Total Hypopharyngeal Reconstruction

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Abstract

In advanced hypopharyngeal carcinoma, the tumor may involve the entire hypopharyngeal mucosa and the larynx. After total laryngohypopharyngectomy is done, reconstruction of the circumferential defect of the hypopharynx is a challenge. We described our results of using a myomucosal tongue flap with dermal or skin graft (MTF) in 8 patients and using a tubed pectoralis major myocutaneous flap (TPMF) in 10 patients to reconstruct the total hypopharynx. There was no operative mortality. Fistula formation occurred in 3 patients of the MTF group and 4 in the TPMF group but all had spontaneous healing after conservative treatment. One in the MTF group and 4 in the TPMF group had stenosis of the anastomotic sites. Almost all responded well with periodic dilatation. Only one patient in the TPMF group who had been previously irradiated required gastrostomy for feeding. The 5-year actuarial survival rate of our patients was 32 per cent.

These results show that total hypopharynx can be reconstructed with the above noted procedures. The survival rate is good, the morbidity rate is acceptable, and the perioperative mortality rate is zero.

Key word : Carcinoma, Hypopharynx, Total Hypopharyngeal Reconstruction, Myomucosal Tongue Flap, Tubed Pectoralis Major Myocutaneous Flap

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Advanced lesions of the hypopharyngeal carcinoma usually require total laryngopharyngectomy and combined radiation therapy(1). During the operation, when the entire circumferential portion of the hypopharynx is resected, a number of reconstructive procedures are available to reconstitute the food conduit. These include local skin flap, deltopectoral flap, pectoralis major myocutaneous

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flap, visceral interposition with stomach or colon and free tissue autografts utilizing colon, jejunum, and radial forearm flap[2]. Gastric pull-up, jejunal free flap, and radial forearm free flap have become the popular methods of hypopharyngeal reconstruction[3]. Gastric pull-up reconstruction even without thoracotomy does have complications. These include pneumothorax, chylothorax, severe hemorrhage and subphrenic abscess[4]. Jejunal free flap has operative risk from entering the intraperitoneum and leakage from 3 anastomotic sites[5]. Radial forearm free flap has a high rate of salivary leak[3]. These procedures also increase the operative time with an average of 3.0-6.5 hours[6].

A one-stage immediate reconstruction of the total hypopharynx with the lowest mortality and morbidity rates and good functional results is desirable. This study examined the complications and functional results in our patients undergoing surgical resection of advanced hypopharyngeal cancer and using myomucosal tongue flap and dermal or skin graft or tubed pectoralis major myocutaneous flap for reconstruction.

MATERIAL AND METHOD

From 1993 to 1997, 18 patients with locally advanced hypopharyngeal carcinoma (T3 and T4) who required total laryngopharyngectomy were included in this study (Table 1). After the specimen of total laryngopharyngectomy was removed, the anteriorly placed vertical incision (fishmouth) in the esophagus was done to allow a widely patent lumen at the lower anastomotic site. Reconstruction of the total hypopharynx utilizing a myomucosal tongue flap with dermal graft or skin graft was performed in 8 patients. The lower limit of the resection was determined by preoperative esophagoscopy and intraoperative frozen section of the margins and should not be more than 2 cm below the cricopharyngeus level. The upper margin was not above the vallecula. No patients in this group had preoperative radiation therapy. The technique of reconstruction was by using dermal or skin graft which was sutured to the prevertebral fascia as the posterior wall of the new gullet and the anteriorly based advancement tongue flap as the anterior and lateral walls of the new gullet[7]. The patient's head was maintained flexed for 10-14 days to decrease tension along the suture line by using chin-to-chest suturing.

Table 1. Number of patients by t-stage and procedure of reconstruction.

T-stage	Procedure	
	MTF	TPMF
T 3	3	2
T 4	5	8
	8	10

MTF = Myomucosal tongue flap with dermal or skin graft
TPMF = Tubed pectoralis major myocutaneous flap

Table 2. Complications and results.

Method	Fistula (%)	Stricture (%)	Swalow (%)
MTF	37.5	12.5	100
TPMF	40	40	90

MTF = Myomucosal tongue flap with dermal or skin graft
TPMF = Tubed pertoralis major myocutaneous flap

Ten patients had tubed pectoralis major myocutaneous flaps for reconstruction. The lower limit of the resection was cervical esophagus above the clavicle and the upper limit was circumvallate papilla. Three of these ten patients had persistent or recurrent tumors after a full course of radiation therapy (6000-6500 cGy). Except for these three patients, the remaining 15 patients of both groups had postoperative radiation therapy within 3-5 weeks.

RESULTS

The age range was 45-68 years with an average of 58.6 years. The male to female ratio was 3 to 1. The additional time for reconstruction of the new gullet after tumor resection was 1.5 to 3.0 hours. No perioperative death was found in our patients. The anastomotic leak which resulted in pharyngocutaneous fistula developed in 3 patients in the myomucosal tongue flap with dermal or skin graft (MTF) group and 4 in the tubed pectoralis major myocutaneous flap (TPMF) group and 3 patients in the latter group had preoperative radiation therapy (Table 2). All fistulas healed with conservative treatment within 5 weeks except the irradiated one in the TPMF group which healed completely in 3 months. Stricture of the

anastomotic site occurred in 1 patient in the MTF group and responded well with esophageal dilatation every day for 2 weeks. Four patients in the TPMF group had anastomotic stricture, one patient tolerated oral diet after esophageal dilatation for 1 month, two patients still have to have periodic dilatation every 3-6 months. The other patient who had been irradiated required gastrostomy for feeding .

The estimated survival of our patients by actuarial method at five years was 32 per cent.

DISCUSSION

With the significant increase of gastric pull-up, jejunal free flap, and radial forearm free flap operations for reconstruction of the total hypopharynx, there are problems related to the additional time of operation, skill of the surgeon and operative complications[2-6]. Our reconstructive operations by using myomucosal tongue flap with dermal or skin graft or tubed pectoralis major myocutaneous flap can decrease the additional operative time for reconstruction from 6.0 - 6.5 hours in jejunal free flap[6], 5.1 hours in radial forearm free flap[8] , and 3.5 - 4.0 hours in gastric pull-up operation[9] to 1.5 - 3.0 hours. While gastric pull-up, and jejunal free flap require a two-team approach, our operations can be done by an otolaryngologist team alone and do not need to have microvascular surgical skills as in the free flap procedures.

The operative mortality of the gastric pull-up and jejunal free flap has been reported as 5-31 per cent[10] and 2-8 per cent[5,10] respectively. We did not find any perioperative death in our patients. Salivary fistula occurred in 37.5 per cent and 40 per cent in the myomucosal tongue flap with dermal or skin graft and tubed pectoralis major myocutaneous flap respectively and all the fistulas healed spontaneously with almost all completely healed within 5 weeks. Rates of fistula formation found in gastric pull-up, jejunal free flap and radial forearm free flap were 2-22 per cent [4], 19-33 per cent[6], and 18-50 per cent[3], only half of these fistulas healed with conservative management. The rest required surgical correction [6].

Stricture rates in our series were 12.5 per cent in myomucosal tongue flap group, 10 per cent in gastric pull-up[3], 16-22 per cent in jejunal free flap, and 8 per cent in radial forearm free flap[3]. High rate of stenosis (4 out of 10) in tubed pectoralis major myocutaneous flap group can be explained by three patients being irradiated before the operation and the other was a female with bulkiness of breast tissue. Successful deglutition was achieved in 100 per cent of the myomucosal tongue flap group and 90 per cent in the tubed pectoralis major myocutaneous flap group. Reports of successful swallowing were 87 per cent in gastric pull-up[11], 88 per cent in jejunal free flap, and 90 per cent in radial forearm free flap groups [3]. Our reported 5-year actuarial survival rate of 32 per cent is not different from that of previous reports (18-35%)[2,12].

The results of this study indicate that the myomucosal tongue flap with dermal or skin graft and the tubed pectoralis major myocutaneous flap are good for total hypopharyngeal reconstruction. We recommend using the myomucosal tongue flap with dermal or skin graft in the limited defect between the vallecula and just below the cricopharyngeus level. The tubed pectoralis major myocutaneous flap should be used in the defect between the circumvallate papilla and supraclavicular part of the esophagus and it can be safely used in previously irradiated patients. These reconstructive techniques are easy and quick to perform, have no operative mortality with an acceptable incidence of fistula and stricture development, and most of the patients can restore their swallowing function.

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การซ่อมแซมส่วนฮัยโปฟาริงซ์ทั้งหมด

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การซ่อมแซมส่วนฮัยโปฟาริงซ์ทั้งหมด หลังการผ่าตัดเอากล่องเสียงและฮัยโปฟาริงซ์ออก ในผู้ป่วยมะเร็งของฮัยโปฟาริงซ์สามารถกระทำได้หลายวิธี ได้รายงานผลการซ่อมแซมฮัยโปฟาริงซ์ในผู้ป่วย 2 กลุ่ม กลุ่มที่ 1 ใช้แฟลบจากเยื่อบุและกล้ามเนื้อของลิ้น ร่วมกับชิ้นเนื้อเยื่อของผิวหนัง ในผู้ป่วย 8 ราย กลุ่มที่ 2 ใช้แฟลบจากผิวหนังและกล้ามเนื้อของ pectoralis major ที่ม้วนเป็นท่อ ในผู้ป่วย 10 ราย ไม่พบการเสียชีวิตจากการผ่าตัด ภาวะแทรกซ้อนมีแผลทะลุ 3 รายในผู้ป่วยกลุ่มแรก และ 4 รายในกลุ่มที่ 2 ทุกรายแผลหายจากการรักษาแบบประคับประคอง มีการตีบตันที่ตำแหน่งเชื่อมต่อ 1 รายในกลุ่มแรก และ 4 รายในกลุ่มที่ 2 เกือบทุกรายสามารถแก้ไขให้กลับมารับประทานทางปากได้ด้วยการถ่างขยายทางเดินอาหาร มีเพียง 1 รายที่ต้องผ่าตัดเพื่อใส่สายให้อาหารลงกระเพาะผ่านทางผนังหน้าท้อง อัตรารอดชีวิตในเวลา 5 ปีใช้วิธีคิดแบบ แอคชูเอเรียล เท่ากับ 32 เปอร์เซ็นต์

จากผลการรักษา พบว่าการซ่อมแซมส่วนของฮัยโปฟาริงซ์ทั้งหมด ด้วย 2 วิธีดังกล่าว มีอัตรารอดชีวิตที่ดี ภาวะแทรกซ้อนที่ไม่มาก และไม่มีการเสียชีวิตจากการผ่าตัด

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