Pharyngo-Oesophageal Reconstruction with Colon Bypass Plus Pectoralis Major Myocutaneous Flap For Corrosive Injury of Upper Gastrointestinal Tract

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Abstract: Corrosive acid stricture of long segment oesophagus along with pharynx and hypopharynx is a therapeutic challenge for thoracic surgeons. Corrosive stricture of pharyngo oesophageal area can very well be reconstructed with myocutaneous flaps like pectoralis major myocutaneous flap. On the other hand long segment oesophageal stricture may be well bypassed by pulling up of suitable abdominal viscera like colon. Post operative swallowing is satisfactory when reconstruction is done in such a combined procedure.

Keywords: oesophagus, hypopharynx, pectoralis major, myocutaneous flap, corrosive stricture

1. Introduction

Stricture of hypopharynx and oesophagus may occur after suicidal or accidental corrosive acid ingestion. Corrosive stricture usually produces dense stricture, which is may be restricted to a small segment at the pharyngo-oesophageal junction. This is due to corrosive induced spasm at the cricopharyngeal musculature resulting from prolonged contact of the toxic agent with the mucosa at that area. This cricopharyngeal stricture usually involves a small segment and can be reconstructed by local or distant or free flap [1,2]. In some cases corrosive acid trickle down to lower oesophagus and stomach producing a long segment stricture of oesophagus and pylorus as well. In such cases of long segment oesophageal replacement may be done by visceral pull up like colon. The primary goal of such procedure is to reestablish the continuity of the alimentary tract[3]. If the stricture at hypopharynx is very severe and circumferential whole of the stricuted segment is resected and reconstruction is done by a flap fashioned as a tube. If the stricture is not very severe and not circumferential then the stricuted segment is slit open and a flap is placed longitudinally as an onlay flap over a nasogastric tube [1,2].

2. Case report

A 25 years old male patient was admitted in the general surgical emergency after suicidal corrosive acid ingestion. Initially the patient presented with absolute dysphagia with burning of pharynx and hypopharynx and managed conservatively with IV fluids, nil per mouth, maintanance of airway and after stabilization a feeding jejunostomy was created for maintenance of nutrition. The barium swallow x-ray performed after one and half months of acid ingestion demonstrated long segment oesophageal stricture from hypopharynx up to lower oesophagus with pyloric stenosis as well. The patient was advised to continue feeding through jejunostomy tube. After six months the patient is readmitted in cardiothoracic surgery for definitive treatment of restoration of gastrointestinal continuity.
and nutrition is maintained through feeding jejunostomy tube. The postoperative recovery is uneventful and the patient is discharged in good health after three weeks of final operation with minimal difficulty in swallowing.

Reconstruction of hypopharynx over ryles tube

Scar over chest wall after final operation

3. Discussion

Since 1866, the first successful cervical oesophageal reconstruction by Mikulicz et al by local cervical skin flap, the search is going on for a suitable method for pharyngoesophageal reconstruction. Each method has its advantages and disadvantages and the therapeutic challenge continues. Pectoralis major myocutaneous flap allowed the head and neck surgeon, for the first time, to perform a one-stage reconstruction of a circumferential defect of the hypopharynx. The advantages of the pectoralis flap are its ease of harvest, reliability, low donor site morbidity, and the ability to perform this reconstruction without the need for microvascular techniques. Disadvantages include the potential for excess bulk, potential for fistula and stricturogenesis formation. Difficulty and controversy arise when this flap is used for reconstruction of a circumferential defect. Folding this flap into a tube is analogous to rolling up a thick book. The early attempts using the pectoralis flap as a tube were uniformly unsuccessful with stenosis developing at the distal anastomosis, especially in patients who received postoperative radiation [2,4,6,7,12,16,17].

Various segments of abdominal viscerae like stomach, colon can be transposed to replace portions of oesophagus advantages include longer segments of oesophagus can be replaced by mucosa lined tissue in a single stage however the magnitude of surgical trauma is generally greater with higher rate of morbidity and mortality as it require entering into both abdominal and thoracic cavity [1,3,15].

The jejunal free flap would seem to be an ideal choice for pharyngeal reconstruction since it is another mucosa-lined conduit from the alimentary tract, which closely approximates the caliber of the pharynx. In this instance, a hollow muscular tube, the pharynx, is replaced by another hollow muscular tube [14].

The radial forearm free flap for pharyngoesophageal reconstruction was first described in 1985, by Harii et al in Japan. The radial forearm flap can be harvested quickly under tourniquet control with minimal blood loss. This flap is extremely reliable due to the large caliber of the radial artery and the presence of multiple veins that can be used to drain the flap. Donor site morbidity is also low. There is no laparotomy and its associated complications [8,9].

Deltopectoral flap alone is very useful for correction of small segment corrosive stricture at the pharyngoesophageal junction. The flap is very thin and pliable so tube formation is very easy where the defect was circumferential, for noncircumferential stricture the flap was used as an onlay patch [10,11,13,16]. For long segment oesophageal replacement by viscerae with stomach or colon, in cases of long segment corrosive strictures or carcinoma oropharynx when the viscerae is pulled very high in the neck there is tension in the suture line and distal vascular jeopardization resulting in anastomotic stricture. Delpectoral flaps can also correct these secondary anastomotic strictures very well.

N.Ananthakrishnan et al suggested preliminary pectoralis major myocutaneous flap as a tube prior to oesophagocolic anastomosis to avoid pulling the viscerae very high in the neck [12]. Delto pectoral flap is a very thin flap with good pliability so the tube formation is easy, it is very easy to harvest, it is a very reliable flap with good vascularity, donor site morbidity is almost nil. Technically also the procedure is very easy and it does not need any microvascular expertise. With care full dissection the blood loss also very minimum.
Cosmetically also it is very well accepted by the patients [1,5].

In our case we use a colonic conduit based on left colic artery for oesophageal replacement and pectoralis major myocutaneous flap based on pectoral branch of thoracoacromial artery for hypopharyngeal reconstruction. The patient is discharged successfully in good health with minimum swallowing difficulty.

References


