A STUDY ON SURGICAL MANAGEMENT OF CORROSIVE STRICTURES OF THE OESOPHAGUS

Prathyusha Godi[1], Moparthy Ramesh[2], Wasif Ali[3]

[1]Senior Resident, Department of General Surgery, Osmania Medical College, Hyderabad, Telangana.
[2]Professor, Department of General Surgery, Osmania Medical College, Hyderabad, Telangana.
[3]Associate Professor, Department of Surgical Gastroenterology, Osmania Medical College, Hyderabad, Telangana.

ABSTRACT

BACKGROUND

Surgery for corrosive strictures of the oesophagus is indicated in cases of strictures that do not respond to endoscopic dilatation. Surgery for this condition involves the use of a conduit to either replace or bypass the strictured oesophagus. This study evaluates the surgical management and short-term outcome of corrosive strictures of the oesophagus.

MATERIALS AND METHODS

Patients who underwent surgery for corrosive strictures of the oesophagus over a period of four years were included in the study. The records of all the 20 patients were analysed to evaluate the clinical presentation, diagnostic modalities and various treatment options for corrosive strictures of the oesophagus and to analyse the short-term outcomes following surgical treatment.

RESULTS

There were 11 male patients and 9 female patients and most of the patients (65%) were in the age group of 20 - 40 years. Acid ingestion was the cause of injury in 90% of patients. The most common symptom was dysphagia. Colon was used as conduit in 13 patients and stomach in 7 patients. Bypass only was done in 15 patients and resection in 5 patients. Common postoperative complications included hoarseness of voice (40%) and anastomotic leak (30%), which settled on conservative treatment. There was no mortality in this group of patients.

CONCLUSION

Surgery for corrosive strictures of the oesophagus is safe and has satisfactory outcomes. Colon and stomach are both good conduits and have reasonable postoperative complications.

KEYWORDS

Stricture, Oesophagus, Corrosive Injury.

HOW TO CITE THIS ARTICLE: Godi P, Ramesh M, Ali W. A study on surgical management of corrosive strictures of the oesophagus. J. Evolution Med. Dent. Sci. 2018;7(12):1543-1545, DOI: 10.14260/jemds/2018/348

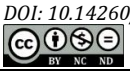
BACKGROUND

Many diseases can cause oesophageal stricture formation. These include acid peptic, autoimmune, infectious, caustic, congenital, iatrogenic, medication induced, radiation induced, malignant and idiopathic disease processes. Corrosive agents produce extensive damage to the gastrointestinal tract, which may result in perforation and death in the acute phase. Long-term complications include stricture formation and the development of oesophageal carcinoma. Strictures produced by corrosive burns of the oesophagus are a common and a challenging problem. Even though majority of the strictures can be managed by modern endoscopic interventional methods, surgery is mandatory in quite a few cases. Surgery for chronic oesophageal strictures involves either resection or bypass of the damaged oesophagus and replacement by a conduit.

MATERIALS AND METHODS

- N= 20.
- Study Design- Retrospective Descriptive Study.
- Study Period- August 2012 to August 2016.

'Financial or Other Competing Interest': None.
Submission 01-02-2018, Peer Review 02-03-2018,
Acceptance 10-03-2018, Published 19-03-2018.
Corresponding Author:
Wasif Ali,
Department of Surgical Gastroenterology,
Osmania Medical College, Hyderabad, Telangana.
E-mail: drwasifali2017@yahoo.com
DOI: 10.14260/jemds/2018/348



Inclusion Criteria

- Primary corrosive strictures of oesophagus with or without gastric injury following failed endoscopic therapy.
- Long segment corrosive strictures, which are not amenable to endoscopic dilatation.

Exclusion Criteria

- Malignant strictures.
- Post anastomotic strictures.
- Radiation induced strictures.
- Corrosive gastric injury only.
- Acute corrosive injures.
  - The type of surgery performed (resection/bypass), the conduit used, the short-term outcomes were assessed.
  - Various factors like type of corrosive ingested.
- Duration from ingestion.
- Clinical presentation.
- Type and length of stricture.
- Prior endoscopic management.
- Intraoperative assessment.
- Postoperative complications were assessed.

RESULTS

20 cases of corrosive strictures of the Oesophagus who underwent surgery between August 2012 and August 2016 in Osmania General Hospital, Hyderabad, were included in the study. The case sheets of all the patients who underwent

surgery were studied and wherever necessary patients were called by telephone for follow-up visits and the findings recorded.

Age

There were 9 females and 11 males in the study with the mean age being 22.4 yrs. (range 10 to 55 yrs.).

Age Range	Number	Percentage
0-10	1	5%
10-20	3	15%
20-30	9	45%
30-40	5	25%
40-50	1	5%
50-60	1	5%
Age Range Number Percentage		

Agents

Alkali ingestion was the cause in 2 patients, while majority (18 patients) had consumed variable amounts of acid.

Symptomatology

Majority of the patients presented with dysphagia, vomiting, chest pain and haematemesis. Regurgitation and difficulty in breathing were the minor complaints.

Symptoms	No. of Patients	Percentage
Dysphagia	20	100%
Chest Pain/Discomfort	20	100%
Vomiting	12	60%
Haematemesis	6	30%
Regurgitation	6	30%
Stridor/ Difficulty in Breathing	5	25%

Level of Stricture/ Endoscopic Findings

- 7 had oesophageal strictures, only 13 had both oesophageal and gastric injury.
- Majority of them had mid oesophageal strictures or long segment strictures (associated post-cricoid strictures are 5 cases).

Level of Stricture	No. of Patients	Percentage
Isolated Mid-Oesophageal Strictures	5	25%
Lower Segment Stricture	2	10%
Long Segment Stricture with Gastric Injury	13	65%
[Associated Post-Cricoid Strictures]	5	

	Bypass Only	Resection and Bypass
Mean duration of surgery	4.5 +/- 1 hr.	4.5 +/- 1 hr.
Intraoperative blood loss	300 +/- 50 mL	300 +/- 50 mL
Postoperative lung complications	20% (3/15)	20% (1/5)
Mean hospital stay	14 +/- 2 days	14 +/- 2 days
In hospital mortality (30 day postop)	Nil	Nil
Leaks	5/15 (33.3%)	1/5 (20%)
Type of Surgery Done		

There were no differences in the short-term outcomes in patients who underwent bypass only versus resection and bypass.

	Colonic Bypass Group	Gastric Bypass Group
Mean Duration of Surgery	5 +/- 0.5 hr.	3 +/- 0.5 hr.
Intraoperative Blood Loss	300 +/- 50 mL	200 +/- 50 mL
Mean Hospital Stay	15 +/- 1 day	9 +/- 1 day
In-Hospital Mortality- 30 Days	Nil	Nil
Hoarseness of Voice	5 (38.4%)	3 (42.8%)
Aspiration	2 (15.3%)	Nil
Leaks	4 (30.7%)	2 (28.5%)
Recurrent Dysphagia	4 (30.7%)	2 (28.5%)

The mean duration of surgery, intraoperative blood loss, mean hospital stay was more with the colon bypass group and so were the complications.

Complication	No. of Patients	Percentage	Management
Hoarseness of voice	8	40%	Conservative/ Voice Therapy
Pneumothorax	1	5%	Tube Thoracostomy
Aspiration	2	10%	Antibiotics, Chest Physiotherapy, Spirometry
Arrhythmias (SVT)	1	5%	Managed with T.Diltiazem, IDC Mobilisation
Leaks -Cervical -Colocolic	6 6 1	30%	Managed conservatively with NPO, TPN
Recurrent dysphagia -Stricture	6 4	30%	Settled with Postoperative Endoscopic/ Foley's Bulb Dilatation
Complications			

DISCUSSION

Based on the current study, we still prefer gastric pull-up operation in our unit due to the relative technical ease,[1] adequate length can almost invariably be attained, excellent healing power of the anastomosis, wide anastomotic stoma at the neck, only one single anastomosis is required and the robust blood supply and rich plexus of submucosal arteriole ensure against the complications from ischaemic necrosis.[2,3,4,5] We also recommend T-tube jejunostomy for feeding the children postoperatively as it is safe, wider, easier for application and less liable for spontaneous extraction. Choice of colon segment as a graft is also a key point for reconstruction of oesophagus. The left colon has been considered by many surgeons to be a preferable conduit for several reasons. But left colon interposition could always be used in an antiperistaltic fashion, which may cause inflammation of the anastomosis, and affect the healing process. The choice of a colon segment for substitution in our study was also affected by the supply of blood vessels during operation, and the colour of intestine and pulsation of marginal arteries after the supplying artery of colon was

clamped. The mortality and morbidity in the literature after colonic interposition was very high. The most severe complication was complete necrosis of the transplanted colon. When it happened, a more complex reconstruction procedure should be considered.

We had no experience in facing such a catastrophe. In 1 case, local necrosis in the proximal end of transplanted colon was observed when anastomotic leakage was diagnosed 3 d after the procedure. Considering the fact that most patients in whom oesophageal disease was caused by caustic injury accompanied with bad nutritional status, this rate of postoperative complication after colon interposition is acceptable. Anastomotic leakage of the patients was managed by opening the cervical wound, and it seemed to have no effect on the late swallow ability of patients after anastomotic leakage compared with the patients without leakage in the follow-up interviews. There was no death in the group. The outcome was favourable when compared with published literature.

	Present Study (2012-2016)	**Chattopadhay TK et al (1983-2009)[7]**	**NM Gupta et al (1986 – 2001)[6]**
Leak Rates	30%	12.5%	19.6%
Stricture Rates	20%	18.7%	58.8%
Permanent Recurrent Laryngeal Nerve Palsy	Nil	8%	Nil
Resection vs. Bypass Observed	No Difference	No Difference	No Difference
Stomach vs. Colon	Stomach Better	Stomach Better	Stomach Better
In-Hospital Mortality	Nil	3%	Nil
Comparison of Results of Treatment			

The leak rates were found to be higher in the present study compared to the other series, while the stricture rates were almost comparable. There was no incidence of permanent recurrent laryngeal nerve palsy and the in-hospital mortality was zero. Resection of the oesophagus did not cause any significant difference and it was comparable to other study groups.[6,7,8] Stomach as a conduit was found to be definitely better in all studies when compared to colon.

CONCLUSION

- Satisfactory outcomes are achieved after surgery for corrosive strictures of the oesophagus.
- Stomach and colon are good conduits and selection of conduits should be tailor made for each patient and colon used when stomach is not amenable for usage.

Less sample size is the limitation of this study and hence no definite recommendations can be made.

REFERENCES

[1] Nathan H. Relations of the soft structures of the posterior mediastinum in the scoliotic spine. Acta Anat (Basel) 1988;133(3):260-4.
[2] Akiyama H. Surgery for carcinoma of the esophagus. Curr Probl Surg 1980;17(2):53-120.
[3] Liebermann-Meffert D, Luescher U, Neff U, et al. Esophagectomy without thoracotomy. Is there a risk of intramediastinal bleeding? A study on blood supply of the esophagus. Ann Surg 1987;206(2):184-92.
[4] Aharinejad S, Bock P, Lametschwandtner A. Scanning electron microscopy of esophageal microvasculature in human infants and rabbits. Anat Embryol 1992;186(1):33-40.
[5] Liebermann-Meffert D, Meier R, Siewert JR. Vascular anatomy of the gastric tube used for esophageal reconstruction. Ann Thorac Surg 1992;54(6):1110-5.
[6] Gupta NM, Gupta R. Transhiatal esophageal resection for corrosive injury. Ann Surg 2004;239(3):359-63.
[7] Javed A, Pal S, Dash NR, et al. Outcome following surgical management of corrosive stricture of the esophagus. Ann Surg 2011;254(1):62-6.
[8] Orringer MB, Orringer JS. Esophagectomy without thoractomy: a dangerous operation? J Thorac Cardiovasc Surg 1983;85(1):72-80.