

GASTRIC PULL-UP RECONSTRUCTION FOR PHARYNGOLARYNGOESOPHAGECTOMY IN HEAD AND NECK CANCER AND CERVICAL ESOPHAGEAL SQUAMOUS CELL CARCINOMA

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Abstract- There are many techniques for reconstruction after total pharyngolaryngoesophagectomy. The use of a transposed stomach to restore gastrointestinal continuity, and this combined cervical and abdominal approach for pharyngolaryngoesophagectomy and gastric pull up has become one of the most popular. This retrospective study is a review of 50 consecutive Iranian patients who underwent pharyngolaryngoesophagectomy and gastric pull up in Amir-Alam Hospital affiliated to Tehran University of Medical Sciences, to determine the complication and survival rates. The clinical data of 50 consecutive cases of cervical esophagus carcinoma and squamous cell carcinoma of the hypopharynx treated by pharyngolaryngoesophagectomy and gastric pull-up were analysed. The age, gender, operating room time, operative mortality, major postoperative complications and survival rate were retrieved. Survival time was studied using Kaplan-Meier method. The postoperative complications were wound infection in five patients, pulmonary complications in ten, Stomal stenosis in six, cutaneous fistula in four, Gastric outlet obstruction in three. There were no intraoperative deaths. One month mortality was 10 per cent. The median survival for patients who underwent pharyngolaryngoesophagectomy and gastric pull-up procedures was 21 months and the 5-year survival was 18%.

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INTRODUCTION

Reconstruction after total pharyngolaryngoesophagectomy has been one of the most challenging

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operations for its distance covered, adequate routes selected, maintenance and provision of adequate blood supply to the segment of gut used for the reconstruction (1). There are many techniques for reconstruction of this area. Local or regional cutaneous flap, myocutaneous flap and colon interposition technique (2). The use of stomach as a method of reconstruction was first described by Turner in 1936 (3). Ong and Lee modified this technique and they described the use of a transposed

stomach to restore gastrointestinal continuity, and this combined cervical and abdominal approach for pharyngolaryngoesophagectomy and gastric pull up has become one of the most popular (4). Although there have been a little studies that have reported complications and patient survival in patients who treating pharyngoesophageal defects with gastric pull up method. This study is a review of 50 consecutive patients who underwent pharyngolaryngoesophagectomy and gastric pull up, to determine the complication and survival rates in this reconstruction method.

MATERIALS AND METHODS

Between January 1997 and December 2003, 50 pharyngolaryngoesophagectomy and gastric pull-up performed with a same surgeon in Amir-Alam hospital affiliated to Tehran University of Medical Sciences (TUMS). Institutional Review Board (IRB) approval was granted by the Research Ethic Committee of Tehran University of Medical Sciences.

All patients underwent preoperative evaluation and received nutritional support before the operation. Pre-operative investigation included clinical assessment, chest X-ray, computerized tomography (CT) of the neck, chest and upper abdomen, upper GI endoscopy, standard blood tests, ECG and spirometry. The procedures included were performed using a one-team approach. Neck resection was started via a standard collar neck incision and was completed by surgical team. If common carotid or internal carotid or prevertebral fascia were invaded with tumor or proximal free margin could not gain patient was inoperable. If tumor was respectable laryngopharyngectomy and bilateral neck dissection performed; after this, surgical team mobilized the stomach through an upper midline incision. The left gastric and short gastric have been cut after ligation. The right gastroepiploic and right gastric arteries were preserved. The duodenum was Kocherized, and the esophageal hiatus was mobilized. The stomach was transected at the esophagogastric junction. The cervical esophagus was then dissected, and the upper thoracic esophagus was bluntly mobilized through

the thoracic inlet into the posterior mediastinum to a level just above the carina. The cervical portion of esophageal dissection was performed under direct vision. The esophagogastric junction was then transected. Total esophagectomy was performed with stripping. The stomach was then tubed in all cases by gastroplasty. This neoesophagus was then passed through the posterior mediastinum up to the neck by attaching it to the aforementioned suture and taking care not to axially twist the tube as it passed through the posterior mediastinum. The neoesophagus was then anchored to the prevertebral fascia in the neck and the pharyngogastric anastomosis was performed using a single-layer full-thickness interrupted 3-0 Vicryl stitch. Nearby muscles or omentum from the greater curvature was buttressed to the anastomosis. All anastomoses were located at the base of the oropharynx. The posterior mediastinum and anastomoses were drained with two closed-suction 15-F catheters. Pyloromyotomy and Jejunostomy were performed on all patients and nasogastric tubes were inserted at the time of surgery in all patients. All patients remained in an Intensive Care Unit for the immediate postoperative period before transfer to a ward. All patients underwent a Gastrografin swallow seven to 10 days after surgery, and if the anastomosis was intact, the nasogastric tube was removed and oral fluids were commenced. Patients were advised to swallow a small amount of their meal, and to sit in an upright position after the meal for about 30 minutes during the early postoperative period. All patients were followed up to until April 2006 for postoperative complications.

Hospital, operative, and office records of these patients were reviewed. The age, gender, operating room time, operative mortality, major postoperative complications and survival rate were retrieved. Details of the patients are shown in Table 1.

Table 1. Details of the patients

Details	
Mean age (range)	51(17-77) years
Male: female ratio	31/19
Mean hospital stay (range)	28 (15-57) days
Mean preoperative haemoglobin (range)	12.8 (10-15.4) gr/dl
Mean preoperative Albumin (range)	36 (18-48) gr/dl

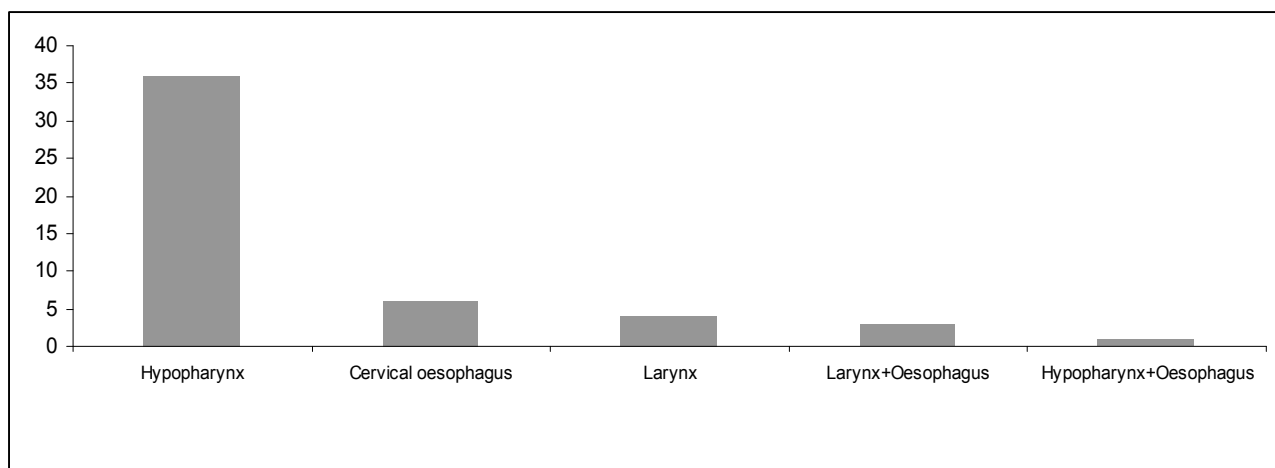


Fig. 1. Primary sites of tumour

RESULTS

A total of 50 patients underwent pharyngo-laryngoesophagectomy and gastric pull-up procedures during this 8-year period. There were 19 female and 31 male patients. The mean age was 51 years with a range from 17 to 77 years.

The primary sites of tumor are showed in figure 1. In most cases, the definite primary location of the tumor could not be determined due to extensive involvement. Tumor staging was recorded from operative findings and the final pathological specimen. Pathological staging, as classified by the International Union Against Cancer classification, showed T4N1M0 stage in 31 patients (62%), T4N2M0 stage in 7 patients (14%), and T4N0M0 stage in 3 patients (6%).

The postoperative complications were wound infection in five patients, pulmonary complications in ten, Stomal stenosis in six, cutaneous fistula in four, Gastric outlet obstruction in three. There were no intraoperative deaths.

One month mortality was 10 per cent. The median survival for patients who underwent pharyngolaryngoesophagectomy and gastric pull-up procedures was 21 months and the 5-year survival calculated using the Kaplan-Meier method was 18 per cent.

DISCUSSION

Carcinoma of the hypopharynx and cervical esophagus still presents the head and neck surgeon with a difficult management problem (5, 6). Various techniques have been utilized to effect pharyngeal continuity with each carrying a significant morbidity and mortality (7). The optimal reconstructive procedure should provide the lowest mortality and morbidity, the shortest hospital stay, and the most rapid return to successful feeding (8, 9). At present, no general exists as to which methods is the perfect reconstruction method after total pharyngo-laryngoesophagectomy. Over the last 40 years, the use of stomach as a method of reconstruction was has become one of the most popular (4).

In choosing the reconstructive method, post operative complications are very important factor. In present study pulmonary complications are the common complication of gastric pull up procedure (20%) and it is comparable with previous reports (3). Wound infection developed in 10% of our patients and it is lower than some previous report (2). Stomal stenosis, Cutaneous fistula and Gastric outlet obstruction rate in our study were higher than similar reports (2, 3). Other important factors in choosing reconstructive procedure after total pharyngo-laryngoesophagectomy are mortality and survival time. In previous studies reported hospital mortality

(30 days mortality) was from 5% to 11% in previous studies (10) and overall mortality in the world literature is 15% (11) and mortality was 10 per cent in present study. In our study most factors that increase the operative risk can be controlled by a heightened experience of hypopharyngeal and esophageal reconstructions and an extended knowledge of all the appropriate surgical procedures (12). Decrease mortality rate in present study probably reflects our systematic concern about preoperative evaluation, received nutritional support before the operation, preoperative consultation and preoperative collaboration between head and neck, digestive, and plastic surgeons, and the close adaptation of the surgical procedure to the patient's condition. This underlines the need for a heightened awareness of the surgical indications (13).

Considering the safety of the operation, as well as the low postoperative morbidity and mortality, we suggest that this method is effective and should be regarded as a method of choice in reconstructive surgery after pharyngo-laryngo-oesophagectomy.

Conflict of interests

The authors declare that they have no competing interests.

REFERENCES

1. Sagawa N, Okushiba S, Ono K, Ito K, Morikawa T, Kondo S, Katoh H. Reconstruction after total pharyngolaryngoesophagectomy. Comparison of elongated stomach roll with microvascular anastomosis with gastric pull up reconstruction or something like that. *Langenbecks Arch Surg.* 2000 Jan; 385(1):34-38.
2. Puttawibul P, Pornpatanarak C, Sangthong B, Boonpipattanapong T, Peeravud S, Pruegsanusak K, Leelamanit V, Sinkijharoenchai W. Results of gastric pull-up reconstruction for pharyngolaryngo-oesophagectomy in advanced head and neck cancer and cervical oesophageal squamous cell carcinoma. *Asian J Surg.* 2004 Jul;27(3):180-185.
3. Hartley BE, Bottrill ID, Howard DJ. A third decade's experience with the gastric pull-up operation for hypopharyngeal carcinoma: changing patterns of use. *J Laryngol Otol.* 1999 Mar; 113(3):241-243.
4. Ong GB, Lee TC. Pharyngogastric anastomosis after esophageal pharyngectomy for carcinoma of the hypopharynx and cervical esophagus. *Br J Surg.* 1960;45:193-200.
5. Wight RG, Birchall MA, Stafford ND, Stanbridge RL. Management of hypopharyngeal carcinoma: a 6-year review. *J R Soc Med.* 1992 Sep;85(9):545-547.
6. Marmuse JP, Koka VN, Guedon C, Benhan G. Surgical treatment of carcinoma of the proximal esophagus. *Am Surg.* 1995; 169: 386-390.
7. Stell PM, Misotten F, Singh SD, Ramadan MF, Morton RP. Mortality after surgery for hypopharyngeal cancer. *Br J Surg.* 1983; 70:713-718.
8. Bottger T, Bumb P, Dutkowski P, Schlick T, Junginger T. Carcinoma of the hypopharynx and the cervical esophagus: a surgical challenge. *Eur J Surg.* 1999;165(10):940-946.
9. Cole CJ, Garden AS, Frankenthaler RA, et al. Postoperative radiation of free jejunal autografts in patients with advanced cancer of the head and neck. *Cancer.* 1995; 75: 9-13.
10. Hartley BEJ, Bottrill ID, Howard DJ. A third decade's experience with the gastric pull-up operation for hypopharyngeal carcinoma: changing patterns of use. *J Laryngol Otol.* 1999; 113:241-243.
11. Wei WL, Lam LK, Yuen PW, et al. Current status of pharyngolaryngoesophagectomy and pharyngogastric anastomosis. *Head Neck.* 1998; 20:240-244.
12. Asamura H, Kato H, Watanabe H, Tachimori Y, Ebihara S, Harii K. Combined gastric pull-up and microvascular jejunal transfer procedure after pharyngolaryngoesophagectomy. *Ann Thorac Surg.* 1989; 48: 423-425.
13. Guillem P, Chevalier D, Patenotre P, Triboulet JP. Composite reconstruction of hypopharynx and esophagus. *Dis Esophagus.* 2000; 13(3):207-212.