Among the 85 patients who developed left RLN palsy after MIE, recovery was observed in 22 patients (i.e., permanent palsy rate: 75%). Multivariate logistic regression analysis revealed active smoker (unfavorable, OR [95%CI]: 2.99 [1.06-8.41], p = 0.038) and the use of thoracoscopic approach (unfavorable, OR [95%CI]: 3.52 [1.14-10.8], p = 0.028) as independent risk factors for permanent palsy. The permanent palsy rate was 33.3% in patients who were non- or ex-smoker and received robotic approach as opposed to 85.7% in those who were smokers and received conventional thoracoscopic approach (p < 0.001).

Among the patients who developed left RLN palsy after McKeown MIE, only one-fourth could be fully recovered. RLN palsy occurred in patients who were smoker and received thoracoscopic approach were less likely to have spontaneous recover and might be candidates for early intervention.

409. RECONSTRUCTION OF A SEGMENTAL OESOPHAGEAL DEFECT WITH A TUBED RADIAL ARTERY FOREARM FREE FLAP GUIDED BY 3-DIMENSIONAL MODELLING
Brandon Leggett1,2,3, Onur Bas2, Jonathan Wiper1,2, Michael Wagels1,2,3,4, Adam Frankel1,2
1. Princess Alexandra Hospital, Brisbane, Australia, 2. Australian Centre for Complex Integrated Surgical Solutions (ACCESS), Brisbane, Australia, 3. Surgical Treatment and Rehabilitation Service (STARS), Brisbane, Australia, and 4. Queensland Children's Hospital, Brisbane, Australia

Segmental defects of the oesophagus are rare but complex. If the patient survives the initial insult, reconstructive techniques most commonly involve gastric pull-up or colonic interposition (1) however alternative techniques such as free flap reconstruction can be utilised if the former are unsuitable (2). The surgical field often is quite hostile in these cases, making pre-operative visualisation and planning critical in achieving a successful outcome. We describe our approach after a surgical complication in a 49-year-old man.

cT3N2M0 GOJ adenocarcinoma, pre-operative FLOT4, three-stage oesophagectomy complicated by anaesthetic leak and tracheo-gastric fistula. Cervical oesophagectomy and venting gastrostomy (via laparotomy) was performed (severe illness precluded one-lung ventilation). He improved and was discharged, but a persistent fistula from the gastric conduit to his trachea remained. Reconstruction was planned by a multidisciplinary team using detailed 3D modelling. Via right thoracotomy, the gastric conduit was reduced into the abdomen and the tracheal defect was repaired with an intercostal muscle flap. A retrosternal colonic interposition restored gastrointestinal continuity. The superior 2 cm was infarcted and was replaced by a dual-paddled tubular radial forearm free flap.

This complex surgical situation demonstrates how 3D visualisation of a segmental oesophageal defect can be extremely helpful in pre-operative planning. In particular, the precise anatomical location of the gastro-tracheal fistula and its relationship to the bony landmarks and surrounding vascular anatomy were critical in considering surgical access and reconstruction options. Whilst the literature describes applications of 3D visualisation for surgical planning in alternative contexts, there is minimal information of its use in upper gastrointestinal reconstruction. The use of 3D modelling and printing within the surgical context has frequently been associated with reduced operating times and improved medical outcomes (3).

This case adds to the previously documented advantages of 3D modelling in surgical planning but applies them to an area not well covered in the literature. Additionally, it demonstrates the utility of an infrequently used technique (RAFF) for reconstructing a segmental oesophageal defect. Further research into quantifying the outcomes following the implementation of 3D modelling in visualisation and surgical planning would be useful in encouraging its integration into mainstream surgical practice.

411. MAJOR INTRAOPERATIVE COMPLICATIONS IN MINIMALLY INVASIVE ESOPHAGECTOMIES
Henna Söderström1, Johnny Moons2,3, Philippe Nafteux2,3, Eren Uzman4, Peter Grimminga4, Misha D.P. Layer5, Grard A.P. Nieuwenhuijzen6, Magnus Nilsson7,8, Masaru Hayami9,10, De Sebastien Degisors9, Guillaume Piessens9, Hanne Vanommeslaeghe10, Elke Van Daele10, Edward Cheong11, Christian A. Gutierrez12, Diana Vetter12, Nannet Schuring12,13,14,15, Suzanne Gisbert12,13,14,15,16, Jari Räisänen1
1. Department of Thoracic Surgery, Helsinki University Hospital, Helsinki, Finland, 2. Department of Thoracic Surgery, University hospitals Leuven, Leuven, Belgium, 3. Laboratory of Respiratory Diseases and Thoracic Surgery (BREATHE), Department of Chronic Diseases, Metabolism and Ageing Risk Unit, Leuven, Belgium, 4. Department of General, Visceral and Transplant Surgery, University Medical Center of the Johannes Gutenberg University, Mainz, Germany, 5. Department of Surgery, Catharina Hospital, Eindhoven, The Netherlands, 6. Department of Upper Abdominal Surgery, Center for Digestive Diseases, Karolinska University Hospital, Stockholm, Sweden, 7. Division of Surgery, Department of Clinical Science, Intervention and Technology (CLINTEC), Karolinska Institutet, Stockholm, Sweden, 8. Department of Gastroenterological Surgery, Gastroenterological Center, Cancer Institute Hospital, Japanese Foundation for Cancer Research, Tokyo, Japan, 9. Department of Digestive and Oncological Surgery, University Hospital C. Huriez Place de Verdun, Lille Cedex, France, 10. Department of gastro intestinal surgery, Ghent University Hospital, Ghent, Belgium, 11. Norfolk and Norwich University Hospital NHS FT, Norwich, UK, 12. Department of Surgery and Transplantation, University Hospital Zurich, Zurich, Switzerland, 13. Amsterdam UMC location University of Amsterdam, Surgery, Meibergdreef 9, Amsterdam, The Netherlands, 14. Cancer Center Amsterdam, Cancer Treatment and Quality of Life, Amsterdam, The Netherlands, and 15. AGEM Amsterdam Gastroenterology, Endocrinology and Metabolism, Amsterdam, The Netherlands

Studies have shown minimally invasive esophagectomy (MIE) to be a feasible surgical technique in treating esophageal carcinoma, with equal oncological results as open surgery. The number of MIEs in Europe are increasing. Postoperative complications have been recently reviewed by a multicenter study that benchmarked MIE outcomes. There are no studies, to date, regarding major intraoperative complications during MIE and their effect on patient survival. Data was gathered retrospectively from 10 European centers with a minimum MIE experience of 3 years and more than 20 procedures annually. All intention-to-treat, minimally invasive laparoscopic/thoracoscopic esophagectomies with gastric conduit reconstruction for esophageal- and GE junction cancers operated between 2003-2019 were reviewed. Major intraoperative complications were defined as loss of conduit, erroneous transection of vascular structures, significant injury to other organs including heart, kidneys, liver, spleen, great vessels, and diaphragm. Among the 85 patients who developed left RLN palsy after MIE, recovery was observed in 22 patients (i.e., permanent palsy rate: 75%). Multivariate logistic regression analysis revealed active smoker (unfavorable, OR [95%CI]: 2.99 [1.06-8.41], p = 0.038) and the use of thoracoscopic approach (unfavorable, OR [95%CI]: 3.52 [1.14-10.8], p = 0.028) as independent risk factors for permanent palsy. The permanent palsy rate was 33.3% in patients who were non- or ex-smoker and received robotic approach as opposed to 85.7% in those who were smokers and received conventional thoracoscopic approach (p < 0.001).

This case adds to the previously documented advantages of 3D modelling in surgical planning but applies them to an area not well covered in the literature. Additionally, it demonstrates the utility of an infrequently used technique (RAFF) for reconstructing a segmental oesophageal defect. Further research into quantifying the outcomes following the implementation of 3D modelling in visualisation and surgical planning would be useful in encouraging its integration into mainstream surgical practice.
bowel, heart, liver or lung, splenectomy, major anesthesiologic complications including intubation injuries, arrhythmias, pulmonary embolism and myocardial infarction. We also included minor intraoperative events that led to additional repair or resection of vascular structures or airways.

Amongst 2862 MIE cases we identified 99 patients with 103 intraoperative complications. Of the 34 different complications the most common were vascular lesions during laparoscopy (n = 40). There were 20 splenic artery and -capsular injuries, 11 requiring splenectomy. Four losses of conduit due to gastroepiploic artery injury and five colon injuries were reported. Six tracheobronchial lesions needed repair, and 12 patients had significant lung parenchyma injuries. During thoracoscopic nine of the 13 cases with bleeding were converted and an additional 5 patients required postoperatively emergency re-intervention for thoracic bleeding. There were 2 on-table deaths. 10 of the 99 patients died in hospital.

This study offers a good overview of the wide range of possible intraoperative complications. Knowing the pitfalls can help trainees, and experienced surgeons, avoid common complications. Unfortunately, this study does not offer us incidence, which would require a prospective trial. On-table deaths are exceedingly rare.

There is a possible underreporting of complications, an issue not avoided by implementing specific surveying criteria. Surgical registries need to capture intraoperative complications better in the future.

412. FEASIBILITY AND SAFETY OF MINIMALLY INVASIVE SURGERY FOR OESOPHAGEAL DYSPLASIA CYST IN ADULTS—EXPERIENCE FROM AN OESOPHAGO-GASTRIC SURGERY UNIT

Sajal Suresh1, Ashish Samuel1, Negine Paul1, Myla Yacob1, Vijay Abraham2, Roy Gnanamuthu3, Inian Samarasam1

1. Christian Medical College Hospital, Vellore, India, 2. The Queen Elizabeth Hospital, 28 Woodville Road, Woodville South, Australia

Oesophageal dysplasia cyst (ODC) is a rare congenital anomaly of the foregut. The reports of ODCs presenting in adulthood is relatively rare. Surgical excision is the ideal treatment. Traditionally, the excision is performed via a thoracotomy with its resultant morbidity. Minimally invasive surgical (MIS) approaches are feasible and can potentially reduce the postoperative discomfort and reduce the hospital stay. We aimed to study the feasibility and safety of MIS for ODC in adults.

A retrospective review of all adult patients with ODCs treated in an oesophago-gastric surgery unit, between January 2015 and March 2022, was performed. All patients received MIS. The demographic, clino-radiological, and operative details and outcomes were analysed.

Nine patients (Female 7, mean age, 36.2 ± 4.4 years) were included. Chest pain was the commonest symptom (44.0%). Oesophageo-gastroscopy showed normal mucosa in all patients. Endoscopic-ultrasound was performed in all except one; no cysts had atypical features. The cysts were frequently located in the distal thoracic oesophagus (78%) and the median (range) cyst size was 6.3(3.9-13.5) cm. All patients received MIS (Thoracoscopy, 8; Thoraco-laparoscopic, 1); no conversion to open surgery. The techniques used included the following (5, stapler-assisted resection (3) or partial excision (1). The 30-day morbidity was 22.2% (Staple line leak/thoracoscopic repair, 1; pleural collection, drainage, 1). The median (range) hospital stay was 7(3-25) days and there was no mortality.

MIS is feasible and safe for the management of adult ODCs and should be offered to patients, irrespective of the timing of its presentation or the location and size of the cyst.

414. SHORT-TERM CLINICAL EFFECT OF ROBOT-ASSISTED ESOPHAGECTOMY WITH THORACIC DUCT RESECTION

Chunguang Li, Bin Li, Yang Yang, Zhigang Li

Department Of Thoracic Surgery, Section Of Esophageal Surgery, Shanghai Chest Hospital, Shanghai Jiao Tong University, Shanghai, China

Whether extended robot-assisted esophagectomy with thoracic duct resection (RAE-TDR) has a favorable impact on esophageal cancer patients remains not well defined. This study aimed to analyze safety and efficiency of RAE-TDR.

From January 2019 to July 2020, 73 consecutive patients with TD-resected and 127 consecutive patients with TD-preserved were enrolled, who received standard RAE McKeown surgery. Perioperative related indicators, RFS and OS at 1-year were compared between the two groups.

Morbidity of Clavien-Dindo classification grade ≥ II or III were similar (p > 0.05). The number of retrieved total lymph nodes and mediastinal nodes were significantly higher in the TD-resected group (29.0 ± 11.1 vs 25.1 ± 8.5, p = 0.006 and 2.3 ± 3.7 vs 1.7 ± 2.8, p = 0.002, respectively). Moreover, more metastatic TD-related lymph nodes were harvested in cT3-4 patients (2.3 ± 3.7 vs 1.7 ± 2.8, p = 0.21). The rate of LN recurrence and local recurrence were similar (6.8% vs 7.1%, p = 0.09 and 1.4% vs 2.4%, p = 0.99, respectively). OS and RFS at 1-year were equivalent regardless of the TD procedure in each stage (p > 0.05). However, Hematogenous metastasis in TD-resected group was significantly elevated (17.8% vs 7.9%, p = 0.034).

RAE-TDR may help to improve total and metastatic LNs harvest, especially for patients with advanced ESCC without increasing adverse events intra- and post-operation. However, RAE-TDR does not bring about a decrease in local recurrence rate within short-term follow-up. We are not sure whether the increase in distant metastasis rate in the RAE-TDR group is associated with relevant immune system damage. Therefore, non-selective RAE-TDR resection is not routinely recommended.

415. A WEBCAST FOR THE EDUCATION AND INFORMATION OF PATIENTS WITH BARRETT’S ESOPHAGUS AND BARRETT’S CANCER

Christian Etzold, Ines Gockel, René Thieme

Department of Visceral, Transplant, Thoracic and Vascular Surgery, University Hospital Leipzig, Leipzig, Germany

To provide expert knowledge to patients becomes more and more important, especially during the Sars-CoV-2 pandemics, where self-helping groups could not meet and on-site information events could not take place. We discovered a need due to patients’ uninformness about diagnostic procedures, treatment options and advice for disease prevention or special nutrition and medications after the diagnosis of Barrett’s oesophagus and Barrett’s cancer.

A webpage was created, including a video streaming platform (https://webcast.barrett-initiative.de/). The events were performed live with the opportunity to ask questions via the chat function. Vimeo was used for the live streaming. Three to four lecturers were invited and one moderator organized the sequence of talks and questions. Additionally, the webpage contains an encyclopedia, to explain disease related terms in a patient-oriented language. The invitation was done based on our nation-wide patient network based on genes for barrett’s (g4b) study https://www.barrett-konsortium.de/. Patients used a desktop computer (65%), mobile phones (28%), and tablets (7%) to join the video sessions.

The lecture series was started with a kick-off event in September 2021 to give a bright overview about reflux, Barrett’s oesophagus und Barrett’s cancer.