

after two years, and thoracoscopic dissection (n=56) was introduced after case 94. Laparoscopic TARC was performed for the last 47 patients. Patients in the four groups had similar demographics, histological diagnosis, pre-operative and pathological staging, although the ones in the lap TARC group had a lower uptake of neo-adjuvant chemotherapy (64% versus 83%), mainly due to patient choice and co-morbidities.

Specimen lymph nodes for the four groups were: open = 20.5 +/-9.5; Lap = 19.5 +/- 7; mini-tho = 19.9 +/- 7; lap TARC = 25 +/- 10 (p = 0.027). Resection margins were >1mm in 68.1% (open), 67.3% (lap), 64.2 (mini-tho) and 79.5% (lap TARC). Patients five-year survival rates during the 4 phases of the learning curve were 38.6%, 44.9%, 42.8% and 59% respectively, showing a benefit trend towards the end of the learning curve (p=0.03, log Rank Test).

Conclusion: Laparoscopic Anatomical resection of cancers of the OJG requires a long learning curve. The evolution of performance and surgical technique through open and minimally invasive learning phases, along with the progress in oncological science, result in improved long-term survival.

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O187 ANASTOMOTIC TECHNIQUES AND ASSOCIATED MORBIDITY IN TOTAL MINIMALLY-INVASIVE TRANSTHORACIC ESOPHAGECTOMY – RESULTS FROM THE ESOBENCHMARK DATABASE

Schroeder W¹, Raptis D², Schmidt H², Gisbertz S³, Moons J⁴, Asti E⁸, Luyer M⁹, Hoelscher A¹, Schneider P², van Berge Henegouwen M³, Nafteux P⁴, Nilsson M⁵, Räsänen J⁶, Palazzo F⁷, Mercer S¹², Bonavina L⁸, Nieuwenhuijzen G⁹, Wijnhoven B¹⁰, Pattyn P¹¹, Grimmering P¹³, Bruns C¹, Gutschow C²

¹Dep of General, Visceral and Cancer Surgery, University of Cologne,

²Department of General and Transplantation Surgery, University Hospital Zurich,

³Department of Surgery, Amsterdam UMC, location AMC, University of Amsterdam, Cancer Center Amsterdam,

⁴Department of Thoracic Surgery, University Ziekenhuis Leuven,

⁵Division of Surgery, CLINTEC, Karolinska Institutet, Stockholm,

⁶Department of General Thoracic and Esophageal Surgery, Helsinki University Hospital,

⁷Department of Surgery, Thomas Jefferson University, Philadelphia, PA,

⁸Department of Surgery, IRCCS Policlinico San Donato, University of Milan,

⁹Department of Surgery, Catharina Hospital, Eindhoven,

¹⁰Department of Surgery, Erasmus University Medical Center, Rotterdam,

¹¹Department of Surgery, University Center Ghent,

¹²Department of Upper GI Surgery, Queen Alexandra Hospital, Portsmouth,

¹³Department of General, Visceral and Transplant Surgery, University Medical Center, Mainz

Background: Total minimally-invasive transthoracic esophagectomy (ttMIE) faces increasing application in surgical treatment of esophageal cancer. For esophago-gastric reconstruction, different anastomotic techniques are currently used, but their impact on postoperative anastomotic leakage and morbidity has not been investigated. The aim of this retrospective multicenter analysis was to describe anastomotic techniques used for ttMIE and to analyze the associated morbidity.

Patients and Methods: Patients were selected from a basic dataset, collected over a 5-year period from 13 international surgical high-volume centers. Endpoints were anastomotic leakage rate and postoperative morbidity in correlation to anastomotic techniques, measured by the CD classification and the Comprehensive Complication Index[®] (CCI).

Results: Five anastomotic techniques were identified in 966 patients after ttMIE: Intrathoracic end-to-side circular-stapled technique in 427 patients (double-stapling n=90, purse-string n=337), intrathoracic (n=109) or cervical (n=255) side-to-side linear-stapled, and cervical end-to-side hand-sewn (n=175). Leakage rates were similar in intrathoracic and cervical anastomoses (15.9% vs. 17.2%, P=0.601), but overall complications (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 intrathoracic reconstructions. Leakage rates after intrathoracic end-to-side double-stapling (23.3%) and cervical end-to-side hand-sewn (25.1%) techniques were significantly higher compared with intrathoracic

side-to-side linear (15.6%), end-to-side purse-string (13.9%) and cervical side-to-side linear-stapled esophago-gastrostomies (11.8%) (P<0.001). Multivariable analysis confirmed anastomotic technique as independent predictor of leakage after ttMIE.

Conclusion: Results of this analysis present the current status of the technical evolution of ttMIE with anastomotic leakage as predominant surgical complication. However, technique-related morbidity requires cautious interpretation considering the long learning curve of this complex surgical procedure.

O190 THE EPIDEMIOLOGY OF ANTI-REFLUX SURGERY IN DENMARK 2000-2017: A NATIONWIDE REGISTRY-BASED POPULATION STUDY

Jonas Sanberg Ljungdahl^{1,2}, Jesper Durup³, Kim Christian Houliand^{4,2}

¹Department of Surgery, Kolding Hospital, a part of Lillebaelt Hospital, Kolding, Denmark.

²Department of Regional Health Research, University of Southern Denmark, Odense, Denmark.

³Department of Surgery, Odense University Hospital, Odense, Denmark

⁴Department of Vascular Surgery, Kolding Hospital, a part of Lillebaelt Hospital, Kolding, Denmark.

Aim: The primary aim of this register-based study was to describe the utilization and development of anti-reflux surgery compared to use of proton-pump inhibitors from 2000-2017 in a nationwide population-based cohort.

Background & Methods: Treatment of GERD consists of anti-secretory drugs, mainly proton pump inhibitors (PPI), or anti-reflux surgery. Laparoscopic anti-reflux surgery is considered standard of care in surgical treatment of gastro-esophageal reflux disease¹ and with careful patient selection based on thorough preoperative workup², symptom control and patient satisfaction are high compared to medical therapy³⁻⁵.

In American studies, the rate of anti-reflux surgery peaked at 16.7 per 100.000 inhabitants in 2000 and then decreased to 6.1 per 100.000 inhabitants by 2010^{6,7}. The only Danish study on the epidemiology of anti-reflux surgery, describes a reoperation rate of 5%, but only includes data from 1997-2005 and describes no rate of surgery compared to population size⁸. It is therefore unclear how the use of anti-reflux surgery has developed.

This register-based cohort study includes all patients who have undergone anti-reflux surgery in Denmark from 2000-2017. Data was retrieved from The National Danish Patient Registry and linked at an individual level using the unique civil registration number issued to all Danes. For the entire study period, rate of anti-reflux surgery, including primary and reoperative procedures, Charlson comorbidity index (CCI), 30- and 90-days perioperative mortality, use of laparoscopic technique and length of stay was calculated. Population-based rates of surgery was compared to rates of PPI-use.

Results: Rate of surgery peaked between 2000-2005 with >5.0 procedures per 100.000 inhabitants, but declined consistently in the rest of the study period. Reoperations were an increasing percentage of the procedures with up to 20% increasing from 7%. CCI increased during the study period with >25% having a CCI>0 at the end of the study. In the entire period, >98% of procedures were performed laparoscopically, mortality <1% and length of stay declined to median 1 day.

Conclusion: Anti-reflux surgery was utilized less, but mortality, conversion rates and length of hospital stay were consistently low, despite an increased burden of comorbidity and reoperations.

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