

PHARYNGOLARYNGO-ESOPHAGECTOMY WITH IMMEDIATE GASTRIC PULL-UP

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Background: This paper documents our experience with patients who underwent laryngopharyngo-esophagectomy with immediate gastric pull-up procedures.

Patients and Method: Fifteen patients with carcinoma of the hypopharynx and cervical esophagus underwent total laryngopharyngo-esophagectomy with immediate gastric pull-up procedures over a period of nine years at the Asir Central Hospital in the southwestern region of Saudi Arabia.

Results: The most common complication was cervical fistula, which with its sequelae occurred in 40%. Postoperative function in terms of swallowing ability was good but rehabilitation of speech was poor. The overall hospital mortality was 7%, and the crude survival rate was 40%. The most common cause of long-term failure was the recurrence of the disease.

Conclusion: The success of this operative procedure depends on wide surgical excision of cancer along with rapid reconstruction of alimentary canal.

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Key Words: Laryngopharyngo-esophagectomy, gastric pull-up, carcinoma of the hypopharynx.

The hypopharynx forms a single oncological unit. Carcinoma of this unit is uncommon, and when it occurs the primary lesion is usually extensive and often accompanied by metastatic deposits in the regional lymph nodes.¹⁻³ The management of carcinomas arising from this unit has been a difficult problem facing head and neck surgeons for a number of reasons, including advanced disease at the time of presentation, high recurrence rate, difficulty in surgical reconstruction and poor results of radiation and surgical treatment. Radiation alone produces few instances of either palliation or cure.¹ Surgical resection has been more successful, producing a cure rate of 25%.²⁻⁴ Combined radiation treatment, followed by surgery for salvage, is better therapy for stages I, II, and III.⁵⁻⁷ The high recurrence rate is attributed largely to the difficulty in determining the true extent of the tumor. This necessitates wide resection, including laryngopharyngo-esophagectomy, in order to minimize recurrence.^{8,9}

Reconstruction of this wide surgical resection falls mostly into two types: those using skin flaps and those using transposed viscera, such as stomach, colon and jejunum. The use of skin flaps has two main disadvantages: 1) recurrence of disease before reconstruction is completed; and 2) high incidence of fistula and strictures if reconstruction is completed.¹⁰ The

several articles.^{2,3,8,11} Gastric pull-up operation was first employed by Ong and Lee¹² in 1960. The procedure was modified by Lequesne and Ranger,⁷ Stell,¹⁰ Leonard and Maran,¹¹ and Silver.² Gastric pull-up through the posterior mediastinum by traction of the esophagus, and anastomosing the stomach to the pharyngeal stump, accompanied by pyloromyotomy and jejunostomy was the procedure used in our institute. Our experience with 15 patients who underwent the above procedure is discussed and their data analyzed.

Patients and Methods

Fifteen patients who underwent pharyngolaryngo-esophagectomy and gastric pull-up operations for treatment of hypopharyngeal, advanced laryngeal and cervical esophageal cancer between January 1988 and December 1996 are described. Excluded from this study were patients who had gastric pull-up for disease other than cancer, such as caustic burn and congenital esophageal disease. Patients not followed in our institute or lost to follow-up and non-Saudi patients were also excluded from the final analysis. Data obtained were compared with data previously reported from international institutions regarding mortality rate and survival.

Result

There were nine men and six women whose ages ranged from 35 to 72 years (an average of 42 years). Seven patients received radical radiotherapy prior to surgery and had active disease at the time of surgery. Two had a severely compromised airway, necessitating emergency

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tracheostomy. Eight patients had postoperative radiotherapy. All patients presented with a three- to five-month history of hoarseness, dysphagia, pain and varying degrees of stridor. Assessment of local disease included complete panendoscopy, CT scan, multiple biopsies and workup for distant metastases.

In five patients, the ipsilateral cervical lymph nodes were palpably enlarged. These patients underwent ipsilateral radical neck dissection and contralateral modified neck dissection with subtotal thyroidectomy. Two patients presented with bilateral cervical node enlargement, and had ipsilateral radical neck dissection and contralateral modified neck dissection, sparing only the internal jugular vein with total thyroidectomy. Eight patients presented with no lymphadenopathy and underwent bilateral modified neck dissection and hemithyroidectomy on the tumor side. All patients were reconstructed with immediate gastric pull-up through the posterior mediastinum with pyloromyotomy and jejunostomy feeding tube. The follow-up period ranged from six months to seven years (mean 19 months). The number of patients, the site of tumors and staging of the disease (according to the American Joint Committee 1980)¹³ are summarized in Table 1.

Operative complication during surgery occurred in one patient, causing a small bowel injury. This complication was recognized and repaired immediately, with no consequences postoperatively. The most common complication was a cervical fistula with its sequelae. One patient developed carotid artery rupture and was successfully secured. Pneumothorax, commonly seen on the right side, developed in four patients, two of whom required insertion of a chest tube. Bronchopneumonia developed in three patients as a sequelae of cervical fistula. This resulted in one death within the first three weeks, postoperatively, giving rise to an approximately 7% mortality rate attributed directly to surgery. Regurgitation, diarrhea and dumping syndrome, seen in three patients, resolved in two to three months. Stenosis at pharyngogastric anastomosis was seen in two patients, but only one required dilatation. Both patients had postoperative radiotherapy. Despite pre-and postoperative calcium monitoring, hypocalcemia developed in five patients, with only one of them requiring long-term calcium and vitamin D therapy. Table 2 shows a breakdown of the postoperative complications.

Good conversational speech was achieved in 20% of patients. Another 30% had limited conversational speech, and 50% had poor, unintelligible or absent speech using various types of speech rehabilitation.

Patients with no complications averaged four weeks in hospital, although those with cervical fistula, which was

TABLE 1. Site of tumors and staging of disease.

Site of tumor	Pyriiform sinus	Post-cricoid	Posterior pharyngeal wall	Larynx	Cervical esophagus
No. of patients	6	5	2	1	1
Stage I	–	–	–	–	–
Stage II	1	2	–	–	–

Stage III	4	3	2	–	1
Stage IV	1	–	–	1	–

TABLE 2. Postoperative complications.

Postoperative complications	Number of patients
Cervical fistula and its sequelae	6
Pneumothorax	4
Bronchopneumonia	3
Regurgitation, dumping syndrome	3
Stenosis at the anastomosing site	2
Persistent hypocalcemia	1

the most common complication, averaged seven weeks in hospital.

Although the various ways in which long-term survival after cancer treatment may be presented give different results,¹⁴ crude five-year survival, actuarial survival, and median survival remain in common usage. The median survival of the whole group of 15 patients was 20 months, with the hospital death as having zero survival. Of the 15 patients who underwent the surgery more than five years ago, six survived five years or more. Thus the crude survival rate is 40% (6 out of 15). Ten patients remain free of disease, and two patients who are still alive with the disease have been operated upon within the past three years. One had distant metastasis and the other had recurrent disease in the regional lymph nodes two years following postoperative radiotherapy. Of those who died of the disease, one died of distant metastasis nine months after surgery, and one of local recurrence six months postoperatively.

Discussion

Gastric pull-up operation is a useful method for reconstruction and immediate restoration of alimentary continuity after tumor resection. It is only suitable for those patients whose general condition is sufficiently satisfactory to tolerate the one-stage combined abdominal and cervical procedures. It is not suitable for patients with previous abdominal surgery which makes mobilization of the stomach impossible, or where an experienced surgeon and nursing team are not available.

When successfully performed, the results are striking in comparison with those usually obtained by other methods of reconstruction.^{2-4,15} This is largely attributable to a number of reasons, namely, the excellent blood supply of the transposed stomach, which facilitates rapid healing, and early swallowing and speech rehabilitation. It is also an anastomosis outside the abdominal cavity, and has a low recurrence rate of tumor due to wide surgical excision.

In this study, the most common complication encountered was cervical fistula with its sequelae, which occurred in 40% of patients, all of whom had radiotherapy prior to surgery. This figure is lower than those reported

internationally,¹⁶ although this is a small series. It shows a decrease in operative mortality rate of 7% and increase in the crude survival rate of 40%, compared to other published reports with operative mortality rates of 11%,¹⁵ 31%,¹⁶ and 10%.¹⁷⁻¹⁹ This is probably related to the fact that eight patients had no lymphadenopathy at the time of presentation, and all had had an elective neck dissection. Neck dissection affords a definitive advantage to patients presenting with clinically negative cervical nodes, and must be considered in the initial treatment planning to obtain a better control of regional disease.²⁰ The aim of the surgical treatment must be the consistent rapid reconstruction of the alimentary tract, combined with as wide a surgical resection of the disease as possible. This is considered to be a key factor in determining the success of this operation and certainly the quality of the patient's life after surgery.

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References

- Vandenbrouck H, Sanco H, Le R, et al. Result of pre- and postoperative radiation of tumor of the hypopharynx. *Cancer* 1977;39:1445-9.
- Silver CE, Som ML. Reconstruction of cervical esophagus after pharyngolaryngectomy. *Ann Surg* 1967;165:239-43.
- Shah JP, Shah AR, Spiro RH, et al. Carcinoma of the hypopharynx. *Am J Surg* 1976;132:439-43.
- Krespi YP, Wurster PF, Sisson GA. Immediate reconstruction after total laryngectomy and mediastinal dissection. *Laryngoscope* 1985;95:156-60.
- Briant TDR, Lord I. Carcinoma of the hypopharynx. *Can J Otolaryngol* 1973;2:1:4-10.
- Ogura JH, Biller HF. Preoperative irradiation for laryngeal and hypopharyngeal cancer. *Laryngoscope* 1970;80:802-10.
- Lequesne LP, Ranger D. Pharyngolaryngectomy with immediate pharyngogastric anastomosis. *Br J Surg* 1966;53:105-9.
- Carpenter RJ. Cancer of the hypopharynx. *Arch Otolaryngol* 1976;102:716-21.
- Harrison DFN. Surgical management of cancer of the hypopharynx and cervical esophagus. *Br J Surg* 1969;56:95-103.
- Stell PM. Esophageal replacement by transposed stomach. *Arch Otolaryngol* 1970;91:166-70.
- Leonard JR, Maran AG. Reconstruction of the cervical esophagus via gastric anastomosis. *Laryngoscope* 1970;80:849.
- Ong GB, Lee TC. Pharyngogastric anastomosis after esophago-pharyngectomy for carcinoma of the hypopharynx and cervical esophagus. *Br J Surg* 1960;48:193.
- American Joint Committee for Cancer Staging and End Result Reporting. *Manual for Staging of Cancer*. ASC, Chicago, 1977.
- Stell PM, Morton RP. Average survival time after treatment of cancer. *Clin Oncol* 1982;8:293-303.
- Harrison DNF, Thompson AE. Pharyngeal esophagectomy with pharyngogastric anastomosis for cancer of the hypopharynx. *Head Neck Surg* 1986;8:418-28.
- Schusterman MA, Shestak K, de Vries EJ, Swartz W, Jones N, Johnson J. Reconstruction of the cervical esophagus: free jejunal transfer versus gastric pull-up. *Plastic Reconstr Surg* 1990;85:16.
- Stell PW, Missotten F, Singh SD, et al. Mortality after surgery for hypopharyngeal cancer. *Br J Surg* 1983;70:713-8.
- Lam KH, Wong J, Lim STK, et al. Pharyngogastric anastomosis following pharyngolaryngoesophagectomy: analysis of 150 cases. *World J Surg* 1981;5:509-16.
- Johnson JT. Cervical esophageal cancer, head and neck surgery. *Otolaryngology*. Vol. 2. Philadelphia: JB Lippincott Company, 1993:1304-12.
- Leeman CR, Rammohan T, van der Wall I, Karim ABM, Nauta JJP, Snow GB. The efficacy of comprehensive neck dissection with or without postoperative radiotherapy in nodal metastasis of squamous cell carcinoma of the upper respiratory and digestive tracts. *Laryngoscope* 1990;100:1194.