

Standardized thoracoscopic esophagectomy for thoracic esophageal carcinoma in the left lateral decubitus position under artificial pneumothorax is slightly more difficult to dissect the middle and lower mediastinum than in prone position, but it is possible to operate the upper mediastinum with good visual field. In salvage surgery after definitive chemoradiotherapy, it is difficult to complete the operation only by thoroscopic surgery, and it is thought that sometimes small thoracotomy can be performed safely and reliably.

Methods: If this procedure is considered feasible, start with thoracoscopic surgery. If it is decided that the procedure cannot be completed, add a small thoracotomy of about 10–15 cm to allow one hand. Thoracoscopy not only reduced invasiveness, shared detailed anatomy, but also improved operability by taping the esophagus and ensured emergency safety.

Results: This standardized procedure is applied to salvage surgery after definitive chemoradiotherapy from January 2016 to March 2019. Thoracoscopic surgery was performed in 14 of the 27 cases (52%). Thoracoscopic surgery was completed in 10 cases and small thoracotomy was used in 4 cases. There are no serious complications such as bleeding.

Conclusion: Starting surgery with a thoracoscopy and adding small thoracotomy as appropriate can share the advantages of thoracotomy and thoracoscopic surgery. This technique has the advantage that it can be easily converted to thoracotomy even in an emergency, and is considered to be superior to advanced cancer.

Video: https://www.dropbox.com/sh/47jcqu3palpsfvg/AAC4PvReWDP_WPBkJufxWU3da?dl=0.

224 A RETROSPECTIVE CASE-CONTROL STUDY ASSESSING THE CLINICAL AND ENDOSCOPIC CHARACTERISTICS OF EOSINOPHILIC ESOPHAGITIS IN JAPAN

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Eosinophilic esophagitis (EoE) is an allergy-associated clinicopathologic condition gaining an increasing amount of recognition in various areas of the world. While the clinical definition and characteristics may differ depending on country and region, sufficient studies have not yet been performed in Japan. To assess the prevalence of EoE among the Japanese population and the clinical features and the prognosis associated with the disease.

Methods: Medical data from January 2012 to October 2018 was gathered from nine Japanese clinical institutes. EoE, defined as more than 15 intraepithelial eosinophils per high power field, was determined based on esophageal biopsies. Clinical and endoscopic patterns in the cases with EoE were investigated and compared with 186 age- and sex-matched controls. We also analyzed the treatment and prognosis of an individual patient.

Results: From 130,013 upper endoscopic examinations, 66 cases of EoE were identified (0.051%; mean age: 45.2 years (range 7–79); 45 males). Patients with EoE had more symptoms (69.7 vs. 10.8%; $P < 0.01$) such as dysphagia and food impaction, and more allergies (63.6 vs. 23.7%; $P < 0.01$) compared with the controls. The prevalence of atrophic gastritis was lower in EoE patients than in the controls (20.0% vs. 33.3%). In 55 patients analyzed, 32 patients (78.0%) received proton pump inhibitors with or without swallowed topical corticosteroids. During the follow-up period (mean 23 months), no patient got worse regarding clinical and endoscopic findings.

Conclusion: The prevalence of EoE in the Japanese population was 0.051% which was comparable with previous reports in Japan. Male predominance, a history of allergies, and the absence of *Helicobacter pylori* infection might

be risk factors for EoE. Our study also indicated that the prognosis of EoE might be relatively good in Japanese populations.

235 5-YEAR FOLLOW-UP OF A PROSPECTIVE CLINICAL TRIAL OF AN ENDOSCOPIC FULL-THICKNESS PPLICATION DEVICE (GERDx™) FOR THE TREATMENT OF GERD

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The gold-standard in the operative treatment of gastroesophageal reflux disease (GERD) is the laparoscopic fundoplication. Alternatively, endoscopic devices to rebuild the gastroesophageal valve were invented. The aim of our study is to assess the improvement of GERD symptoms and quality of life in patients five years after the endoscopic full-thickness plication with the GERDx™ device.

Methods: Between 2013 and 2016 a prospective trial was implemented with forty patients and an endoscopic plication due to reflux symptoms with a pathologic workup for GERD. Limitation for the use of GERDx™ was a 2 cm hiatal hernia. Follow-up workup was done with high resolution manometry (HRM), 24 h-pH-impedance-catheter gastroscopy and questionnaires for quality of life (GIQLI) and reflux-symptoms (SCL).

Results: Median follow-up time was 57 months (36–74 months). There was a significant improvement of the DeMeester score, GIQLI and SCL between pre- and postoperative values in short-term as well as long-term follow-up. At least 55% of patients were assessed as failure of the plication device due to redo operations with laparoscopic fundoplication in 25% and/or necessary PPI use for GERD symptoms (40%). There is no pre- and postoperative significant difference in quality of life or reflux scores between successful and failed endoplications, but patients with laparoscopic redo operations showed significant higher DeMeester scores before and after endoscopic treatment.

Conclusion: There is a higher failure rate to the endoscopic full-thickness plication than to the laparoscopic fundoplication. A small group of well selected patients is eligible for the endoscopic GERDx™ device. In case of therapeutic failure a classic laparoscopic redo fundoplication is possible under more challenging operative conditions.

238 SERUM ALBUMIN EARLY DECREASE IS AN INDEPENDENT PREDICTOR OF MAJOR COMPLICATIONS AFTER ONCOLOGICAL ESOPHAGECTOMY; RESULTS FROM A LARGE EUROPEAN SERIES

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The predictive value of postoperative albuminemia decrease (Δ Alb) has been increasingly evidenced in different types of major surgery but data on esophagectomy remain scarce. This study aimed to assess the predictive value of Δ Alb for adverse short-term outcomes after oncological esophagectomy.

Methods: Retrospective analysis of an international multicentric cohort of patients undergoing oncological esophagectomy between 2006–2017. Patients with missing pre- and postoperative albumin values were excluded from the analysis. Primary endpoint was postoperative morbidity according to Clavien classification. Secondary endpoints were Comprehensive Complication Index (CCI) and length of hospital stay (LoS).

Results: A total of 1046 patients were analyzed. Major complications were reported in 363 (34.7%) patients. Albuminemia showed a rapid postoperative decrease on postoperative day 1 (POD1) (Δ Alb POD1) with a median value of 11 g/L. ROC curve analysis determined a cut-off of 11 g/L for the prediction of overall complications. Patients with Δ Alb POD1 \geq 11 g/L showed increased overall complications ($p = 0.004$), major complications ($p = 0.009$) and CCI ($p = 0.006$) while LoS was comparable ($p = 0.099$). On multivariable analysis, Δ Alb POD1 \geq 11 g/L was an independent predictor of overall (OR:

1.55; 95% CI 1.09–2.21; $p = 0.015$) and major complications (OR: 1.43; 95% CI 1.09–1.89; $p = 0.009$).

Conclusion: Oncological esophagectomy induced a rapid decrease of albuminemia. $\Delta\text{Alb POD1} \geq 11$ g/L was independently associated with the occurrence of overall and major postoperative complications. ΔAlb appears as a promising biomarker to detect patients at risk of adverse outcomes after oncological esophagectomy.

243 PROGNOSTIC IMPACT OF CXCR7 AND CXCL12 EXPRESSION IN PATIENTS WITH ESOPHAGEAL ADENOCARCINOMA

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Chemokines are major regulators of cell trafficking and adhesion. The chemokine CXCL12 and its receptors, CXCR4 and CXCR7, have recently been reported as biomarkers in various cancers, including esophageal squamous cell carcinoma; however, there are few studies of these chemokines in esophageal adenocarcinoma (EAC). In this study, we investigated the relationship between expression of CXCL12, CXCR4 and CXCR7, and prognosis in patients with EAC.

Methods: This study examined 55 patients with EAC who were treated in Toronto General Hospital from 2001 to 2010. Tissue microarray immunohistochemistry was used to evaluate the expression of CXCL12, CXCR4 and CXCR7. Evaluation of immunohistochemistry was performed by a pathologist without knowledge of patients' information and scored based on a semiquantitative scoring system. The average score from multiple cancer tissues on the microarray was utilized and patients were divided into high or low expression groups using the median score as a cutoff point. These results were compared with the patients' clinicopathological features and survival.

Results: The score of CXCR7 was positively correlated with that of CXCL12 ($r = 0.3154$). High CXCR7 expression was significantly associated with lymphatic invasion (present vs absent, $P = 0.005$), higher number of lymph node metastases (pN0–1 vs pN2–3, $P = 0.0014$) and TNM stage (Stage I–II vs III–IV, $P = 0.0168$). Patients with high CXCR7 ($n = 23$) expression was associated with worse overall (OS) and disease-free survival (DFS) ($P = 0.0221$, 0.0090, respectively), and patients with high CXCL12 ($n = 24$) tended to have worse OS and DFS ($P = 0.1091$, 0.1477, respectively). High expression of both CXCR7 and CXCL12 was an independent prognostic factor for DFS on multivariable analysis (HR0.3, 95%CI: 0.1–0.8, $P = 0.0115$).

Conclusion: High CXCR7 expression was associated with poor prognosis in patients with EAC, and high expression of CXCR7 and its ligand CXCL12, had a stronger association on prognosis. Further study of this potential biomarker using whole tissue samples and larger sample size is warranted.

244 MICROBIOME ANALYSIS OF UPPER DIGESTIVE TRACT BIOPSY SAMPLES FROM INDIVIDUALS ALONG THE METAPLASIA-DYSPLASIA-ADENOCARCINOMA SEQUENCE.

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The human microbiota, the collection of microbes that inhabit the human body, is increasingly being appreciated as playing a role in human health. A seminal example of this relationship is *Helicobacter pylori* and gastric cancer oncogenesis. The drop in *H. pylori* infections and non-cardia gastric cancer incidences has coincided with the rise in oesophageal adenocarcinoma (OAC) incidences. We sought to explore the relationship between the upper digestive tract microbiome and OAC oncogenesis.

Methods: Pinch biopsies were taken from individual's oesophagus and stomach who were along the metaplasia-dysplasia-adenocarcinoma sequence

(GERD, Barrett's oesophagus, dysplasia, OAC, metastatic OAC) as well as healthy controls. We carried out 16 s rRNA gene DNA sequencing protocols on these samples. DNA extraction and library preparation was performed with consideration to the low mass nature of oesophageal biopsies. Raw reads were processed and amplicon sequence variants (ASVs) were generated using the DADA2. We dissected ecological differences between sample site and clinical classification using a variety of approaches including examining differentially abundant taxa and inferred metabolic pathways, alpha diversity and beta-diversity.

Results: The upper digestive tract was found to be dominated by the genera *Streptococcus*, *Prevotella*, and *Haemophilus*. There was no statistically significant shift in beta diversity with respect to biopsy location. Alpha diversity was reduced in gastric biopsies compared to oesophageal biopsies. A slight yet significant shift was seen in beta diversity (Bray–Curtis Dissimilarity) with respect to clinical classification in biopsies derived from the gastroesophageal junction (GEJ) and stomach.

Various taxa were found to be differentially abundant between biopsy site and with regard to clinical classification.

Conclusion: OAC primarily occurs at the GEJ. Community structure was shifted in samples derived from the GEJ and the stomach. *Fusobacterium nucleatum* was overrepresented in oesophageal biopsies from individuals with diseased oesophagus compared to individuals with a histologically normal oesophagus. This bacterium has been implicated in oncogenesis of various cancers most notably colorectal cancer. Several ASVs assigned to the genus *Prevotella* were depleted in stomachs of individuals with metastatic OAC compared to all other groups.

245 A RETROSPECTIVE ANALYSIS OF ADVERSE EVENTS OF PER-ORAL ENDOSCOPIC MYOTOMY

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Peroral endoscopic myotomy (POEM) has rapidly vindicated its position within the spectrum of achalasia treatment methods due to its excellent efficacy and safety. Nevertheless, POEM remains an invasive intervention which still carries risk of potential complications. The aim of our detailed analysis was to assess the perioperative and early postoperative adverse events in patients undergoing POEM at our institution.

Methods: We retrospectively evaluated the prospectively collected data from all consecutive patients who underwent POEM 12/2012–5/2018 at our institution and searched for perioperative complications. Surgical classification Clavien Dindo (C-D) was used to assess the severity of adverse events.

Results: A total of 243 POEM procedures were performed. 73 procedures (30.0%) passed uneventfully while in 170 procedures (70.0%), 208 adverse events occurred. Minor AEs (C-D I,II) were as follows: allergic reaction to antibiotics (2/243; 0.8%), anaesthesia-related complications (14; 5.8%), pain requiring analgesics (158; 65%), fever (20; 8.2%), pneumonia (3; 1.2%) and irreversible loss of taste and smell (1; 0.4%). Major adverse events (CD III and more) included: post-POEM leak from mucosal incision requiring endoscopic clipping (5; 2.0%), pneumothorax (2; 0.8%), pleural effusion (1; 0.4%), scrotum emphysema (1; 0.4%) and death due to sudden cardiac arrest (1; 0.4%).

Conclusion: Minor POEM-related adverse events are rather common. Although being rare, severe complications, and even fatal, may still occur. Overall, POEM can be considered a safe procedure.

254 LYMPH NODE DISSECTION IN T1 AND T2 ESOPHAGEAL SQUAMOUS CELL CARCINOMA: MINIMALLY INVASIVE ESOPHAGECTOMY VERSUS OPEN SURGERY

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Minimally invasive esophagectomy is increasingly performed for esophageal squamous carcinoma, with advantages of improved perioperative outcomes in comparison with open esophagectomy. Lymph node dissection is one of