ORIGINAL ARTICLE

Replacing Pyloromyotomy by Thumb Dilatation in Esophagogastrectomy

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ABSTRACT

Background: Esophagogastrectomy is frequently being done at our centre. Subjecting the patient to formal pyloromyotomy is debatable.
Aim: This study aimed to compare the results of formal pylaroplasty with simple thumb dilatation after esophagogastrectomy.
Material and methods: Two hundred patients with abdominal esophagogastrectomy were included in the study. Thumb dilation of the pylorus was done in 120 patients (Study group) and formal pylaromyotomy (Control group) was done in 80 patients.
Results: The amount of Ryles tube aspirate and its duration was similar in both groups. There was no significant difference in the amount of aspirate in both groups. The average duration of Ryles tube aspirate was 3 days in the study group and 4 days in the control group. Recovery from postoperative ileus was earlier in the study group than control group.
Conclusion: Thumb dilatation of pylorus is simple, ideal, less invasive and as effective as routine pylaroplasty after esophagogastrectomy.
Key Words: Pyloromyotomy, esophagogastrectomy, Thumb dilatation
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INTRODUCTION

Pyloroplasty was initially devised by Heineken for the treatment of congenital hypertrophic pyloric stenosis, and the results were poor. Jaboulay's side-to-side anastomosis of the distal greater curvature and duodenum in 1892, and the Faience extension of this anastomosis to include the pylorus itself were subsequently refined by Kocher. Kocher improved the technical ease of the operation by including mobilization of the duodenum from its lateral peritoneal attachments. The first pyloromyotomy was performed for this lesion in 1912 by Ramstedt. All these procedures were done for either peptic ulcer disease or congenital pyloric stenosis. Pylaromyotomy /Pylaroplasty became a routine procedure after esophagogastrectomy to prevent retention. There have been many modifications to this procedure such as balloon dilation, using Tubbs dilator etc. We used thumb dilation of the pylorus with stretching to replace the formal pyloromyotomy/pyloroplasty. The aim of this study was to compare the results of formal pylaroplasty with simple thumb dilatation after esophagogastrectomy.

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PATIENTS AND METHODS

This study was conducted in the Department of general surgery and allied specialities over five years. A total of two hundred patients with upper stomach and lower oesophagal cancer were included in the study. All underwent esophagogastrectomy. There were no demographic or geographical differences among these patients. Each patient had a detailed history taken and a thorough clinical examination. The proper preoperative evaluation was conducted for all patients before surgery. Complete blood count, Kidney function test, Liver function test, Abdominal ultrasonography, and contrast-enhanced tomography were done in every patient. All patients were subjected to midline laparotomy. The resectability of the tumour was assessed. Unresectable lesions were excluded from the study. Esophagogastrectomy was done in every patient. The stomach was mobilized along with the abdominal oesophagus transracially. Growth was resected and a

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stomach tube was made. Thumb dilation of the pylorus was done in 120 patients(Study group) and formal pylaromyotomy (Control group) was done in 80 patients. The effectiveness of the procedure was checked by passing the thumb easily through the pylorus without any resistance. The esophagogastric anastomosis was completed manually. Ryles tube was placed across anastomosis. A liquid diet was given for 2-5 days followed by semisolid and solid. Both the groups were compared for

1. Amount and duration of Ryles tube aspirate
2. Time of recovery from postoperative ileus and appearance of bowel sounds.
3. Other complications

Data was collected and analyzed statistically using SPSS software.

RESULTS

A total of 200 patients were included in the study. Male female ratio was 3:1.Most of the patients were in the age group of 50-60 years. The median age was 50 years. All these patients had adenocarcinoma. All patients were operated on transabdominal. Most of the patients had Gastro-esophageal junction growth. There were three operative deaths, two in the study group and one in the control group. One patient died of pulmonary thromboembolism; another developed an inferior wall myocardial infarction. The third patient developed postoperative sepsis secondary to aspiration pneumonia. The average amount of Ryles tube aspirate was 202 ml/day for the study group and 182 ml/day for the control group on the first postoperative day. The aspirate decreased on the second postoperative day to 90 ml/day and 98 ml/day for the study and control groups. There was no significant difference in the amount of aspirate in both groups. The average duration of ryles tube aspirate was 3 days in the study group and 4 days in the control group. Duration of ryles tube aspirate was less in the study group than in the control group. Recovery from postoperative ileus was again earlier in the study group than control group. Recovery from ileus was at the time when normal bowel sounds were heard. This time of appearance of bowel sounds was significantly less in the study group than control group. We had four patients in the study group who developed anastomotic leak. All these patients were managed conservatively by parenteral nutrition. Three patients in the control group developed an anastomotic leak again and managed conservatively. One patient in the control group developed peritonitis in the postoperative period. He was re-explored and there was a perforation at the pyloromyotomy site. Five patients in the study group and four in the control group developed wound infection in the postoperative period. All patients were discharged and followed in the outpatient department. Patients received adjuvant treatment in the medical oncology department of our Institute. The mean follow-up was 2 years.

DISCUSSION

With the advancement in surgical techniques and improvement in anaesthetic agents mortality and morbidity in esophagogastrectomy have been remarkably reduced with present in-hospital mortality of around 5% in large centres,[1-4] Interest in quality of life in survivors of esophagectomy has got the attention of many researchers as these patients frequently suffer from early satiety, reflux, dumping and swallowing difficulty. Delayed gastric emptying after esophagogastrectomy has been found in a significant number of patients[5-7] It may occur due to resection of the vagus nerve of the stomach leading to impairment of gastric evacuation by gastric dysperistalsis because of gastric dysrhythmia and anatomical destruction of esophageal hiatus decrease the gastric tonicity and impair the gastric evacuation. All of the above would lead to impaired gastric emptying and retention. Currently, there is no ideal method to prevent early-stage postoperative gastric retention following radical esophagectomy for oesophagal carcinoma. Some researchers have studied postoperative intrathoracic gastric function after esophagectomy for oesophagal carcinoma using isotope techniques. The results indicated that the residual stomach empties much faster in patients who underwent simultaneous intraoperative pyloromyotomy or pyloroplasty compared to those who did not undergo these procedures. It may improve patients' postoperative quality of life and prevent or decrease the occurrence of early-stage postoperative gastric retention,[8] This idea is supported by many authors, [9]

Adding routine pyloric drainage following esophagogastrectomy avoids postoperative gastric outlet obstruction secondary to vagotomy,[10-12] they say that a group of patients will experience poor gastric emptying after esophagogastrectomy which can lead to pulmonary

aspiration leading to pneumonia. However, opponents of routine pyloric drainage argue that the procedure is not without problems. A good number of these patients develop bile reflux and dumping. Moreover post esophagectomy foregut function improves with time.[13-14] So the problems of gastric stasis improve with time and can be managed by medical means. Urschel et al. showed that a pyloric drainage procedure, performed at the time of gastric reconstruction and esophagectomy, reduces the occurrence of early postoperative gastric outlet obstruction,[15]. However, the impact of pyloric drainage on overall complications, respiratory complications, and late postoperative foregut function is far from certain. The meta-analysis shows that the presence or absence of a pyloric drainage procedure has little impact on most relevant patient outcomes. Recently, Lanuti et al. reported that pulmonary morbidity, mortality and the incidence of early and/or late gastric outlet obstruction were not influenced by pyloromyotomy after esophagectomy with gastric conduit, and gastric outlet obstruction could be successfully managed postoperatively with endoscopic balloon dilatation in most situations.[16] The largest RCT was by Fok et al.,[17] in 1991, where 200 patients undergoing Lewis-Tanner esophagectomy were randomised to pyloroplasty or control. Thirteen patients without drainage developed obstructive symptoms compared to none in the drainage group. In addition, significant benefits were shown for early and late symptoms with meals, although all other outcome measures showed only non-significant trends towards benefit. Zieren et al. randomised 107 patients to pyloroplasty or control but found no significant differences between the two groups. However, the complication rates in this study were low in both groups.[18] Mannell et al.,[19] performed a 40-patient RCT looking at gastric emptying, but again, due to the low incidence of symptoms, no significant differences were seen. Chattopadhyay et al., [20] performed a small RCT to look at gastric emptying in 24 patients. Emptying was significantly delayed by more than 10 times in both groups post-operatively compared to preoperatively, but the difference was significantly better in the pyloroplasty group. There were no other differences in either group. Kobayashi et al.,[21] performed a 67-patient randomised trial looking at gastric function one and six months post esophagectomy. The food ejection time was reduced in the pyloroplasty group but most other markers including nutritional evaluation, lymphocyte count, rapid turnover protein and body weight fluctuation, were not significantly different. Cheung et al.,[22] performed a 72-patient randomised study looking at gastric emptying and late symptoms. They showed significantly quicker gastric emptying at six months, although symptoms did not correlate well with this improvement in transit time. They deemed that two patients in the control group could have benefited from pyloroplasty as the remainder were completely symptom-free on follow-up.

CONCLUSION

Routine pyloromyotomy in esophagogastrectomy is unnecessary. It can be safely and effectively replaced by thumb dilation of the pylorus, which is less invasive and equally effective.

Conflict of interest: None

Written informed consent: taken

Competting interest : None

REFERENCES

1. Nagawa H, Kobori O, Muto T. Prediction of pulmonary complications after transthoracic esophagectomy. Br J Surg 1994;81:860-862.
2. Fang W, Igaki H, Tachimori Y, Sato H, Daiko H, Kato H. Three-field lymph node dissection for esophageal cancer in elderly patients over 70 years of age. Ann Thorac Surg 2001;72:867-871.
3. Lerut T, Coosemans W, Leyn PD, Raemdonck DV, Deneffe G, Decker G. Treatment of esophageal carcinoma. Chest 1999;116:463S-465S.
4. Ando N, Ozawa S, Kitagawa Y, Shinozawa Y, Kitajima M. Improvement in the results of surgical treatment of advanced squamous esophageal carcinoma during 15 consecutive years. Ann Surg 2000;232:225-232.
5. Hinder RA, Esser J, Demeester TR. Management of gastric emptying disorders following Roux-en-Y procedure. Surgery 1988;104:756-772.
6. Collard JM, Otte JB, Reynaert M, Kastens PJ. Quality of life three years or more after esophagectomy for cancer. J Thorac Cardiovasc Surg 1992;104:391-394.
7. Lee HS, Kim MS, Lee JM, Kim SK, Kang KW, Zo JI. Intrathoracic gastric emptying of solid food after esophagectomy for esophageal cancer. Ann Thorac

Surg 2005;80:443-448.

8. Wang Yong-gang, Zhang Ru-gang, Zhang Da-wei. Research on intra-thoracic gastric function after esophagectomy. Chinese Journal of Tumor 1997;19:385–8.
9. Zhao Chong-wei, Wang De-jiang, Pan Shu-hua et al. Total gastric replacement of esophagus through primary esophageal-bed in the treatment of high positioned esophageal carcinoma. Journal of Shandong Medical University 1991;29:149–51.
10. Branicki FJ, Law SY, Fok M, Poon RT, Chu KM, Wong J. Quality of life in patients with cancer of the esophagus and gastric cardia: a case for palliative resection. Arch Surg 1998;133:316-322.
11. Fok M, Cheng SW, Wong J. Pyloroplasty versus no drainage in gastric replacement of the esophagus. Am J Surg 1991;162:447-452.
12. Law S, Cheung MC, Fok M, Chu KM, Wong J. Pyloroplasty and pyloromyotomy in gastric replacement of the esophagus after esophagectomy: a randomized controlled trial. J Am Coll Surg 1997;184:630-636.
13. Hill AD, Walsh TN, Hamilton D, Freyne P, O'Hare N, Byrne PF, Hennessy PJ. Erythromycin improves emptying of the denervated stomach after oesophagectomy. Br J Surg 1993;80:879-881.
14. Bemelman WA, Brummelkamp WH, Bartelsman JF. Endoscopic balloon dilatation of the pylorus after esophagogastrostomy without a drainage procedure. Surg Gynecol Obstet 1990;170:424-426.
15. Urschel JD, Blewett CJ, Young JE, Miller JD, Bennett WF. Pyloric drainage (pyloroplasty) or no drainage is gastric reconstruction after esophagectomy: a meta-analysis of randomized controlled trials. Dig Surg 2002;19:160-164.
16. Lanuti M, de Delva PE, Wright CD, Gaissert HA, Wain JC, Donahue DM, Allan JS, Mathisen DJ. Post-esophagectomy gastric outlet obstruction: role of pyloromyotomy and management with endoscopic pyloric dilatation. Eur J Cardiothorac Surg 2007;31:149-153.
17. Fok M, Cheng SW, Wong J. Pyloroplasty versus no drainage in gastric replacement of the esophagus. Am J Surg 1991; 162:447–452.
18. Zieren HU, Muller JM, Jacobi CA, Pichlmaier H. Should a pyloroplasty be carried out in stomach transposition after subtotal esophagectomy with esophago-gastric anastomosis at the neck? A prospective randomized study. [German]. Chirurg 1995; 66:319–325.
19. Mannell A, McKnight A, Esser JD. Role of pyloroplasty in the retrosternal stomach: results of a prospective, randomized, controlled trial. Br J Surg 1990; 77:57–59.
20. Chattopadhyay TK, Gupta S, Padhy AK, Kapoor VK. Is pyloroplasty necessary following intrathoracic transposition of stomach? Results of a prospective clinical study. Aust NZ J Surg 1991; 61:366–369.
21. Kobayashi A, Ide H, Eguchi R, Nakamura T, Hayashi K, Hanyu F. The efficacy of pyloroplasty affecting to oral-intake quality of life using reconstruction with gastric tube post esophagectomy [Japanese]. Nippon Kyobu Geka Gakkai Zasshi – J Jpn Ass Thor Surg 1996; 44:770–778.
22. Cheung HC, Siu KF, Wong J. Is pyloroplasty necessary in esophageal replacement by stomach? A prospective, randomized controlled trial. Surgery 1987; 102:19–24.