
EUROPEAN SURGICAL ASSOCIATION



Twenty-sixth Annual Meeting
17th- 18th May, 2019

NH-Eurobuilding Hotel, Madrid - Spain

Final Programme



EUROPEAN SURGICAL ASSOCIATION

WELCOME

It is a pleasure for us to welcome the ESA members, honorary members and guests in Madrid to the 26th Annual Meeting of the European Surgical Association.

We thank ESA for choosing Madrid for its congress and hope we can count with your attendance.

ESA was founded in 1993, holding its first congress in Paris by Professor Bismuth. Only one of the 25 previous congresses was organised in Spain, in Barcelona by Professor Laureano Fernández Cruz in 2004. Fifteen years later, it is organised in Madrid, a charming and beautiful city, especially in spring. Although some of you have already visited it, you will surely find new places to visit and already visited to remember.

The history of Madrid has its origins in Roman times, then Visigoth and it was not until 1561 when it was named capital of Spain. Madrid is a welcoming city for visitors and there are beautiful sights that you should visit such as museums, which are among the most known worldwide (the Prado, Reina Sofia, Thyssen, Sorolla, etc..). You can find real palaces like the palace of the Zarzuela, the Royal Palace, the Palace of the Moncloa, the Palace of the East, etc). It is a multicultural city as you can see visiting the Plaza Mayor and countless concert and theater places.

Madrid gastronomy has a great variety and is of high quality and you can enjoy it eating “tapas”, for example in the market of San Miguel or in restaurants with several Michelin stars.

During your stay, we will try to present you a sample of this gastronomy, both during the congress and the social events. These we have prepared after the long scientific sessions of the congress, which begin at 8:00am and end at 7:00pm.

The venue for the meeting and hotel accommodation, the Hotel NH Eurobuidling, is located next to the Paseo de la Castellana, a big avenue close to the Real Madrid football stadium.

We will also offer a sample of the culture and gastronomy of Madrid.

On the first day of the congress we have planned a guided visit of the Prado Museum and then we will arrive at the welcome reception, which will be held at the Palace Hotel.



EUROPEAN SURGICAL ASSOCIATION

On Saturday, we will visit the Royal Theater of Madrid, located in a privileged and majestic square opposite the Royal Palace. There, you will enjoy a musical event in

the form of a concert. In Spain, there are great tenors and opera sopranos, who are worldwide known and we want you to get a glimpse of it. After the concert, you will have sample of the gastronomy of Madrid with a gala dinner in in the Royal Theater, which will be served by the Spanish Chef Ramón Freixa, who was awarded with 2 Michelin stars. Previous to the dinner we will offer an aperitif on the terrace of the theater from where you will have great views of the Royal palace.

We will also offer visits to emblematic squares of Madrid or a visit to Aranjuez, which is 50km away from Madrid.

The congress will focus on teaching and the research of the surgeons. It is not planned to have booths, advertising, etc., so the focus of the congress will be on the oral communications and discussions with the surgeons.

The organisation committee will be at your full disposal during the congress and we hope you will have a pleasant and productive stay in Madrid for one of the key surgical events of 2019.

Professor Pascual Parrilla

Professor Ricardo Robles

Local Organisers

&

Professor Irinel Popescu

ESA President



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TIMETABLE

	THURSDAY 16th MAY
15:00 - 19:00	Registration

FRIDAY 17th MAY		Detail page n°	Abstract page n°
07:00	Registration	6	
08:00	President's Welcome	6	
08:10	Presentation of new Honorary Members	6	
08:30	Session I: papers 1 > 6	6-8	27-42
<i>10:30</i>	<i>Coffee break</i>		
11:00	Session II: papers 7 > 12	8-9	43-55
<i>13:00</i>	<i>Lunch</i>		
14:15	Presidential address	10	
14:45	Session III: papers 13 > 18	10-11	56-68
<i>16:45</i>	<i>Coffee break</i>		
17:15	Session IV: papers 19 > 23	12-13	69-83
19:00	End of session		
20:00	Welcome reception	13	

SATURDAY 18th MAY		Detail page n°	Abstract page n°
07:30	Registration	15	
08:30	Session V: papers 24 > 27	15	84-92
09:50	Special lecture	16	24
<i>10:20</i>	<i>Coffee break</i>		
10:50	Session VI: papers 28 > 33	16-17	93-104
<i>12:50</i>	<i>Lunch</i>		
14:00	Session VII: papers 34 > 38	18-19	105-114
15:40	Special lecture	19	25
<i>16:10</i>	<i>Coffee break</i>		
16:40	Session VIII: papers 39 > 42	20-21	115-124
18:00	General Assembly	21	
19:00	End of the congress		
20:30	Gala dinner	21	

SCIENTIFIC PROGRAMME

THURSDAY, MAY 16th 2019

15:00 - 19:00 REGISTRATION

FRIDAY, MAY 17th 2019

07:00 REGISTRATION

08:00 - 08:10 PRESIDENT'S WELCOME
Presentation of new members confirmed by I. Popescu

08:10 - 08:30 PRESENTATION OF NEW HONORARY ESA MEMBERS
Simon Ying Kit LAW - by John Reynolds
Fabrizio MICHELASSI - by Henri Bismuth
Melina KIBBE - by Mario Morino

08:30 - 10:30 SESSION I *Papers 1 > 6*
Moderators: R. Anderson, B. Muller

01] Specificity of procedure volume and postoperative mortality association in digestive cancer surgery. A nationwide study of 225,752 patients

Mehdi EL AMRANI (1), Guillaume CLEMENT (2), Xavier LENNE (2), Amelie BRUANDET (2), Claire LAUERIERE (2), Anthony TURPIN (3), Didier THEIS (2), Stephanie TRUANT (1), François - René PRUVOT (1)

(1) Department of digestive surgery and transplantation, France, (2) Department of medical information, France, (3) Department of medical oncology, France

02] Saccular Abdominal Aortic Aneurysms: Patient Characteristics, Clinical Presentation, Treatment and Outcomes in the Netherlands

Eleonora KARTHAUS (1), Thais TONG (1), Anco VAHL (2), Jaap HAMMING (1)

(1) Leiden University Medical Center, The Netherlands, (2) OLVG, The Netherlands

03] Functional outcomes and quality of life after redo anastomosis in rectal cancer patients: an international multicentre comparative cohort study

Emma WESTERDUIN (1), Hossam ELFEKI (2), Alice FRONTALI (3), Zaher LAKKIS (3), Søren LAURBERG (2), Pieter TANIS (1), Albert WOLTHUIS (4), Yves PANIS (3), Andre D'HOORE (4), **Willem BEMELMAN** (1), Therese JUUL (2)

(1) Amsterdam UMC - location AMC, The Netherlands, (2) Aarhus University Hospital, Denmark, (3) Beaujon Hospital, France, (4) University Hospitals Leuven, Belgium

04] Defining Global Benchmarks in Bariatric Surgery. A Multicenter Analysis of Minimally Invasive Roux-en-Y Gastric Bypass and Sleeve Gastrectomy

Marco BUETER (1), Daniel GERO (1), Dimitri A. RAPTIS (1), Wouter VLEESCHOUWERS (2), Laura DEDEDEN (3), Andres SAN MARTIN (4), Yao XIAO (5), Manoela GALVAO (6), Marcoandrea GIORGI (7), Marine BENOIS (8), Felipe ESPINOZA (9), Marianne HOLLYMAN (10), Aaron LLOYD (11), Hanna HOSA (1), Henner SCHMIDT (1), José L. GARCIA-GALOCHA (12), Simon VAN DE VRANDE (13), Sonja CHIAPPETTA (14), Emanuele LO MENZO (15), Cristina MAMÉDIO ABOUD (16), Sandra GAGLIARDO LÜTHY (17), Philippa ORCHARD (18), Steffi ROTH (19), Gerhard PRAGER (19), Dimitri J. POURNARAS (18), Ricardo COHEN (16), Raul ROSENTHAL (15), Rudolf WEINER (14), Jacques HIMPENS (13), **Antonio J. TORRES GARCIA** (12), Kelvin HIGA (11), Richard WELBOURN (10), Marcos A. BERRY (20), Camilo BOZA (20), Antonio IANNELLI (21), Sivamainthan VITHIANANTHAN (7), Ramos ALMINO (6), Torsten OLBERS (22), Matias SEPULVEDA (4), Eric J. HAZEBROEK (3), Bruno DILLEMANS (2), Roxane D. STAIGER (1), Milo A. PUHAN (23), Ralph PETERLI (17)

(1) Division of Bariatric Surgery, University Hospital Zurich, Switzerland, (2) Department of General Surgery, AZ Sint Jan Brugge-Oostende, Belgium, (3) Department of Surgery, Rijnstate Hospital/Vitalys Clinics, The Netherlands, (4) Bariatric and Metabolic Surgery Center, Dipreca Hospital, Chili, (5) Department of Surgery, Varberg Hospital, Sweden, (6) GastroObeso-Center - Advanced Institute In Bariatric And Metabolic Surgery, Brazil, (7) Department of Surgery, Alpert Medical School of Brown University/The Miriam Hospital, United States, (8) Digestive Surgery and Liver Transplantation Unit, Archet 2 Hospital, University Hospital of Nice, France, (9) Bariatric and Metabolic Center, Department of Surgery, Clinica Las Condes, Chili, (10) Department of Upper Gastrointestinal and Bariatric Surgery, Musgrove Park Hospital, UK, (11) Minimally Invasive and Bariatric Surgery, Fresno Heart and Surgical Hospital, United States, (12) Department of Surgery, Hospital Clínico San Carlos, Complutense University of Madrid, Spain, (13) Department of General Surgery, AZ Sint-Blasius Hospital, Belgium, (14) Department of Obesity and Metabolic Surgery, Sana Klinikum Offenbach, Germany, (15) The Bariatric and Metabolic Institute, Cleveland Clinic Florida, United States, (16) Center for the treatment of Obesity and Diabetes - COD, Hospital Oswaldo Cruz, Brazil, (17) Department of Surgery, University of Basel at St. Claraspital, Switzerland, (18) North Bristol Centre for Weight Loss Metabolic & Bariatric Surgery Southmead Hospital Bristol, UK, (19) Department of Surgery, Vienna Medical University, Austria, (20) Bariatric and Metabolic Center, Department of Surgery, Clinica Las Condes, Las Condes, Chili, (21) Digestive Surgery and Liver Transplantation Unit, Archet 2 Hospital, University Hospital of Nice, France, (22) Department of Surgery, Sahlgrenska Academy, University of Gothenburg, Sweden, (23) Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Switzerland

05] Life confocal tissue assessment with Syto 16/PI und WGA staining visualizes acute organ damage and predicts delayed graft function in kidney transplantation

Annemarie WEISSENBAHER, Rupert OBERHUBER, Martin HERMANN, Christian MARGREITER, Thomas RESCH, Benno CARDINI, Franka MESSNER, Claudia BOESMUELLER, Raimund MARGREITER, Dietmar OEFNER, Stefan SCHNEEBERGER

Medical University Innsbruck, Austria

06] Minor hepatectomies: focusing a blurred picture. Analysis of the outcome of 4471 open resections in non-cirrhotic patients

Luca VIGANO (1), Guido TORZILLI (1), Roberto TROISI (2), Luca ALDRIGHETTI (3), Alessandro FERRERO (4), Pietro MAJNO (5), Christian TOSO (5), Juan FIGUERAS (6), Daniel CHERQUI (7), Rene ADAM (7), Norihiro KOKUDO (8), Kiyoshi HASEGAWA (8), Alfredo GUGLIELMI (9), Marek KRAWCZYK (10), Felice GIULIANTE (11), Mohammad ABU HILAL (12), Jose COSTA-MAIA (13), Antonio Daniele PINNA (14), Eduardo DE SANTIBANES (15), Lucio URBANI (16), Timothy PAWLIK (17), Daniela ZUGNA (18)

(1) Humanitas Clinical and Research Center, Humanitas University, Italy, (2) Ghent University Hospital, Belgium, (3) S. Raffaele Hospital, Italy, (4) Mauriziano Hospital, Italy, (5) University Hospital of Geneva, Switzerland, (6) Josep Trueta Hospital, Spain, (7) Paul Brousse Hospital, France, (8) University of Tokyo Hospital, Japan, (9) Policlinico Rossi, Verona University, Italy, (10) Medical University of Warsaw, Poland, (11) Gemelli Hospital, Italy, (12) University Hospital Southampton, UK, (13) Centro Hospitalar de Sao Joao, Portugal, (14) S. Orsola Hospital, Bologna University, Italy, (15) Hospital Italiano, Argentina, (16) Azienda Ospedaliero-Universitaria Pisana, Italy, (17) The Ohio State University Wexner Medical Center, United States, (18) Department of Medical Sciences, Cancer Epidemiology Unit, University of Torino and CPO-Piemonte, Italy

10:30 - 11:00

COFFEE BREAK

11:00 – 13:00

SESSION II

Papers 7 > 12

Moderators: M. Bockhorn, J. Reynolds

07] Is decompressing stoma a better alternative than stent as bridge to surgery for left-sided obstructive colon cancer? A nationwide, propensity score matched analysis

Joyce VELD (2), Femke AMELUNG (3), Wernard BORSTLAP (1), Emo VAN HALSEMA (4), Esther CONSTEN (3), Peter SIERSEMA (5), Frank TER BORG (6), Edwin VAN DER ZAAG (7), Hans de WILT (8), Paul FOCKENS (4), Willem BEMELMAN (1), Jeanin VAN HOOFT (4), Pieter TANIS (1)

(1) Amsterdam UMC, University of Amsterdam, department of Surgery, The Netherlands, (2) Amsterdam UMC, University of Amsterdam, department of Surgery and Gastroenterology & Hepatology, The Netherlands, (3) Meander MC, department of Surgery, The Netherlands, (4) Amsterdam UMC, University of Amsterdam, department of Gastroenterology & Hepatology, The Netherlands, (5) Radboud UMC, Radboud University Nijmegen, department of Gastroenterology & Hepatology, The Netherlands, (6) Deventer Hospital, department of Gastroenterology & Hepatology, The Netherlands, (7) Gelre Hospital, department of Surgery, The Netherlands, (8) Radboud UMC, Radboud University Nijmegen, department of Surgery, The Netherlands

08] Novel real time prediction of liver graft function during hypothermic oxygenated machine perfusion prior to liver transplantation

Xavier MULLER (1), Andrea SCHLEGEL (1), Philipp KRON (1), Dilmurodjon ESHMUMINOV (1), Michael WÜRDINGER (1), D MEIERHOFER (2), Pierre-Alain CLAVIEN (1), Philipp DUTKOWSKI (1)
(1) Division of Transplantation, University Hospital Zurich, Switzerland, (2) Mass Spectrometry Facility, Max Planck Institute for Molecular Genetics, Germany

09] Neoprene-based Glue injection in the Pancreatic Stump after Pancreatoduodenectomy in Patients at High-Risk for Pancreatic Fistula and Adverse Oncological Outcome: a New Prospective Comparative Clinical Study

Vincenzo MAZZAFERRO (1), Matteo VIRDIS (2), Carlo SPOSITO (2), Christian COTSOGLOU (2), Michele DROZ DIT BUSSET (2), Marco BONGINI (2), Maria FLORES (2), Jorgelina COPPA (2)
(1) University of Milan, Gastrointestinal Surgery and Liver Transplantation, Fondazione IRCCS Istituto Nazionale Tumori, Italy, (2) Gastrointestinal Surgery and Liver Transplantation, Fondazione IRCCS Istituto Nazionale Tumori, Italy

10] International Comparison of Surgical Intervention and Mortality for Surgical Emergencies in England and the United States

Sheraz MARKAR (1), Alberto VIDAL-DIEZ (1), Kirtan PATEL (2), Will MAYNARD (2), Karina TUKANOVA (1), Alice MURRAY (1), Pete HOLT (2), Alan KARTHIKESALINGAM (2), George HANNA (1)
(1) Imperial College London, UK, (2) St George's University London, UK

11] What is the impact of neoadjuvant radiotherapy on anastomotic leakage and definitive stoma rates after anterior resection for rectal cancer? A national cohort study of 13151 patients

Jeremie LEFEVRE (1), Yann PARC (1), Alexandre CHALLINE (1), Andrea LAZZATI (2), Clotilde DEBOVE (1), Najim CHAFAI (1), Emmanuel TIRET (1)
(1) Hôpital saint-antoine, France, (2) Centre intercommunal de Créteil, France

12] Transthoracic versus transhiatal esophagectomy for esophageal cancer: a nation-wide propensity score matched cohort analysis

Alexander MERTENS, Marianne KALFF, Wietse ESHUIS, Thomas VAN GULIK, Mark VAN BERGE HENEGOUWEN, Suzanne GISBERTZ
Amsterdam UMC, location AMC, The Netherlands

13:00 - 14:15

LUNCH

14:15 - 14:45

PRESIDENTIAL ADDRESS by I. Popescu

Introduced by M. Morino

The changing role of the surgeon.

14:45 - 16:45

SESSION III

Papers 13 > 18

Moderators: D. Henne-Bruns, E. Vicente

13] First Successful ex-vivo Liver Perfusion at Physiologic Conditions with Preservation of Full Hepatic Functions for one Week in a Swine Model

Dilmurodjon ESHMUMINOV (1), Dustin BECKER (2), Max HEFTI (3), Lucia BAUTISTA BORREGO (1), Martin J. SCHULER (3), Catherine HAGEDORN (1), Xavier MULLER (1), Mark TIBBIT (4), Christopher ONDER (5), Rolf GRAF (1), Philipp DUTKOWSKI (1), Philipp R. VON ROHR (1), **Pierre-Alain CLAVIEN** (1)

(1) Department of Surgery and Transplantation, University Hospital Zurich, Switzerland, (2) Transport Processes and Reactions Laboratory, Department of Mechanical and Process Engineering, ETH Zurich, Switzerland, (3) Wyss Zurich – ETH Zurich/University of Zurich, Switzerland, (4) Macromolecular Engineering Laboratory, Department of Mechanical and Process Engineering, ETH Zurich, Switzerland, (5) Institute for Dynamic Systems and Control, Department of Mechanical and Process Engineering, ETH Zurich, Switzerland

14] Immunonutrition to improve the quality of life of upper gastrointestinal cancer patients undergoing neoadjuvant treatment prior to surgery (NEOIMMUNE); Double blind randomized controlled multi-center clinical trial

Sheraz MARKAR (1), Christophe MARIETTE (2), Frank BONNETAIN (3), Lars LUNDELL (4), Riccardo ROSATI (5), Giovanni DE MANZONI (6), Luigi BONAVINA (7), Olga TUCKER (8), Patrick PLUM (9), Xavier Benoît D'JOURNO (10), Daniel VAN DAELE (11), Geoff COGILL (12), Stefano SANTI (13), Leandres FARRAN (14), Vega IRANZO (15), **Manuel PERA** (16), Guillaume PIESSSEN (2)

(1) Imperial College London, UK, (2) Univ. Lille, Department of Digestive and Oncological Surgery, Claude Huriez University Hospital, France, (3) Methodology and Quality of Life Unit in Cancer, INSERM UMR 1098, University Hospital of Besançon, France, (4) Karolinska institutet Department of Clinical Sciences Intervention and Technology, Sweden, (5) Department of Gastrointestinal Surgery, San Raffaele Scientific Institute, Vita e Salute University, Italy, (6) General and Upper GI Surgery Division, University of Verona, Piazzale Aristide Stefani, Italy, (7) Department of Biomedical Science for Health, Division of General Surgery IRCCS Policlinico San Donato, Italy, (8) Department of Surgery, University of Birmingham, UK, (9) Department of General, Visceral and Cancer Surgery, University Hospital of Cologne, Germany, (10) Department of Thoracic Surgery, Hôpital Nord, Aix-Marseille Université, Assistance Publique Hôpitaux de Marseille, France, (11) Department of Gastro-enterology, Centre Hospitalier Universitaire de Liège, Belgium, (12) Department of Oncology, University Hospitals Plymouth NHS Trust, Plymouth, UK, (13) Regional Referral Center for Diagnosis and Treatment of Diseases of Esophagus, Esophageal Surgery Unit, Gastroenterology Department, "Nuovos. Chiara" Hospital, Italy, (14) Digestive Surgery Department, Hospital Universitari de Bellvitge, IDIBELL, L'Hospitalet de Llobregat, Barcelona, Spain, (15) Medical Oncology Department, Hospital General Universitario de Valencia, Valencia, Spain, (16) Sección de Cirugía Gastrointestinal, Servicio de Cirugía, Hospital Universitario del Mar, Institut Hospital del Mar d'Investigacions Mèdiques (IMIM), Universitat Autònoma de Barcelona, Spain

15] Minimally Invasive versus Open Liver Resection for Hepatocellular Carcinoma and Portal Vein Hypertension: Results of an International Multi-Institutional Analysis

Fabio BAGANTE (1), Andrea RUZZENENTE (1), Eliza W. BEAL (2), Simone CONCI (1), Katuscha MERATH (2), Tommaso CAMPAGNARO (1), Guillaume MARTEL (3), Sorin ALEXANDRESCU (4), Irinel POPESCU (4), Francesca RATTI (5), Luca ALDRIGHETTI (5), Olivier SOUBRANE (6), Hugo P MARQUES (7), Thomas HUGH (8), George A POULTSIDES (9), Vincent LAM (10), Calogero IACONO (1), **Alfredo GUGLIELMI** (1), Timothy M PAWLIK (2)

(1) Department of Surgery, University of Verona, Verona, Italy, Italy, (2) Department of Surgery, The Ohio State University Wexner Medical Center, Columbus, OH, USA, United States, (3) Department of Surgery, University of Ottawa, Ottawa, Canada, Canada, (4) Department of Surgery, Fundeni Clinical Institute, Bucharest, Romania, Romania, (5) Department of Surgery, Ospedale San Raffaele, Milano, Italy, Italy, (6) Department of Hepatobiliopancreatic Surgery, AP-HP, Beaujon Hospital, Clichy, France, France, (7) Department of Surgery, Curry Cabral Hospital, Lisbon, Portugal, Portugal, (8) Department of Surgery, The University of Sydney, School of Medicine, Sydney, Australia, (9) Department of Surgery, Stanford University, Stanford, CA, USA, United States, (10) Department of Surgery, Westmead Hospital, Sydney, Australia

16] Organ resilience contributes to different impact of delayed graft function on graft survival in kidneys donated by brain death and circulatory death donors

Michèle DE KOK (1), Alexander SCHAAPHERDER (1), Leonie WIJERMARS (1), Dorottya DE VRIES (1), Lars VERSCHUREN (2), Jan LINDEMAN (1), **Rutger PLOEG** (3)

(1) Leiden University Medical Center, The Netherlands, (2) The Netherlands Organization for Applied Scientific Research (TNO), The Netherlands; (3) Nuffield Department of Surgical Science, University of Oxford, John Radcliffe & Churchill Hospital, Oxford Transplant center, United Kingdom

17] Surgeon's fitness to perform (FTOP) after night shift is less impaired as compared to residents in daily surgical practice in the Netherlands; a cross-sectional study using the validated FTOP self-test

Koen VAN DER BOGT (1), Fokkiedien TUMMERS (1), Coen HUIZINGA (2), Hein STOCKMANN (3), **Jaap HAMMING** (1), Adam COHEN (2)*

(1) Leiden University Medical Center, The Netherlands, (2) Centre for Human Drug Research, The Netherlands, (3) Patient Safety Committee of the Association of Surgeons of the Netherlands, The Netherlands

18] Risk factors for locally advanced cancer associated with ulcerative colitis: results of a retrospective multicentric study in the biological era

Matteo ROTTOLI (1), Marta TANZANU (1), Francesca DI CANDIDO (2), Francesco COLOMBO (3), Alice FRONTALI (4), Pramodh CHANDRASINGHE (5), Gianluca PELLINO (6), Matteo FRASSON (6), Janindra WARUSAVITARNE (5), Yves PANIS (4), Gianluca SAMPIETRO (3), Antonino SPINELLI (7), **Gilberto POGGIOLI** (1)

(1) Sant'Orsola - Malpighi Hospital, Alma Mater Studiorum University of Bologna, Italy, (2) Colon and Rectal Surgery Division, Humanitas Clinical and Research Center, Italy, (3) Department of Surgery, Luigi Sacco University Hospital, Italy, (4) Beaujon Hospital, Department of Colorectal surgery and University, France, (5) St Mark's Hospital, UK, (6) Colorectal Unit, Hospital Universitario y Politecnico La Fe, University of Valencia, Spain, (7) Colon and Rectal Surgery Division, Humanitas Clinical and Research Center. Department of Biomedical Sciences, Humanitas University, Italy

Moderators: C. Fondevila Campo, K. Van Laarhoven

19] Perioperative Omega-3 fatty Acids Fails to Confer Protection in Liver Surgery. Results of a multi-centric, double-blind, randomized, placebo-controlled trial

Michael Linecker (1); Florin Botea (2); Dimitri Aristotele Raptis (1,3); Diana Nicolaescu (2); Perparim Limani (1); Ruslan Alikhanov (4); Pavel Kim (4); Andrea Wirsching (1); Philipp Kron (1,5); Marcel A. Schneider (1); Christoph Tschuor (1); Patryk Kambakamba (1); Christian Oberkofler (1); Michelle L. De Oliveira (1); John Bonvini (6); Michail Efanov (4); Rolf Graf (1); Henrik Petrowsky (1); Igor Khatkov (4); Pierre-Alain Clavien (1); **Irinel Popescu** (2)

(1) Department of Surgery and Transplantation, University Hospital Zurich, Switzerland, (2) Center of General Surgery and Liver Transplantation, Fundeni Institute Bucharest, Romania, (3) Department of HPB- and Liver Transplantation Surgery, University College London, Royal Free Hospitals, London, UK, (4) Department of Liver and Pancreatic Surgery, Moscow Clinical Scientific Center, Russia, (5) Department of HPB and Transplant Surgery, St. James's University Hospital NHS Trust, Leeds, UK, (6) Department of Anesthesiology, University Hospital Zurich, Switzerland

20] Next-generation sequencing is helpful for risk stratification as well as surgical decision making in treatment of colorectal liver metastases

Hauke LANG (1), Stefan HEINRICH (1), Wilfried ROTH (2), Michael KLOTH (2), Janine BAUMGART (1)

(1) Department of General, Visceral and Transplantation Surgery, University Medical Center Mainz, Johannes Gutenberg University, Germany, (2) Institution of Pathology, University Medical Center Mainz, Johannes Gutenberg University, Germany

21] Intracorporeal or extracorporeal ileocolic anastomosis after laparoscopic right colectomy: a double-blinded randomized controlled trial

Marco ALLAIX, Maurizio DEGIULI, Marco BONINO, Alberto AREZZO, Massimiliano MISTRANGELO, Roberto PASSERA, **Mario MORINO**

Department of Surgical Sciences, University of Torino, Italy

22] A national cohort study evaluating the association of short-term quality indicators with long-term survival after esophageal and gastric cancer surgery

Leonie VAN DER WERF (1), Bas WIJNHOFEN (1), Johanna VAN SANDICK (2), Gard NIEUWENHUIJZEN (3), Linde BUSWEILER (4), Richard VAN HILLGERSBERG (5), Michel WOUTERS (6), Mark VAN BERGE HENEGOUWEN (6)

(1) Erasmus University MC, The Netherlands, (2) Netherlands Cancer Institute – Antoni van Leeuwenhoek Hospital, The Netherlands, (3) Catharina Hospital, The Netherlands, (4) Amsterdam University Medical Centre, The Netherlands, (5) UMC Utrecht, The Netherlands, (6) Netherlands Cancer Institute - Antoni van Leeuwenhoek Hospital, The Netherlands

23] Does a longer waiting period after neoadjuvant radiochemotherapy improves the oncological prognosis of rectal cancer? 3 years follow-up results of the GRECCAR-6 randomized multicenter trial

Jeremie LEFEVRE (1), **Yann PARC** (1), Laurent MINEUR (2), Marine CACHANADO (1), Eric RULLIER (3), Philippe ROUANET (4), Cécile DE CHAISEMARTIN (5), Bernard MEUNIER (6), Jafari MEHRDAD (7), Eddy COTTE (8), Jerome DESRAME (9), Mehdi KAROUI (10), Stephane BENOIST (11), Sylvain KIRZIN (12), Anne BERGER (13), Yves PANIS (14), Guillaume PIESSEN (15), Emmanuel TIRET (16)

(1) hopital saint Antoine, France, (2) Sainte-Camille Institut, France, (3) CHU Bordeaux, France, (4) Val d'Aurélié Institut, France, (5) Paoli-Calmettes Institut, France, (6) CHU Rennes, France, (7) Oscar Lambret Center, France, (8) CHU Lyon, France, (9) Jean Mermoz Institut, France, (10) CHU Pitié-Salpêtrière, France, (11) CHU Bicêtre, France, (12) CHU Toulouse, France, (13) CHU HEGP, France, (14) CHU Beaujon, France, (15) CHRU Lille, France, (16) CHU Saint-Antoine, France

19:00

END OF SESSION

20:00

WELCOME RECEPTION

Dress Code: Business / informal

Prado museum visit and dinner at Hotel Palace restaurant

07:30

REGISTRATION

08:30 - 09:50

SESSION V

Papers 24 > 27

Moderators: A. Hölscher, P. Majno

24] Is superior intracorporeal vs extracorporeal anastomosis during laparoscopy right hemicolectomy? Results from randomized controlled trial

Bollo JESUS, Carmen MARTINEZ, Victor TURRADO, Pilar HERNANDEZ, Carmen BALAGUE, Ignaci GICH, Eduardo TARGARONA

Hospital de la Santa Creu i Sant Pau, Spain

25] Lower postoperative mortality of adrenal surgery in high volume centres; a nationwide study (AFCE)

Robert CAIAZZO (1), Xavier LENNE (2), Guillaume CLEMENT (2), Didier THEIS (2), Fabrice MENEGAUX (3), Frederic SEBAGH (4), Laurent BRUNAUD (5), Jean-Christophe LIFANTE (6), Eric MIRALLIE (7), Amelie BRUANDET (2), François PATTOU (1)

(1) General Endocrine Surgery, Lille University Hospital, France, (2) Medical information, Lille University Hospital, France, (3) Pitie Salpetriere Hospital, France, (4) Marseille University Hospital, France, (5) Nancy University Hospital, France, (6) Lyon University Hospital, France, (7) Nantes University Hospital, France

26] The American College of Surgeons surgical risk calculator underestimates the actual risks of hepatectomy for liver tumors: Results from a cohort of 450 patients

Matteo DONADON, Guido TORZILLI, Jacopo GALVANIN, Bruno BRANCIFORTE, Angela PALMISANO, Fabio PROCOPIO, Luca VIGANÒ, Daniele DEL FABBRO

Division of Hepatobiliary and General Surgery, Department of Surgery, Humanitas University and Research Hospital - IRCCS, Italy

27] Validation of novel technique in 3d printed hepatic model in hepatobiliary surgery: a pilot study "liv3dprint"

Victor LOPEZ-LOPEZ (1), Ricardo ROBLES-CAMPOS (1), Dario GARCÍA (1), Hauke LANG (2), Manuel Angel BARRERA-GOMEZ (3), José Manuel FERNÁNDEZ (4), Manuel FERNANDEZ CEBRIAN (5), Victor SANCHEZ-TURRION (6), Juan DE LA CRUZ (7), Asuncion LOPEZ-CONESA (1), Roberto BRUSADIN (1), Béatriz GOMEZ-PEREZ (1), Pascual PARRILLA-PARICIO (1)

(1) Hospital Clínico Universitario Virgen de la Arrixaca. Murcia, Spain, (2) Klinik für Allgemein-, Viszeral- und Transplantationschirurgie, Universitätsmedizin Mainz, Mainz, Germany, (3) Hospital Universitario de la Candelaria, Tenerife, Spain, (4) Hospital Universitario de Ceuta, Ceuta, Spain. (5) Hospital Fundación Alcorcón de Madrid, Madrid, Spain. (6) Hospital Universitario Puerta de Hierro de Madrid, Madrid, Spain. (7) Group of Applied Mathematics in Science and Engineering, Faculty of Computer Science, University of Murcia, Murcia, Spain.

09:50 - 10:20

SPECIAL LECTURE Introduced by A. Hölscher

The Journey of Mastery in the Art of Surgery

C. Pellegrini (1), E. De Santibanes (2)

(1) Department of Surgery, University of Washington, United States, (2) Hospital Italiano, Buenos Aires, Argentina

10:20 - 10:50

COFFEE BREAK

10:50 - 12:50

SESSION VI

Papers 28 > 33

Moderators: A. Karamarkovic, T. Walsh

28] Incidence and predictive factors for poor pathological outcome after Transanal Total Mesorectal Excision for rectal cancer

Roel HOMPES (1), Sapho ROODBEEN (1), Borja LACY (2), Marta PENNA (3), **Frederic RIS** (4)

(1) Amsterdam UMC, location AMC, The Netherlands, (2) Hospital Clinic, Barcelona, Spain, (3) Churchill Hospital, NHS Trust, UK, (4) Geneva University Hospitals, Service of visceral surgery, Geneva, Switzerland

29] Deportalized lobe during ALPPS technique could interfere in the liver regeneration of the future liver remnant

Álvaro Navarro-Barrios (1), Ricardo Robles-Campos (2), Asunción López-Conesa (1), Roberto Brusadin (1), Víctor López-López (1), Carlos Martínez-Caceres (3), Jesús de la Peña-Moral (4), Beatriz Revilla (3), Albert Caballero-Planes (4), Pascual Parrilla-Paricio (5).

(1) Department of Surgery. HBP Unit. Virgen de la Arrixaca University Hospital. Murcia. IMIB. Spain. (2) Department of Surgery. Professor of Surgery. HBP Unit Head. Virgen de la Arrixaca University Hospital. Murcia. IMIB. Spain. (3) Doctor in Investigation Support. IMIB. Murcia. Spain. (4) Department of Pathology. Virgen de la Arrixaca University Hospital. IMIB. Murcia. Spain. (5) Department of Surgery. Professor of Surgery. Chief of Service. Virgen de la Arrixaca University Hospital. IMIB. Murcia. Spain.

30] Pelvic Exenteration for Advanced Pelvic Neoplasms: Results from the PelvEx Collaborative

Michael KELLY & PelvEx Collaborative, Ireland : Michael E Kelly, Aalbers AGJ, Abdul Aziz N, Abraham-Nordling M, Alberda W, Antoniou A, Austin KK, Baker R, Bali M, Baseckas G, Bednarski BK, Beets GL, Berg PL, Beynon J, Biondo S, Bordeianou L, Brunner M, Buchwald P, Burger JWA, Burling D, Campain N, Chan KKL, Chang GJ, Chew MH, C Chong P, Christensen HK, Codd M, Colquhoun AJ, Corr A, Coscia M, Coyne PE, Creavin B, Damjanovic L, Daniels IR, Davies M, Davies RJ, de Wilt JHW, Denost Q, Deutsch C, Dietz D, Domingo S, Dozois EJ, Duff M, Eglinton T, Evans MD, Fearnhead NS, Frizelle FA, Garcia-Granero E, Garcia-Sabrido JL, GentiliniL, George ML, Glynn R, Golda T, Griffiths B, Harris DA, Evans M, Hagemans JAW, Harji DP, Heriot AG, Hohenberger W, Holm T, Jansson-Palmer G, Jenkins JT, Kapur S, Kanemitsu Y, Kelley SR, Keller DS, Kim H, Koh CE, Kok NFM, Kokelaar R, Kontovounisios C, Kusters M, Lago V, Larson DW, Law WL, Laurberg S, Lee P, Lydrup ML, Lynch AC, Mathis KL, Martling A, Meijerink WJHJ, Merkel S,

Mentha AM, McDermott FD, McGrath JS, Mihailo A, Mirnezami A, Morton JR, Mullaney TG, Nielsen MB, Nieuwenhuijzen GAP, Nilsson PJ, **O'Connell PR**, Palmer G, Patsouras D, Pellino G, Poggioli G, Quinn M, Quyn A, Radwan RW, Rasheed S, Rasmussen PC, Rocha R, Rothbarth J, Roxburgh C, Rutten HJT, Ryan É, Sagar PM, Sammour T, Schizas AMP, Schwarzkopf E, Scripcariu V, Shaikh I, Shida D, Simpson A, Smart NJ, Smith JJ, Solomon MJ, Sørensen MM, Steele SR, Steffens D, Stocchi L, Stylianides NA, Tekkis PP, Taylor C, Tsukamoto S, Turner WH, Tuynman JB, van Ramshorst GH, van Zoggel D, Vasquez-Jimenez W, Verhoef C, Versteegen M, Wakeman C, Warrier S, Wasmuth HH, Weiser MR, Wheeler JMD, Wild J, Yip J, **Winter DC**.

31] Variation in the use of resection for colorectal cancer liver metastases

Hayley FENTON (1), John TAYLOR (1), **Peter LODGE** (2), Giles TOOGOOD (2), Paul FINAN (2), Alastair YOUNG (2), Eva MORRIS (2)

(1) University of Leeds, UK, (2) Leeds Teaching Hospitals NHS Trust, UK

32] Outcomes of Anastomotic Techniques in Total Minimally Invasive Transthoracic Esophagectomy: A Multi-Center Cohort Study

Wolfgang SCHRÖDER (1), Dimitri A. RAPTIS (2), Henner SCHMIDT (2), Susanne GISBERTZ (3), Johnny MOONS (4), Emanuele ASTI (5), Misha LUYER (6), Arnulf HÖLSCHER (1), Paul M. SCHNEIDER (1), Mark VAN BERGE HENEGOUWEN (3), Philippe NAFFEUX (4), Magnus NILSSON (7), Jari RÄSANEN (8), Francesco PALAZZO (9), Stuart MERCER (10), Luigi BONAVINA (5), Gard NIEUWENHUIJZEN (6), Bas WIJNHOFEN (11), Piet PATTYN (12), Peter GRIMMINGER (13), Christiane J. BRUNS (1), **Christian Alexander GUTSCHOW** (2)

(1) Department of General, Visceral and Cancer Surgery, University Hospital Cologne, Germany, (2) Division of Upper GI Surgery, University Hospital Zurich, Switzerland, (3) Department of Surgery, Academic Medical Center, The Netherlands, (4) Department of Thoracic Surgery, University Ziekenhuis Leuven, Belgium, (5) Department of Surgery, IRCCS Policlinico San Donato, University of Milan, Italy, (6) Department of Surgery, Catharina Hospital, The Netherlands, (7) Division of Surgery, CLINTEC, Karolinska Institutet, Sweden, (8) Department of General Thoracic and Esophageal Surgery, Helsinki University Hospital, Finland, (9) Department of Surgery, Thomas Jefferson University, United States, (10) Department of Upper GI Surgery, Queen Alexandra Hospital, UK, (11) Department of Surgery, Erasmus University Medical Center, The Netherlands, (12) Department of Surgery, University Center Ghent, Belgium, (13) Department of General, Visceral and Transplant Surgery, University Medical Center, Germany

33] Palliative gastrectomy for advanced gastric cancer does not result in additional postoperative risks compared to curative gastrectomy

Emma GERTSEN (1), Hylke BRENKMAN (2), Lucas GOENSE (3), Nadia HAJ MOHAMMAD (4), Bas WEUSTEN (5), **Richard VAN HILLEGERSBERG** (1), Jelle RUURDA (1)

(1) Department of Surgery, University Medical Center Utrecht, Utrecht University, The Netherlands, (2) Department of Surgery, Diaconessenhuis, Utrecht, The Netherlands, (3) Department of Surgery, Sint Antonius Ziekenhuis, Nieuwegein, The Netherlands, (4) Department of Medical Oncology, University Medical Center Utrecht, Utrecht University, The Netherlands, (5) Department of Gastroenterology, University Medical Center Utrecht, Utrecht University, The Netherlands

12:50 - 14:00

LUNCH

34] Increased and safe utilization of high-risk donor livers for transplantation after ex situ resuscitation and assessment using combined hypo- and normothermic machine perfusion

Otto VAN LEEUWEN (1), Yvonne DE VRIES (1), Masato FUJIYOSHI (1), Rinse UBBINK (2), Gert Jan PELGRIM (2), Maureen J WERNER (1), Koen REYNTJENS (3), Aad P. VAN DEN BERG (4), Marieke T. DE BOER (1), Ruben H DE KLEINE (1), Vincent E. DE MEIJER (1), **Robert J. PORTE** (1)

(1) Department of Surgery, section of Hepatobiliary Surgery & Liver Transplantation. University of Groningen, University Medical Center Groningen, Groningen, The Netherlands, (2) Groningen Transplant Center. University of Groningen, University Medical Center Groningen, Groningen, The Netherlands, (3) Department of Anesthesiology. University of Groningen, University Medical Center Groningen, Groningen, The Netherlands, (4) Department of Internal Medicine, section of Hepatology. University of Groningen, University Medical Center Groningen, Groningen, The Netherlands

35] Total versus near-total thyroidectomy in Graves' disease – Results of the randomized controlled multicenter TONIG-trial

Elisabeth MAURER (1), Katja MASCHUW (2), Alexander REUSS (3), Hans Udo ZIEREN (4), Andreas ZIELKE (5), Peter GORETZKI (6), Dietmar SIMON (7), Cornelia DOTZENRATH (8), Thomas STEINMÜLLER (9), **Detlef K. BARTSCH** (1), - TONIG-STUDY GROUP (1)

(1) Department of Visceral-, Thoracic- and Vascular Surgery, Philipps University Marburg, Germany, (2) Department of General-, Visceral- and Thoracic Surgery, Hospital Lippe, Germany, Germany, (3) Coordination Center for Clinical Trials-KKS, Philipps-University Marburg, Germany, (4) Department of General- and Visceral- Surgery, St. Agatha Hospital Köln, Germany, (5) Department of Endocrine Surgery, Katharinen-Hospital Stuttgart, Germany, (6) Department of Endocrine Surgery, Lukashospital Neuss, Germany, (7) Department of General-, Visceral- and Endocrine Surgery, Bethesda Hospital Duisburg, Germany, (8) Department of Endocrine Surgery, Helios Universityhospital Wuppertal, Germany, (9) Department of General-, Visceral- and Endocrine Surgery, DRK Hospital Berlin Westend, Germany

36] Does artery first approach improve the rate of R0 resection in pancreatoduodenectomy? A randomized, prospective Multicenter study

L. SABATER (1), E. CUGAT (2), A. SERRABLO (3), G. SUAREZ (4), L. DIEZ-VALLADARES (5), J. SANTOYO-SANTOYO (6), E. MARTÍN-PÉREZ (7), F. AUSANIA (8), S. LOPEZ-BEN (9), J.M. JOVER-NAVALON (10), M. GARCÉS-ALBIR (1), M. GARCIA-DOMINGO (2), M. SERRADILLA (11), E. PÉREZ-AGUIRRE (5), B. SÁNCHEZ-PÉREZ (6), M. Di MARTINO (7), P. SENRA-DEL-RIO (8), L. FALGUERAS-VERDAGUER (9), C. CARABIAS (10), M.C. GÓMEZ-MATEO (12), A. FERRANDEZ (1), D. DORCARATTO (13), E. MUÑOZ-FORNER (1,), **C. FONDEVILA CAMPO** (14), J. PADILLO (4)

(1) Department of Surgery. Hospital Clínico, University of Valencia. Biomedical Research Institute INCLIVA. Valencia - Valencia (Spain), (2) Department of Surgery. Hospital Universitario Mutua Terrassa. Barcelona - Terrassa (Spain), (3) Department of Surgery. Hospital Miguel Servet. Zaragoza - Zaragoza (Spain), (4) Department of Surgery. Hospital Virgen del Rocío. Sevilla. - Sevilla (Spain), (5) Department of Surgery. Hospital Clínico San Carlos. Madrid. - Madrid (Spain), (6) Department of Surgery. Hospital Regional Universitario Carlos Haya. Málaga. - Málaga (Spain), (7) Department of Surgery. Hospital Universitario La Princesa. Madrid. - Madrid (Spain), (8) Department of Surgery. Hospital Universitario Alvaro Cunqueiro. Vigo - Vigo (Spain), (9) Department of Surgery. Hospital Universitario Josep Trueta. Girona. - Girona (Spain), (10) Department of Surgery. Hospital Universitario de Getafe. Madrid. - Getafe (Spain), (11) Department of Surgery. Hospital Miguel Servet. Zaragoza. - Zaragoza (Spain), (12) Department of Pathology. Hospital

Universitario de Donostia. San Sebastián. - San Sebastian (Spain), (13) Department of Surgery. Hospital Clínico, University of Valencia. Biomedical Research Institute INCLIVA. Valencia - València (Spain), (14) Hospital Clinic. University of Barcelona (Spain)

37] Penetrating Crohn's disease is not associated with a higher risk of recurrence after surgery: a prospective nationwide cohort conducted by the GETAID chirurgie group

Léon MAGGIORI (1), Yves PANIS (1), Antoine BROUQUET (2), Philippe ZERBIB (3), Jérémie LEFEVRE (4), Quentin DENOST (5), Adeline GERMAIN (6), Eddy COTTE (7), Laura BEYER-BERJOT (8), Nicolas MUNOZ-BONGRAND (9), Véronique DESFOURNEAUX (10), Amine RAHILI (11), Jean-Pierre DUFFAS (12), Karine PAUTRAT (13), Christine DENET (14), Valérie BRIDOUX (15), Guillaume MEURETTE (16), Jean-Luc FAUCHERON (17), Jérôme LORIAU (18), Régis SOUCHE (19), Eric VICAUT (20), Stéphane BENOIST (2)

(1) Hôpital Beaujon, France, (2) Hôpital Bicêtre, France, (3) CHU Lille, France, (4) Hôpital Saint-Antoine, France, (5) CHU Bordeaux, France, (6) CHU Nancy, France, (7) CHU Lyon, France, (8) CHU Marseille, France, (9) Hôpital Saint Louis, France, (10) CHU Rennes, France, (11) CHU Nice, France, (12) CHU Toulouse, France, (13) Hôpital Lariboisière, France, (14) Institut Montsouris, France, (15) CHU Rouen, France, (16) CHU Nantes, France, (17) CHU Grenoble, France, (18) Hôpital Saint Joseph, France, (19) CHU Montpellier, France, (20) Hôpital Fernand Widal, France

38] Surgical Quality Assurance in Randomised Controlled Trials -Standardisation and Competency Assessment in COLOR III trial

Alice Yi-Chien TSAI (1), Stella MAVROVELI (1), Danilo MISKOVIC (1), Michel ADAMINA (2), Roel HOMPES (3), Felix AIGNER (4), Antonino SPINELLI (5), Janindra WARUSAVITARNE (6), Joep KNOL (7), Matthew ALBERT (8), George NASSIF (8), Willem BEMELMAN (9), Luigi BONI (10), Henrik OVESEN (11), Ralph AUSTIN (12), Andrea MURATORE (13), Gerald SEITINGER (14), Antonino LACY (15), Jurriaan TUYNMAN (16), Jaap BONJER (16), **George HANNA** (1)

(1) Imperial College London, UK, (2) Kantonsspital Winterthur, Switzerland, (3) Academic Medical Center Amsterdam, The Netherlands, (4) Charité – University Medicine Berlin, Germany, (5) Humanitas Research Hospital, Italy, (6) St Mark's Hospital, UK, (7) Jessa Hospital, Belgium, (8) Florida Hospital Medical Group, United States, (9) Academic Medical Centre Amsterdam, The Netherlands, (10) University of Milan, Italy, (11) Zealand University Hospital, Denmark, (12) Colchester General Hospital, UK, (13) Candiolo Cancer Institute, Italy, (14) Krankenhaus der Barmherzigen Brüder Graz, Austria, (15) Hospital Clínic, Barcelona, Spain, (16) VU Medical Centre, The Netherlands

15:40 - 16:10

SPECIAL LECTURE Introduced by I. Popescu

Level 1 Randomized Control Trials to Assess Surgical Innovations: Is it a just a waste of time and money? Should we change the Paradigm of Evidence-based Surgery?

Christian OBERKOFER (1), Jacob F. HAMMING (2), Roxane D. STAIGER (1), Philippe BROSI (1), Sebastiano BIONDO (3), Olivier FARGES (4), Dink A. LEGEMATE (5), Mario MORINO (6), Antonio PINNA (7), Hugo PINTO-MARQUES (8), John V. REYNOLDS (9), Ricardo Robles CAMPOS (10), Xavier ROGIERS (11), KJETIL SOReide (12), Milo A. PUHAN (13), Pierre-Alain CLAVIEN (1), **Inne BOREL RINKES** (14)

(1) Department of Surgery and Transplantation, University Hospital Zurich, Switzerland, (2) Department of Vascular Surgery, Leiden University Medical Center, Leiden, The Netherlands, (3) Department of General and Digestive Surgery, Bellvitge University Hospital, Barcelona, Spain, (4) Department of Surgery and Transplantation, Hôpital Beaujon, Clichy, France, (5) Department of Surgery, Academic Medical Center, University of Amsterdam, The Netherlands, (6) Department of Digestive Surgery, Hospital San Giovanni Battista, University of Torino, Italy, (7) Digestive Disease Institute, Cleveland Clinic, Abu Dhabi, United Arab Emirates, (8) Department of Surgery, Curry Cabral Hospital, Lisbon, Portugal, (9) Department of General Surgery, St. James's Hospital, Dublin, Ireland, (10) Department of Surgery and Transplantation, Virgen de la Arrixaca Clinic and University Hospital, Murcia, Spain, (11) Department of Surgery and Transplantation, Gent University Hospital and Medical School UZG, Gent, Belgium, (12) Department of Clinical Medicine, Gastrointestinal Surgery, HPB unit, Stavanger, Norway, (13) Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Switzerland, (14) Dept Surgical Oncology, Endocrine and GI Surgery, University Hospital Utrecht, The Netherlands

16:10 - 16:40 COFFEE BREAK

16:40 - 18:00 SESSION VIII *Papers 39 > 42*

Moderators: P. Bachellier, L. Grande

39] Failure to rescue following laparoscopic or open proctectomy for rectal cancer : nationwide study of 44,536 patients

Mehdi EL AMRANI (1), Guillaume CLEMENT (2), Xavier LENNE (2), Amelie BRUANDET (2), François-Rene PRUVOT (1), Didier THEIS (2), Philippe ZERBIB (1)

(1) Department of digestive surgery and transplantation, France, (2) Department of medical information, France

40] Defining Benchmark Outcomes for ALPPS

Dimitri Aristotle RAPTIS (1,2), Michael LINECKER (1), Patryk KAMBAKAMBA (1), Christoph TSCHUOR (1), Philip MÜLLER (1), Christopher HADJITTOFI (2), Gregor A. STAVROU (4), Mohammad H. FARD-AGHAIE (4), Mauro TUN-ABRAHAM (5), Victoria ARDILES (6), Massimo MALAGÓ (2), Ricardo ROBLES CAMPOS (3), Karl J. OLDHAFFER (4), Roberto HERNANDEZ-ALEJANDRO (5), Eduardo DE SANTIBANES (6), Marcel AUTRAN MACHADO (7), Henrik PETROWSKY (1), **Pierre-Alain CLAVIEN** (1)

(1) Department of Surgery and Transplantation, University Hospital Zurich, Switzerland, (2) Department of HPB Surgery and Liver Transplantation, Royal Free London Hospital, NHS Foundation Trust, UK, (3) Virgen de la Arrixaca University Hospital, Spain, (4) Department of General, Abdominal, and Oncology Surgery, Asklepios Hospital Barmbek, Hamburg, Germany, (5) Department of Surgery London Health Sciences Centre, Ontario, Canada, (6) Hospital Italiano de Buenos Aires, Argentina, (7) Brazil, Sirio Libanes Hospital, Sao Paulo

41] Perioperative interstitial fluid overload predicts major morbidity following pancreatic surgery. Appraisal by bioimpedance vector analysis

Marta SANDINI (1), Luca GIANOTTI (1), Salvatore PAIELLA (2), Marco CEREDA (1), Marco ANGRISANI (1), Giovanni CAPRETTI (3), Fabio CASCIANI (2), Simone FAMULARO (1), Alessandro GIANI (1), Elena VIVIANI (2), Riccardo CACCIALANZA (4), **Marco MONTORSI** (3), Alessandro ZERBI (3), Claudio BASSI (2)

(1) University of Milano - Bicocca, Italy, (2) University of Verona, Italy, (3) Humanitas University, Italy, (4) Fondazione IRCCS Policlinico San Matteo, Italy

42] Identification of the clinically most relevant postoperative complications after gastrectomy: a population-based cohort study

Emma GERTSEN (1), Lucas GOENSE (2), Hylke BRENKMAN (3), **Richard VAN HILLEGERSBERG** (1), Jelle RUURDA (1)

(1) Department of Surgery, University Medical Center Utrecht, Utrecht University, The Netherlands, (2) Department of Surgery, Sint Antonius Ziekenhuis, The Netherlands, (3) Department of Surgery, Diaconessenhuis, The Netherlands

18:00 - 19:00 **GENERAL ASSEMBLY**

19:00 **END OF CONGRESS**

20:30 **GALA DINNER**

Dress Code: Black tie

Real theatre concert and dinner



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The Journey of Mastery in the Art of Surgery

C. Pellegrini (1), E. De Santibanes (2)

(1) Department of Surgery, University of Washington, United States, (2) Hospital Italiano, Buenos Aires, Argentina

This lecture will examine the characteristics of outstanding surgeons and will describe the most important elements that facilitate the development of those characteristics.

As such, the authors will describe the importance of mentorship in the formation of a surgeon, the development of technical skills and the focus that must be placed on the development of non-technical skills.

Indeed, it will emphasize the importance of integrity, compassion, respect, judgement and team work as vital features that allow for excellency.

The lecture will review the patient-center approach, the value of safety in surgery, the need to eliminate myths such as “speed” in contrast with safety, the importance of patience, the virtue of empathy and the vital role of a high functioning team.

We will discuss the concept of error, rescue from them and the concept of failing forward and lastly we will discuss the critical role of “balance” in the life a surgeon.

Level 1 Randomized Control Trials to Assess Surgical Innovations: Is it a just a waste of time and money? Should we change the Paradigm of Evidence-based Surgery?

Christian OBERKOFER (1), Jacob F. HAMMING (2), Roxane D. STAIGER (1), Philippe BROSI (1), Sebastiano BIONDO (3), Olivier FARGES (4), Dink A. LEGEMATE (5), Mario MORINO (6), Antonio PINNA (7), Hugo PINTO-MARQUES (8), John V. REYNOLDS (9), Ricardo Robles CAMPOS (10), Xavier ROGIERS (11), KJETIL SOREide (12), Milo A. PUHAN (13), Pierre-Alain CLAVIEN (1), Inne BOREL RINKES (14)

(1) Department of Surgery and Transplantation, University Hospital Zurich, Switzerland, (2) Department of Vascular Surgery, Leiden University Medical Center, Leiden, The Netherlands, (3) Department of General and Digestive Surgery, Bellvitge University Hospital, Barcelona, Spain, (4) Department of Surgery and Transplantation, Hôpital Beaujon, Clichy, France, (5) Department of Surgery, Academic Medical Center, University of Amsterdam, The Netherlands, (6) Department of Digestive Surgery, Hospital San Giovanni Battista, University of Torino, Italy, (7) Digestive Disease Institute, Cleveland Clinic, Abu Dhabi, United Arab Emirates, (8) Department of Surgery, Curry Cabral Hospital, Lisbon, Portugal, (9) Department of General Surgery, St. James's Hospital, Dublin, Ireland, (10) Department of Surgery and Transplantation, Virgen de la Arrixaca Clinic and University Hospital, Murcia, Spain, (11) Department of Surgery and Transplantation, Gent University Hospital and Medical School UZG, Gent, Belgium, (12) Department of Clinical Medicine, Gastrointestinal Surgery, HPB unit, Stavanger, Norway, (13) Epidemiology, Biostatistics and Prevention Institute, University of Zurich, Switzerland, (14) Dept Surgical Oncology, Endocrine and GI Surgery, University Hospital Utrecht, The Netherlands

BACKGROUND & AIMS

Randomized clinical trials (RCTs) are notoriously considered to be the cornerstone of evidence-based medicine by representing the highest level of evidence. As such, we would expect that surgical practice rigorously follows the results of level 1 evidence recommendations. Suggestions exist that this might not be the case due to many factors including resistance of surgeons to changes, ignorance or even ego-related issues. The aim of this special article is to assess the impact of CONSORT-validated RCT in surgery or whether other approaches such as videos of single cases may have a bigger influence on clinical practice.

STUDY DESIGN

We searched for RCT's published between 2009-2013 in ten prominent journals (NEJM, JAMA, Lancet, Ann Surg, BJS, JAMA Surgery/Archives of Surgery, Journal of Surgery, JACS and HPB) reporting on surgical issues and unambiguously advocating for a change in surgical practice. A minimum of 5 years follow-up was chosen to allow putative dissemination of the published results into surgical practice.

Only RCTs that fulfilled the CONSORT guidelines and provided level 1 evidence were included. The impact on clinical practice was assessed through a survey based on a

multiple choice questionnaire to assess knowledge of the study, results and recommendations, as well as changes in surgical practice. The questionnaire was tested on 48 surgeons practicing in academic and non-academic centers in Switzerland. The second part will include all members of ESA, and other leaders in Europe and USA. A separate analysis will be done covering the same period on RCT's presented at ESA and published in the November issue of AoS. The last part of this study will be to assess through a questionnaire and contacting individual surgeons testing various scenarios to assess the impact of video presented at meeting on change in clinical practice.

RESULTS

We identified 208 surgical RCT's (9.2%) out of a total of 2.265 RCTs published during the study period in the 10 selected Journals. 86% of the articles appeared in high (>5) IF journals, and received a median of 163 citations (range 51-438). The results indicate that less than a third of the surgeons adhere to the recommendations of the RCT's despite good knowledge of the study. The main arguments rely on the non-applicability of the results to their population or that no change is necessary due to their "good" results. ESA RCT's seems not to differ from these results. Interestingly, the methodology of the preliminary analysis suggests that about two thirds the surgeons have already implemented new surgical techniques in their practice having seen a video at surgical meetings.

DISCUSSION

Despite a reasonable number of surgical RCTs of excellent quality, the impact on surgical practice appears to be at best weak. Contrarily to non-surgical RCT's, such as those testing oncological regimens, surgical RCT's are rarely included in guidelines, and thus not subjected to panel discussion at tumor board or other multidisciplinary sessions. Surgeons clearly rely more on non-validated experience from colleagues (e.g. video) to adjust their medical practice.

CONCLUSION

Costly and time-consuming surgical RCTs, although academically rewarding in terms of citations and perhaps promotion of individuals, appears of little value in the real world of surgery. Novel model must be developed to secure valuable impact including assessment ranking of videos by quality to minimize adoption of level 5 evidence, but promotion a real innovation.

01] Specificity of procedure volume and postoperative mortality association in digestive cancer surgery. A nationwide study of 225,752 patients

Mehdi EL AMRANI (1), Guillaume CLEMENT (2), Xavier LENNE (2), Amelie BRUANDET (2), Claire LAUERIERE (2), Anthony TURPIN (3), Didier THEIS (2), Stephanie TRUANT (1), François-René PRUVOT (1)

(1) *Department of digestive surgery and transplantation, France*, (2) *Department of medical information, France*, (3) *Department of medical oncology, France*

BACKGROUND & AIMS

There are growing evidences that performing high complex surgeries in tertiary centers is associated with improved outcome. Several studies have correlated procedure-specific volume in digestive cancer surgery to postoperative mortality (POM). However, the association between POM and hospital volume of non-specific procedures is not known. The aims of our study were to: 1-examine whether the improved outcome of a digestive cancer procedure in high volume hospitals is specific or correlates to procedures for other digestive cancers, and 2-determine if a discriminant cut-off of global hospital volume may influence POM whatever the procedure in digestive cancer surgery.

STUDY DESIGN

Data were extracted retrospectively from the French national administrative database for hospital care. All patients who underwent colectomy, proctectomy, esophagectomy, gastrectomy, pancreatectomy and hepatectomy for cancer between 2012 to 2017 were included. Patient condition was assessed on the basis of the validated Charlson Comorbidity Index (CCI) and patients were stratified into 3 groups according to the CCI score (0-2, 3, and ≥ 4).

STATISTICAL ANALYSIS

Chi-square automatic interaction detector (CHAID) was used to identify the cut-off values of the annual caseload affecting the 90-day POM. Odd-ratios (OR) of POM in relation to the hospital volume of the same surgical procedure and of the other procedures were determined after adjustment for age, sex and CCI. A common threshold was estimated by minimization of the chi-square distance taking into account the specific mortality of each procedure.

RESULTS

Overall, 225752 patients who underwent colectomy (n=113283), proctectomy (n=49353), esophagectomy (n=4608), gastrectomy (n=14370), pancreatectomy (n=15375) hepatectomy (n=28763) were included. The definition of high volume hospitals varied according to the surgical procedure (≥ 80 cases/year for colectomy, ≥ 35 /year for proctectomy, ≥ 41 /year for esophagectomy, ≥ 16 /year for gastrectomy, ≥ 26 /year for pancreatectomy and ≥ 76 /year for hepatectomy). The overall 90-day

POM was 5.1% and varied significantly with volume (3.7% vs 5.4% $p<0.001$). We demonstrated that the benefits of high volume were transferable across procedures. For colorectal cancer surgery, the risk of POM was significantly lower in hospitals meeting the cut-off values of pancreatectomy (OR=0.89, $p=0.009$; OR=0.7, $p<0.001$ respectively for colic and rectal surgery) or hepatectomy (OR=0.91, $p=0.13$; OR=0.65, $p<0.001$, respectively for colic and rectal surgery). Similarly, high volume hospitals for colorectal cancer surgery significantly influenced the risk of death following hepatectomy ($p<0.001$) and pancreatectomy ($p<0.001$). The common threshold for all procedures that influenced POM was 199 cases/year (OR=1.29, $p<0.001$, hospital volume>199 as a reference).

DISCUSSION

Our results suggest that centralization of patients needing digestive cancer surgery in high volume hospitals improve outcome regardless of the specific surgical procedure. This could be explained by number of processes (experience of radiologists, anesthesiologists and gastroenterologists, appropriate patient selection, intensive care, interventional radiology) already in place in high volume of any gastrointestinal cancer procedures. A common cut-off may also help health authorities in process of healthcare accreditation and centralization of digestive cancer surgery in high volume hospitals.

CONCLUSION

In digestive cancer surgery, the volume-POM relationship could be associated to the volume of the other procedures. Thus, tertiary hospital could be defined according to a common threshold of different procedures.

02] Saccular Abdominal Aortic Aneurysms: Patient Characteristics, Clinical Presentation, Treatment and Outcomes in the Netherlands

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BACKGROUND & AIMS

Based on the belief that saccular shaped abdominal aortic aneurysms (AAA) are more prone to rupture than fusiform shaped AAAs, guidelines recommend early elective treatment. However, no exact cut-off for elective intervention in saccular AAAs is provided. Little is known about the natural history of patients with a saccular shaped AAA and it remains unclear whether saccular AAAs should be operated earlier. In this study, we aim to analyze the differences between saccular and fusiform AAAs regarding patient characteristics, clinical presentation, treatment and outcomes.

STUDY DESIGN

Observational retrospective analysis of prospectively collected data including all patients undergoing primary AAA repair in the Netherlands between January 2016 and December 2017, registered in the Dutch Surgical Aneurysm Audit (DSAA). All patients with an atherosclerotic AAA in which the aneurysm shape was specified were included.

STATISTICAL ANALYSIS

Patients were stratified by urgency of the surgery; elective versus acute. Within the elective and acute group descriptive analyses were performed comparing patient characteristics, clinical presentation, treatment and outcomes between patients with a saccular or fusiform aneurysm. A t-test or Mann-Whitney U test was used for continuous variables. Categorical variables were analyzed with a chi-square test. A p-value of <0.05 was considered significant.

RESULTS

Out of 5642 patients with an atherosclerotic AAA, 5635 patients were included, 6.4% (n=358) had a saccular shaped aneurysm and 94% (5277) a fusiform aneurysm. The cohort consisted of 4389 elective patients and 1246 acute patients, of which respectively 6.7% and 5.1% had a saccular aneurysm. Patient characteristics between saccular and fusiform patients were comparable, except that acute saccular patients were significantly more often female (30% vs 18%, p 0.016) than acute fusiform patients. Saccular aneurysms had smaller diameters than fusiform aneurysms, in both elective (53mm SD 11 vs 60mm SD 10; p 0.000) and acute (70mm SD 24 vs 76mm SD 18; p 0.012) patients. Additionally, 54% of elective saccular patients are undergoing surgery at diameters of <55mm, compared to 21% of fusiform patients (p 0.000) and 22% of acute saccular patients, compared to 9.0% of acute fusiform patients (p 0.010).

Treatment and postoperative outcomes did not significantly differ between shapes in both the elective and acute groups.

DISCUSSION

To our knowledge, this is the largest patient cohort consisting of saccular shaped abdominal aortic aneurysms. Patients with an acute saccular AAA were significantly more often female than patients with an acute fusiform AAA. The majority of elective patients with saccular aneurysms were operated at aortic diameters smaller than 55mm. Acute saccular patients more often had smaller diameters than acute fusiform patients. Lastly, there were no differences in treatment and surgical outcomes between saccular and fusiform AAAs.

CONCLUSION

Saccular AAAs rupture at smaller aortic diameters than fusiform AAA in the DSAA. This study therefore supports the current idea that saccular AAAs should be electively treated at smaller aortic diameters than fusiform AAAs. However, the exact diameter thresholds for elective treatment of saccular AAAs needs to be determined.

03] Functional outcomes and quality of life after redo anastomosis in rectal cancer patients: an international multicentre comparative cohort study

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BACKGROUND & AIMS

A redo anastomosis can be considered when conservative treatment for anastomotic leak following rectal cancer surgery fails. This is technically challenging and little is known about the functional outcomes after this rare type of surgery. The aim of this study is to assess the functional outcomes and quality of life after redo anastomosis and to compare it to outcomes following uncomplicated total mesorectal excision (TME) for rectal cancer.

STUDY DESIGN

This is a multicentre comparative cohort study. Patients undergoing redo anastomosis were compared to patients undergoing uncomplicated TME for rectal cancer. Patients were retrospectively identified from three tertiary referral centres in the Netherlands, Belgium and France. Primary outcome was ano(neo)rectal function. Secondary outcomes included urinary and sexual dysfunction and quality of life. The Low Anterior Resection Syndrome (LARS) Score, EORTC QLQ-C30, and QLQ-CR29 questionnaires, scored at least one year after surgery or closure of the diverting stoma, were used to assess the outcomes.

STATISTICAL ANALYSIS

Outcomes were compared between groups using student's t test or Mann-Whitney U test for continuous data and Chi-square test or Fisher's exact for categorical data, when applicable.

RESULTS

In total, 170 patients were included; 52 redo anastomosis and 118 controls. In the redo group, 83% of patients had preoperative radiotherapy prior to their primary surgery versus 58% in the control group ($P=0.001$). Major LARS occurred in 73% after redo compared to 68% following uncomplicated TME ($P=0.517$). The redo group had worse EORTC QLQ-CR29 mean scores for faecal incontinence ($P=0.032$) and flatulence ($P=0.008$). There were no differences in urinary ($P=0.482$) or sexual dysfunction neither in men nor in women ($P=0.832$ and $P=0.756$, respectively). Global health ($P=0.002$), role- ($P=0.049$), and social function ($P=0.006$) were scored significantly worse in the redo group. Also, worse body image ($P=0.025$) and more anxiety ($P=0.022$) were scored in the redo group.

DISCUSSION

This is the first study comparing functional outcomes and quality of life after redo anastomosis with uncomplicated TME in a large group of patients. Even though there was no difference between groups in proportion of patients who experienced major LARS, flatulence and incontinence for faeces were significantly more prevalent in the redo group. This might be explained by the history of leakage with formation of scar tissue and sacrificing of the remaining rectal cuff for making the new anastomosis. Even though a redo anastomosis is mostly performed in only highly motivated and fit patients and occurrence of major LARS is not different from patients undergoing uncomplicated TME, redo patients rated a worse quality of life. One could speculate that the second chance of life without a stoma would enhance the appreciation of the quality of life, but this was not supported by this study. Possibly, the high motivation for restoring bowel continuity is accompanied by equally high expectations for outcomes in patients undergoing redo anastomosis.

CONCLUSION

Compared to uncomplicated TME, redo anastomosis is associated with a negative impact on quality of life, but considering comparable LARS scores in the two groups it might still be a valid treatment option in patients highly motivated for restoration of bowel continuity. This is important information in the counselling of patients and for the use and implementation of redo anastomosis internationally.

04] Defining Global Benchmarks in Bariatric Surgery. A Multicenter Analysis of Minimally Invasive Roux-en-Y Gastric Bypass and Sleeve Gastrectomy

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BACKGROUND & AIMS

The importance of quality and quality assessment is widely recognized and adopted in the world of business and manufacturing. Benchmarking uses best performance in a given field as reference point for others to improve. Surgical benchmarks – best achievable results for a specific surgical intervention – have been recently introduced in outcome research. Our aim was to identify the global benchmarks for patient-centered postoperative morbidity following the two most commonly performed minimally invasive bariatric surgery (BS) procedures (Roux-en-Y gastric bypass [RYGB]

and sleeve gastrectomy [SG]). The identified benchmarks are expected to allow outcome comparisons within or across centers and over time.

STUDY DESIGN

The establishment of BS benchmarks followed a standardized methodology, previously applied for liver surgery, liver transplantation, and esophagectomy. Out of 39,424 elective bariatric procedures performed in 19 high volume academic centers (annual caseload > 200 cases/year) on 3 continents between 06/2012 – 05/2017, we identified 4,120 RYGB and 1,457 SG benchmark cases based on preoperative risk-factors (Figure 1). Benchmark patients had: BMI<50kg/m², age<65 years, no previous abdominal surgery, no diabetes, no sleep apnea, no cardiopathy, no renal insufficiency, no inflammatory bowel disease, no immunosuppression or anti-coagulation, no associated procedures at the time of BS and were followed-up for minimum 90-days. The proportion of benchmark RYGB and SG cases varied largely between centers, therefore we excluded from the procedure-specific analyses all centers with <30 benchmark cases. We chose clinically relevant endpoints covering intra- and postoperative course, with a focus on complications graded by severity, using the Clavien-Dindo classification and the comprehensive complication index (CCI®). Costs of complications were derived from age and CCI®, based on a validated formula. The study was pre-registered on ClinicalTrials.gov

STATISTICAL ANALYSIS

Descriptive statistics were used (R software version 3.5.1). Benchmark cut-offs were set at the 75th percentile of the included centers' median value for respective outcomes.

RESULTS

BS patients were mainly females (78%), aged 38±11 years, with a baseline BMI of 40.8±5.8 kg/m². Benchmark cutoffs for relevant peri-operative outcome indicators are presented in Table 1 for RYGB, and in Table 2 for SG. During the first 90-days, 7.2% of RYGB and 6.2% of SG patients presented at least 1 complication. The most frequent reasons of readmission after the 90-day period following both procedures were symptomatic cholelithiasis and abdominal pain of unknown origin (Table 3).

DISCUSSION

In high-volume centers, the 90-day postoperative morbidity of BS in low-risk patients is remarkably low and the mortality is zero. However, the readmission-rate beyond 90-days increases with time after surgery and may not entirely depend on baseline patient factors or surgical performance (i.e.: abdominal pain of unknown origin or weight-loss induced cholelithiasis). This emphasizes the need for BS centers to show commitment to long-term follow-up of bariatric patients.

CONCLUSION

Benchmark cutoffs targeting peri-operative outcomes in BS offer a new tool in surgical quality-metrics and may be implemented in the quality-improvement cycle.

Figure 1. Case-mix of elective bariatric surgery (BS) in participating centers over the 5-year inclusion period (06/2012 – 05/2017). Percentages show the proportion of benchmark Roux-en-Y gastric bypass (RYGB) and sleeve gastrectomy (SG) cases within the total elective BS caseload.

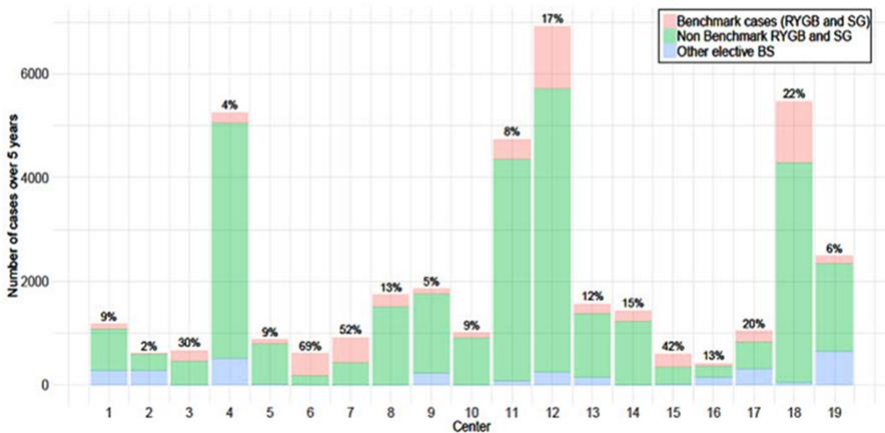


Table 1. Benchmark cut-offs for Roux-en-Y gastric bypass

A. Perioperative Course	
Operation duration	≤2h
Conversion to open surgery	0%
Intraoperative blood transfusions	0%
Postoperative blood transfusions	≤2%
Postoperative ICU admission rate	≤0.14%
ICU stay in patients admitted to ICU	≤1 day
Hospital stay	≤4 days
Hospital cost in CH or USA / in the EU	16203 CHF or USD / 5402 EUR
Hospital cost in patients with complications in CH or USA / in the EU	26113 CHF or USD / 8705 EUR

B. Morbidity and Mortality	Until discharge	Until 30-days	Until 90-days
Readmission	-	≤4%	≤5.5%
Reoperation	≤2%	≤2.5%	≤4%
Any complication	≤6%	≤9%	≤10%
Complication grade ≥ 3a	≤3.5%	≤5%	≤5.5%
Mortality	0%	0%	0%
CCI [®] In patients with at least 1 Clavien-Dindo Grade ≥II complication	≤26.2	≤32.5	≤33.73
Signature complications			
Gastro-intestinal leak	≤0.6%	≤1.1%	≤1.3%
Stenosis of any anastomosis	≤0.05%	≤0.3%	≤1.2%
Postoperative bleeding	≤2.2%	≤2.2%	≤2.2%
Small bowel obstruction / internal hernia	≤1.4%	≤2.1%	≤2.1%
Wound infection	≤0.5%	≤0.5%	≤0.5%
Marginal ulcer	0%	≤0.3%	≤1.5%

C. Weight loss	1-year
% excess BMI loss	≥77%
BMI loss (kg/m ²)	≥10.5
% total weight loss	≥31.4%

Table 2. Benchmark cut-offs for sleeve gastrectomy

A. Perioperative Course	
Operation duration	≤1.5h
Conversion to open surgery	0%
Intraoperative blood transfusions	0%
Postoperative blood transfusions	≤1.3%
Postoperative ICU admission rate	0%
ICU stay in patients admitted to ICU	≤4 day
Hospital stay	≤3 days
Hospital cost in CH or USA / in the EU	16203 CHF or USD / 5402 EUR
Hospital cost in patients with complications in CH or USA / in the EU	24608 CHF or USD / 8203 EUR

B. Morbidity and Mortality	Until discharge	Until 30-days	Until 90-days
Readmission	-	≤4%	≤5.5%
Reoperation	≤2%	≤2%	≤3%
Any complication	≤8%	≤11%	≤12%
Complication grade ≥ 3a	≤2.5%	≤5%	≤5.5%
Mortality	0%	0%	0%
CCI® In patients with at least 1 Clavien-Dindo Grade ≥II complication	≤26.22	≤32.53	≤33.73
Signature complications			
Staple line leak	0%	≤0.15%	≤0.15%
Dysphagia/Stenosis of the gastric tube	0%	≤0.14%	≤0.27%
Postoperative bleeding	≤1.7%	≤1.7%	≤1.7%
Small bowel obstruction	0%	0%	0%
Wound infection	0%	0%	0%

C. Weight loss	1-year
% excess BMI loss	≥78%
BMI loss (kg/m ²)	≥10.75
% total weight loss	≥27%

Table 3. Cumulative incidence (%) of the most common reasons for readmission in benchmark patients after bariatric surgery.

A. Roux-en-Y gastric bypass (n = 4120, median follow-up = 1.9 year, [range: 0.25-6 years])

	Until 30 days	Until 90 days	Until 1 year	Until last-follow-up
Abdominal pain of unknown origin	0.51 (n=21)	1.02 (n=42)	2.52 (n=104)	5 (n=206)
Symptomatic cholelithiasis	0.05 (n=2)	0.15 (n=6)	2.45 (n=101)	4.3 (n=177)
Internal hernia / small bowel obstruction	0.24 (n=10)	0.39 (n=16)	1.43 (n=59)	3.71 (n=153)
Dysphagia	0.49 (n=20)	1 (n=41)	1.14 (n=47)	1.26 (n=52)
Weight regain	0	0	0	0.41 (n=17)
Anastomotic leak / perforation	0.17 (n=7)	0.17 (n=7)	0.24 (n=10)	0.32 (n=13)
Gastroesophageal reflux disease	0.05 (n=2)	0.12 (n=5)	0.19 (n=8)	0.27 (n=11)

B. Sleeve gastrectomy (n = 1457, median follow-up = 1.6 year, [range: 0.25-6 years])

	Until 30 days	Until 90 days	Until 1 year	Until last-follow-up
Symptomatic cholelithiasis	0.07 (n=1)	0.21 (n=3)	1.3 (n=19)	1.99 (n=29)
Abdominal pain of unknown origin	0.55 (n=8)	0.69 (n=10)	1.44 (n=21)	1.65 (n=24)
Gastroesophageal reflux disease	0	0.07 (n=1)	0.27 (n=4)	0.75 (n=11)
Staple line leak	0.48 (n=7)	0.62 (n=9)	0.62 (n=9)	0.62 (n=9)
Weight regain	0	0	0.07 (n=1)	0.48 (n=7)

05] Life confocal tissue assessment with Syto 16/PI und WGA staining visualizes acute organ damage and predicts delayed graft function in kidney transplantation

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BACKGROUND & AIMS

The use of expanded-criteria donor kidneys in transplantation demands careful pre-implantation assessment. Tools for objective graft assessment prior to transplantation, however, are lacking. Our aim was to establish a rapid assessment tool of donor kidney quality and investigate its predictive value for clinical use.

STUDY DESIGN

Based on a previously established technology (real-time confocal analysis of Syto 16/PI und WGA, “biopsychronology”), we have performed a prospective clinical trial in 71 patients to assess the predictive value of this tool as a clinical assessment for organ quality in deceased donor kidney transplantation. The biopsychronology score displays the sum of viable cells divided by the number of non-viable cells per examined area (glomerulus, proximal and distal tubules) with an overall score of -3 (nonviable) up to +3 (100% viable). The primary study endpoint was the delayed graft function (DGF), the robustness of the correlation was assessed in comparison with conventional histology, read and quantified per the Remuzzi score.

STATISTICAL ANALYSIS

The statistical testing for the pilot trial was done with Graph Pad Prism 7 and IBM® SPSS® Statistics Version 23. A p-value <.05 was considered as statistically significant. Biopsy results (confocal score and Remuzzi result), recipient, donor and transplant factors were analysed. Variables surfacing as significant in the univariate analysis were analysed in a multivariate model.

RESULTS

Seventy-one kidney transplant recipients (19 female, 26.8%; 14 re-transplants, 19.7%) have been recruited and successfully transplanted. Three biopsies were not included due to technical and/or logistic failures. All grafts stemmed from brain dead donors. The median recipient age was 58.5 years; the median donor age was 57 years. Cold ischemia time was 13.6±4.7 hours, anastomosis time was 30.8±8.7 minutes (mean±SD). Overall, 23 (33.8%) patients developed DGF. The mean biopsychronology score was 0.5±2.1. This score was significantly lower in kidneys eventually developing DGF: -0.44±0.37 in the DGF vs. 0.91±0.32 in the no DGF group, p=0.013. The Remuzzi scores did not differ between DGF (2.1±0.4) and no DGF (1.4±0.2) kidneys, p=0.1. The

univariate analysis revealed recipient and donor age, the biopsychronology score, CIT, anastomosis time, recipient BMI and HLA-B mismatch as significant factors for the occurrence of DGF. In the multivariate analysis, solely the biopsychronology score remained a significant independent factor influencing DGF; $p=0.018$, Wald=5.6, OR=0.72, 95%CI=0.55-0.95.

DISCUSSION

We herein demonstrate, that real time confocal imaging of Syto 16/PI und WGA has a predictive value in respect to delayed graft function in kidney transplantation. This method allows for assessment for acute organ damage and was the sole independent risk factor in this study. Therefore, we consider this a meaningful addition to the Remuzzi score, which indicates chronic damage and does not correlate with DGF.

CONCLUSION

Our data confirms that live tissue staining is feasible and clinically meaningful. The real-time imaging provided detailed information about organ viability. A multicentre trial is warranted in order to establish reproducibility of our findings.

06] Minor hepatectomies: focusing a blurred picture. Analysis of the outcome of 4471 open resections in non-cirrhotic patients

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BACKGROUND & AIMS

In the last decades liver surgery moved toward a parenchyma-sparing approach, favoring minor hepatectomies (MiH) instead of major resections. MiH encompasses a wide range of procedures at different complexity, whose outcomes have not been fully elucidated.

STUDY DESIGN

Consecutive patients undergoing a first liver resection in 17 highly experienced centers were considered. Cirrhosis, associated digestive/biliary resection and mini-invasive surgery were exclusion criteria. The Brisbane nomenclature was used, distinguishing limited resections (LR), (mono)segmentectomies (S), bisegmentectomies (BS), right anterior sectionectomies (RAS), and right posterior sectionectomies (RPS). In addition: LR with exposure of major intrahepatic vessels were defined as complex LR (CLR); segmentectomies Sg8, segmentectomies Sg7, and bisegmentectomies Sg7-8 were defined as postero-superior segmentectomies (PSS); segmentectomies Sg1 and combined resections of segments Sg4s+Sg8+Sg1 were defined as complex core hepatectomies (CCH). Outcomes of MiH were analyzed using those of open left lateral sectionectomies (LLS, n=442) and of open right hepatectomies (RH, n=1042) performed in the same centers in the same period as reference standards. RH of staged hepatectomies were excluded.

STATISTICAL ANALYSIS

Categorical variables were compared using the χ^2 test. A multivariable logistic-regression model was performed to adjust the outcome of MiH for covariates (demographic data, liver function, diagnosis, chemotherapy, and center).

RESULTS

4471 MiH were analyzed. In comparison with RH, MiH had lower 90-day mortality (0.5 vs. 2.2%, $p<0.001$), severe morbidity (8.6 vs. 14.4%, $p<0.001$), and liver failure rates (2.4 vs. 11.6%, $p<0.001$), but similar bile leak rate (6.3 vs. 6.7%). Mortality rate was low (<1%) in all MiH. Among patients with liver failure, mortality rate after RH was twofold mortality rate after MiH (10 vs. 5.7%). Outcomes of non-complex LR (of any segment) were similar to LLS. CLR and S/BS of anterolateral segments (S2-6) had higher bile leak rates than LLS (7.3% and 6.6% vs. 3.4%; OR=2.2, CI95%=1.1-4.6 and OR=2.7, CI95%=1.2-5.7), but similar severe morbidity rates. CCH had the highest bile leak rate (13.3%, vs. LLS OR=5.5, CI95%=2.2-13.4), even higher than RH (vs. 6.7%, OR=1.9, CI95%=1-3.6), and had severe morbidity rate approaching RH (11.5% vs. 14.4%, OR=0.7; vs. LLS OR=2.4, CI95%=1.1-5.6). PSS and RAS had severe morbidity rates similar to RH (15.5 and 14.5%, OR=1 and OR=1.3; vs. LLS OR=3.4, CI95%=1.8-6.8, and OR=4.5, CI95%=2.1-9.5), while RPS had slightly lower rates (11.0%, OR=0.7; vs. LLS OR=2.4, CI95%=1.2-4.7). The three procedures had bile leak rates similar to RH. MiH had low liver failure rates (<5%) except for RAS (9.7% vs. 11.6% after RH; vs. LLS OR=4.6 CI95%=1.6-13.7).

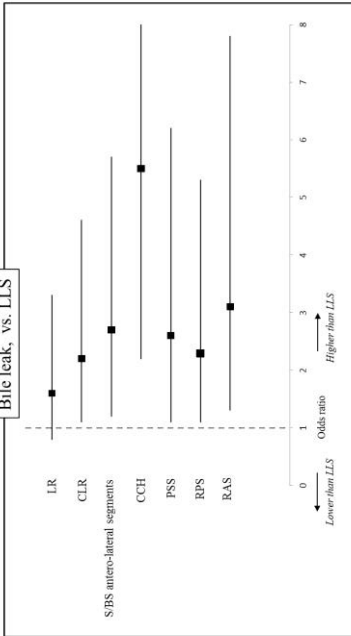
DISCUSSION

Even if retrospective, this is the first study to provide stratification of MiH based on clinically-relevant outcomes. MiH were compared with the most standardized hepatectomies (LLS/RH). Outcomes were adjusted for covariates, including differences among centers. The heterogeneity of procedures and of patients did not allow yet to define a benchmark for MiH, but the large number of patients collected in highly experienced centers identifies reliable reference outcomes and guarantees for adequate risk stratification.

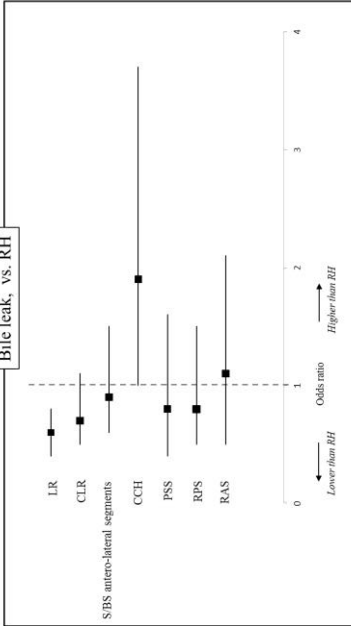
CONCLUSION

MiH include resections having heterogeneous outcome. Overall, mortality rate is low (<1%), but MiH can be stratified according to their severe morbidity, liver failure and bile leak rates, most complex resections having outcome similar to RH.

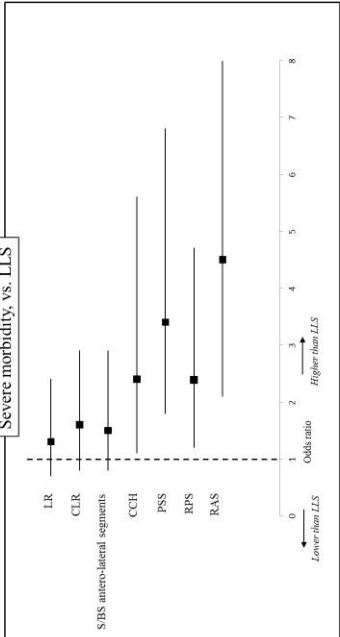
Bile leak, vs. LLS



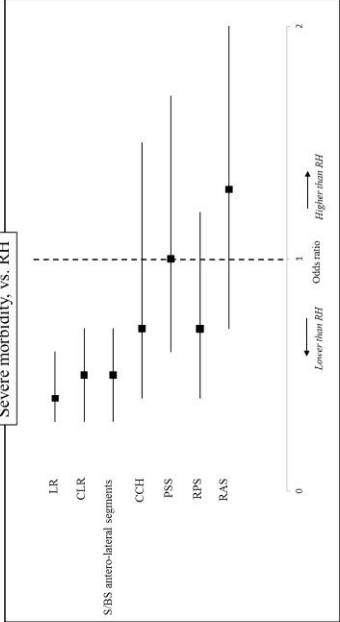
Bile leak, vs. RH



Severe morbidity, vs. LLS



Severe morbidity, vs. RH



07] Is decompressing stoma a better alternative than stent as bridge to surgery for left-sided obstructive colon cancer? A nationwide, propensity score matched analysis

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BACKGROUND & AIMS

Bridge to elective surgery (BTS) with colonic stent is still a debated alternative to emergency resection of left-sided obstructive colon cancer (LSOCC) because of oncological concerns. A second BTS strategy is decompressing stoma formation, but studies comparing stoma and stent are scarce. Therefore, our aim was to directly compare stoma and stent as BTS for LSOCC.

STUDY DESIGN

All patients with curable LSOCC treated between 2009 and 2016 were included from the Dutch ColoRectal Audit, a prospective, (mandatory) national registry. Additional data were retrospectively collected by surgical residents under supervision of a consultant surgeon through a secured web application. Patients with an extracolonic malignancy or signs of bowel perforation on CT were excluded. Stoma and stent were compared after propensity score matching. Our main outcomes were three-year locoregional recurrence, disease free and overall survival, temporary and permanent stoma rates, and hospital stay.

STATISTICAL ANALYSIS

One-to-one nearest neighbour matching without replacement was performed within a caliper of 0.25 logit of the standard deviation of the propensity score. Mean standardized differences (MSD) were used for assessment of covariate balance (MSD < 10% indicated good balance). Outcomes were analyzed with conditional logistic regression. Survival probabilities were compared using Cox proportional hazards with shared frailty.

RESULTS

In total, 75 out of 77 Dutch hospitals participated, leading to an inclusion of 574 BTS patients (345 stoma and 229 stent). Stoma patients were younger than stent patients (67 versus 71 years), had more T4 tumours (34% versus 23%), and had more often undergone prior abdominal surgery (37% versus 24%) (MSD > 10%). Propensity score matching led to two balanced groups of 142 patients each (MSD < 10%). Median follow-up was 37 (18-60) months for the stoma group and 35 (15-63) months for the stent group (p=0.74). Decompressing stoma showed more temporary stomas (68% vs. 23%, p<0.001), permanent stomas (28% vs. 16%, p=0.022), and a longer total hospital stay (21 vs. 14 days, p=0.006). Three-year locoregional recurrence was 13% and 16% (p=0.4), disease free survival was 59% and 65% (p=0.43), and overall survival was 75% and 77% (p=0.75) for stoma and stent, respectively.

DISCUSSION

Suggested poorer oncological outcomes after colonic stenting made physicians hesitant to use this endoscopic intervention in The Netherlands. However, the current study did not show any significant differences in disease-free survival or overall survival between stent and stoma. In fact, stoma patients showed more temporary and permanent stomas, and a longer hospital stay. Thus, for patients who are candidates for both treatment options, stent placement appears to be the preferred choice.

CONCLUSION

This nationwide, propensity score matched analysis revealed less stomas and a shorter hospital stay after stenting, while oncological outcomes were not compromised. Therefore, if the lesion is amenable for stenting and sufficient experience is available, endoscopic stent placement seems to be the preferred BTS technique for LSOCC.

Figure 1. Disease-free survival.

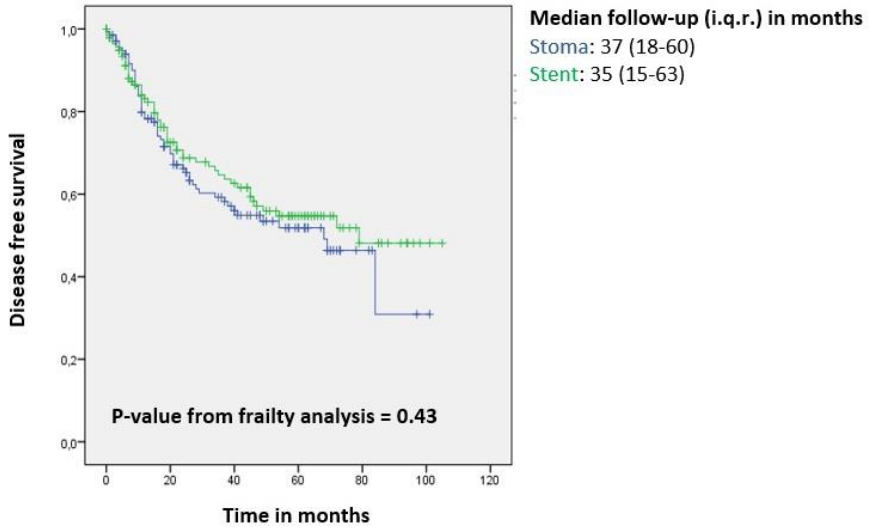
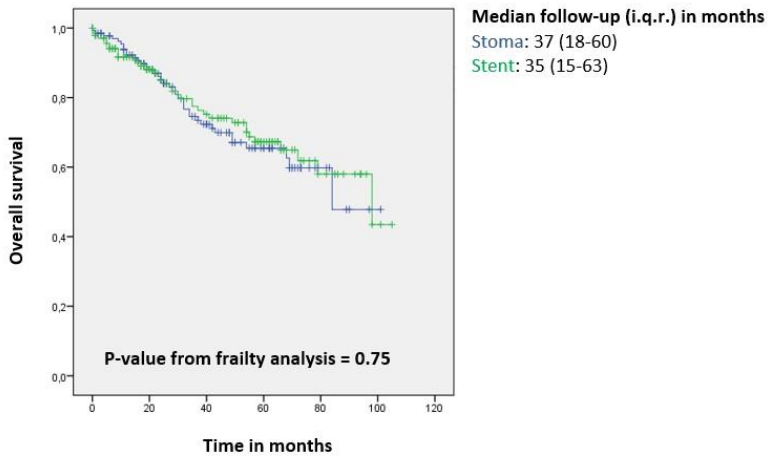


Figure 2. Overall survival.



08] Novel real time prediction of liver graft function during hypothermic oxygenated machine perfusion prior to liver transplantation

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(1) Division of Transplantation, University Hospital Zurich, Switzerland, (2) Mass Spectrometry Facility, Max Planck Institute for Molecular Genetics, Germany

BACKGROUND & AIMS

Ex situ machine perfusion is a new method to potentially repair injured organs and to assess organ function. In the field of liver transplantation, however, no studies exist on reliable prediction of graft function during machine perfusion. We have developed a simple machine perfusion technique, hypothermic oxygenated perfusion (HOPE), which is applied after cold storage for 1-2 hours exclusively through the portal vein. The aim of this study was to analyze, whether liver graft function can be predicted during HOPE, besides optimizing of outcomes.

STUDY DESIGN

We have used HOPE for DCD (donation after cardiac death) or extended criteria DBD (donation after brain death) human liver grafts in the past 5 years. Our entire series includes currently 100 HOPE treated liver transplanted patients with an overall tumor censored 5y graft survival of 89%. Based on recent reports on mitochondrial metabolism, suggesting injury of mitochondrial complex I during re-oxygenation after ischemia, we monitored fifty livers during HOPE in terms of fluometric analysis of released mitochondrial flavoproteins (flavin mononucleotide, FMN) in the machine perfusate. In detail, monochromal light with a wavelength of 450nm was introduced to machine perfusate, and a spectroscopic detector quantified the proportion of fluorescent light, emitted at 90°. The peaks detected at a wavelength between 500 and 600nm correspond to the emission spectrum of FMN, validated by additional NMR analysis. Perfusate measurements were correlated to liver graft function after transplantation, as determined by arterial lactate clearance, INR and factor V synthesis, and by the L-GrAFT risk score.

STATISTICAL ANALYSIS

Statistical analysis was performed using linear regression and receiver operating characteristic (ROC) curve analysis (GraphPadPrism, version 7.0, IBM SPSS statistics 25). Correlation between fluometric perfusate analysis and liver graft function was calculated using Pearson's correlation coefficient (R). Referred reference values for strength of effect size were: "very weak" 0.00-0.19, "weak" 0.20-0.39, "moderate" 0.40-0.59, "strong" 0.60-0.79 and "very strong" 0.80-1.0.

RESULTS

Real time optical measurement of mitochondrial FMN release in machine perfusates of fifty livers correlated strongly with lactate clearance and coagulation factors at day 1 and 2 after transplantation (Figure 1). ROC analysis revealed an area under the curve (AUROC) of 0.80 (95% CI 0.67-0.93) for allograft dysfunction.

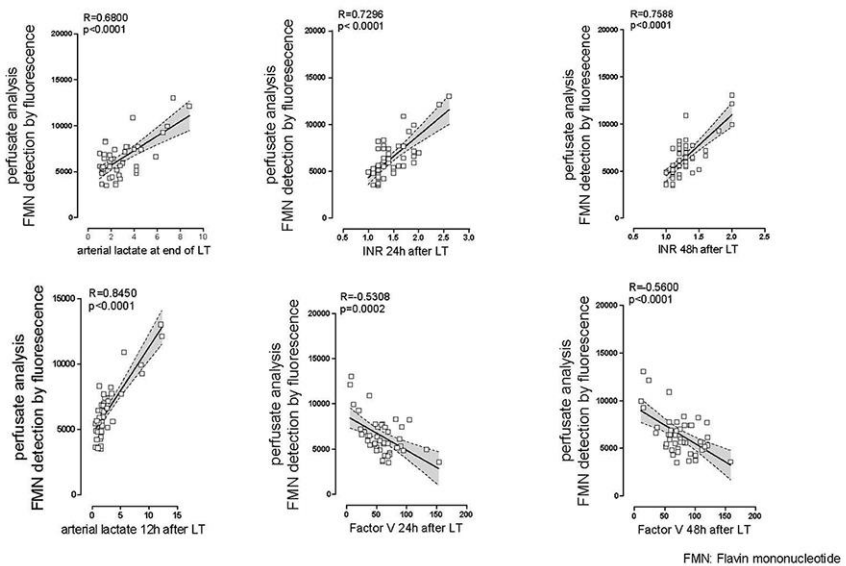
DISCUSSION

We demonstrate for the first time an accurate and fast prediction of liver graft function during ex situ machine perfusion before implantation, based on determining the level of mitochondrial complex I injury.

CONCLUSION

We expect a high clinical relevance of our results, as liver grafts from extended DBD or DCD donors potentially carry considerable risks for recipients. On-line estimation of outcome before implantation would therefore substantially increase safe utilization of liver grafts.

Figure 1: Prediction of graft function by machine perfusate analysis during HOPE



09] Neoprene-based Glue injection in the Pancreatic Stump after Pancreatoduodenectomy in Patients at High-Risk for Pancreatic Fistula and Adverse Oncological Outcome: a New Prospective Comparative Clinical Study

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BACKGROUND & AIMS

Pancreatoduodenectomy (PD) is the gold-standard approach for tumours arising in the pancreatic head. Anastomotic leak determining postoperative pancreatic fistula (POPF) is the most fearful complication after PD. Aim of this study is to evaluate in high-risk patients safety and efficacy of pancreatic duct occlusion (PDO) with a novel formulation of Neoprene-based glue, followed by stump closure instead of pancreato-jejunal anastomosis (PJA).

STUDY DESIGN

This is a single-Centre, prospective, nonrandomized comparative trial that enrolled consecutive 100 patients undergoing PD for cancer (protocol NCT03738787 on ClinicalTrials.gov). Patients at high-risk for POPF according to an alternate-Fistula Risk Score (a-FRS) >15% and at high-risk of adverse oncologic outcome (intraoperative >2 positive lymphnodes or vascular reconstruction due to tumour infiltration) were treated with PDO using Neoprene-based glue, while patients with aFRS ≤ 15% and no additional oncologic risk received PJA. Primary endpoint was comparison of complication-rate (Dindo-Clavien[DC] grade > II) and 90-days mortality in the two groups. Secondary endpoints were post-surgical diabetes and BMI variations after PDO, also considering rescue PDO instead of total pancreatectomy in case of unmanageable POPF.

STATISTICAL ANALYSIS

RESULTS

100 patients were enrolled between January 2015 and December 2017: primary PDO vs. PJA were 52 vs. 48, respectively. Median aFRS in PDO vs. PJA was 18.8% (14.7-15.8%) vs. 4.8% (3.6-8.3%) respectively. 90-days overall mortality was 3% (PDO 5.7% vs. PJA 2% p=NS) while overall and DC>II complication-rates were 56% vs. 59% (p=NS) and 27% for both groups (p=NS). Median comprehensive complication index (CCI) was 20.9 in both groups (p=NS). POPF incidence was 11.5% in PDO and 16.6% in PJA cohort (p=NS). Postoperative stay and readmission rates were similar in both groups (17 vs. 18 days, p=NS; 9% vs. 0%, p=NS). 7 patients underwent PDO because of unmanageable POPF after PJA. For the evaluation of long-term outcomes, the PDO

cohort thus included 59 patients compared to 41 patients who underwent PJA. At 12 months, 10 patients in the PDO group (19.2%) and 3 in the PJA group (6.2%) developed post-surgical diabetes requiring at least oral tablets ($p=NS$). Weight/BMI variation did not show significant difference at 1, 3, 6 and 12 months in the PDO vs. PJA cohort. Overall survival was 26.7% vs. 54.8% ($p=0.03$) at 3-years, being N-positive patients significantly higher in the PDO group (N+ 73%) vs. PJA (N+ 52%) ($p=0.04$).

DISCUSSION

PDO with Neoprene-based glue in patients at high risk for POPF or accelerated adverse cancer outcome, when compared to standard PJA reconstruction in low-risk patients, showed similar outcomes in terms of post-operative complications, mortality rates and mid-long term metabolic control. Neoprene as a rescue treatment was effective and avoided a total pancreatectomy in all cases.

CONCLUSION

PDO with Neoprene-based glue is an easy-to-learn, safe and reliable technique that can replace anastomosis in a selected population of patients at high risk for POPF and adverse oncologic predictors. Reconsideration of this alternative management of the pancreatic stump is warranted to avoid total pancreatectomy and prevent dreadful complications even in the urgent setting.

10] International Comparison of Surgical Intervention and Mortality for Surgical Emergencies in England and the United States

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BACKGROUND & AIMS

Considerable international variation exists in the configuration, provision and outcomes of emergency healthcare. This study aims to examine differences between England and the USA in the rate of surgical intervention for patients (aged <80 years) presenting to hospital with seven index surgical emergency conditions; and compared each country's rate of in-hospital mortality attributable to these conditions.

STUDY DESIGN

Patients aged <80 years hospitalised with one of seven surgical emergencies (ruptured abdominal aortic aneurysm, aortic dissection, appendicitis, perforated esophagus, peptic ulcer, small bowel or large bowel, and incarcerated or strangulated inguino-femoral hernias) were identified from English Hospital Episode Statistics and the USA Nationwide Inpatient Sample for 2006-2012 and classified by whether they received a corrective surgical intervention. At the level of the national population, mortality from these conditions was determined from the USA Centers for Disease Control and the English Office of National Statistics for 2006-2012.

STATISTICAL ANALYSIS

The rates of surgical intervention and population mortality were compared between England and the USA after age and gender standardisation or conditional regression. Mediation analysis was employed to identify the direct effect of surgical intervention upon in-hospital mortality independent of other patient factors.

RESULTS

From 2006-2012, there were 201,453 admissions in English hospitals and 2,058,828 admissions in US hospitals due to the index surgical emergencies. Lack of utilisation of surgery was associated with increased 7-day in-hospital mortality for all seven conditions in both England and the United States. Probability of surgical intervention for all seven conditions was greater in the United States (OR 2.51, 1.58, 4.52, 1.83, 2.04, 2.02, 1.60) and population in-hospital 7-day mortality was greater in England (HR 1.24, 1.86, 1.31, 1.2, 1.79, 2.25, 2.48) for ruptured abdominal aortic aneurysm, aortic dissection, appendicitis, perforated esophagus, peptic ulcer, small bowel or large bowel, and incarcerated or strangulated inguino-femoral hernias respectively. In England (where follow-up was available), lack of utilisation of surgery was also associated with increased long-term mortality for six conditions (HR 1.47, 1.54, 1.37,

1.37, 1.44, 1.66) specifically aortic dissection, appendicitis, perforated esophagus, peptic ulcer, small bowel or large bowel, and incarcerated or strangulated inguino-femoral hernias respectively.

DISCUSSION

In England significantly fewer patients received corrective surgical intervention for all seven surgical emergencies investigated, suggesting a difference in interventional threshold between the countries, which translated into increased population mortality for all conditions compared to the USA independent of other patient factors. The fundamental difference in healthcare structure may be a plausible explanation for the difference in the rate of intervention for these emergency conditions. However importantly corrective intervention was associated with reduced in-hospital 7-day mortality across all conditions. The magnitude of change in mortality observed with corrective intervention was greatest for severe conditions such as perforation of esophagus, peptic ulcer, small and large bowel.

CONCLUSION

Clear differences exist between England and US hospitals in the threshold for surgical intervention, which are associated with significant increases in mortality in England for the seven general surgical emergencies studied.

11] What is the impact of neoadjuvant radiotherapy on anastomotic leakage and definitive stoma rates after anterior resection for rectal cancer? A national cohort study of 13151 patients

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BACKGROUND & AIMS

Neoadjuvant radiotherapy is part of treatment for large rectal cancers. The aim of this study was to assess the impact of radiotherapy on anastomotic leakage and definitive stoma rate.

STUDY DESIGN

Patients operated for low anterior resection for rectal cancer with a low anastomosis with diverting stoma between 2010 and 2015 were selected from the national database (PMSI). Patients who had radiotherapy in the 6 months before surgery were included in the Irradiation group (RTH). The primary outcome was the rate of definitive stoma.

STATISTICAL ANALYSIS

A propensity score based on the probability to receive radiotherapy according to clinical, surgical data and type of hospital and delay between radiotherapy and surgery was created. A matched data on propensity score was done to analyze outcomes and a multivariate analysis to identify risks of definitive stoma.

RESULTS

Among the 13151 patients included, 3697 (28%) had irradiation. RTH patients were younger (RTH: 64.6 ± 11.1 vs no-RTH: 66.6 ± 11.5 , $p < 0.001$), had more denutrition (RTH: 19.6% vs no-RTH: 15.7%, $p < 0.001$), were more frequently operated in high volume center (RTH: 28.7% vs no-RTH: 17.2%, $p < 0.001$), by laparoscopy (RTH: 64.0% vs no-RTH: 59.5%, $p < 0.001$) and more frequently Charlson's score higher than 3 (RTH: 22.9% vs no-RTH: 20.9%, $p < 0.001$). The leakage rate at one year was 18.3% ($n=2406$) and the rate of definitive stoma was 20.1% ($n=2644$) after a mean follow-up of 30.33 ± 20.61 months. Radiotherapy was not associated with an increased rate of leakage (RTH: 19.0% vs no-RTH: 18.0%, $p < 0.2$) in univariate analysis. Leakage rate was not significantly influenced neither by the delay between radiotherapy and surgery (<7 weeks: 19.5%, 7-10 weeks: 18.4%, >10 weeks: 20.7%; $p=0.54$) nor by the type of radiotherapy (long course: 19.1%, short course: 25.6%, $P=0.18$). After propensity score matching on general population (3616 patients in each groups), radiotherapy still did not increase the rate of leakage (RTH: 19.0% vs no-RTH: 19.0%, $p=1$) or definitive stoma (RTH: 20.2% vs no-RTH: 19.5%, $p=0.5$). After stratification on the leak and matching (611 patients in each group with a leakage; 2904 patients in each group

without leak), radiotherapy was not associated with definitive stoma after leakage (RTH: 41.4% vs. no-RTH: 38.6%, $p=0.35$) or without leakage (RTH: 15.3% vs. no-RTH: 14.5%, $p=0.42$). In multivariate analysis, male (OR:1.30; 95%CI=1.18-1.43), denutrition (OR:1.47; 95%CI=1.32-1.65), a Charlson score >3 (OR:2.00; 95%CI=1.79-2.22), open approach (OR:1.16, 95%CI=1.06-1.27), emergency surgery (OR:1.80; 95%CI=1.21-2.69), low volume of hospital (OR:1.74; 95%CI=1.52-1.98), anastomotic leakage (OR:3.02; 95%CI=2.69-3.39) were independent risk factors of definitive stoma.

DISCUSSION

This national cohort study, even though retrospective highlighted several risk factors of definitive stoma requirement after low anastomosis. Neoadjuvant radiotherapy didn't seem to influence the frequency and the severity of anastomotic leakage.

CONCLUSION

Radiotherapy did not increase the rate of definitive stoma after low anastomosis. Only the nutritional status and the hospital volume are modifiable variables that can be addressed to reduce the risk of definitive stoma.

12] Transthoracic versus transhiatal esophagectomy for esophageal cancer: a nation-wide propensity score matched cohort analysis

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Amsterdam UMC, location AMC, The Netherlands

BACKGROUND & AIMS

With the exception of cT1N0, chemoradiation (CRT) followed by resection is the standard therapy for resectable (cT1-4aN0-3M0) esophageal carcinoma in the Netherlands since 2010. The optimal surgical approach remains the topic of active discussion in both literature and daily practice. The current study aims to compare transthoracic and transhiatal esophagectomy regarding postoperative morbidity, mortality and pathology results through a propensity score matched nation-wide cohort study.

STUDY DESIGN

Data was acquired from the national Dutch Upper-GI Cancer Audit database. All patients who underwent surgery with curative intent for mid/distal esophageal or junction carcinoma (cT1-4aN0-3M0) from 2011 through 2016 were included. Hybrid and non-elective procedures, procedures without gastric tube reconstruction and patients with missing baseline data were excluded. Primary endpoints were morbidity, mortality, and quality of the surgical resection (R0, lymph node yield).

STATISTICAL ANALYSIS

Propensity score matching was performed, matching patients who underwent a transthoracic (TTE) to a transhiatal (THE) esophagectomy. Additionally, subgroup analysis was performed on outcomes following different anastomotic levels.

RESULTS

In total, 4143 patients underwent an esophagectomy with curative intent during the study period. After propensity score matching, the groups were well balanced and contained 766 patients each. R0 resection was >93% for both procedures. The transthoracic approach yielded more lymph nodes (TTE median 19, THE median 14; $p < 0.001$). There was no difference in the number of positive lymph nodes, however, the distribution of the (y)pN stage differed significantly, with a lower median (y)pN-stage in the THE group ($p = 0.044$). The (y)pT, (y)pM stage and Mandard score were equally distributed between the two groups. Total morbidity (TTE 62.9% vs THE 58.2%, $p = 0.054$) and the incidence of anastomotic leakage (TTE 18.3% vs THE 19.5%, $p = 0.606$) was similar between groups. The TTE group experienced more chyle leakage (9.7% vs 2.7%, $p < 0.001$), more pulmonary complications (35.5% vs 26.1%, $p < 0.001$) and more cardiac complications (15.4% vs 10.3%, $p = 0.003$). In addition to this, the TTE group required a longer hospital stay (median 14 vs 11 days, $p < 0.001$), longer ICU

stay (median 3 vs 1 day, $p < 0.001$) and had a higher in-hospital and 30-day mortality (4.0% vs 1.7%, $p = 0.009$). Anastomotic leakage rates were similar between subgroups. However, a cervical anastomosis showed a trend to higher leakage rates (TTE with cervical anastomosis 21.6%, THE 18.4%, TTE with intrathoracic anastomosis 17.0%, $p = 0.064$). The 30-day mortality rate was significantly higher in the TTE with cervical anastomosis vs THE group (4.6% vs 1.7%, $P = 0.006$).

DISCUSSION

(y)pN stage was higher in the TTE group, which could be explained by the higher lymph node yield in this group, with possibly leaving residual lymph node metastases during THE. As a consequence of the superior oncological resection, the TTE group showed a higher morbidity and mortality, especially in the patients with a cervical anastomosis.

CONCLUSION

Several complications and mortality were more frequent after transthoracic esophagectomy. Transthoracic esophagectomy provided a more extensive lymph node dissection and resulted in a higher N-stage. Future research should investigate if a more extensive lymph node dissection also leads to an improved long-term survival.

13] First Successful ex-vivo Liver Perfusion at Physiologic Conditions with Preservation of Full Hepatic Functions for one Week in a Swine Model

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BACKGROUND & AIMS

To achieve ex-vivo liver perfusion for at least one week, with full preservation of function and histological integrity in a porcine model. Ex vivo perfusion of livers at normothermic temperature has been feasible to sustain full function for only short periods of time. Consequently, this approach has failed or resulted in only marginal improvement of graft preservation in animal models or in the clinic. Longer perfusion at physiologic conditions may rescue unsuitable grafts for transplantation or provide tools to predict outcome after implantation. Such a strategy may therefore substantially correct the worldwide organ shortage for transplantation. Success in developing such perfusion technology mimicking in vivo conditions requires a multidisciplinary approach putting together surgeons, biologists and importantly dedicated engineers. To sustain full hepatic function, the technology must mirror artificial pancreas, kidney, lungs, and heart with pulsatile flow under strict hemodynamic control, and diaphragm movement of the liver (Figure 1). We present here first evidence for keeping porcine livers ex situ fully functional for up to 7 days.

STUDY DESIGN

We performed a large body of preliminary experiments over a 3-year period to incrementally develop an optimized ex vivo system, mimicking all in vivo conditions necessary for long-term maintenance of hepatic functions. After development of the new technology, five healthy livers were procured in a standardized fashion from adult pigs (weight 80-90 kg), and were connected to the ex vivo system prototype. Liver grafts were evaluated during and after machine perfusion, based on continuous biochemical assessment of hepatic metabolism, liver synthesis, bile production, hepatocellular enzyme release, and various histological stainings. An additional PET-CT was performed to assess vascular integrity.

STATISTICAL ANALYSIS

Descriptive statistics. Data were reported as mean and standard deviation.

RESULTS

Perfused livers immediately produced bile and had a constant bile production over the entire preservation period (10-20ml/h), with preserved bile quality and clearance of bilirubin (Figure2). After one week, factor V in the perfusate was higher than 300%, underlining full graft function. Tissue stainings after 7 days confirmed histological integrity with sufficient glycogen and ATP content, and the absence of activation of endothelial cells. Signaling proteins and cytokines indicated low levels of inflammation during perfusion. PET-CT at the end of preservation confirmed homogeneous radioactive tracer and iodinated contrast medium in the intrahepatic vasculature.

DISCUSSION

This is the first evidence worldwide that livers can be preserved fully functional outside of the body for up to 7 days, without any evidence of injury in a complete physiological functional state. This opens a wide door for application in human and modulation of graft functions and repair of unfit grafts, such as those with steatosis. The period of seven days even offer a credible time frame to induce clinically relevant liver regeneration.

CONCLUSION

We envision that ex situ liver perfusion will provide an important tool for repair of injured grafts, immunologic manipulation or assessment of liver quality before transplantation.

Figure 1: Novel liver perfusion system

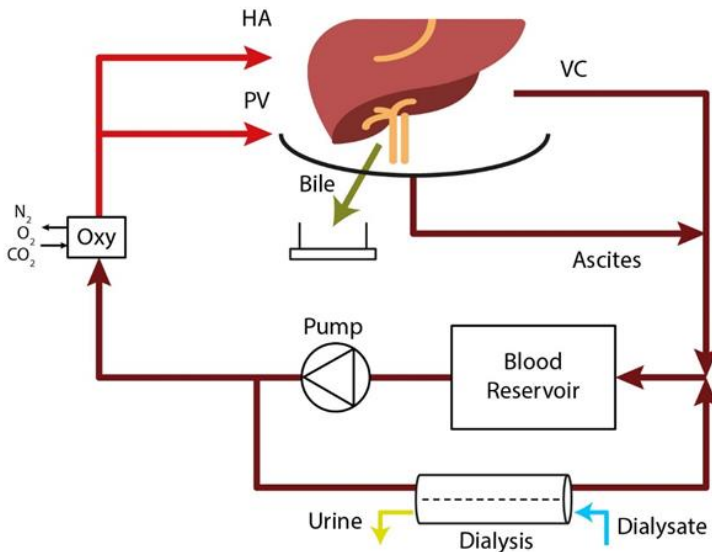
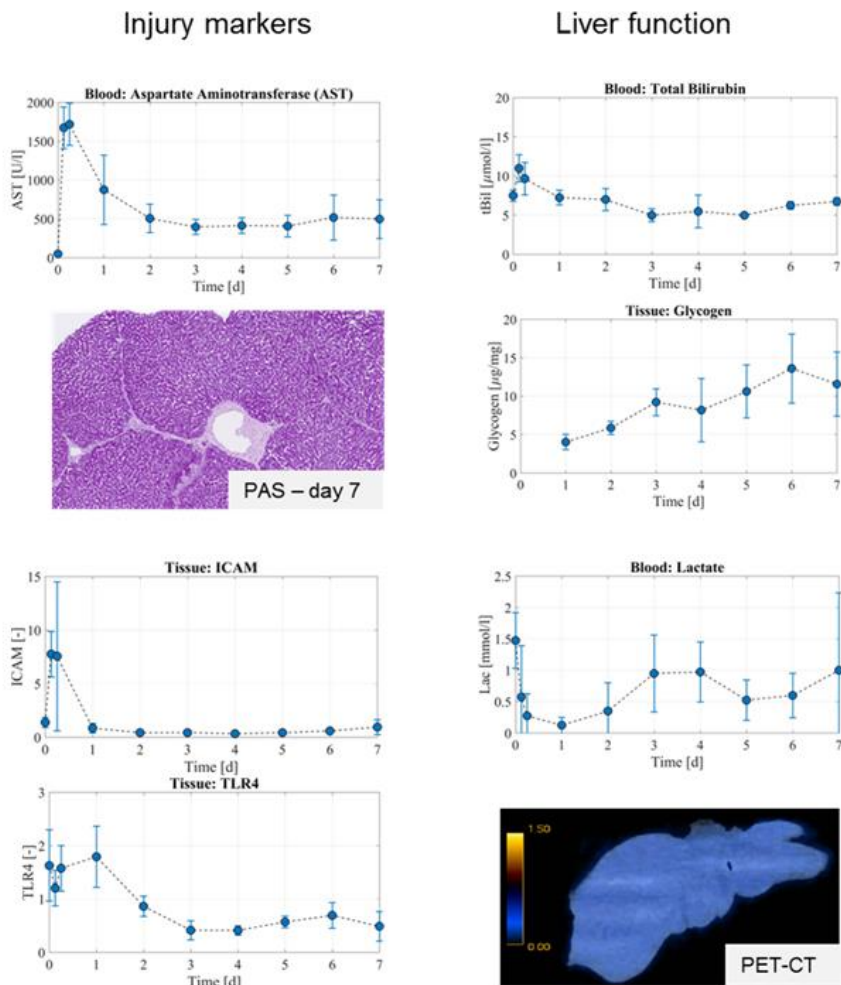


Figure 2: Hepatocellular and endothelial integrity and liver function of pig livers during 7 day normothermic perfusion with full blood



14] Immunonutrition to improve the quality of life of upper gastrointestinal cancer patients undergoing neoadjuvant treatment prior to surgery (NEOIMMUNE); Double blind randomized controlled multi-center clinical trial

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BACKGROUND & AIMS

Malnutrition, is very frequent in oesophagogastric cancers, and is associated with negative outcomes including increased morbidity, poor tumour response, poor tolerance to treatment and decreased quality of life (QOL). Immunonutrition in gastro-intestinal cancer surgery has been shown to efficient in perioperative period in reducing the risk of infectious complications. The aim of this randomized controlled trial was to evaluate if immunonutrition during neoadjuvant treatment prior to surgery will improve patients' QOL, reduce postoperative morbidity and reduce haematological and mucosal toxicities.

STUDY DESIGN

Double blind randomized controlled multi-center clinical trial. Included patients had untreated non-metastatic Upper GI tumor, aged 18 \geq years with a life expectancy of >3months. The study was powered for 80% power to detect a difference in EORTC-QLQC30 with standard deviation of 15 between the groups, permitting 179 randomized to received immunonutrition with IMPACT® formula and 179 randomized to receive an isocaloric control during neoadjuvant therapy. The primary end-point

for the study was QOL as measured by the EORTC-QLQ-C30. Secondary end-points included diarrhoea, mucositis, haematologic toxicity, nutritional status, compliance and response to neoadjuvant therapy, postoperative morbidity and length of hospital stay.

STATISTICAL ANALYSIS

An intention-to-treat analysis was employed, and univariate analysis (ANOVA) was performed to compare scores, with an analysis of co-variance using ANCOVA also performed.

RESULTS

The study was terminated prior to completion of recruitment at the interim analysis stage, as reviewers felt the sample size was underestimated given the true effect of IMPACT formula. 300 patients were randomized; 148 to the IMPACT group and 152 to the control-formula group. Patient groups were well balanced in terms of age, sex, ethnicity, BMI, clinical tumour stage, utilisation of neoadjuvant therapy and medical comorbidities. No significant differences between groups in changes, at diagnosis and 30 days postoperatively, were identified in global health score ($p=0.112$) and time to global health deterioration ($p=0.527$), physical functioning ($p=0.976$), role functioning ($p=0.777$), emotional functioning ($p=0.545$), cognitive functioning ($p=0.207$), social functioning ($p=0.968$) and fatigue score ($p=0.920$). No significant differences in changes, at diagnosis, after neoadjuvant therapy and 30 days postoperatively were seen in pain, nausea and vomiting, dyspnea, insomnia, appetite loss and change in bowel habit. Analysis of EORTC-OG25 in changes 30-days postoperatively showed with IMPACT® improvements in time to pain and discomfort ($p=0.007$). Multivariate analysis for global health score deterioration showed no significant effect of IMPACT® administration (Hazard ratio = 1.18; 95% confidence interval 0.843 to 1.652). Within the IMPACT® group toxicity during neoadjuvant treatment, tumor regression, postoperative complications, length of hospital stay and survival were unaffected.

DISCUSSION

The results of this large multi-center blind RCT fail to demonstrate any large benefit in terms of HRQOL to the utilization of immunonutrition during neoadjuvant therapy in patients with esophageal or gastric cancer. Furthermore no significant improvements were observed in secondary outcomes including 30-day postoperative complications.

CONCLUSION

The addition of immunonutrition during neoadjuvant therapy failed to significantly alter patient reported or clinical outcomes during or after neoadjuvant therapy.

15] Minimally Invasive versus Open Liver Resection for Hepatocellular Carcinoma and Portal Vein Hypertension: Results of an International Multi-Institutional Analysis

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BACKGROUND & AIMS

Patients with hepatocellular carcinoma (HCC) and clinical sign of portal vein hypertension (CSPH, platelet count <100,000/mm³ and spleen size >12 cm) are often denied surgery even if they fulfill all other criteria for classification as BCLC stage 0-A potentially resectable disease.

STUDY DESIGN

In this retrospective international multi-institutional study, we sought to investigate short- and long-term outcomes of patients with CSPH and no-CSPH who underwent hepatectomy for HCC at 10 tertiary referrals centers. Sub-analyses were performed to compare the outcomes of CSPH patients undergoing minimally-invasive surgery (MIS).

STATISTICAL ANALYSIS

Propensity-score matching (PSM) was used to balance the clinico-pathological (age, gender, ASA classification, number and size of tumors, type of hepatectomy) differences between CSPH patients, as well as patients undergoing open versus MIS.

RESULTS

Among 1,556 patients who underwent surgery for HCC, 207 (13%) had CSPH while 1,349 (87%) did not have CSPH. Median age was 67 years and 75% (n=1,171) of patients was male. While 85% (n=1,326) of patients had a single HCC, 11% (n=170) and 4% (n=60) had 2-3 and >3 tumors, respectively. Median tumor size was 4.8 cm. Serum AFP was <10, 10-500, and >500 in 32% (n=491), 31% (n=477), and 38% (n=588) of patients, respectively. HCC was well/moderately differentiated in 81% (n=1,256) of

patients and poorly/undifferentiated in 19% (n=300) of patients. Minor and major hepatectomy was performed on 980 (63%) and 576 (37%) patients, respectively. While 987 (63%) patients underwent open surgery, 569 (37%) patients had MIS. Median length-of-stay (LoS) was 6 days. The incidence of overall and severe (Clavien-Dindo ≥ 3) complications was 33% (n=489) and 8% (n=117), whereas the incidence of 90-day mortality was 3% (n=52). Patient in the CSPH group more often had smaller HCC and more often underwent a minor hepatectomy with an MIS approach versus no-CSPH patients (all $p < 0.05$). After PSM balancing of clinical-pathological variables, the resulting groups of CSPH (n=192) and no-CSPH (n=192) patients had similar baseline characteristics (all $p > 0.2$). Of note, there were no differences in terms of 90-day mortality, overall-, and severe (Clavien-Dindo ≥ 3) complications comparing the two matched groups ($p > 0.2$). Moreover, there were no differences in terms of disease-free and overall survival in the PSM matched groups ($p > 0.2$). In a sub-analysis of PSM matched patients undergoing open versus MIS, patients with CSPH who had MIS had a shorter LoS ($p = 0.002$) yet no difference in 90-day mortality, overall- and sever complication, as well as disease-free and overall survival versus open resection (all $p > 0.2$).

DISCUSSION

While the current guidelines for the management of HCC patients suggest excluding patients with CSPH, one fourth of patients were able to undergo curative intent surgery with clinically significant CSPH. Interestingly, patients with CSPH were more likely to undergo MIS than patients with no-PVH. MIS for CSPH patients resulted in a shorter LoS without an increased risk of complications and post-operative mortality.

CONCLUSION

When accurately selected, CSPH patients with HCC should not be excluded from surgical treatment. Moreover, our data suggest that MIS might have better result for CSPH patients undergoing surgery for HCC.

16] Organ resilience contributes to different impact of delayed graft function on graft survival in kidneys donated by brain death and circulatory death donors

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BACKGROUND & AIMS

Despite a three times higher incidence of delayed graft function (DGF) in kidney grafts from Donation after Circulatory Death (DCD) donors compared to those retrieved from Donation after Brain Death (DBD), large studies show equivalent long-term graft survival with DBD and DCD kidneys. This observation implies differential impacts of DGF on DCD and DBD graft survival. Possible explanations are more severe DGF in DBD grafts, and/or DCD grafts are more resilient than DBD grafts. The aim of this study was to assess the biological basis of the differential impacts of DGF on long-term outcome of DBD and DCD grafts.

STUDY DESIGN

The impact of DGF on long-term graft survival was analysed using the Netherlands Organ Transplantation Registry data. 3744 DBD and 2891 DCD kidney transplants performed between 2000 and 2018 were included. The severity of DGF was estimated for all 640 DBD and DCD kidneys transplanted at the Leiden University Medical Center by evaluating postoperative functional recovery (eGFR), and the number of posttransplant dialyses required until functional independence. In parallel to findings in tumour biology, where p53, phospho-EGFR, IGF-1R, phospho-mTOR, phospho-MAPK14, PCNA, BCL2 and PPAR γ have been associated with tumour resilience, we determined expression of these factors by immunohistochemical staining of pre-reperfusion kidney biopsies (DBD n=40; DCD n=40). Gene expression profiles (array analysis) followed by Ingenuity Pathway Analysis was performed to identify pathways differentially activated in DBD (n=8) and DCD (n=7) grafts.

STATISTICAL ANALYSIS

Uni- and multivariate analyses were performed. The Kruskal-Wallis test was used for histological data, and bespoke biostatistical methods for raw data of the microarray analysis.

RESULTS

Registry data confirmed a higher incidence of DGF in DCD than in DBD grafts (DCD 42% vs. DBD 18%). This higher incidence of DGF did not impact long-term graft survival. Multivariate analysis showed that this was mainly due to differential impact of DGF on long-term outcomes, with a major impact in DBD grafts (RR: 1.62, 95%CI: 1.24-2.11) but no significant impact in DCD grafts (RR: 1.29, 95%CI: 0.96-1.73). The

differential impact was not caused by a more severe form of DGF in DBD grafts, a conclusion based on equal numbers of DGF-associated dialyses and superior posttransplant eGFRs in DBD grafts compared to DCD grafts. Immunohistochemical evaluation showed expression of all key components of the resilience network in pre-transplantation biopsies. Pathway analysis identified 24 differentially expressed pathways with the resilience associated pathways EGF-signalling (p: 0.003), BRCA1 (p: 0.005) and p38-MAPK-signalling (p: 0.009) in the top-6 differentially expressed pathways.

DISCUSSION

The results of this clinical study confirm differential impacts of DGF in DCD and DBD kidney grafts on long-term graft survival, despite more severe DGF in DCD grafts. We hypothesized that this was due to superior resilience of DCD grafts, and were able to confirm the presence of pathways associated with tumour resilience. Moreover, gene expression analysis showed significant differences in resilience networks.

CONCLUSION

The absent impact of DGF on long-term graft survival in DCD kidneys is paralleled by differential activation of resilience pathways. Targeting of these pathways may provide a major opportunity to modulate organ resilience within and maybe even outside the field of transplantation.

17] Surgeon's fitness to perform (FTOP) after night shift is less impaired as compared to residents in daily surgical practice in the Netherlands; a cross-sectional study using the validated FTOP self-test

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BACKGROUND & AIMS

Surgical skills and complex decision making are influenced by alertness, reaction time, eye-hand coordination, and concentration. Night shift might impair these functions but it is unclear to what extent. Published studies of the effect of night shift on performance of surgeons show varying results due to the use of non-validated measurement methods or inadequately selected outcomes. The aim of this study was to investigate whether a night shift routinely impairs the surgeon's fitness to perform (FTOP) and whether this reaches a critical limit as compared to relevant frames of reference.

STUDY DESIGN

A prospective cross-sectional study among surgeons and residents from seven hospitals was performed. Seven-minute on-site measurements were conducted using the validated FTOP self-test at pre-call, post-call and non-call moments. The self-test consists of an adaptive tracker that is able to objectively measure alertness, reaction time, concentration, and eye-hand coordination, and multiple visual analog scales (VAS) to subjectively score alertness, mood, and drowsiness. The test results are compared to socio-legal (ethanol) and professional (operative skills) frames of reference that refer to a decrease under the influence of 0.06% ethanol which is beyond the Dutch legal driving limit. This equals -1.36% on the tracker and -8.17 points on subjective alertness (Huizinga et al J Surg Educ. 2018;75(4):968-977).

STATISTICAL ANALYSIS

MIXED Models with repeated measures within subjects were designed. Tracker scores are reported as mean percentage of time within target, subjective scores are reported as mean points on a composite measure of multiple VAS questions in the same domain (alertness, mood, and drowsiness).

RESULTS

59 surgeons and 103 residents enrolled. Shift duration was 11 hours for residents and 20 for surgeons. During nightshift, residents spent 1.7 hours asleep as compared to 5.4 for surgeons. Subjective alertness significantly decreased during nightshift in the resident group (-13, $p < 0.001$) but not among surgeons (-1.2, $p = \text{NS}$). The overnight

difference in tracker score was -1.16% ($p < 0.001$) for residents and 0.46% ($p = \text{NS}$) for surgeons. Subjective alertness was only significantly correlated to objective tracker score in a non-call state but not post-call. Post-call, 43.9% of residents and 18.8% of surgeons performed worse than the reference. All these residents went home afterwards as compared to 36.4% of these surgeons. For residents, hours slept on-call significantly correlated to tracker score with less than 5 hours being related to performance below the reference. For surgeons, subsequent night calls significantly correlated to tracker score, with the second subsequent call being related to performance below the reference.

DISCUSSION

The lack of ability to self-assess performance underscores the utility of the FTOP test including both objective and subjective measurements. As compared to residents, Dutch surgeons generally get enough sleep on-call to remain adequately fit to perform. However, subsequent calls may compromise clinical activities. These data can be used to guide surgical rosters in an evidence-based manner.

CONCLUSION

This is the first real-life surgical study using an extensively validated multimodal tool to provide data on the influence of night shift on surgically relevant neurocognitive domains. The study provides insight and awareness of individual performance with clear frames of reference.

18] Risk factors for locally advanced cancer associated with ulcerative colitis: results of a retrospective multicentric study in the biological era

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BACKGROUND & AIMS

Patients affected by ulcerative colitis (UC) are at higher risk of developing colorectal cancer. Guidelines suggest surveillance colonoscopy beginning 8 years after onset of disease (15 years in left-sided colitis). Nevertheless, a significant proportion of UC patients are diagnosed with stage III cancer. Aim of the study is to identify the factors associated with advanced colorectal cancer in a large series of UC patients.

STUDY DESIGN

Observational retrospective multicentric study. Patients undergoing surgery for UC complicated by cancer since 2001 (introduction of biologics in clinical practice) in six European referral centers were included. Exclusion criteria were lack of significant data and a diagnosis of Crohn's disease. Primary end-point: identification of variables associated with the presence of nodal involvement (N+) at the histological examination.

STATISTICAL ANALYSIS

Association between independent variables and N+ was assessed using univariate and multivariable logistic regression analyses. Model building was performed by means of a variable selection based on an initial screening using univariate analysis with $p < 0.2$ criteria, then a stepwise selection with entry criteria $= 0.05$ and stay criteria $= 0.1$. Collinearity amongst variables was checked with variance inflation factor. The Area under the Receiver Operator Characteristic (ROC) was reported. All p values refer to two-tailed tests of significance. $P < 0.05$ was considered significant.

RESULTS

Between 2001-2018, 130 patients were included. Median duration of disease was 21 years (1-52). Forty patients (30.8%) were N+ at the postoperative histological examination. Eighteen (13.8%) developed cancer within 10 years from the onset of UC, 33.3% of them were N+. At the univariate analysis, gender, duration of disease,

use of biologics, extension and severity of colitis were not associated with N+. At the multivariable analysis, younger age at surgery (OR 0.96, $p=0.042$), left colon location (OR 2.44, $p=0.045$), and presence of a stricture at the colonoscopy (OR 5.07, $p=0.002$) were significantly associated with N+. Area under ROC curve: 0.7615.

DISCUSSION

The current guidelines are inadequate in preventing the delay of cancer diagnosis in a significant proportion of patients. Even in the present series from European referral centers, over 30% of patients underwent surgery for a cancer which was already locally advanced. Moreover, colorectal cancer could develop as early as few years after the onset of UC, and according to the guidelines, the surveillance could miss the diagnosis of initial cancer in this group of patients. In fact, the frequency of the surveillance endoscopies is based on the extension and the activity of disease observed at the colonoscopy. However, both clinical features do not predict the onset of cancer and, subsequently, the risk of advanced oncological stage at surgery. Despite the guidelines suggest that left-side colitis could evolve more indolently, cancers in the left colon are more likely detected at advanced stage. The evidence of colitis-associated strictures at colonoscopy should call for further investigations and early endoscopic follow-up, since it is the strongest factor predicting locally advanced cancer at surgery, possibly due to a delay of diagnosis.

CONCLUSION

Location in the left colon, presence of strictures and younger age correlate with a higher risk of advanced cancer in UC patients, which could develop shortly after diagnosis of colitis. Endoscopic surveillance should be planned taking this evidence into consideration.

19] Perioperative Omega-3 fatty Acids Fails to Confer Protection in Liver Surgery. Results of a multi-centric, double-blind, randomized, placebo-controlled trial

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BACKGROUND & AIMS

Omega-3 polyunsaturated fatty acids (Ω 3-FA) regulate many metabolic signaling pathways and yield strong anti-inflammatory properties. In a variety of animal models, Ω 3-FA disclosed significant protective effects in alleviating hepatic ischemia/reperfusion injury and steatosis with enhancement of regeneration after major tissue loss. Intravenous (IV) administration of Ω 3-FA causes dramatic abrogation of reactive oxygens species upon reperfusion of ischemic livers. With the knowledge that Ω 3-FA cause minimal undesired effects in humans, we hypothesized that peri-operative IV administration of Ω 3-FA in patients undergoing liver surgery may provide clinically relevant benefits translated in a reduction of post-operative complications.

STUDY DESIGN

The Omegaven™ trial is a multi-centric, double-blind, randomized, placebo-controlled trial applying two single doses of Omegaven™ vs. placebo in patients undergoing liver resection. The primary endpoint was morbidity/mortality, as defined by the Clavien-Dindo classification of complications integrated in the Comprehensive Complication Index (CCI) ranging from 0 (uneventful course) to 100 (death). Cirrhotic patients were excluded from the trial.

STATISTICAL ANALYSIS

Assuming that perioperative continuous IV administration of Omegaven™ may decrease postoperative complications by 30% (α : 0.05, Power (1- β): 0.8, 2-sided test and a putative drop-out rate of 10%, we identified a sample size of 129 patients per randomized group. An interim analysis for safety was planned after 60 cases. Final analysis was performed in a univariate setting using Fisher's Exact test for categorical variables and Mann-Whitney-U test for continuous variables.

RESULTS

Between July 2013 and May 2018, 261 patients (132 in the Omegaven and 129 in the placebo groups) were included in the trial from three expert liver centers. Both groups were comparable in terms of demographics and indications. The dropout rate was 15% and 12% for the Omegaven and placebo group, respectively, mostly due to unexpected irresectability of the lesions at the time of surgery. Most cases (92%, n=225) underwent open liver surgery and 64% (n=146) were major resection (≥ 3 segments). The safety interim analysis revealed no significant differences in terms of outcome. In an intention-to-treat analysis including the drop out cases, the mortality rate was 4% and 2% in the Omegaven and placebo groups ($P=0.45$; OR: 95%CI: 0.04-2.51), respectively. Any complications and major complications (Clavien-Dindo $\geq 3b$) occurred in 46% vs. 43% ($P=0.71$; OR:0.89; 95%CI:0.53-1.50) and 12% vs. 10% ($P=0.70$; OR:0.81; 95%CI:0.34- 1.89) in the Omegaven and placebo groups, respectively. The mean CCI was, respectively, 17 (± 23) vs.14 (± 20) ($P=0.42$). Subgroup analyses for patients with major hepatectomy, inflow occlusion and age did not reveal different outcomes. An analysis excluding the drop-outs confirmed this finding.

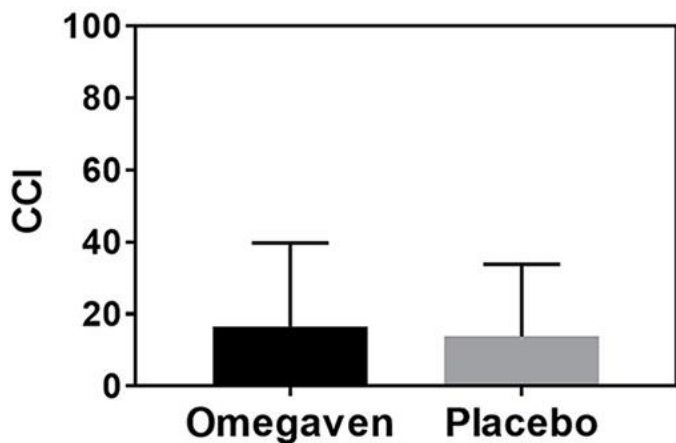
DISCUSSION

This inaugural RCT failed to show any beneficial effects of pre- and intraoperative continuous injection of $\Omega 3$ -FA on clinically relevant endpoints. This is an important observation, as centers have started to use $\Omega 3$ -FA in patients undergoing liver surgery based on convincing evidence from a number of animal models that $\Omega 3$ -FA not only protect against ischemia-reperfusion injury and steatosis, but also significantly enhance liver regeneration.

CONCLUSION

The use of perioperative intravenous application of intravenous $\Omega 3$ -FA cannot be recommended in patients undergoing liver surgery (Grade A recommendation).

Comprehensive Complication Index (CCI)



The figure displays mean (\pm SD) CCI values (0-100) for Omegaven and Placebo. Both intervention groups showed a similar distribution of CCI.

20] Next-generation sequencing is helpful for risk stratification as well as surgical decision making in treatment of colorectal liver metastases

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BACKGROUND & AIMS

During the last decade the introduction of Next-generation sequencing (NGS) of cancer-related genes has broadened the spectrum of potential biomarkers being available for prognostication and risk stratification in patients with colorectal liver metastases (CRLM). There is reason to hope that the implementation of new genetic prognostic factors in the clinical daily routine helps to identify patients who would benefit from surgical treatment of CRLM. Yet, the published data are still too small to draw reliable conclusions. The aim of this analysis was to assess the impact of cancer-related genes and their mutations on the oncological outcome after resection of CRLM and to identify the role of this diagnostic tool in daily routine of liver surgeons.

STUDY DESIGN

Since March 2018 Next-generation sequencing of 25 cancer-related genes in CRLM was established in cooperation with the Institute of Pathology. From 2008 to 2018, nearly 850 liver resections were performed at our department for CRLM. Clinical data were extracted from a prospectively collected institutional CRLM database and out of these, 300 patients were included in the retrospective Next-generation sequencing study. To date, 131/300 patients were eligible for a first analysis. Data sets of the entire cohort will be completed in December 2018.

STATISTICAL ANALYSIS

Categorical data were compared using χ^2 -test, continuous data of normally distributed data by the Fisher exact test. The Mann-Whitney U-test was used to compare medians of data without normal distribution. Survival analyses were performed using the Kaplan-Meier method, and the log-rank test was used to compare median survivals between groups. P-values <0.05 were considered significant.

RESULTS

The following cancer related genes and their mutations were primarily analyzed: APC, TP53, KRAS, PIK3CA, ATM, SMAD3 and SMAD4, BRAF600V, ERBB2 and NRAS. The most common gene mutations were observed in APC (77.1%), TP53 (74%), KRAS (28.2%) and PIK3CA (13.7%). ERBB2 wild type amplification as well as mutation was significantly associated with a poorer overall survival ($p=0.0019$) just like SMAD

($p=0.03$) and RAS mutations (0.02). In contrast, PIK3CA mutations are related to a better prognosis ($p=0.017$). Rectal cancer with KRAS or SMAD4 mutation was significantly associated with a worse survival compared to wild type ($p=0.012$).

DISCUSSION

Mutations of KRAS, TP53, SMAD4 as well as BRAF600V are associated with a poorer overall and recurrence free survival after resection of CRLM. Our data confirm the most frequent reported mutation rates and the potential of being prognostic factors. Especially ERBB2 could occupy an important place in the treatment of CRLM offering nowadays a targeted therapy possibility. Nevertheless, the data need to be reassessed after study completion.

CONCLUSION

Our preliminary data suggest that NGS of cancer-related genes and their mutations may have significant impact on both, prognostication as well as on surgical decision making. In particular the role of targeted cancer therapy against ERBB2 could offer new opportunities in the treatment of CRLM resulting in a better overall survival.

21] Intracorporeal or extracorporeal ileocolic anastomosis after laparoscopic right colectomy: a double-blinded randomized controlled trial

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BACKGROUND & AIMS

Intracorporeal ileocolic anastomosis (IIA) and extracorporeal IA (EIA) are two well-established techniques for restoration of bowel continuity after laparoscopic right colectomy (LRC). There are no high-quality studies demonstrating the superiority of one anastomotic technique over the other. The aim of this randomized controlled trial (RCT) was to determine whether there are clinically relevant differences in outcomes between LRC with IIA and LRC with EIA.

STUDY DESIGN

This is a single-institution double-blinded RCT comparing the outcomes of LRC with IIA and LRC with EIA. Eligible patients were randomly assigned in a 1:1 ratio to undergo either IIA or EIA. Patients and staff collecting data and assessing the endpoints were all blinded to treatment allocation. Inclusion criteria were: patients with a benign or malignant right-sided colon neoplasm, aged 18 years or older and who give written informed consent. Exclusion criteria were: distant metastases, preoperative evidence of adjacent organs tumor invasion, acute bowel obstruction, scheduled synchronous intra-abdominal surgery. Primary endpoint was length of hospital stay (LOS); secondary outcomes were operative time, intraoperative complications, number of lymph nodes harvested, total length of skin incision, 30-day postoperative morbidity, return of bowel function, postoperative pain, reoperation rate, hospital readmission.

STATISTICAL ANALYSIS

A sample size of 128 patients (64 per arm) was required to detect a 1.5-day (standard deviation: 3 days) decrease in the mean LOS (from 7 to 5.5 days with EIA vs. IIA, respectively), with $\alpha=0.05$, $\beta=0.20$ and $\text{power}=80\%$. Considering 10% of patients lost to follow-up, the total sample size was 140 patients. No interim analyses were planned, all procedures were performed on an intention-to-treat basis. Descriptive statistics for categorical variables were expressed as absolute/relative frequencies, while those for continuous covariates as median/IQR. All p-values were obtained by the two-sided exact method, at the conventional 5% significance level. The statistical analyses were performed by using R 3.5.1 (R Foundation for Statistical Computing, Vienna, Austria). This trial was registered with ClinicalTrials.gov, number NCT03045107.

RESULTS

A total of 140 patients were randomized and analyzed. Median operative time was similar in IIA and EIA groups [130 (IQR 105-195) vs. 130 (IQR 110-180) mins; P=0.770] and no intraoperative complications occurred. The quicker recovery of bowel function after IIA than EIA [gas: 2 (IQR 2-3) vs. 3 (IQR 2-3) days, P=0.003; stool: 4 (IQR 3-5) vs. 4.5 (IQR 3-5) days, P=0.032] was not reflected in any advantage in the primary endpoint: median LOS was similar in the two groups [6 (IQR 5-7) vs. 6 (IQR 5-8) days; P=0.839]. No significant differences were observed in the number of lymph nodes harvested, length of skin incision, 30-day morbidity (17.1% vs. 15.7%, P=0.823), reoperation rate, postoperative pain, and readmission rate between the two groups.

DISCUSSION

This RCT shows that IIA was associated with a quicker return of bowel functions. However, this difference had only a minor clinical impact on the postoperative course and did not influence LOS.

CONCLUSION

IIA is not associated with clinically relevant benefits when compared with EIA.

22] A national cohort study evaluating the association of short-term quality indicators with long-term survival after esophageal and gastric cancer surgery

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BACKGROUND & AIMS

Outcome indicators are often used to evaluate the quality of esophageal and gastric cancer surgery and compare the performance between hospitals and care providers. Most of these indicators relate to adverse events in the direct postoperative period. In the Dutch Upper gastrointestinal Cancer Audit (DUCA) a set of short-term outcome indicators is defined. All hospitals receive a weekly updated report regarding these indicators. To explore the validity of these indicators, the aim of this study was to investigate the association between the short-term outcome indicators and long-term survival in a national cohort of operated esophageal and gastric cancer patients.

STUDY DESIGN

For this national cohort study data were retrieved from the DUCA database and a national database containing survival information. All patients who underwent curative surgery for esophageal or gastric cancer between 2011 and 2016 were included. Patients with esophageal and those with gastric cancer were analyzed separately. The primary outcome was overall survival, and the secondary outcome was conditional overall survival (under the condition of surviving the first postoperative 30 days and hospital admission). Subgroup analyses were executed for patients with a ‘complicated postoperative course’ versus ‘no complicated postoperative course’, ‘complete resection (pR0)’ versus ‘incomplete resection (pR1/2)’, and ‘textbook outcome’ versus no ‘textbook outcome’. ‘Textbook outcome’, a composite quality measure, was defined as a complete resection (pR0) with at least retrieved lymph nodes, together with an uneventful postoperative course and no hospital readmission.

STATISTICAL ANALYSIS

Overall survival was reported using 1, 2, and 3-year survival rates and evaluated using the Kaplan Meier method. A Cox regression model was used to study the independent association between the short-term outcomes and overall survival and conditional overall survival adjusted for patient characteristics, tumor characteristics and surgical approach.

RESULTS

In total, 4414 esophageal and 2943 gastric cancer patients were included in this study. The median [interquartile range] age was 65 [59-71] and 70 [62-77] years and 78% and 63% of the patients was male, respectively. The 1-, 2-, and 3-year overall survival was 76%, 62%, and 54% for esophageal cancer and 71%, 56%, and 49% for gastric cancer (fig 1). A 'complicated postoperative course' was independently associated with shorter overall survival (HR: 1.54 [95%CI: 1.39-1.70] and 1.91 [95%CI: 1.67-2.20]) and shorter conditional overall survival (HR: 1.24 [95%CI: 1.11-1.39] and 1.40 [95%CI: 1.18-1.65]). Complete resection of the tumor was independently associated with longer overall survival (HR: 0.75 [95%CI: 0.63-0.89] and 0.69 [95%CI: 0.58-0.82]). 'Textbook outcome' was independently associated with longer overall survival (hazard ratio (HR): 0.68 [95% confidence interval (95%CI): 0.61-0.76] and 0.62 [95%CI: 0.54-0.71]) and longer conditional overall survival (HR: 0.75 [95%CI: 0.68-0.84] and 0.69 [95%CI: 0.60-0.79]).

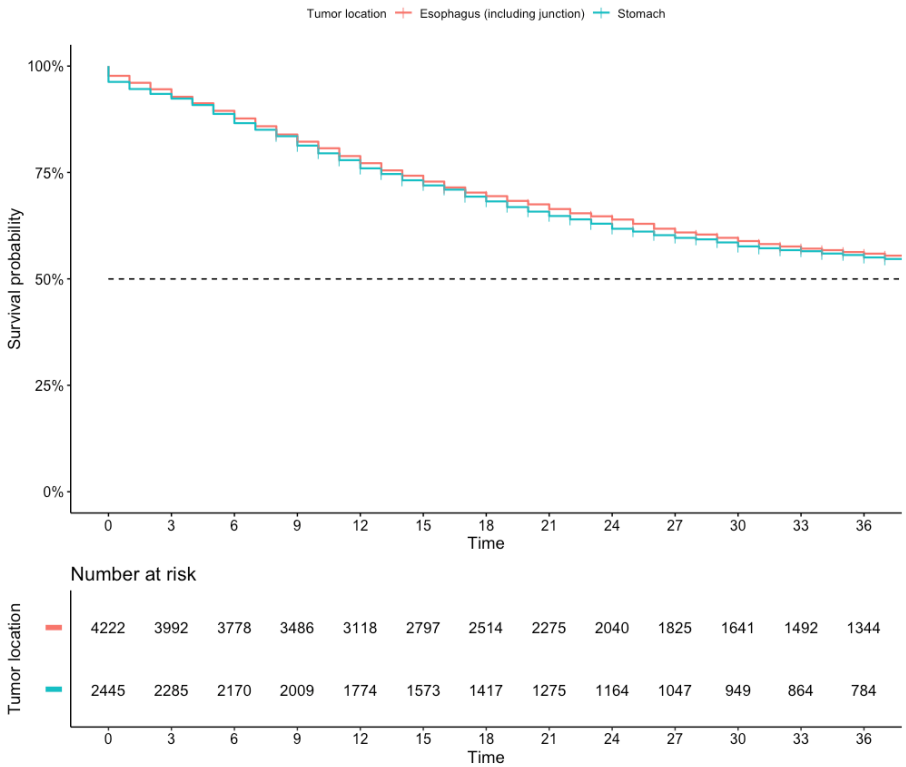
DISCUSSION

Benchmarked feedback of indicators such as 'complicated postoperative course', 'complete tumor resection', and 'textbook outcome' in clinical auditing may help hospitals and care providers to improve outcomes on these indicators. Following the results of this study, improvement in these short-term outcomes might also improve long-term survival.

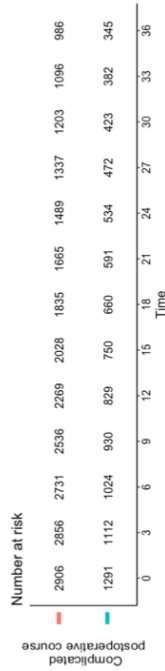
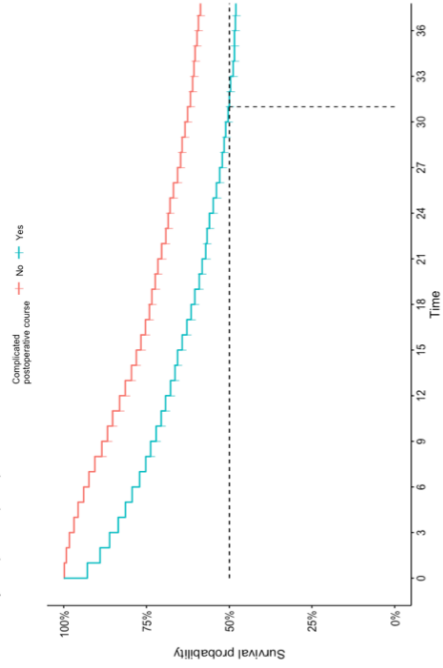
CONCLUSION

This study showed that the short-term outcome indicators used in the DUCA were associated with long-term survival.

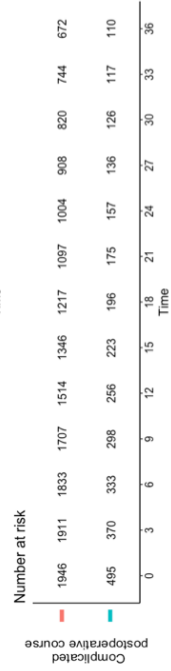
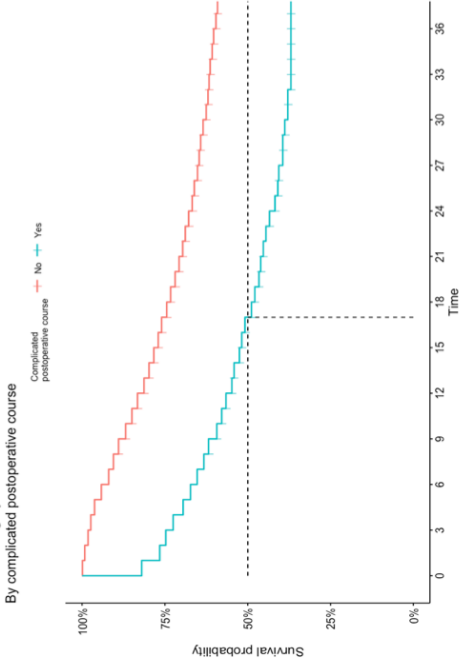
Patients with esophageal or gastric cancer who underwent curative surgery between 2011-2016
By tumor location



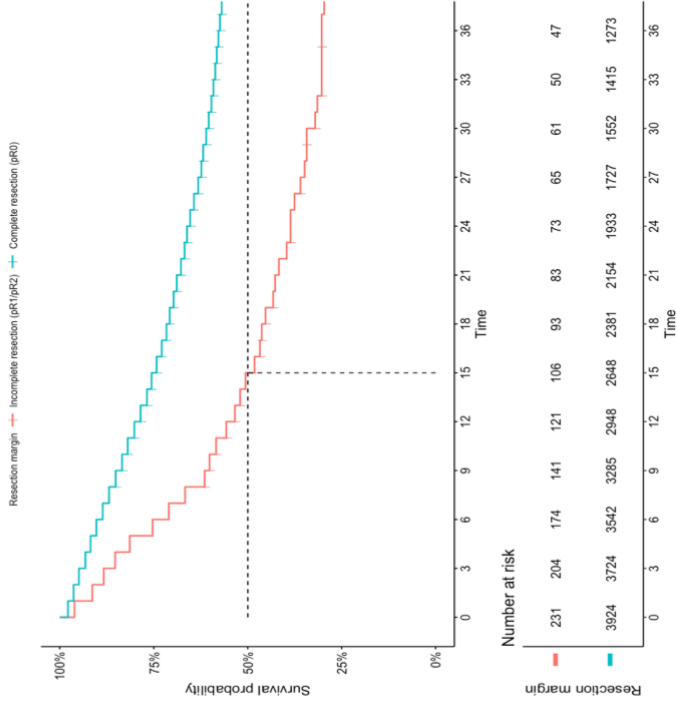
Patients with esophageal cancer who underwent curative surgery 2011-2016
By complicated postoperative course



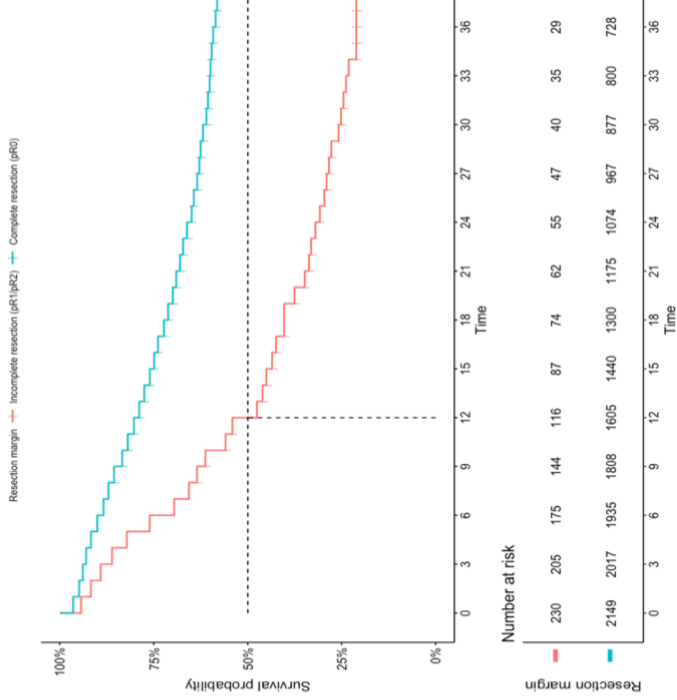
Patients with gastric cancer who underwent curative surgery 2011-2016
By complicated postoperative course



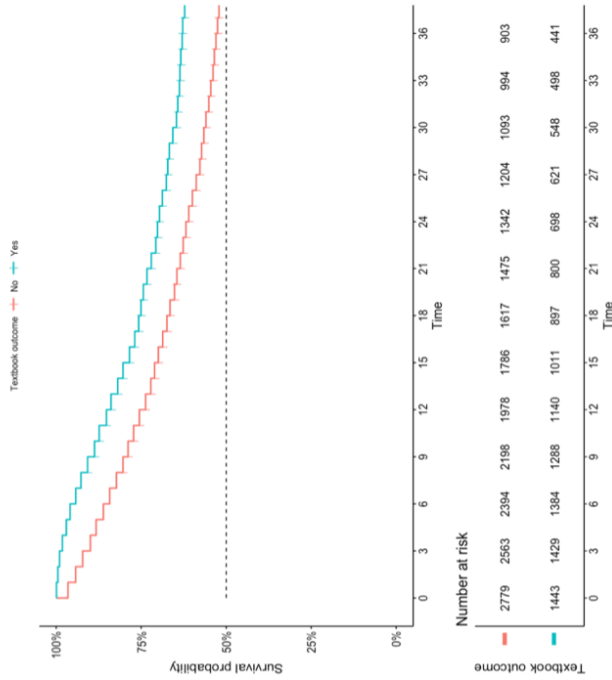
Patients with esophageal cancer who underwent curative surgery 2011-2016
By resection margin



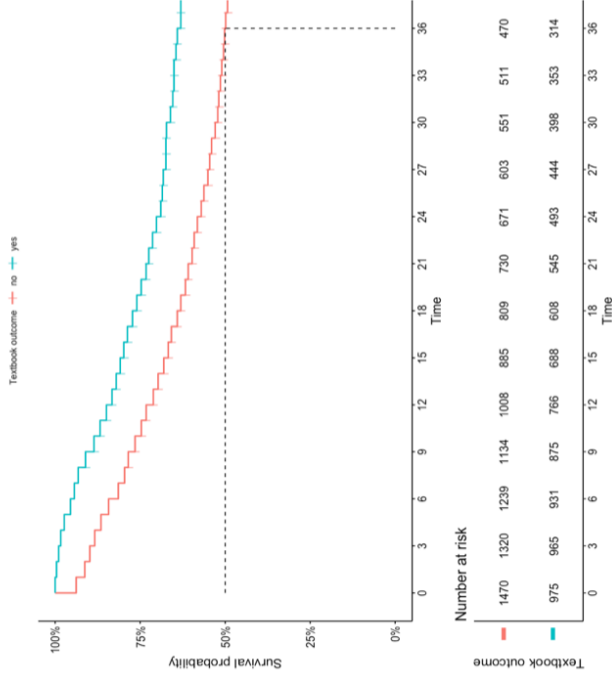
Patients with gastric cancer who underwent curative surgery 2011-2016
By resection margin



Patients with esophageal cancer who underwent curative surgery 2011-2016
By textbook outcome



Patients with gastric cancer who underwent curative surgery 2011-2016
By textbook outcome



23] Does a longer waiting period after neoadjuvant radiochemotherapy improves the oncological prognosis of rectal cancer? 3 years follow-up results of the GRECCAR-6 randomized multicenter trial

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BACKGROUND & AIMS

There are controversial data on the impact of a long waiting period between radiochemotherapy (RCT) and resection for rectal cancer on the rate of complete pathological response (pCR=ypTON0). The impact on the oncological prognosis is also unknown. We present the 3 years survival results of the GRECCAR6 trial.

STUDY DESIGN

The GRECCAR6 trial was a phase III, multicentre, randomized, open-label, parallel-group, controlled trial. Patients with cT3/T4 or TxN+ tumours assessed by radiological examination (MRI and/or endo-ultrasound) of the mid or lower rectum who had received RCT (45-50 Gy with intravenous 5-FU or capecitabine) were included and randomized between 7 weeks or 11 weeks of waiting period. Primary endpoint was the pCR rate. Secondary endpoints were overall, disease-free survival and rate of recurrences.

STATISTICAL ANALYSIS

Survival curves were plotted using the Kaplan–Meier method. Potential prognostic factors were evaluated using Cox proportional hazards models. For each outcome, factors achieving a p value < 0.20 in the univariate analysis were included in a multivariable model. A backward stepwise variable selection procedure was used to remove factors with p value < 0.05 in the multiple model.

RESULTS

A total of 265 patients from 24 participating centres were enrolled between October 2012 and February 2015. Among them, 253 patients underwent surgery with mesorectal excision. 125 patients were randomized in the 7 weeks group and 128 in the 11 weeks group. Tumors were classified as mrT3 for 190 (n=82%). The rate of pCR was 17% (43/253). Mean follow-up from surgical resection was 32±8 months. 25

deaths occurred with a 89% OS at 3 years. DFS was 67.7% at 3 years due to 77 deaths or recurrences. 3-years local and distant recurrences rates were 9.2% and 24.9%, respectively. The group of randomization had no impact on the OS ($p=0.9486$) and the DFS ($p=0.8672$). Distant ($p=0.8589$) and local ($p=0.5780$) recurrences were also not influenced by the waiting period. Patients with a pCR had an excellent prognosis with an overall survival of 94.5% vs. 87.9% for the remaining patients at 3 years ($p=0.232$) and a DFS of 89.6% vs. 63.4% ($p=0.0025$). On multivariate analysis, DFS was influenced by low rectal tumors (OR=1.74; [1.03 ; 2.94], $p=0.037$), R1 resection (OR=2.03 [1.18 ; 3.50], $p=0.011$), ypT3-T4 (OR=2.4 [1.12 ; 5.19], $p=0.0245$) and N+ (OR=2.85 [1.76 ; 4.61], $p<0.001$). As expected, good responders (ypT0-Tis-T1-T2, $n=115$) had a significant better DFS than bad responders (ypT3-T4), $p<0.0001$. However, the waiting period did not modify the DFS for good responders ($p=0.7861$) or for the bad responders ($p=0.8601$). The waiting period had also no impact on the DFS for ypN0 patients ($p=0.7183$) or for ypN+ patients ($p=0.3468$).

DISCUSSION

In this randomized multicentric study a longer waiting period had non influence on the rate of pCR and on the oncological prognosis. For patients not included in a rectal sparing approach, surgery should be performed after a waiting period of 7 weeks.

CONCLUSION

Waiting 4 weeks longer after radiochemotherapy had no influence on the oncological outcomes of cT3/T4 or cN+ rectal cancers. Even good responders don't take an oncological benefit of a longer waiting period.

24] Is superior intracorporeal vs extracorporeal anastomosis during laparoscopy right hemicolectomy? Results from randomized controlled trial

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BACKGROUND & AIMS

The suggested advantages of intracorporeal anastomosis for laparoscopic right colectomy is still a controversial aspect. Several studies have suggested a potential superiority of intracorporeal (IA) vs extracorporeal (EA) anastomosis. But all of them are retrospective or non-randomized trials, which might induce patient selection bias and unreliable outcomes.

STUDY DESIGN

We present the first randomized controlled trial comparing both technical approach (IA vs EA) in order to analyze the postoperative results. The primary endpoint was to compare the length of hospital stay. Secondary endpoints were: intraoperative technical events (operative time, blood loss, conversion rate) and postoperative clinical outcome (digestive function recovery, analgesia requirements and morbidity). All patients aged ≥ 18 years old referred only for oncological pathology located in the right colon and requiring an elective right hemicolectomy assisted by laparoscopy with an R-0 purpose were considered for inclusion. Exclusion criteria were: simultaneous surgical procedures, ASA IV and Stage IV.

STATISTICAL ANALYSIS

Sample size was determined for the primary endpoint: days of hospital stay, assuming that the variability 3 days (standard deviation) with a coefficient of variation between 50-100%. It was estimated that the difference between the two arms of the study was minimum of 1.5 days. The value for type I error was specified by 5% ($\alpha = 0.05$), bilateral approximation and a minimum power of 80% (probability of type II error = 0.20).

RESULTS

The number of patients was 140. The demographic data comparable between groups. Operative time was longer in IA vs EA (149 ± 27 vs 123 ± 36 min, $p = 0.001$). Length of resected colon was longer in IA (25.2 ± 5.7 vs 22.6 ± 7.8 cm, $p = 0.026$) with similar number of lymph nodes (19.6 ± 6 vs 19.1 ± 7 , $p = 0.612$). The length of assistance wound was shorter in IA (6.7 ± 1.2 vs 8.7 ± 1.4 cm, $p < 0.001$). Postoperative requirement of analgesia (39 ± 24.3 vs 53 ± 26 doses, $p < 0.001$), and the pain score (VAS) (1.8 ± 1.8 vs 2.9 ± 2.2 ; $p < 0.035$) were lower in IA. Recovery of digestive function was faster in IA group (2.3 vs 3.3 days; $p = 0.003$) with lower incidence of paralytic ileus (13% vs 30%; $p = 0.022$). The decrease of postoperative Hb (-8.82 ± 1.7 vs -17.05 ± 1.7 mg/dl; $p =$

0.001) and the incidence of intestinal bleeding (2.8% vs 14%; $p=0.031$) were lower in IA. Postoperative complications according to Clavien Dindo classification were lower in IA: grade I (10% vs 27% $p = 0.016$); grade II (18% vs 35% $p = 0.0369$); grade III (1.4% vs. 7.2%, $p = 0.209$). Incidence of anastomotic leak (4.3% vs. 7.14%, $p = 0.719$) and wound infection rates were similar in both groups (4.3% vs. 4.2%). Hospital stay was similar ($5.65\pm 3,7$ vs $6.58\pm 4,6$ days, $p = 0.194$) but the readmission was lower in IA (0% vs 7,1%; $p=0,05$).

DISCUSSION

Laparoscopic right hemicolectomy with IA requires a longer surgical time, and provides a surgical specimen comparable to the EA. IA is a less aggressive approach demonstrated by lower postop decrease in Hb, smaller wound and quicker recovery of digestive function. The association with lower perception of pain, reduced analgesic requirements and a reduced morbidity would lead to a earlier recovery.

CONCLUSION

IA offers additional clinical advantages over EA when a laparoscopy right colectomy is performed.

25] Lower postoperative mortality of adrenal surgery in high volume centres; a nationwide study (AFCE)

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BACKGROUND & AIMS

Adrenalectomy, open or laparoscopic, is the recommended treatment for many benign or malignant, secreting or non secreting, adrenal diseases. Adrenal surgery remains however a relatively uncommon primary procedure. Postoperative outcomes such as mortality and readmission rate vary widely in the litterature and their determinants remain ill defined. The relation between center volume and postoperative outcomes is established for several major surgical procedures but remains debated in adrenal surgery. We took advantage of an unprecedented nationwide dataset for exploring the determinants of postoperative outcomes of adrenal surgery .

STUDY DESIGN

This retrospective analysis was based on “Programme de médicalisation des systèmes d'information” (PMSI) which compiles abstracts for every admission to all French acute healthcare facilities, private and public. All patients submitted to adrenal surgery in France between January 2012 and December 2017, were enrolled. Diagnosis were extracted with the CCAM codes that describe benign and malignant (primary tumours or metastasis) adrenal pathologies and their eventual secretion : pheochromocytoma (PHEO), hyperaldosteronism (CONN), hypercorticism (CUSH). Comorbidities were considered using the ICD-10 codes. Main outcomes were postoperative mortality, defined as death in the index hospital or after transfer to or readmission in another hospital within 90 days from the date of surgery, and readmission defined as another hospitalization in any hospital for more than 24 hours within 30 days from surgery.

STATISTICAL ANALYSIS

Centre volume was defined as the number of procedures produced by each centre on each given year. The 90-day postoperative mortality and 30-day readmission rate were modeled using a multivariable logistic model with a random effect on the hospital. Analysis of hospital volume thresholds predictive postoperative death was conducted with CHAID (chi-square automatic interaction detection).

RESULTS

A total of 9820 patients (55±14 years; F/M ratio 1.1) underwent adrenalectomy (2.7 per 100,000 inhabitant per year), for benign disease in 6448 , adrenal metastasis in 1811, and primary malignant disease in 1561 (Fig.1a). These adrenal lesions were secreting in 5284 patients (46.8%) (Fig.1c). The proportions of adrenal lesions remained unchanged throughout the study period (Fig 1 bd). Total mortality rate was 1.5% (n=147) and CHAID defined two distinct thresholds of hospital volume : 1 and 32 cases per year. The 90 day mortality rate was 4.0% in low volume centres (≤1 per year), 1.6 % in intermediate volume centres (2-31 per year) and 0.9% in high volume centres (≥32 per year) (P< 0.001). These high volume centres were 15 academic third referral hospitals operating . In multivariate analysis, postoperative mortality was independently associated with malignancy (OR 2.5, P<0.001), older age (>50y; OR 3.3; P=0.02), comorbidities (Charlson≥1; OR 1.5; P=0.04), high volume center (OR 1.5; P=0.04), and laparotomy (OR 4.2; P<0.001); Total readmission rate was 10.3% (N=1010). In multivariate analysis, readmission rate was independently associated with malignancy (OR 1.4, P<0.001), CUSH (OR 2.2; P<0.01), older age (>70y; OR 1.4; P=0.02), comorbidities (Charlson≥1; OR 1.3; P<0.01), and laparotomy (OR 1.2; P=0.01).

CONCLUSION

Postoperative mortality of adrenal surgery was lower in high volume centres. Malignancy, older age, comorbidities, hypercorticism and laparotomy were also associated with less favorable outcome . Patients presenting with one or more of these characteristics should be referred for adrenal surgery in high volume centres.

Fig.1: Adrenal surgery in France 2012-2017 (N=9820)

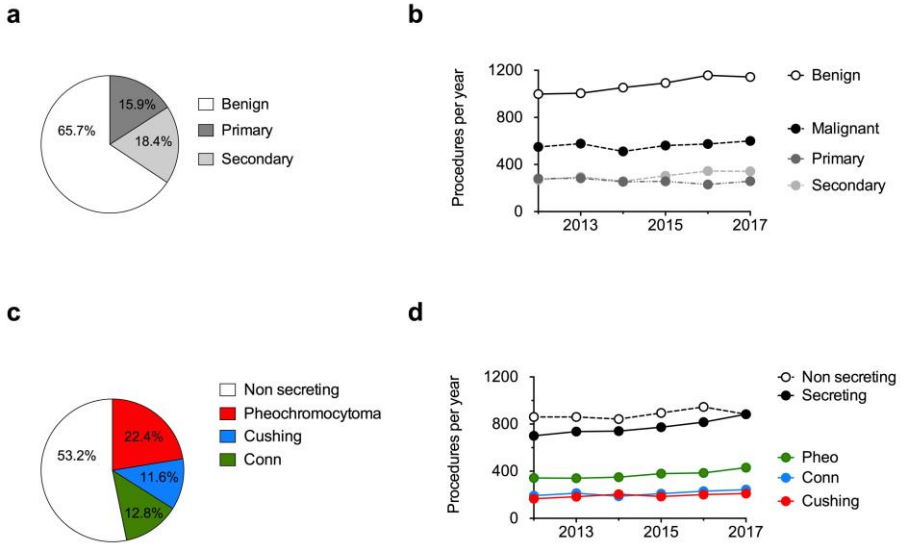
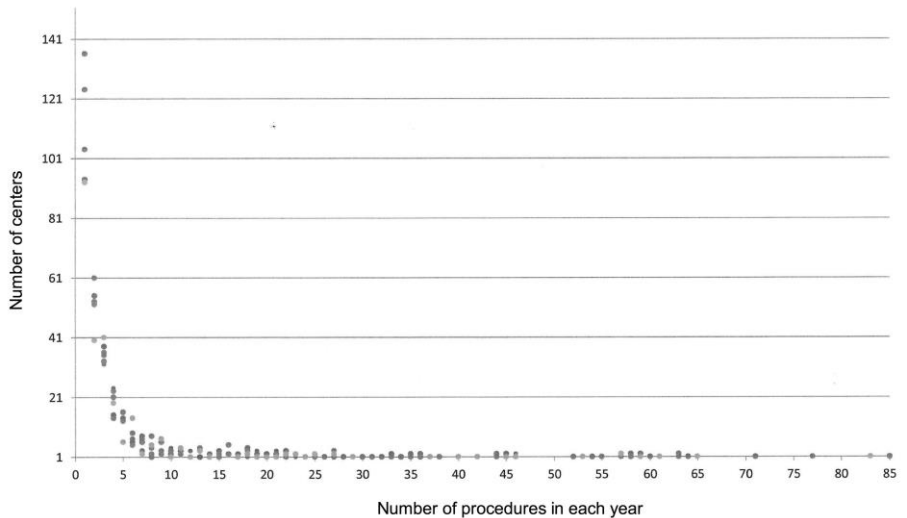


Fig.2: Center volume of adrenal surgery in France



26] The American College of Surgeons surgical risk calculator underestimates the actual risks of hepatectomy for liver tumors: Results from a cohort of 450 patients.

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BACKGROUND & AIMS

The American College of Surgeons National Surgical Quality Improvement Program's (ACS-NSQIP) calculator has been endorsed by the surgeons' community to counsel patients and relatives regarding estimated postoperative complications. However, it does not include organ-specific risks. The aim of this study was to assess the ACS-NSQIP calculator's ability to predict complications, mortality and length of stay (LOS) in patients undergoing hepatectomy for liver tumors.

STUDY DESIGN

This is an observational retrospective study conducted in a tertiary-referral university hospital. An established classification of complications, including post-hepatectomy insufficiency and bile leak, was adopted. The endpoint was the rate of complications, mortality and LOS as expected by the ACS-NSQIP calculator and as observed within 90-day after surgery.

STATISTICAL ANALYSIS

The performance of the ACS-NSQIP calculator was tested by the comparison of the expected versus the observed rates of complications, mortality and LOS by using regression analysis or by using paired t-test as indicated. The prediction ability of the ACS-NSQIP calculator was also tested by using c-statistic.

RESULTS

Our prospectively-maintained liver surgery unit database was queried, and 450 patients who underwent hepatectomy between 2015 and 2017 were included. The overall predicted rates of complications and mortality, were significantly lower than actual rates: mean morbidity ACS-NSQIP 18.7% \pm 8.6 vs. actual 37.1% \pm 0.48 ($P < 0.001$), and mean mortality 0.9% \pm 1.68 vs. 1.7% \pm 0.12 ($P < 0.001$). Predicted LOS was significantly shorter (mean ACS-NQIP 5.7 days \pm 1.76 vs. actual 11 days \pm 7.6; $P < 0.001$). Post-hepatectomy liver insufficiency and bile leak were recorded in 7.1% and 12.9% of patients, respectively. These specific postoperative events were not expressed by the ACS-NSQIP calculator. The c-statistics of the ACS-NSQIP calculator for complications, mortality and LOS were 0.54, 0.63, and 0.52 respectively.

DISCUSSION

The low performance of the ACS-NSQIP calculator depends both on the incorporation of several acute onset events, which usually are absent in the setting of hepatectomy for liver tumors, and on the absence of organ-specific risks. In the case of hepatectomy, the incorporation of determinants of post-hepatectomy liver insufficiency and bile leak might improve the predictive capacity of the calculator.

CONCLUSION

The ACS-NSQIP calculator underestimates the actual risks of hepatectomy for liver tumors giving an optimistic estimation of complications, mortality and LOS. Refinements of the ACS-NSQIP risk model that account for organ-specific risks should be considered.

27] Validation of novel technique in 3d printed hepatic model in hepatobiliary surgery: a pilot study "liv3dprint"

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BACKGROUND & AIMS

Three-dimensional (3D) printing has gained popularity in medicine in the last decade. The true strength of this technique has been recognized due to its ability to obtain anatomical models based on the unique characteristics of each patient. Hepatobiliary resections are challenging operations due to the complex nature of the liver anatomy, so 3D printing is a promising tool for surgical planning.

STUDY DESIGN

Multicenter study in patients with complex hepatic tumors (bilobar disease, infiltration of suprahepatic or portal veins and involvement of the hepatic hilum). A CT and/or MRI was performed preoperatively for tumor distribution, volume of the hepatic remnant and relationships with vessels. Subsequently, a 3D printing model was made based on 3D digital image reconstruction (3D Model for Surgery Planning "3D-MSP", Cella Medical Solutions   ). The primary endpoint was the validation of the 3D printing model in surgical planning according to the degree of correlation with the intraoperative findings. Other secondary endpoints were coefficients of similarity between hepatobiliary surgeons and utility for medical students and surgical residents teaching. The study was registered in Clinicaltrials.gov (NCT03416387).

STATISTICAL ANALYSIS

The coefficient of similarity Dice (DSC) was used for the comparison of the radiological images and the printed model. The coefficient of Jaccard was used for the coefficients of similarity between the specialists neglecting coincidences of the type error/error in the answer. For the teaching evaluation we used statistics of success rate per question and comparison between models (comparison of means or success rates).

RESULTS

Thirty-five patients from 6 centers were included (17 very large tumors/vessels proximity, 9 bilobar colorectal liver metastases and 9 perihilar colangiocarcinomas). The DSC coefficient of the 3D virtual model with respect radiological images was 0.92

with a variation of 2% for distance and volume measurements between 3D printing model and radiological images. Professionals considered 3D printing model with a positive rate of 0.8 that increases to 0.97 including neutral positions (Figure 2). In general, medical students and surgical residents success rates were significantly higher in the 3D printing model compared to the other models ($p < 0.01$) (Figure 3).

DISCUSSION

3D printing in liver surgery is a promising new tool for surgical planning. This technique facilitates the identification of tumor relationships with vascular structures and specific tumor extension allowing interactive manipulation and simulating intraoperative mobilization. When analyzing the cases, the usefulness of these models was highlighted for the cases of multiple lesions, suspected infiltration of suprahepatic veins and klatskin tumors, although this last group presented the highest degree of dissociation. 3D printing was the best method for medical students and surgical residents for the understanding of surgical liver anatomy.

CONCLUSION

3D printed hepatic model into complex hepatobiliary surgery validate an improvement in surgical planning and educational comprehension in surgical liver anatomy.

28] Incidence and predictive factors for poor pathological outcome after Transanal Total Mesorectal Excision for rectal cancer

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BACKGROUND & AIMS

Transanal total mesorectal excision (TaTME) has the potential to improve the oncological quality of rectal cancer surgery. Evidence on predictive factors for poor pathological outcomes after TaTME is scarce and might differ from those after laparoscopic surgery. This study aimed to determine the incidence and predictive factors for poor pathological outcomes after TaTME for rectal cancer.

STUDY DESIGN

This was a prospective registry based study. All cases on the international TaTME registry between July 2014 and January 2018 were analyzed. Endpoints were the incidence of poor pathological outcomes, defined as the composite of a positive resection margin and/or poor TME quality and/or rectal perforation. Predictive factors for poor pathological quality were then assessed by formulating a predictive model.

STATISTICAL ANALYSIS

Univariate and multivariate logistic regression with backward step selection was done after exclusion of patients in which data on pathological outcomes were missing.

RESULTS

In total, 2656 TaTME cases were included in this analysis, of whom 68.9% (n=1829) were male and 60.0% (n=1452) had BMI of >25 kg/m². Tumour was located up to 1 cm from the anorectal junction (ARJ) in 19.7% (n=524), and anteriorly located in 44.5% (n=1182). Preoperative staging showed cT1 in 2.9%, cT2 in 23.2%, cT3 in 57.8%, and cT4 in 5.5%. A threatened mesorectal fascia on baseline MRI was identified in 25.5% (n=676). Neoadjuvant therapy was given in 59.1% (n=1571). The incidence of poor pathological outcome was 8.5% (n=227). In multivariate logistic regression analysis, poor pathological outcome after TaTME was independently associated with tumour located up to 1 cm from anorectal junction (OR 1.9; 95% CI, 1.2 to 3.0; p=0.006), anterior tumour location (OR 1.5; 95% CI, 1.0 to 2.3; p=0.046), cT4 tumour (OR 2.1; 95% CI, 1.1 to 3.8; p=0.012), and tumours >30 mm on pathological evaluation (OR 1.9; 95% CI, 1.2 to 2.9; p=0.003). EMVI on MRI was present in 33.8% of the patients (OR 1.5; 95% CI, 0.9 to 2.3; p=0.051). No patient-related factors were associated with a poor pathological outcome. The area under the curve in this prediction model was 0.757.

DISCUSSION

Predictive factors for poor pathological outcome after TaTME were only tumour characteristics. Patient-related factors, such as gender and BMI, known to pose greater technical difficulty in a conventional approach solely from above, do not influence the pathological outcome after TaTME. Knowledge of these predictive factors will help guide patient selection and enhance a tailored treatment approach to optimize oncological outcome.

CONCLUSION

TaTME provided an acceptable rate of poor pathological outcome in this study. Predictive factors were limited to tumour-related factors. On behalf of the International TaTME Registry Collaborative

29] Deportalized lobe during ALPPS technique could interfere in the liver regeneration of the future liver remnant

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BACKGROUND & AIMS

Since the beginning of ALPPS, all efforts have been made to study the mechanisms that drive liver regeneration at the future liver remnant (FLR) assuming that the deportalized lobe did not interfere in such regenerative progression.

It is accepted that a compensatory flow increase of the right hepatic artery occurs, however, molecular biology changes produced by ALPPS are not well characterized in humans and are still a mystery for most authors.

The aim of this study is to analyze the main molecular events after Tourniquet-ALPPS, to understand the influence of the deportalized lobe on liver function in order to avoid post hepatectomy liver failure (PHLF).

STUDY DESIGN

Between September 2011 and July 2018, 61 patients underwent Tourniquet-ALPPS. In 31 patients (50.82%), samples of the FLR (A samples) and deportalized lobe (B samples) were obtained prior to ALPPS (control samples), 30 minutes and 60 after Tourniquet-ALPPS) and 10 days later, at stage 2, before hepatectomy.

Samples were fixed in RNA and processed for molecular studies. Real-time PCR was performed to determine the expression of growth factors (HGF, VEGF, EGFR, TGF- β) and HGF receptors (cMET), inflammatory factors (IL-6, TNF- α , IL-1, Casp-1), cell cycle regulators related with hepatocyte regeneration (Stat-3, Eno-1, Lef-1, Cyclin D1), apoptotic (Bax, Dapk-3, Casp-3) and hypoxic (Hif1 α , iNOS) genes

STATISTICAL ANALYSIS

For data comparison, a Wilcoxon test was performed as the lack of normality of the data. Metric data was expressed as median and range, with a significant p value for <0.05.

RESULTS

An increase of proinflammatory factors (IL-6, TNF- α , IL-1, Casp-1) at both hemilivers after Tourniquet-ALPPS was observed. At Stage 2, this inflammatory state returns to baseline levels, except Casp-1 (Figure 1).

During Stage 1, at the left lobe, Hif1 α ($p=0.003$), HGF ($p=0.003$), c-Met ($p=0.013$) and VEGF ($p=0.006$) increased significantly, whereas there was no increase of these factors at the right lobe.

Ten days after the procedure (during Stage 2), at the left lobe the levels of HGF remained not significantly elevated, but other growth factor (EGFR, $p<0.001$) shows higher levels ($p<0.001$) (Figure 2). However, the deportalized lobe displays a different response, showing higher HGF ($p=0.003$) and also higher Hif1 α ($p=0.005$). The rest of proliferation factors do not increase significantly at this lobe (Figure 2).

DISCUSSION

Both hemilivers respond differently to ALPPS proliferative stimuli. Left lobe shows a higher increase of proregenerative factors after Tourniquet-ALPPS that lead to hepatocitary hyperplasia and liver regeneration. The right lobe performs distinctly, with a higher level of HGF and Hif1 α at Stage 2. This surprising response could be related to an attempt to regenerate after deportalization. If this means right lobe strives for regeneration and competes for the liver function, this could be related with PHLF.

CONCLUSION

ALPPS causes a regenerative response affecting the whole liver (FLR and deportalized lobe), in which the hypoxia may have a key role. The deportalized liver may try to regenerate as it still receives arterial Flow. This fact may affect the results of ALPPS technique, increasing the risk of PHLF or tumor proliferation.

30] Pelvic Exenteration for Advanced Pelvic Neoplasms: Results from the PelvEx Collaborative

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BACKGROUND & AIMS

The PelvEx Collaborative was established to provide large volume “real-world” data regarding a relatively uncommon procedure from specialist centres across the world to ascertain factors associated with improved outcomes. Already this collaborative has reported outcomes following exenteration for locally advanced and locally recurrent rectal cancer. The aim was to determine factors associated with surgical and survival outcomes following pelvic exenteration for advanced pelvic neoplasms from a large international collaboration

STUDY DESIGN

Consecutive patients who underwent pelvic exenteration for advanced non-rectal pelvic neoplasms (locally advanced and recurrent cancers) between 2006-2017 were identified from a large collaborative group comprising of twenty-two tertiary centers. The primary endpoints were overall survival and surgical outcomes.

STATISTICAL ANALYSIS

Data were analyzed using Statistical Package for the Social Sciences (SPSS). Descriptive analysis was undertaken to report variable frequencies. Differences between patient groups were evaluated using the Chi-squared (χ^2) test (for categorical variables), or Student's t-test, and the Mann Whitney U test as appropriate. Reported intergroup comparisons were significant at the 5% level ($p < 0.05$). Survival was estimated by the Kaplan-Meier method, and group differences were assessed with the log-rank test for

statistical significance. The duration of survival for each case was defined as the time from the month of surgery to either the month of death or to 31stDecember 2017. Cox proportional hazards model was used to estimate hazard ratio (HR) for death in relation to age, receipt of neoadjuvant therapy, margin status, and perioperative complication. Factors significantly associated with survival on univariable analysis were included in multivariable analyses.

RESULTS

1,293 patients were identified. 40.4% (n=523) for gynecological malignancies (endometrial, ovarian, cervical and vaginal), 35.7% (n=462) for urological malignancies (bladder), 18.1% (n=234) for anal malignancy and 5.7% for sarcoma (n=74). The median age across the cohort was 63 years (range, 23-85). The 30-day mortality rate was 1.7% across the cohort, with the highest occurring in those having a sarcoma resection (3.9%). The median length of hospital stay was 17.5 days. 31.7% of patients experienced a >Grade 2 Clavien-Dindo complication. The complication rate was highest following salvage surgery for anal cancer. Negative margin (R0) was achieved in 76% of cases with the lowest rates in the sarcoma and ovarian cancers groups (p=0.004). The 5-year overall survival rates for R0 resection for endometrial, ovarian, cervical, vaginal, bladder, anal, and sarcoma neoplasms were 38%, 40.2%, 37.6%, 37.7%, 34.8%, 39.3%, and 38% respectively. Multivariable analysis showed R0 resection was the main factor associated with long-term survival. Neoadjuvant therapy was associated with improved survival in cervical, endometrial, and ovarian neoplasms. Complications had no effect on long-term outcomes.

DISCUSSION

Pelvic exenteration remains an important treatment in select cases of locally advanced and recurrent pelvic neoplasms. 5-year overall survival ranges 34-40% following R0 resection for non-rectal neoplasms. This study highlights that pelvic exenteration performed in specialist units is associated with acceptable morbidity and low re-intervention or mortality rates

CONCLUSION

Pelvic exenteration with clear margins offers the best chance of long-term survival for advanced pelvic cancer. The diversity of tumour types underlines the heterogeneity of neoadjuvant treatment responses.

31] Variation in the use of resection for colorectal cancer liver metastases

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BACKGROUND & AIMS

In England, approximately 20% of the 35,000 people diagnosed with colorectal cancer annually have metastatic disease at presentation and up to 50% subsequently go on to develop it during the course of their illness. At least 15-20% of patients with metastases in the liver may be eligible for potentially curative liver resection. This population-based study aims to identify whether practice has changed since previous research, which highlighted significant variation in access to liver resection for patients with colorectal cancer liver metastases (CRCLM) between hospitals across the English NHS. Understanding and addressing the underlying reasons for variation in the decision-making process around eligibility for referral to a specialist liver team and resection has the potential to improve outcomes.

STUDY DESIGN

All adults who underwent a major resection for colorectal cancer in an English NHS hospital between 2005 and 2012, were identified in the COLORECTal cancer data Repository (CORECT-R) in this retrospective study. All episodes of care, which occurred within three years of the initial bowel operation, corresponding to liver resection were identified in order to investigate factors affecting the frequency of resection.

STATISTICAL ANALYSIS

Multi-level logistic regression was used to determine factors associated with the use of resection for CRCLM. Explanatory variables in the risk-adjusted model were age at resection, sex, Index of multiple deprivation (IMD) quintile, tumour site, year of primary major colorectal resection, Charlson comorbidity score, stage at diagnosis, and whether the hospital had an onsite specialist liver team. Funnel plots were constructed to show the variation across hospitals and Cancer Alliances.

RESULTS

During the study period 157,383 patients were identified as undergoing major resection for a colorectal tumour, of whom 7,423 (4.7%) underwent one or more liver resections. The resection rate increased from 4.1% in 2005, reaching a plateau around 5% by 2012. There was significant variation in the rate of liver resection across hospitals (2.1-12.2%, Figure 1) and Cancer Alliances (4.1-7.0%). Women, more deprived, more comorbid and older patients were all less likely to receive liver resection, as were those with right-sided primary colorectal tumours. Patients with synchronous metastases who have their primary colorectal resection in a hospital

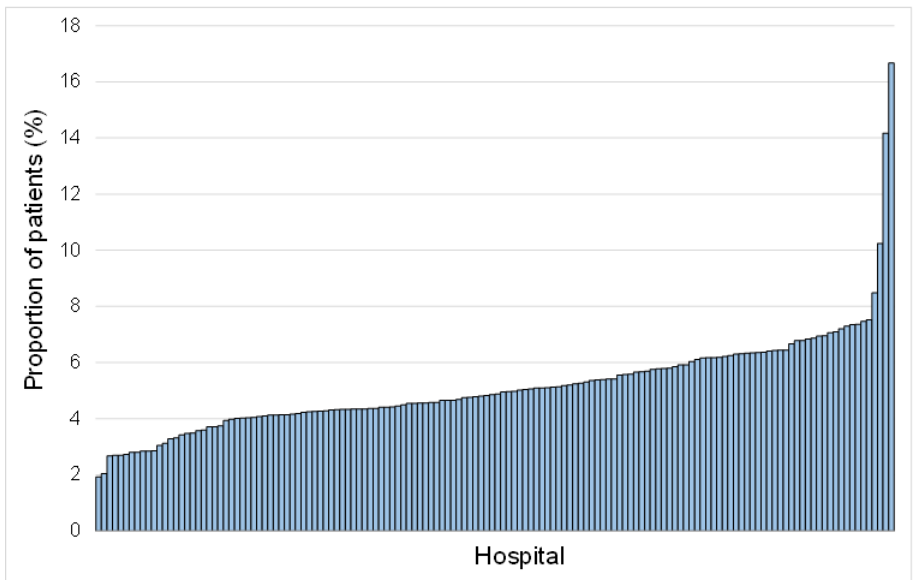
with an onsite specialist hepatobiliary team were more likely to receive a liver resection (OR 1.22 CI 1.10-1.35) than those treated in one without. This effect was absent for those diagnosed with Stage I-III disease. The proportion of those with synchronous metastases who received liver resection surgery increased from 15% in 2005 to 21% in 2012.

DISCUSSION

A large degree of variation is still present in the rates of resection by hospital and Cancer Alliance, even following adjustment for case-mix. This suggests that inequities in access to treatment for patients with CRCLM still exist, based on proximity to a specialist liver centre.

CONCLUSION

This study presents the largest reported population based analysis of liver resection rates in CRC patients. Significant variation has been observed in patient and hospital characteristics and the likelihood of patients receiving a liver resection, with the data showing that proximity to a liver resection service is as important a factor as social deprivation. Understanding the reasons for variation in likelihood of resection has a significant potential to improve patient outcomes.



32] Outcomes of Anastomotic Techniques in Total Minimally Invasive Transthoracic Esophagectomy: A Multi-Center Cohort Study

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BACKGROUND & AIMS

Different anastomotic techniques (AT) are currently used for esophago-gastric reconstruction after total minimally invasive transthoracic esophagectomy (ttMIE). The impact of AT on postoperative anastomotic leakage rate (ALR) and associated morbidity after ttMIE remains unknown.

STUDY DESIGN

The basic dataset consisted of 1053 patients after ttMIE, collected over a 5-year period from 13 international high-volume centers for esophageal surgery. Unspecified anastomotic techniques (n=68), benign conditions (n=7), and malignant tumors other than adeno- or squamous cell carcinoma (n=12) were excluded from the analysis, resulting in a final cohort of 966 ttMIE patients. Endpoints of this analysis were ALR and postoperative morbidity as measured by the Clavien-Dindo (CD) classification and the Comprehensive Complication Index® (CCI®).

STATISTICAL ANALYSIS

Continuous variables were compared using the Mann-Whitney U test. Categorical variables were compared using the Fischer exact or the Pearson X2 tests, where appropriate. All p values were 2-sided and considered significant if $P \leq 0.05$. Multivariable analysis was calculated with binary logistic regression using the stepwise backward conditional model. Statistical analysis was performed using R version 3.3.2 (R Core Team, GNU GPL v2 License), R studio version 1.0.44 (RStudio, Inc. GNU Affero general Public License v3, Boston, MA, 2016) with the graphical user

interface (GUI) rBiostatistics.com alpha version (rBiostatistics.com, London, UK, 2017).

RESULTS

Overall morbidity was 58.8%, and 30- and 90-day mortality were 2.0 and 5.1%, respectively. Five major AT's were identified: For intrathoracic reconstruction, an end-to-side circular stapled technique was used in 427 patients (double stapling n=90, purse string n=337), and a side-to-side linear stapled technique in 109 patients, respectively. In contrast, cervical anastomoses were fashioned in end-to-side hand sewn (n=175) or side-to-side linear stapled (n=255) techniques. Intrathoracic and cervical AT were similar regarding ALR (15.9% vs 17.2%, p=0.601) and major (CD grade \geq IIIb) complications (21.1% vs. 22.1 %, p=0.753). However, the overall complication rate (56.7% vs. 63.7%, p=0.029) and median 90-day CCI (21 (IQR 0-36) vs. 29 (IQR 0-40)), p=0.019) favored the intrathoracic AT group . ALR was highest after intrathoracic end-to-side double stapling (23.3%) and cervical end-to-side hand sewn (25.1%) anastomoses, and lowest after intrathoracic end-to-side purse string (13.9%) and cervical side-to-side stapled (11.8%) esophago-gastrostomy (p<0.001). Multivariable analysis confirmed the AT being an independent predictor of anastomotic leak after ttMIE.

DISCUSSION

This study evaluates the impact of AT on ALR and postoperative morbidity in a large and homogeneous cohort of patients after ttMIE for esophageal carcinoma. Although ALR was similar in intrathoracic and cervical AT's, the associated morbidity is in favor of the Ivor Lewis procedure. However, intrathoracic AT's which were introduced with the advent of ttMIE are associated with significantly higher ALR, possibly reflecting heterogeneous center experience.

CONCLUSION

Results of this analysis present the current status of a technical development and therefore must be interpreted in consideration of a long learning curve of ttMIE. Clearly structured training curricula are needed to accelerate the learning process of this complex surgical procedure.

33] Palliative gastrectomy for advanced gastric cancer does not result in additional postoperative risks compared to curative gastrectomy

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BACKGROUND & AIMS

Palliative gastrectomy (PG) for gastric cancer can be considered in selected cases to relieve symptoms. The aim of this study was to evaluate postoperative morbidity and mortality in patients that underwent PG for gastric cancer and to compare these results with an intended curative gastrectomy (CG).

STUDY DESIGN

All patients undergoing gastrectomy for gastric cancer in the Netherlands are registered in the Dutch Upper GI Cancer Audit. Between 2011-2016, patients who underwent both palliative and curative gastrectomy were included from this audit. In this population-based cohort study postoperative morbidity, mortality, readmissions and short-term oncological outcomes were appraised.

STATISTICAL ANALYSIS

Propensity score matching (PSM) was applied to create comparable groups of patients that underwent PG versus CG, using patient (such as gender, age, Body Mass Index, comorbidities) and tumor (such as cTNM-stage, neoadjuvant treatment) characteristics. Categorical parameters were compared using the Chi-square test (or Fisher's Exact test in case of expected counts less than 5), and for continuous variables the student's t-test was used. For variables with a non-parametric distribution logarithmic transformation was applied.

RESULTS

Of the 2202 eligible patients, 115 patients underwent PG and 2087 CG. After PSM, 227 CG-patients were matched to 115 PG-patients. More conversions from laparoscopic to open surgery occurred during PG (11% vs. 3%, $p=0.007$). Although postoperative mortality was higher after PG in the original cohort (10% vs. 5%, $p=0.026$), after PSM there was no difference between groups (10% vs. 7%, $p=0.415$). Postoperative morbidity, re-interventions and readmission rates did not differ significantly between groups. Resection of additional organs (30% vs. 12%, $p<0.001$) and irradical resections (65% vs. 12%, $p<0.001$) occurred more frequently during PG, whereas less lymph nodes were resected (15 vs. 19 nodes, $p<0.001$).

DISCUSSION

Performing PG is often debatable. Possible disadvantages of performing PG are the controversial survival benefit and the previously reported high morbidity and mortality rates. After propensity score matching, the current results demonstrate that these rates are comparable to a curative group with similar characteristics, representing frail patients. Main arguments in favor of performing PG are that PG could lead to improved quality of life due to resolution of bothersome symptoms, increased survival (although this is still being investigated by randomized trials) and prevention of further surgery due to tumor-related complications.

CONCLUSION

Although postoperative mortality after PG was higher in the original cohort, PG does not lead to additional postoperative morbidity compared to CG in patients with similar patient and tumor characteristics (after PSM). This might suggest that PG could be considered more often in symptomatic patients deemed fit enough for surgery. However, randomized trials evaluating potential (survival) benefits of PG in selected patients should be awaited.

34] Increased and safe utilization of high-risk donor livers for transplantation after ex situ resuscitation and assessment using combined hypo- and normothermic machine perfusion

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BACKGROUND & AIMS

Background and aims: Despite persistent donor organ shortage, a high number of livers is currently not used for transplantation because the risk of primary non-function (PNF) and/or biliary complications is considered too high. We aimed to increase the number of transplantable livers by resuscitating and assessing hepatobiliary viability of previously declined high-risk livers using a protocol of end-ischemic sequential ex situ hypothermic and normothermic machine perfusion.

STUDY DESIGN

Study design: In this prospective clinical trial, all nationwide declined livers were eligible for inclusion. The perfusion protocol consisted of one hour oxygenated hypothermic (10°C) perfusion, followed by one hour of controlled rewarming, and subsequent normothermic machine perfusion (NMP). A novel perfusion fluid based on a hemoglobin-based oxygen carrier was used for all temperature phases. During the first 150 min of NMP, viability of the liver and biliary tree was tested, using the following criteria: perfusate lactate <1.7mmol/L, pH 7.35-7.45, cumulative bile production >10mL and biliary pH>7.45. Primary endpoint was safety and feasibility, as reflected by a 3-months graft survival rate of at least 80%. Secondary endpoints were patient survival rate, incidence of PNF, early allograft dysfunction (EAD), and biliary complications.

STATISTICAL ANALYSIS

Statistical analysis: The trial protocol was published in the Netherlands trial registry (www.trialregister.nl; NTR5972). Characteristics of livers that were secondary accepted or declined after NMP were compared using Chi-square test for categorical variables and Mann-Whitney test for continuous variables (median and IQR).

RESULTS

Results: Between August 2017 and October 2018, 31 nationwide declined livers were offered for inclusion in the study. Fifteen livers did not undergo machine perfusion because the organ was macroscopically fibrotic/cirrhotic/severely damaged upon procurement (n=5), there was no matching recipient that gave informed consent (n=5), or there was no perfusion capacity (n=5). The remaining 16 livers underwent machine perfusion after an average of 288 (241-480) min of cold preservation. All livers were derived from donation after circulatory death donors, with a median age of 63 (range 42-82) years. During NMP, all livers cleared lactate and produced sufficient bile volume, but in 5 cases biliary pH remained <7.45. The 11 (69%) livers that met all viability criteria were successfully transplanted, resulting in a 20% increase in the number of deceased donor liver transplants. There was no case of PNF. One patient developed EAD based on an elevated AST peak. The same patient developed post-transplant cholangiopathy one month after transplantation. During NMP, this liver had temporarily produced bile with pH>7.45, but this was likely caused by a concomitant alkalotic perfusate. Since this procedure, we have used the difference between perfusate and bile pH as viability/selection criterion. All recipients were alive 3-months after transplantation. Comparison of secondary declined or accepted livers revealed donor hepatectomy time (70 [44-93] min vs. 44 [28-54] min; p=0.04) and cold ischemia time (326 [286-480] min vs. 270 [241-294] min; p=0.02) as the only significant variables.

CONCLUSION

Sequential hypo- and normothermic machine perfusion enables resuscitation and selection of initially declined high-risk donor livers. This method offered a valuable tool to safely increase the number of transplantable livers by 20%.

35] Total versus near-total thyroidectomy in Graves' disease – Results of the randomized controlled multicenter TONIG-trial

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BACKGROUND & AIMS

Previous data suggest that the incidence of hypoparathyroidism after surgery of Graves' disease is significantly lower after near-total thyroidectomy (NTT) compared to total thyroidectomy (TT). Therefore, the study evaluated the incidence of hypoparathyroidism in Graves' disease after NTT compared to TT.

STUDY DESIGN

The study was designed as a multicenter prospective randomized controlled clinical trial with intervention group NTT and active control group TT on the basis of critical appraisal of current evidence. Patients with Graves' disease scheduled for surgery according to the German national S2-guideline were randomized intra-operatively to NTT with a defined total remnant of less than 1g on each side or TT. Primary endpoint was the incidence of transient hypoparathyroidism within 6 weeks after surgery. Secondary endpoints were permanent hypoparathyroidism, recurrent laryngeal nerve palsy, reoperations due to bleeding, recurrent disease, changes of endocrine orbitopathy (EO) and quality of life six weeks after surgery. The trial was registered in the German clinical trials register (DRKS) DRKS00004161.

STATISTICAL ANALYSIS

Based on published evidence, a reduction in the incidence of transient hypoparathyroidism from 28% after TT to 12% after NTT was assumed. Accounting for 5% drop-out, the planned sample size of 205 patients achieves a power of 80% in a 2-sided chi square test with significance level 0.05. Confirmatory analysis of the primary endpoint used a logistic regression of transient hypoparathyroidism on randomized allocation adjusted for age (<45 vs ≥45 years) in keeping with the protocol.

RESULTS

Eighteen participating centers randomized 205 patients to either TT (n=102) or NTT (n=103) between 09/2015 and 01/2017. Seven of 103 (7%) patients in the NTT group resp. 1 of 102 (1%) patients in the TT group did not receive the randomly allocated intervention, because of intraoperative technical problems. According to intention to treat postoperative transient hypoparathyroidism occurred in 20 (19%) patients after NTT and in 21 (21%) patients after TT ($p = 0.84$). The hypoparathyroidism persisted >6 months in 2.4% (2 of 85) in the NTT and 3.6% (3 of 83) in the TT group ($p = 0.59$). The rates of parathyroid autotransplantation were similar in both groups (NTT 24% vs. TT 28%, $p = 0.50$). The rate of transient RLNP with regard to the nerves at risk was similar in both groups (NTT 3.5% vs. TT 2.5%, $p = 0.54$). The rate of reoperations for postoperative bleeding tended to be higher in the NTT group (3% vs. 0%, $p = 0.07$). After 12 months Graves' disease recurred in only one patient who underwent TT. An existing EO (n = 49) improved in 35.7% (10 of 28) patients in the NTT and 14.3% (3 of 21) patients in the TT group. The median SF-36 physical and mental health summary scores 6 weeks after surgery were similar (52 and 47 in the NTT vs. 51 and 52 in the TT groups, $p = 0.73$ and $p = 0.96$).

DISCUSSION

NTT did not show any benefit regarding the incidence of postoperative transient hypoparathyroidism compared to TT. NTT was in some cases technically demanding resulting in conversion to TT and the risk for postoperative bleeding tended to be higher.

CONCLUSION

NTT for Graves's disease is not superior to TT regarding short term outcome, especially postoperative hypoparathyroidism.

36] Does artery first approach improve the rate of R0 resection in pancreatoduodenectomy? A randomized, prospective Multicenter study

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BACKGROUND & AIMS

Surgery offers the only possibility for long-term survival in patients with pancreatic cancer. Even after curative resection, however, most patients recur and die within two years. An ongoing concern surrounding standardized histological examination pancreatoduodenectomy (PD) specimens is that most pancreatic resections thought to be R0 resections were, in fact, non-oncological, with surgical pathology rates of R1 >70-80%. “Artery-first approach” (AFA) is a technique for early evaluation of main arterial vasculature involvement before irreversible surgical steps are performed. It is characterized by meticulous dissection of arterial planes and clearing of retropancreatic tissue to achieve a higher rate of R0. To date, studies comparing AFA versus standard (ST) PD are retrospective cohort or case-control studies. This study represents the first randomized, prospective, multicenter (RPM) trial that aims to compare rates of R0 resection in ST-PD versus AFA-PD.

STUDY DESIGN

A RPM trial was conducted in ten University Hospitals (NCT02803814, ClinicalTrials.gov). Eligible patients presented pancreatic head adenocarcinoma and periampullary tumors (ampuloma, distal cholangiocarcinoma, duodenal adenocarcinoma). Assignment to each group (ST-PD or AFA-PD) was randomized by blocks and stratified by centers. Assignment envelopes were opened in the operating room. The primary end-point was the rate of disease-free resection margins (R0);

secondary objectives were postoperative complications and mortality. A clinically significant decrease from 50% R1 resection rate with ST-PD to 25% with AFA-PD was estimated. Aiming for 5% significance and 80% power levels and considering a 20% drop-out rate, it was calculated that a total of 140 patients (70 in each arm) should be included.

STATISTICAL ANALYSIS

Between 01/2016 and 12/2017, 179 patients were assessed for eligibility and 176 randomized: 87 patients to ST-PD and 89 to AFA-PD. After exclusions, the final analysis included 75 ST-PD and 78 AFA-PD. R0 resection rates were 77% (CI: 68-87) with ST-PD and 68% (CI: 58-79) with AFA-PD, P=0.19. There were no significant differences in postoperative complication rates: overall 73 vs. 68%, Clavien-Dindo ≥ 3 24 vs. 21%, hemorrhage 11 vs. 10%, pancreatic fistula grade B-C 16 vs. 10%, delayed gastric emptying 17 vs. 18%, biliary fistula 5 vs. 4%, intraabdominal abscess 23 vs. 22%, diarrhea 4 vs. 8%, reoperation 7 vs. 6%, readmission 16 vs. 6%, and perioperative mortality 4 vs. 6%. Perioperative blood loss was not different: 304 \pm 408 mL vs. 345 \pm 304 mL. Even when evaluating only cases of pancreatic head adenocarcinoma (N=89: 38 ST-PD and 51 AFA-PD), differences in R0 resection rates did not vary: 58% (CI: 44-76) with ST-PD vs. 59% (CI: 47-74) with AFA-PD.

CONCLUSION

Despite theoretical oncological advantages associated with AFA-PD and evidence coming from low-level studies, this randomized, prospective, multicenter trial has found no difference in rates of R0 resection for patients undergoing ST-PD versus AFA-PD for pancreatic head adenocarcinoma and other periampullary tumors.

37] Penetrating Crohn's disease is not associated with a higher risk of recurrence after surgery: a prospective nationwide cohort conducted by the GETAID chirurgie group

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BACKGROUND & AIMS

Recurrence rate after ileocolonic resection for Crohn's disease (CD) can reach 60%, but its predictive factors have never been evaluated in large prospective cohort studies. We aimed to assess recurrence risk factors following ICR for CD in a nationwide prospective cohort study.

STUDY DESIGN

From 2013 to 2015, data of 346 consecutive patients who underwent surgery for ileocolonic CD at 19 French academic centers of the GETAID Chirurgie group, specialized in inflammatory bowel disease (IBD) management, were collected in a prospective nationwide database. Inclusion criteria were: age \geq 18 years, elective or emergent CD ileocolonic resection with anastomosis (either during primary surgery or during a secondary stoma take-down), and total ileocolonoscopy performed between 6 to 12 months following surgery.

STATISTICAL ANALYSIS

Endoscopic recurrence was defined as a Rutgeerts score i2. Clinical recurrence was defined by a Crohn's Disease Activity Index score $>$ 150 associated to an endoscopic recurrence i2. Risks factors of endoscopic and clinical recurrences were analyzed using a multivariate Cox regression analysis.

RESULTS

12-month postoperative endoscopic and clinical recurrence rates were 57.6% [95CI: 54.2-61.0] and 11.3% [9-13.6], respectively. A total of 185 patients (54%) had a postoperative CD medical prophylaxis, comprising thiopurine in 69 (20%), or anti-TNF therapy in 93 (27%). In multivariate analysis, absence of postoperative smoking (Odds-ratio (OR)=0.61 [0.40-0.93]; $p=0.022$), postoperative medical prophylaxis

(OR=0.57 [0.39-0.85]; $p=0.006$), and B3 disease behavior (OR=0.59 [0.34 0.89]; $p=0.012$) were the only independent predictors of reduced endoscopic recurrence risk. Postoperative medical prophylaxis (OR=0.32 [0.15-0.66]; $p=0.002$), and B3 behavior (OR=0.36 [0.16-0.80]; $p=0.013$), were the only independent predictors of reduced clinical recurrence risk. Postoperative anti-TNF therapy was associated with a significant reduction of both 12-month risks of endoscopic ($p<0.001$) and clinical ($p=0.019$) recurrences.

DISCUSSION

This is a large prospective study which aimed to assess risk factors of postoperative recurrence following surgery for ileal terminal CD among a national expert centers cohort. Our results regarding postoperative CD medical prophylaxis, and especially anti-TNF therapy, are in line with previous randomized trials and confirmed a significant reduction of postoperative recurrence risk. We also one again emphasizes the importance of smoking cessation following CD surgery. On the other hand, we identified B3 (penetrating) behavior to be associated with a lower risk of CD recurrence, as opposed to previous studies and especially a meta-analysis of 12 studies published in 2009. However, these previous studies were impaired by their retrospective nature and by the lack of carefully adjusted analyses, especially regarding postoperative medical CD prophylaxis.

CONCLUSION

This prospective national cohort study suggested that absence of postoperative smoking, CD medical prophylaxis, and B3 disease behavior are the main factors associated with reduced postoperative recurrence following surgery for ileocolonic CD. In these patients, postoperative anti-TNF therapy was the most effective prophylactic medical treatment, significantly reducing both endoscopic and clinical recurrence rates following surgery for ileocolonic CD. These results suggest that upfront surgery followed by postoperative anti-TNF therapy is probably the best therapeutic approach for complex Crohn disease (B3 disease behavior), with low recurrence rate after surgery.

38] Surgical Quality Assurance in Randomised Controlled Trials – Standardisation and Competency Assessment in COLOR III trial

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BACKGROUND & AIMS

Surgical Quality Assurance (SQA) is essential to minimise the effect of heterogeneity of surgical techniques and competencies in surgical randomised controlled trials (RCT) and to aid the interpretation of trial outcomes. Standardisation impacts clinical outcomes, including variation of lymph nodes harvest, in-hospital mortality and locoregional cancer recurrence. Learning curve effect has been described as the most intractable of the obstacles to conducting surgical RCT. COLOR III is an international multicentre, non-inferiority, RCT designed to compare transanal total mesorectal excision (TaTME) with laparoscopic TME for mid and low rectal carcinomas. The primary outcome is 3-year local recurrence and sample size is 1100. TaTME is an innovative procedure and technically challenging. The aim of this study is to develop and implement an objective, and reliable SQA process specific to technical performance and oncological quality in COLOR III.

STUDY DESIGN

A robust 4-round Delphi methodology was applied for standardisation of TaTME with 14 international expert surgeons. Semi-structured interviews were conducted in Round 1; the results were used for hierarchical task analysis (HTA) to identify key steps and qualities of performance. Questionnaires based on HTA were used in Rounds 2, 3 and 4 where each step was rated as mandatory, optional or prohibited (70% agreement level). The mandatory and prohibited steps that achieved consensus were used to develop an operation guide and competency assessment tool (CAT) for assessing surgical performance through video analysis.

STATISTICAL ANALYSIS

To evaluate the acceptability and content validity of TaTME CAT, a 1-day workshop with TaTME surgeons was held; subsequently, the surgeons were invited to analyse

20 unedited videos to test the inter-rater and inter-item reliability; generalisability theory was applied using G-string IV software.

RESULTS

Response rate was 96.4% across the 4-round Delphi process. 93 surgical steps were identified; 83.4% reached agreement level. TaTME was broken down into 9 main steps: transabdominal set-up, vascular pedicles, mobilisation, transanal set-up and pursestring, rectotomy, posterior TME dissection, anterior TME, lateral TME, and specimen extraction and anastomosis. CAT consists of a matrix of 9 surgical steps and 4 performance qualities: exposure, execution, adverse event and end-product. Acceptability and content validity of CAT were examined with 6 TaTME surgeons; 5 of those independently completed 20 videos assessments. With 36 components of TaTME CAT (9 steps x 4 qualities), 3600 data points were collected with 19 missing data. The overall G-coefficient was 0.883. Inter-rater and inter-item reliability were 0.883 and 0.986 respectively. Inter-rater reliability within each step ranged from 0.772 to 0.972.

DISCUSSION

To enter the trial, two full-length unedited TaTME and 1 lap TME videos are submitted by each participating center and assessed by two independent assessors using CAT. There are 8 recruiting centres across 3 continents; a secure COLOR III online platform was constructed to facilitate SQA including the assessment of operative videos and monitoring.

CONCLUSION

We have applied a rigorous iterative approach to develop a robust, objective, and reliable SQA process within a large international multicentre RCT. This approach included the standardisation of the interventions via expert consensus and the development of a valid and reliable competency assessment tool.

39] Failure to rescue following laparoscopic or open proctectomy for rectal cancer : nationwide study of 44,536 patients

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BACKGROUND & AIMS

There are growing evidences that failure to rescue (FTR) is an important factor of postoperative mortality (POM) after rectal cancer surgery. However, the impact of laparoscopy on FTR after proctectomy for rectal cancer remains unknown. The aim of this study is to compare the rates of postoperative complications and FTR after laparoscopic vs open proctectomy.

STUDY DESIGN

Data were extracted retrospectively from the French national administrative database for hospital care (Programme de Médicalisation des Systèmes d'Information (PMSI)). All patients who underwent proctectomy for rectal cancer between 2012 to 2016 were included. Patient condition was assessed on the basis of the validated Charlson Comorbidity Index (CCI) and patients were stratified into 3 groups according to the CCI score (0-2, 3, and ≥ 4). FTR was defined as the 90-day POM rate among patients with major complications. We considered a complication as major if the patient required readmission to the Step down care unit, if the patients required critical care in the intensive care unit or required reoperation.

STATISTICAL ANALYSIS

Qualitative variables were expressed as percentages and the chi-square was used to compare categorical data. We performed uni and Multivariable analysis to identify factors independently associated with FTR.

RESULTS

Overall, 44536 patients who underwent proctectomy were included, 7043 of whom (15.8%) developed major complications. The rate of laparoscopic procedure was 61% vs 39% for open. The proportion of patients with postoperative complications was similar among those who underwent laparoscopic proctectomy compared to patients who underwent open proctectomy (53% vs 52%). However, the rate of major complications was significantly higher in open compared to laparoscopic procedure (19.1% vs 13.6%; $p < 0.001$). The overall 90-day POM was 3.5% and varied significantly with surgical approach (5.4% and 2.3% respectively for open and laparoscopy). The rate of FTR was 10.8% and increased significantly after open compared to laparoscopic proctectomy (13.6% vs 8.6%; $p < 0.001$). FTR for shock was the highest of all complications (27%), followed by neurologic (19.3%) and cardiac complications

(18%). Multivariable analysis showed that age, CCI, hospital volume and surgical approach were predictive factors for FTR. Open proctectomy was found to be a risk factor for POM (OR=1.55, IC95%[1.382 ; 1.743], $p<0.001$) and FTR (OR=1.47, IC95%[1.236 ; 1.749], $p<0.001$) compared to laparoscopic procedure.

DISCUSSION

Laparoscopy is associated with the lower rates of FTR after proctectomy for rectal cancer. This is attributed to lower rates of major complications in laparoscopic group. Another reason is that minimally invasive technique has fewer abdominal trauma and surgical stress response than open procedure. In our knowledge, this is the first description of correlation between FTR and surgical approach in rectal cancer surgery.

CONCLUSION

When complications occurred, patients with open proctectomy were more likely to die. Selecting laparoscopic proctectomy for rectal cancer patients might reduce FTR rates.

40] Defining Benchmark Outcomes for ALPPS

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BACKGROUND & AIMS

The “Associating Liver Partition and Portal vein Ligation for Staged hepatectomy” (ALPPS) procedure is a recently developed approach of two-stage hepatectomy to remove unresectable primary or secondary liver tumors. While gaining increasing acceptance by many teams, this procedure has been criticized for safety issues with high variations in the reported morbidity and mortality rates depending on patient, disease, and technical characteristics, and importantly center experience. No reference values for relevant outcome parameters are, however, available for ALPPS with only information from earlier observational studies suggesting poorer outcome in low volume centers, in patients > 67 years of age, and diseases other than colorectal metastases.

STUDY DESIGN

By November 2016, 859 patients were registered in the International ALPPS registry and each patient was screened for eligibility for the benchmark study. Selection criteria for optimal outcome, namely benchmark cases, included four parameters: a) Centers having performed at least 30 cases, b) patients younger than 67 years of age, c) operated for colorectal metastases only, and d) no simultaneous abdominal procedures (Figure 1). Each center was contacted to provide additional in-hospital and follow-up data for each patient to optimize accuracy of the data collection, particularly to calculate the Comprehensive Complication Index (CCI[®]). This study received approval by the scientific committee of the International ALPPS.net registry.

STATISTICAL ANALYSIS

Consistent with the previous benchmark studies, we first calculated the median values of continuous parameters and the proportions of categorical variables for each participating center. After calculating the median and interquartile range (IQR) of the center specific values, the 75th percentile was chosen as the benchmark value (Figure 2). Statistical analysis was performed using R.

RESULTS

111 (13%) of all 859 ALPPS patients from 7 high volume centers met the inclusion criteria as “benchmark” cases, with a median age of 57 (IQR 47-61) years, 37 (33%) were females. Eleven benchmark values were calculated with figures as follows: completion of stage 2: $\geq 93\%$, postoperative liver failure (ISGLS-criteria) after stage 2: $\leq 5\%$, ICU stay after ALPPS stage 1 and 2: ≤ 1 and ≤ 2 days, respectively, inter-stage interval: ≤ 16 days, hospital stay after ALPPS stage 2: ≤ 10 days, rates of overall morbidity in combining both stage 1 and 2: $\leq 63\%$ and for major complications (Grade ≥ 3): $\leq 42\%$, 90-day CCI[®] was ≤ 21 , the 30- and 90-day mortality was ≤ 4 and $\leq 5\%$, respectively, the overall 1-year and liver-tumor-free survival was $\geq 91\%$ and $\geq 62\%$, respectively (Table). Of interest, further analysis of mortality revealed a zero percent 90-day mortality in benchmark patients below the age of 55 years (n=45).

DISCUSSION

The lack of reference values for the best achievable results following major surgery has hampered conclusive comparisons over time or with competitive strategies. This is the first study establishing benchmark values after ALPPS, which may serve as reference for evaluating surgical performance among centers (particularly with lower volume), indications, or other competitive surgical procedures and medical strategies.

CONCLUSION

These novel benchmark data indicate that ALPPS may be safely performed in selected patients with non-resectable colorectal metastases. Benchmark cutoffs targeting morbidity and oncologic parameters offer a valid tool to assess high risk groups and may find wide acceptance in daily clinical practice and for future studies.

Figure 1 Flow chart of included patients in the analysis

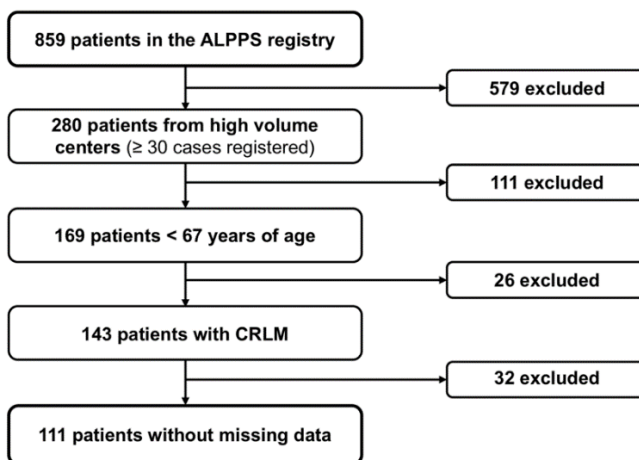
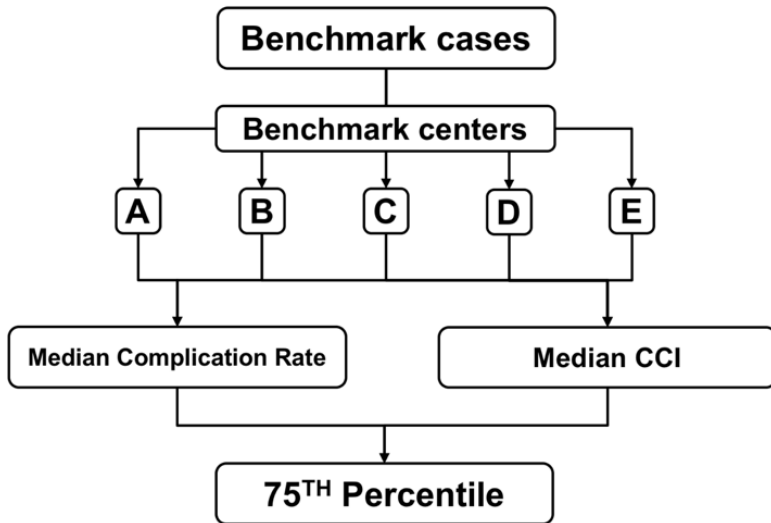


Figure 2 Benchmark process



Table

Benchmark values for ALPPS

Benchmark parameters	Benchmark value estimates
ALPPS stage 2 completion rate*	≥ 93 %
Liver failure rate (ISGLS criteria at POD 5) after Stage 2	≤ 5 %
ICU stay in days after ALPPS stage 1	≤ 1
ICU stay in days after ALPPS stage 2	≤ 2
Inter-stage interval (days from ALPPS stage 1 to 2)	≤ 16
Hospital stay in days after ALPPS stage 2	≤ 10
Complication of any severity rate for both stages	≤ 63 %
Major complication rate (Grade ≥3a) for both stages	≤ 42 %
90-day CCI® for both stages	≤ 21
30-day mortality rate after ALPPS stage 1	≤ 4 %
90-day mortality rate after ALPPS stage 1	≤ 5 %
Overall 1-year survival rate after ALPPS stage 1*	≥ 91 %
1-year liver disease-free survival rate after ALPPS stage 1*	≥ 62 %

* indicates benchmark values derived from the 25th percentile of the center data.

The remaining benchmark values are derived from the 75th percentile of the center data.

Benchmark parameters assessed at 90 days post-ALPPS Stage 1, unless 30 days indicated

ICU: indicates Intensive Care Unit. POD: indicates postoperative day

41] Perioperative interstitial fluid overload predicts major morbidity following pancreatic surgery. Appraisal by bioimpedance vector analysis

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BACKGROUND & AIMS

Peculiar anthropometric features and perioperative excessive hydration have been associated with adverse outcomes after pancreatic surgery. Bioimpedance vector analysis (BIVA) is a reliable tool to assess fat free mass and hydration status. Aim of this study was to evaluate whether perioperative parameters derived from BIVA could predict the occurrence of major complications.

STUDY DESIGN

We prospectively measured BIVA in patients undergoing resection for pancreatic malignancies at 3 Italian institutions on the day prior to surgery and on postoperative day (POD) 1. The bioimpedance vector was plotted together with those of the reference population in a bivariate resistance to reactance graph to describe potential deviations (Figure 1). Intraoperative fluid infusions were provided according to goal-directed-fluid-therapy algorithms and postoperative fluid balance was calculated using the difference between in and out estimates. Postoperative morbidity was scored per the Clavien-Dindo Classification (CDC), the Comprehensive Complication Index (CCI) and the ISGPS classifications.

STATISTICAL ANALYSIS

Nonrandom association was tested using the Fisher's exact χ^2 test for categorical variables and the Student's t test or the Mann-Whitney's U test for continuous data. The Hotelling's T2 test was used for multivariate hypothesis testing on resistance and reactance, given the interdependence of these variables. Correlations between continuous variables were assessed with the Spearman's ρ test.

RESULTS

Two-hundred and forty-nine patients were analyzed. The overall complication rate was 61% (n=152), and 42 patients (16.5%) had a CDC \geq 3. The median CCI was 24 (IQR 0.0-24.2), and 24 patients (9.6%) had a CCI \geq 40, considered as severe complication burden. At baseline the impedance vectors of patients with severe morbidity were shortened compared with the vectors of uncomplicated patients (p=0.018) suggesting fluid overload. The amount of preoperative extracellular water (ECW) was significantly higher in patients who experienced severe morbidity (CDC \geq 3) [median 19.4 L (IRQ 17.5-22.0) vs. 18.2 L (15.6-20.6) in uncomplicated; p=0.009] and

CCI \geq 40 [20.3 L (18.5-22.7) vs. 18.3 L (15.6-20.6) for CCI $<$ 40; $p=0.002$]. Also the hydration status on POD1, measured by total body water, was significantly higher in patients who experienced major complications (at CDC) [23.9 L (20.6-22.5) vs. 19.7 L (17.3-23.1), $p=0.02$] and at CCI (\geq 40) [24.8 L (20.3-26.7) vs. 19.8 L (17.5-23.5), $p=0.002$]. No correlation between ECW and the fluid balance on POD1 was detected ($p=0.215$ Spearman's test). Similar results were obtained for hydration status. At a linear regression model, advanced age ($\beta=0.14$, $p=0.035$), female gender ($\beta=0.40$, $p<0.001$), high BMI ($\beta=0.30$, $p<0.001$) and malnutrition per the ESPEN criteria ($\beta=0.14$, $p=0.037$) were independent preoperative predictors of ECW retention.

DISCUSSION

Perioperative hyperhydration, and excessive extracellular fluid retention significantly predicted major morbidity. Fluid balance seemed inaccurate in estimating hydration status as it disregarded the fluid shift into the interstitial space. Our findings support the previously reported lack of consensus on the effects of perioperative fluid therapy on post-pancreatectomy outcomes. Specific preoperative characteristics of the patient can predict the risk of interstitial fluid overload and may represent a target for potential interventions.

CONCLUSION

Measuring and monitoring hydration status and fluid distribution by BIVA in patients undergoing pancreatic resection add key and previously unexplored elements to predict outcome.

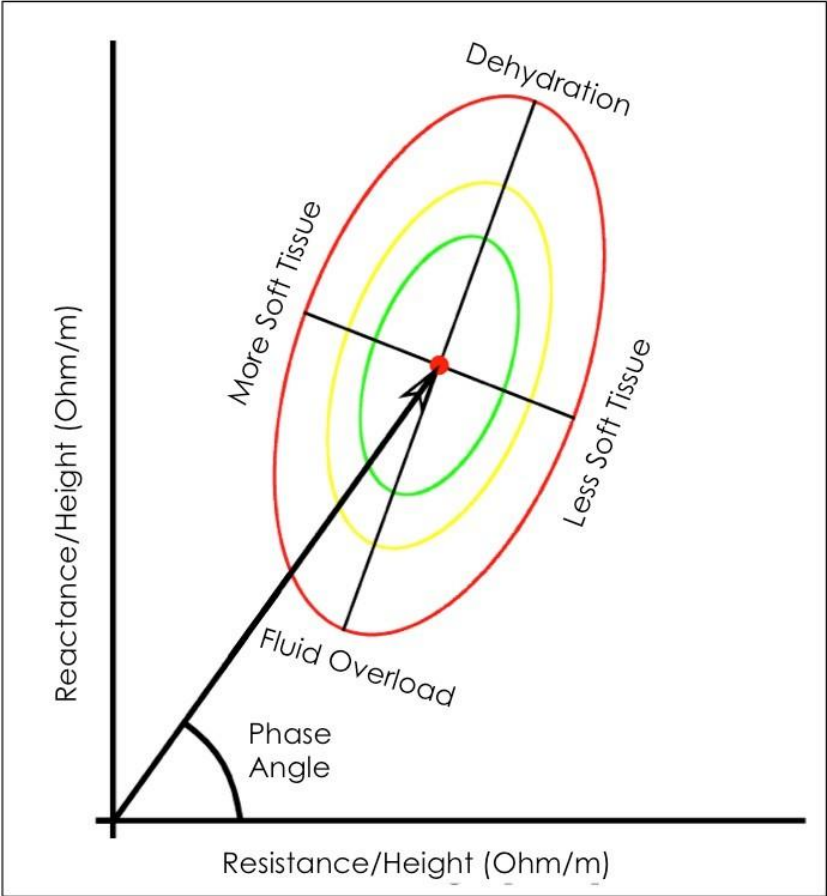


Figure 1

The figure shows the mean bioimpedance vector, together with the 50%, 75% and 95% of the reference population, in green, yellow and red ellipses, respectively.

42] Identification of the clinically most relevant postoperative complications after gastrectomy: a population-based cohort study

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BACKGROUND & AIMS

Postoperative complications frequently occur after gastrectomy for gastric cancer and are associated with poor clinical outcomes, such as mortality and reoperations. The aim of study was to identify the clinically most relevant complications after gastrectomy, using the population attributable fraction (PAF).

STUDY DESIGN

All patients who undergo gastrectomy for gastric adenocarcinoma in the Netherlands are registered in the Dutch Upper GI Cancer Audit. From this audit, all patients that underwent elective, potentially curative gastrectomy between 2011-2017 were included. Postoperative outcomes (morbidity, mortality recovery and hospital stay) were evaluated in this population-based cohort study.

STATISTICAL ANALYSIS

The prevalence of postoperative complications (e.g. anastomotic leakage and pneumonia) and of the study outcomes (i.e. postoperative mortality, prolonged hospitalization, re-interventions, reoperations and readmissions) were calculated. The adjusted relative risk (aRR) and corresponding 95% confidence interval (95% CI) for each complication-outcome pair were calculated. Subsequently, the PAF was calculated, which represents the percentage of all cases of a particular outcome (e.g. mortality) in a population that is caused by a specific complication, taking both the aRR and frequency in which a complication occurs into account.

RESULTS

In total, 2176 patients were analyzed. Pulmonary complications, anastomotic leakage and cardiac complications were the most common complications and occurred in 15%, 7% and 6% of patients, respectively. Anastomotic leakage and pulmonary complications had the greatest overall impact on postoperative mortality (PAF: 29.2% [95% Confidence Interval (CI): 19.3-39.1] and 21.6% [95%CI: 10.5-32.7], respectively) and prolonged hospitalization (PAF: 12.9% [95%CI: 9.7-16.0] and 14.7% [95%CI: 11.0-18.8], respectively). Anastomotic leakage had the greatest overall impact on re-interventions (PAF: 25.1% [95%CI: 20.5-29.7]) and reoperations (PAF: 30.3% [95%CI: 24.3-36.3]). Intra-abdominal abscesses had the largest impact on readmissions (PAF: 7.0% [95%CI: 3.2-10.9]). Other complications only had a small effect on these outcomes.

DISCUSSION

Existing surgical quality improvement programs (such as ERAS) focus on the prevention of pulmonary and infectious complications. However, more attention should be paid to the prevention of anastomotic leakage (e.g. using proctoring programs), since our results show that anastomotic leakage is a big contributor to postoperative mortality, prolonged hospitalization, re-interventions and reoperations.

CONCLUSION

Surgical improvement programs should focus on preventing or managing anastomotic leakage and pulmonary complications, since these complications have the greatest overall impact on clinical outcomes after gastrectomy.

GENERAL INFORMATION

MEMBERSHIP FEE

2019 Annual Membership Fee: **120- €**
Payable to the Administrative Office ESA



UPDATE YOUR ADDRESS

Members are asked to notify the ESA Administrative Office for any change in postal address, phone number, and e-mail address.

>> directly at the congress welcome desks

>> by email at: esa@hopscotchcongres.com

>> by mail at:

European Surgical Association (ESA)
c/o Hopscotch Congrès
23-25 rue Notre Dame des Victoires
75002 Paris
FRANCE

ESA ANNUAL MEETINGS

PAST MEETINGS

1 st	Paris: April 22 nd - 23 rd , 1994	Host:	Henri Bismuth
2 nd	Paris: April 28 th - 29 th , 1995	Host:	Henri Bismuth
3 rd	Paris: May, 3 rd - 4 th , 1996	Host:	Henri Bismuth
4 th	Brussels: April 25 th - 26 th , 1997	Host:	Paul Kinnaert / Toni Lerut
5 th	Milan: April 24 th - 25 th , 1998	Host:	Alberto Peracchia
6 th	London: April 23 rd - 24 th , 1999	Host:	Peter Morris
7 th	Amsterdam: April 14 th - 15 th , 2000	Host:	Hans Jeekel / Hugo Obertop
8 th	Berlin: April 20 th - 21 th , 2001	Host:	Albrecht Encke / Peter Neuhaus
9 th	Lisbon: April 19 th - 20 th , 2002	Host:	Jose Manuel Mendes de Almeida
10 th	Paris: April 11 th - 12 th , 2003	Host:	Henri Bismuth
11 th	Barcelona: April 2 nd - 4 th , 2004	Host:	Laureano Fernández-Cruz
12 th	Stockholm: April 8 th - 9 th , 2005	Host:	Ingemar Ihse
13 th	Zurich: April 7 th - 8 th , 2006	Host:	Pierre-Alain Clavien
14 th	Dublin: April 13 th - 14 th , 2007	Host:	Gerald O'Sullivan
15 th	Venice: April 18 th - 19 th , 2008	Host:	Ermanno Ancona
16 th	Vienna: April 17 th - 18 th , 2009	Host:	Raimund Margreiter
17 th	Budapest: May 6 th - 7 th , 2010	Host:	János Kiss

18th Helsinki: May 20 th - 21 st , 2011	Host: Kristler Hoeckerstedt
19th Hamburg: May 4 th - 5 th , 2012	Host: Jakob Izbecki
20th Beaune: April 12 th - 13 th , 2013	Host: Henri Bismuth
21th Athens: April 24 th - 26 th , 2014	Host: Christos Dervenis
22nd Warsaw: May 8 th - 9 th , 2015	Host: Marek Krawczyk
23rd Edinburgh: April 8 th - 9 th , 2016	Host: James Garden
24th Bucharest: May 5 th - 6 th , 2017	Host: Irinel Popescu
25th Trieste: May 11 th - 12 th , 2018	Host: Nicolò de Manzini

PRESENT MEETING

26th Madrid: May 17 th - 18 th , 2019	Host: Pascual Parrilla / Ricardo Robles
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FORTHCOMING MEETING

27th Köln, May 22 nd -23 rd , 2020*	Host: Christiane Bruns
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**Provisional date*

ESA PRESIDENTS

1993 - 1996	Henri BISMUTH
1996 - 1998	Peter MORRIS
1998 - 1999	Johannes JEEKEL
1999 - 2000	Toni LERUT
2000 - 2001	Alberto PERACCHIA
2001 - 2002	Felix HARDER
2002 - 2003	Ingemar IHSE
2003 - 2004	Laureano FERNÁNDEZ-CRUZ
2004 - 2005	Huug OBERTOP
2005 - 2006	Krister HÖCKERSTEDT
2006 - 2007	Peter NEUHAUS
2007 - 2008	Daniel JAECK
2008 - 2009	János KISS
2009 - 2010	Gerald O'SULLIVAN
2010 - 2011	Raimund MARGREITER
2011 - 2012	Ermanno ANCONA
2012 - 2013	Pierre-Alain CLAVIEN
2013 - 2014	Eduardo BARROSO GARCIA DA SILVA
2014 - 2015	Jakob IZBICKI
2015 - 2016	Andrea FRILLING
2016 - 2017	Marek KRAWCZYK
2017 - 2018	Mario MORINO
2018 - 2019	Irinel POPESCU

ESA OFFICERS

	Secretary	Treasurer	Councillors
1994	J. Jeekel	T. Lerut	L. Fernández-Cruz, S. Stipa, P. Morris, M. Trede
1995	J. Jeekel	T. Lerut	L. Fernández-Cruz, I. Ihse, R. Shields, A. Peracchia
1996	J. Jeekel	T. Lerut	F. Harder, I. Ihse, R. Shields, A. Peracchia, A. Encke
1997	H. Obertop	K. Höckerstedt	R. Shields, I. Ihse, A. Encke, A. Peracchia, F. Harder
1998	H. Obertop	K. Höckerstedt	A. Fingerhut, A. Johnson, A. Encke, A. Peracchia, F. Harder
1999	H. Obertop	K. Höckerstedt	A. Fingerhut, A. Johnson, P. Neuhaus
2000	P. Neuhaus	P. Bell	A. Fingerhut, A. Johnson, G. Nuzzo
2001	P. Neuhaus	P. Bell	M. Büchler, C. Russell, G. Nuzzo
2002	P. Neuhaus	M. Büchler	M. Büchler, C. Russell, G. Nuzzo
2003	P. Neuhaus	M. Büchler	A. Eggermont, C. Russell, V. Di Carlo, P.-A. Clavien
2004	P.-A. Clavien	M. Büchler	A. Eggermont, O.J. Garden, V. Di Carlo, J. Kiss, M. Rothmund
2005	P.-A. Clavien	L. Bonavina	A. Eggermont, V. Di Carlo, J. Kiss, M. Rothmund
2006	P.-A. Clavien	L. Bonavina	A. Frilling, U. Haglund, J. Kiss, M. Rothmund

	Secretary	Treasurer	Councillors
2007	P.-A. Clavien	L. Bonavina	A. Frilling, U. Haglund, M. Rothmund
2008	P.-A. Clavien	L. Bonavina	R. Adam, A. Frilling, U. Haglund, N. Mortensen, M. Morino
2009	P.-A. Clavien	L. Bonavina	R. Adam, A. Frilling, U. Haglund, N. Mortensen, M. Morino
2010	P.-A. Clavien	L. Bonavina	R. Adam, J. Izbicki, M. Krawczyk, N. Mortensen, M. Morino
2011	R. Adam	J. van Lanschot	J. Izbicki, M. Krawczyk, N. Mortensen, M. Morino, B. Walther
2012	R. Adam	J. van Lanschot	J. Figueras, A. Hölscher, J. Izbicki, M. Krawczyk, B. Walther
2013	R. Adam	J. van Lanschot	J. Figueras, A. Hölscher, M. Krawczyk, P. Lodge, B. Walther
2014	J. van Lanschot	R. Adam	P. Lodge, B. Walther, C. Bruns, A. Hölscher, J-C. Garcia-Valdecasas Salgado
2015	J. van Lanschot	R. Adam	P. Lodge, A. Pinna, C. Bruns, A. Hölscher, J. C. Garcia-Valdecasas Salgado
2016	O. Farges	R. Adam	P. Lodge, C. Bruns, R. Robles Campos, I. Popescu, H. S. Pinto Marques
2017	O. Farges	C. Bruns	E. Tukiainen, I. Popescu, H. Marques, X. Rogiers, R. Robles
2018	O. Farges	C. Bruns	E. Tukiainen, H. Marques, J. Reynolds, X. Rogiers, R. Robles

ESA COUNCIL 2018 - 2019

PRESIDENT

Irinel Popescu (Roumania)

PRESIDENT-ELECT

Arnulf Hölscher (Germany)

PAST PRESIDENT

Mario Morino (Italy)

HONORARY FOUNDING PRESIDENT

Henri Bismuth (France)

SECRETARY

Olivier Farges (France)

TREASURER

Christiane Bruns (Germany)

COUNCILLORS

John Reynolds (Ireland)

Ricardo Robles Campos (Spain)

Xavier Rogiers (Belgium)

Hugo Silva Carvalho Pinto Marques (Portugal)

Erkki Tukiainen (Finland)

CHAIR ADVISORY MEMBERSHIP COMMITTEE

Jan Lerut (Belgium)

CHAIR PROGRAMME COMMITTEE

Antonio Pinna (United Arab Emirates)

CHAIR EDITORIAL BOARD COMMITTEE

Pierre-Alain Clavier (Switzerland)

CHAIR NOMINATING COMMITTEE

Mario Morino (Italy)

ESA COMMITTEES 2018 - 2019

ADVISORY MEMBERSHIP COMMITTEE

Chair - Jan Lerut

Members

Cornelis Dejong, Guido Torzilli, Attila Olah, Stefan Post, Rutger Ploeg, Pal Dag Line.

Member (ex officio)

Olivier Farges (Secretary)

PROGRAMME COMMITTEE

Chair - Antonio Pinna

Members

Derek Alderson, Mario Morino, Sebastiano Biondo, John Reynolds, Kjetil Soreide.

Members (ex officio)

Irinel Popescu (President)

Olivier Farges (Secretary)

Pierre-Alain Clavien (Chair Editorial Board Committee)

EDITORIAL BOARD COMMITTEE

Chair - Pierre-Alain Clavien

Associates Editors: Peter Lodge, Manuel Pera, Desmond Winter.

Members (ex officio)

Irinel Popescu (President)

Antonio Pinna (Chair Programme Committee)

Olivier Farges (Secretary)

NOMINATING COMMITTEE

Chair - Mario Morino

Members

Marek Krawczyk, Andrea Frilling, Jakob Izbiki, Eduardo Barroso Garcia Da Silva.

ESA By Laws

By-laws accepted at the special general assembly in Zurich on 8 April, 2006

Article I: LEGAL FORM

The Association is governed by the French law of July 1, 1901, by the laws in effect which have amended or completed such law and by these By-laws.

Article II: NAME

This Association shall be called The European Surgical Association.

Article III: OBJECT

The Object of this Association shall be the cultivation and improvement of the science and art of surgery, the elevation of the standards of the medical profession in Europe and such other matters as may come legitimately within its sphere.

Article IV: REGISTERED OFFICE

The Association's registered office shall be located at Centre Hépato-Biliaire - Hôpital Paul Brousse - 14 Avenue Paul Vaillant Couturier - 94800 VILLEJUIF (France). This registered office may be transferred to any other location whatsoever under a decision by the Council, subject to the ratification of such decision by the next following General Meeting of Members.

Article V: MEMBERSHIP

Section 1

This Association shall consist of Active, Senior and Honorary Members.

Section 2

To be eligible for Active Membership, a candidate must have established a reputation as a surgeon from contributions as a practitioner, author, teacher, and/or original investigator, and have been recommended by the Council. Candidates for Active Membership must be active in clinical, scientific and academic surgical practice. They should have a position of a senior staff or consultant surgeon. Candidates must express a clear intention to contribute actively to the society and its goals.

Section 3

The Active Membership shall not exceed three hundred (300) members.

Section 4

Active members who reach the age of sixty five (65) years will be automatically placed on the list of senior members at the end of the calendar year following their sixty fifth birthday.

Active Members can apply for Senior Membership by giving satisfactory reasons (e.g.: early retirement from surgical or academic practice) in a written request to the Council. Active Members can also apply for prolongation of the Active Membership (e.g.: continuation of a surgical or academic practice) until the age of seventy (70) years in a written request to the Council.

Senior Members are exempt from the annual fees and are not subjected to the condition applied to each Active Member to participate at the annual meeting. They may not be elected into the Council. Furthermore, Senior Members have the right to vote at the General Assembly, and may submit and sponsor abstracts/papers for the annual meeting. Senior Members can propose and support candidates for Active Membership.

Section 5

Honorary Members shall be distinguished surgeons whose contributions to surgery have been unusually noteworthy, of lasting value and worthy of the highest international recognition.

Honorary Members are exempt from annual fees and are not subjected to the condition applied to each Active Member to participate at the annual meeting. They shall not be elected to Council. Furthermore, Honorary Members have the right to vote at the General Assembly, and can propose and support candidates for Active Membership from Europe, and may submit and sponsor abstracts for the annual meeting. However, accepted papers outside of Europe for presentation shall be limited to a reasonable number for presentation at the annual meeting.

The Honorary Membership shall not exceed fifty (50) members.

Section 6

Proposals for Active Membership shall be made by members, on forms which shall be furnished by the Secretary of the Association. The application for membership shall be signed by three (3) members who shall vouch for the candidate's character and professional standing. The sponsors of a candidate shall send the application to the chair of the Membership Committee along with two confidential letters.

Active Membership applications will be reviewed by the Advisory Membership Committee and submitted for approval to the Council. Membership shall be approved by the Active Members through the General Assembly or through an electronic vote. If three fourths of the votes are favourable, the candidate shall be declared elected. Active Membership shall be granted on the occasion of their first (1st) attendance at the annual meeting. The new membership is terminated if the elected member cannot attend the annual meeting within three years after election.

Section 7

If a candidate is not recommended by the Council for three (3) successive years, the application shall be withdrawn from consideration, and the sponsors shall be notified. Such a candidate may be proposed again without imposed delay. If a candidate is recommended by the Council, but fails to be elected by the Active Members, the individual cannot be proposed again within two (2) years.

Section 8

Candidates for Honorary Membership may be proposed to the council by any member of the Association. The council will vote, and the elected new Honorary Member will be invited to join the next Annual meeting to receive the Honorary Membership.

Section 9

Active Membership shall be terminated in the event that an Active Member is absent from three (3) consecutive meetings without submitting adequate excuse to the Secretary, in writing. The member shall then be notified of the proposed termination of membership and shall thereafter be given an adequate opportunity to respond, and, in the absence of a satisfactory response, termination shall become final upon written notice from the Secretary and may only be reinstated by a two thirds vote of the Council, on presentation of reasons considered to be valid. Similarly Active Membership shall be automatically terminated in the event an Active Member fails to pay the annual fee for three (3) consecutive years despite proper notifications.

Article VI: FEES

Section 1

There shall be an annual subscription for all Active Members.

Section 2

The amount of the annual subscription shall be fixed by the Council.

Section 3

Senior and Honorary Members shall not be required to pay the subscription.

Section 4

Subscriptions and all financial arrangements are managed by the Treasurer. The annual budget must be reviewed by a qualified agent, and be presented to the Council and at the General Assembly during the annual meeting of the Association.

Article VII: OFFICERS

Section 1

The Council of the Association is constituted by the officers and chairs and vice chairs of committees. The Officers of the Association shall consist of the President,

the Vice-President, the Past-President, Secretary, Treasurer, and a maximum of five (5) Councillors. The Chairman of the Advisory Membership Committee, the Chairman of the Programme Committee and Chair of the Editorial Board Committee, as well as the two Vice-chairmen of the Editorial Board Committee are included in the council. The council shall not exceed fourteen (14) members.

Section 2

The Officers and Chairmen of all Committees shall be nominated by the Nominating Committee.

Section 3

The election of Officers shall take place at the General Assembly of the Annual Meeting. A majority of the votes shall constitute election.

Section 4

The term of service of the President, Vice-President and immediate Past-President shall be one (1) year, without the possibility for re-election. The terms of service of the Secretary, Treasurer and Chair of each committee shall be three (3) years with the possibility for one re-election, for a maximum of three years. The terms of service of the five Councillors shall be two (2) years with the possibility for one re-election, for a maximum of two years. New Members of the Council shall be elected at the General Assembly of the Association to take the place of the retiring Members.

Section 5

The President of the Association shall be the Chairman and the Secretary of the Association shall be the Secretary of the Council.

Section 6 Vice-President

The Vice-President of the Association shall be the proxy of the President.

Section 7 Past-President

To maintain continuity, it is customary to elect the retiring President as Past-President to the Council. The immediate Past-President will serve as Chairman of the Nominating Committee.

Section 8 Secretary

The Secretary of the Association shall be the Secretary of the Council. He is responsible for all administrative work of the Society, with adherence to the by-laws and acts as liaison officer between the committees. The term of service shall last three (3) years, with the possibility for one re-election, for a maximum of three (3) years.

Section 9 Treasurer

The Treasurer shall be responsible for the finances of the Society, including the collection of the annual subscription. The term of service shall last three (3) years, with the possibility of re-election, for a maximum of three (3) years.

Section 10 Councillors

Five active members are elected as Councillors for two (2) years, with the possibility of one re-election, for a maximum of two (2) years. They shall serve as executive members of the Council.

Article VIII: COUNCIL

Section 1

The President of the Association shall be the Chairman and the Secretary of the Association shall be the Secretary of the Council.

Section 2

The Council shall be the executive body of the Association and accurate minutes of its proceedings shall be kept by the Secretary.

Section 3

Meetings of Council shall be held at the call of the President. Ordinarily this will include one meeting held between two annual meetings in addition to the meeting held in conjunction with the annual meeting. Special meetings of the Council may be held on call of the President or at the request of three (3) members of the Council, in the interval between the annual meetings of the Association.

Section 4

All proposals for membership shall be submitted to the Council for action in accordance with Article V and only the names of those candidates who have received favourable recommendation shall attend the annual meeting and be granted Active Membership.

Section 5

The Council shall act as a Board of Censors for alleged offences against the by-laws or unprofessional conduct by any member of the association, and it alone shall have the power of presenting a motion to the members for suspension or expulsion of members. Due process must be granted to members accused of such offences.

Section 6

For the transaction of business a majority of the members of the Council shall constitute a quorum and a majority of those present shall prevail, subject to the provisions of Article V, Section 9.

Article IX: COMMITTEES

Section 1

The Council shall appoint the following standing committees:

- Advisory Membership Committee
- Programme Committee
- Editorial Board Committee
- Nominating Committee

In addition, the Council may appoint ad hoc committees as the need arises, their continuance to be subject to subsequent approval by the Association.

Section 2

The Council shall appoint the following ad hoc committee: Committee on Local Arrangements.

Section 3

The Advisory Membership Committee shall consist of eight (8) Members who shall be appointed by the Council, each member shall serve for four (4) years. The Secretary will serve as a member (ex officio). The Chairman shall be designated by the Nominating Committee.

It shall be the duty of members of this Committee to review all candidates proposed for Active Membership in the Association, to seek out desirable candidates for proposal to the Association and to consult with members in their areas of interest about proposed candidates. This Committee shall advise the Council concerning the eligibility of those candidates under consideration for Membership each year.

The Committee shall hold at least one meeting annually prior to the meeting of the Association in order to evaluate the candidates for Active Membership.

The establishment of the Committee shall in no way infringe upon Article V, Section 6 of the by-laws, which provides the proposal of candidates for Membership through three (3) members of the Association.

Section 4

The Programme Committee shall consist of four (4) Members, and the President, the Secretary, and the Chair of the Editorial Board ex officio with vote. The chair shall be appointed by the Nominating Committee. The other members shall be proposed by the Chair of the Programme Committee and elected by the Council. They are appointed for a maximum of three (3) years. The Chair can be re-elected for one more term of three years. The chairman shall provide a report to be reviewed at the mid-winter council meeting and at the General Assembly.

The duties of this Committee shall consist of arranging for the scientific papers, symposia and discussions at the annual meeting. The Programme Committee shall

recommend which papers shall be accepted, and their order of presentation. The Committee may recommend that individuals who are not Members of the Association be invited to present a paper or discussion. Acceptance of papers

outside of Europe shall be restricted to a reasonable proportion by the Chair of the Programme Committee.

The President of the Association is authorised to appoint substitute Members to the Committee for any member unable to attend.

Section 5

The Editorial Board Committee shall consist in a maximum of nine (9) members, and the President, the Secretary, and the Chair of the Programme Committee ex officio with vote. The chair shall be appointed by the Nominating Committee and the two associate editors, and the other members shall be proposed by the Chair of the Editorial Board Committee and elected by the Council. They are appointed for a maximum of three (3) years. The chair and the two Vice-Chairs of the Editorial Board Committee can be re-elected for one more term of three years. The chairman shall provide a report to be reviewed at the mid-winter council meeting and at the General Assembly.

Section 6

A Chairman on the Committee on Local Arrangements shall be appointed by the Council from members residing at or near the place of the next meeting. Additional members may be appointed. The duties of the Committee shall be to make general arrangements for the Annual Meeting of the Association.

Section 7

The Nominating Committee shall consist of the five (5) most recent living Past-Presidents, the most recent President

(Past-President) to serve as Chairman. The Committee shall nominate officers and elected members of the Council.

Article X: MEETINGS

Section 1

The Members of the Association shall meet at General Meetings. The General Meeting of Members shall consist of all the Members of the Association. Such General Meeting of Members shall be chaired by the President or by another person authorised for such purpose by the Council. The decisions by the General Meeting of Members shall be recorded in minutes.

Section 2

The call notices shall be sent by the Council by all means to the Members, no less than fifteen (15) days prior to the date scheduled for the General Meeting of Members, and they must indicate the agenda defined by the Council.

Section 3

Each Member of the Association shall have one (1) vote.

Section 4 Annual general meeting of members

The Members of the Association shall meet each year, for an Annual General Meeting of Members, upon the notice of call issued by the Council, which must indicate therein the date and time for such meeting.

The Annual General Meeting of Members shall examine the annual report from the Council, on the management and on the "moral" and financial position of the Association. It shall:

- approve the accounts for the fiscal year closed;
- Elect the Officers of the Association; and conduct deliberations on all the issues of general interest and all those referred to it by the Council.

The Annual General Meeting of Members shall only take decisions validly where at least twenty percent of the Members of the Association are present at the meeting. If such quorum is not reached, the General Meeting of Members shall be adjourned and reconvened pursuant to the procedure and within the time limits specified above in section 2.

Upon the second holding of this General Meeting of Members, it shall take decisions validly whatever the number of Members present at the meeting, but only with regard to those items indicated on the agenda for the previous General Meeting of Members.

Decisions shall be adopted at a simple majority of the votes of those Members present at the meeting.

Any Member may invite one physician or other scientist to an Annual Meeting of the Association, and such a guest, at the Member's request to the President or Secretary, may receive the privilege of the floor.

Section 5 Extraordinary general meeting of members

The Extraordinary General Meeting of Members shall have the authority to amend any and all provisions of the By-Laws, to adopt and to amend the Internal Rules and Regulations, and it shall have the authority to resolve the Association's early dissolution or its merger with other associations.

The Extraordinary General Meeting of Members shall only take decisions validly where at least twenty percent of the Members of the Association are present at the meeting. If such condition is not satisfied, the General Meeting of Members shall be reconvened pursuant to the procedure and within the time limits specified above in section 2.

Upon the second holding of this General Meeting of Members, it shall take decisions validly whatever the number of Members present at the meeting, but only with regard to those items indicated on the agenda for the previous General Meeting of Members.

Decisions shall be adopted at a simple majority of the votes of those members present at the meeting.

Article XI: INTERNAL RULES

The Council can establish internal rules. These rules will complete the by-laws. They must be approved by the General Assembly.

Article XII: LIABILITY

The association only assumes liability with the association's fortune. There is no individual liability of the members.

ESA Internal Rules

Internal Rules accepted at the General Assembly in Beaune on 13 April 2013

1. ABSTRACTS AND PAPERS

1.1. Submission of Abstracts

Abstracts submitted after the deadline set by the chair of the Programme Committee will not be accepted.

1.2. Submission of Papers

Each ESA member can submit an unlimited number of abstracts. However, only two abstracts per group will eventually be accepted for presentation at the Annual Meeting. A group is defined as the senior author of a particular study. There may, however, be more than one group per centre.

Rule 1.2 shall not apply to multicenter trials (defined by 3 or more centres), however no Centre can present more than 2 abstracts to the Annual Meeting.

1.3. Sponsorship of non-European Abstracts

It is the role of Honorary Members to sponsor abstracts from their countries or continent.

Non-European abstracts sponsored by a European ESA member will be rejected unless this member qualifies for authorship.

1.4. Presentation of Papers

Papers can only be presented at the Annual Meeting if a manuscript has been submitted to the Editorial Board on time.

1.5. Publication in the Annals of Surgery

The submission of a manuscript implies that if accepted by the editorial board it may only be published in the pages reserved for ESA in the December issue of the Annals of Surgery.

2. ANNUAL MEETINGS

2.1. Venue

The Council will decide on the venue for the annual meetings. The choice should be made two years in advance at the winter council meeting. The local organiser must present to the Council a detailed budget 18 months before the planned meeting.

2.2. Sponsoring

The local organiser of the Annual Meetings may seek sponsorship, but must inform the sponsors that the only acknowledgement will be their logo on the back of the program booklet. Commercial exhibits are not permitted.

2.3. Fees

The fee should be reasonable.

The ESA will neither share profit nor loss with the local organiser. The local organiser needs to transfer € 30.00 per paying participant to the treasurer of the ESA.

2.4. Assistant of Local Organiser of Future Meetings

The local organiser of a future meeting can invite a member of his organising committee to the annual meeting preceding his meeting. The local organiser of the future meeting has to take care of all the costs involved.

2.5. Social Events

2.5.1. Gala Dinner

Dress Code: black tie. This information should be made available on the website and in the programme.

Speakers are invited to the gala dinner. According to internal rules (2.4.3) only honorary members will be invited free of charge.

2.5.2. President Dinner

On behalf of the President, the Secretary will invite the guests chosen by the President. The Dinner will be organised by the local organising committee on behalf of the President. The costs of the dinner will be covered by the President. Sponsoring is permitted. Under special circumstances presidents can ask for some support as deficit warranty. The council will decide on the level of support. Requests for support need to be submitted no later than the preceding Winter Council Meeting.

2.5.3. Honorary Members

The Registration Fee and the fee for the gala dinner shall be waived for honorary members. These costs shall be covered by the local organiser. The hotel costs for newly elected honorary members and their accompanying person will also be covered by the local organiser.

3. CONTRACTS

All contracts between a third party and ESA need to be signed by the Council Member responsible for the contract and the Secretary. The President must be informed prior to the signing of any contract.

The secretary's office shall always keep one copy of each contract.

4. FINANCIAL ISSUES

4.1. Financial Support of Officers

The office of the Treasurer, Chairman of the Scientific Committee, Chairman of the Advisory Membership Committee, Editor-in-chief and Secretary General receive some financial support. Hotel and travel expenses of the secretary's staff assistant to be present at the annual meeting will be covered by the Association. The local

activities for the staff (e.g. lunches, gala dinner, welcome reception, etc.) will be covered by the local organiser.

4.2. Annals of Surgery and British Journal of Surgery

The financial contribution by the Annals of Surgery and British Journal of Surgery must be transferred to the Treasurer and used to support the activities of the Association.

5. MEMBERSHIP

5.1. Duration of Membership

Members who are neither traceable nor answer mail will be removed from the member list.

5.2. Membership of Active Members out of Europe

Active members who have been out of Europe for several years can remain active members. However, while they need to pay the fees, they are exempt of the requirement to attend the annual meetings. They can only submit abstracts if all dues are paid.

5.3. Exclusion from Association

Below rule shall supplement Art. V: Membership, section 9 of the bylaws.

Members who have been absent from the annual meeting for three consecutive meetings will be invited twice. Should they not attend one of the following two meetings, they will automatically be excluded from the association.

5.4. Payment of Fees

Senior Members do not have to pay fees but shall be encouraged to do so.

These Internal Rules will become active with their acceptance by the general assembly. Concessions made by previous versions of the internal rules are not applicable with the acceptance of these Internal Rules.

These Internal Rules were accepted at the General Assembly in Beaune on 13 April, 2013 and replace those accepted in Helsinki on 21 May, 2011.

Based on art. XI of the by-laws these Internal Rules shall complete the by-laws of 8 April, 2006.

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For confidentiality reason, the following pages will be available in the printed edition

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Senior Members _____page 152

Active Members _____page 168

New Members _____page 198

Acknowledgments

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