Case Report

New Indian Journal of Surgery
Volume 15 Number 1/January - March 2024
DOI: https://dx.doi.org/10.21088/nijs.0976.4747.15124.4

A Case Report of Corrosive Injury of Gastrointestinal Tract Managed with Pectoralis Major-Myocutaneous Patch Cover Over Pharyngo-Esophageal Anastomosis

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How to cite this article:

Arnab Chattopadhyay, Rajan Jagad, Pranav Bhatt *et al.* A Case Report of Corrosive Injury of Gastrointestinal Tract Managed with Pectoralis Major-Myocutaneous Patch Cover Over Pharyngo-Esophageal Anastomosis. New Indian J Surg. 2024; 15(3):27–31.

Abstract

Corrosive ingestion remains one of the most devastating problems in developing countries that cripples patient's body, mind and soul depriving them from leading a normal social life and living with a scar on their emotions, psyche and charisma. Appropriate management in the acute phase of corrosive injury reduces tissue damage and further morbidity and mortality. The aim of this case discussion is to evoke a light of hope for those patients of corrosive injury and a guide to clinicians worldwide for further better management and sharing our experience of surgical management of a case of such corrosive injury of gastrointestinal tract.

Keywords: Corrosive; Stricture; Anastomosis.

INTRODUCTION

Corrosive injury of gastrointestinal tract is one of the most devastating injury that is commonly seen in developing countries. Most of cases are suicidal rather than accidental. Corrosive injuries make patients live with a debilitating morbidity. In developed countries though it is rare but ingestion of alkali in form of bathroom cleaners and dishwashing agents containing sodium hydroxide and household bleach containing sodium hypochlorite is more common in contrast to developing countries where acid is commonly used in toilet cleaners as it is less expensive than caustic soda.[2-4] Acids cause coagulative necrosis with formation of coagulum that limits further penetration into gastrointestinal tract wall and transmural spread. Alkalis in contrast leads to liquefactive necrosis of tissues that exacerbates further tissue penetration with transmural spread leading to perforation of gastrointestinal tract and damage to adjacent organs as well including respiratory tract.[2-4] In case of acid ingestion, stomach is preferentially damaged as there is reflex pyloric spasm along with formation of protective esophageal escar that leads to increase contact time of acid with stomach lumen.[6] Clinical symptoms range from vomiting, retching, Dysphagia or Odynophagia, severe chest pain (esophageal perforation), severe abdominal

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Received on 11-12-2023 **Accepted on** 01-02-2024

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pain (gastric perforation), respiratory distress or stridor if upper respiratory tract injury is there.[2]

The gastrointestinal tract post-corrosive injury goes through following 3 phases of Healing[7]:

Phase-1 (Phase of Acute Necrosis): Cellular necrosis occurs, lasts for 24-72 hours.

Phase-2 (Phase of Granulation): Mucosa gets sloughed off with ulceration followed by proliferation of fibroblasts and formation of granulation tissue. This phase lasts 3 - 12 days. Esophagus is at its weakest point of healing from day - 5 to day - 15 post-corrosive injury so invasive diagnostic and therapeutic procedures like endoscopy, dilatation or stenting should be avoided. 7 However, Tiryaki *et al.* have performed early bougienage and dilatation without complications during this time frame and shown superior results in decreasing the rates of stricture formation.[9]

Phase-3 (Phase of Cicatrisation): Formation of stricture due to cicatrisation and scarring is there, begins from 3 weeks post-corrosive injury and can last for upto 3-6 months.

Case: A 31 year old male patient having history of corrosive injury due to suicidal acid ingestion came to emergency with severe epigastric pain and vomiting and was diagnosed with Gastric perforation due to corrosive injury. Patient was operated for same and total gastrectomy and feeding jejunostomy was done. Later patient developed severe abdominal pain with fever and chills on post-operative day 3 and duodenal stump leak was found. Patient was treated conservatively and was discharged with hemodynamically stable condition. On follow up, endoscopy was done and patient developed stricture at cricopharynx and was explained about operative intervention further with Bypass using colon conduit. Patient was posted for surgery after 6 months from corrosive injury but intra-operative findings were not satisfactory and large bowel vasculature was not well-defined and robust to sustain the colon conduit after bypass, so procedure was abandoned and patient was counselled to continue feeding jejunostomy. By 12 months post-corrosive injury, patient developed gradual breathing difficulty and tachypnoea. CECT Neck, Chest and Abdomen was done there after, there was stricture at cricopharynx and esophagus was found to be grossly dilated and air-filled with blind lower end and slight deviation to right side mediastinum and resulting compression of trachea with no any tracheo-esophageal connection was seen. Patient was now posted for surgery and free jejunal flap bypass of cricopharyngeal stricture was planned accordingly. Intra-operatively esophagus was opened and endoscopy was performed and findings show blind lower end of esophagus. Then, we did take down of feeding jejunostomy and jejunal stump was created 25cm distal to DJ-junction. Left thoracotomy was done and end-to-side anastomosis was done between blind lower -end of esophagus and jejunal stump respectively with intercostal drainage tube insertion there after. Then end-to-side jejuno-jejunal anastomosis was performed 50cm from jejunal stump. New feeding jejunostomy was done 25cm distal to jejuno-jejunal anastomosis. Left sided cervical incision was placed and side-to-side Pharyngo-esophageal anastomosis with ryle's tube in-situ was tried to bypass cricopharyngeal stricture but only posterior wall anastomosis could be performed and anterior wall anastomosis could not be done due to excessive tension.

Finally, Pectoralis major myocutaneous (PMMC) flap was harvested on left chest wall and PMMC Patch cover was used to form a Neolumen and anterior wall cover of pharyngo-esophageal anastomosis with ryle's tube in-situ. Tracheostomy was done. PMMC - Flap donor site was primarily sutured proximally but distal end could not be primarily closed due to excess tension so, Split thickness skin grafting was done with skin graft harvested from left thigh.

Post-operatively, patient recovered well, FJ-Feeding was given.



Fig. 1: CT-scan with Red arrow showing Dilated megaesophagus, slightly deviated to right mediastinum with blind lower-end.

On post-operative day 14, Barium swallow was done and contrast was found to freely reach jejunum without any leak. All suture removal was done. Ryle's tube was removed and gradually oral feeding was started. Patient tolerated oral feeds well with no any complaints of abdominal pain, vomiting or fever. Intercostal drainage tube was removed on post-operative day 15 with no any breathing difficulty.

RESULTS

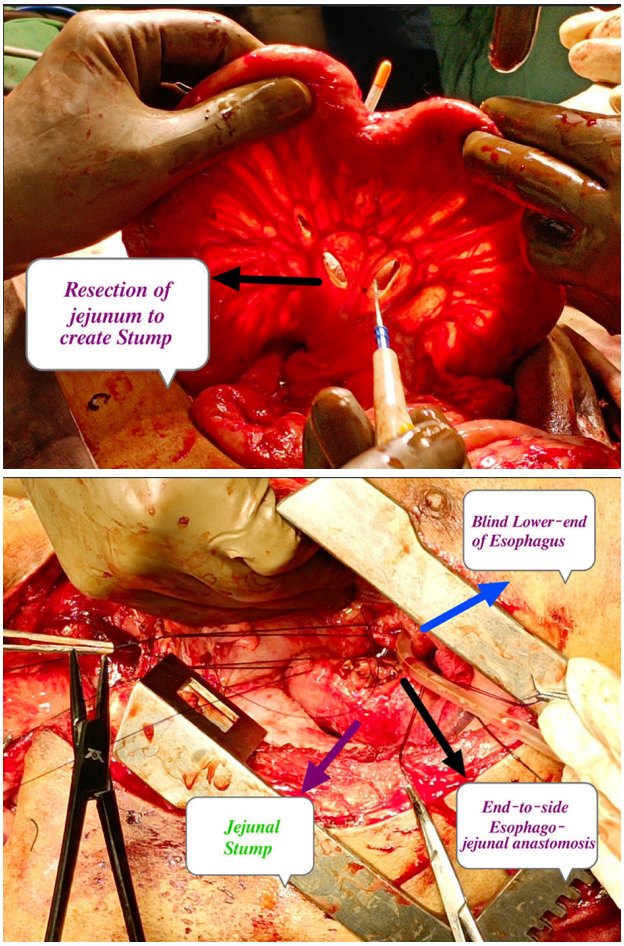
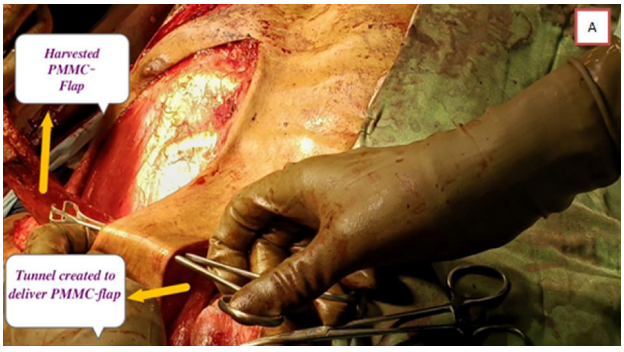


Fig. 2: Showing image A with Resection of jejunum to create stump, Image B with end-to-side esophago-jejunal anastomosis.



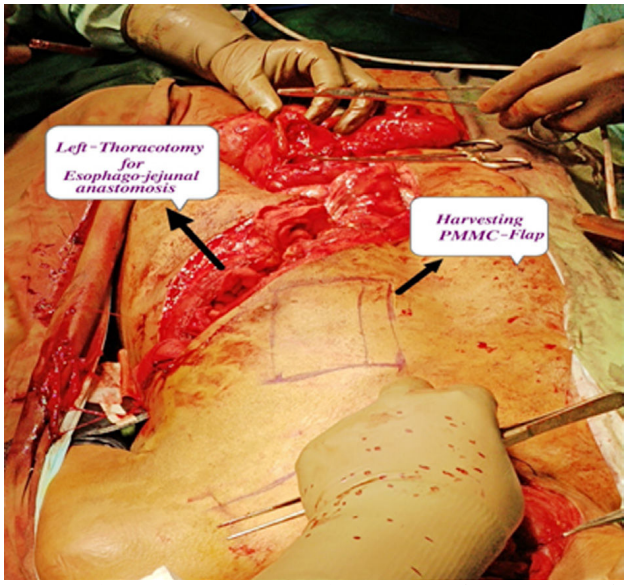


Fig. 3: Showing Image A with creation of tunnel in left cervical region to deliver newly harvested PMMC-Flap, Image B Harvesting left sided PMMC-Flap

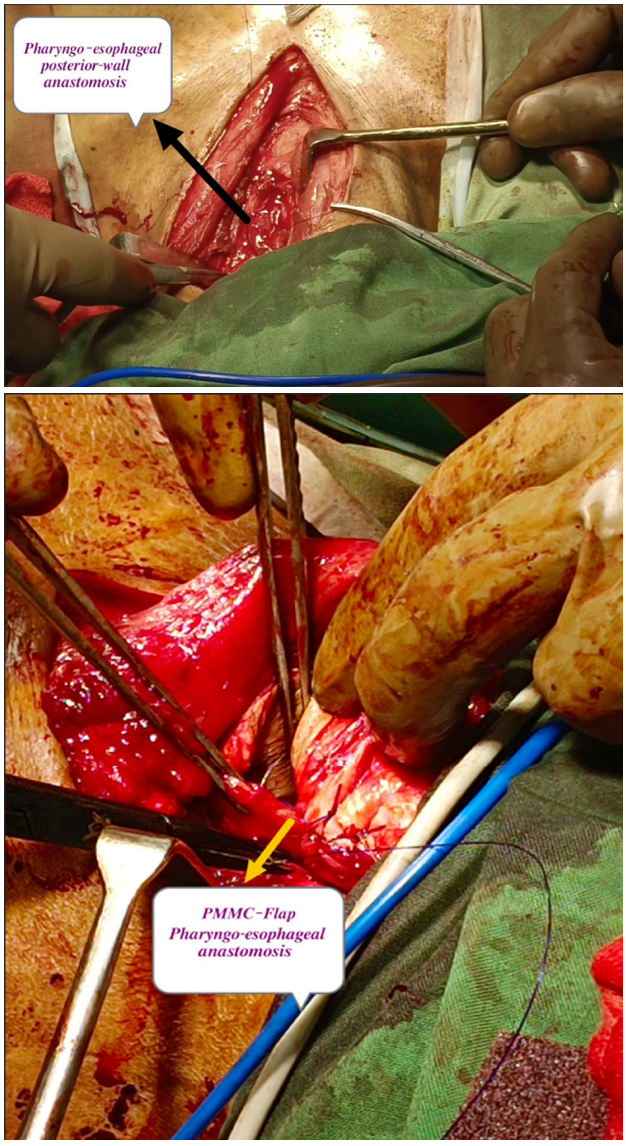
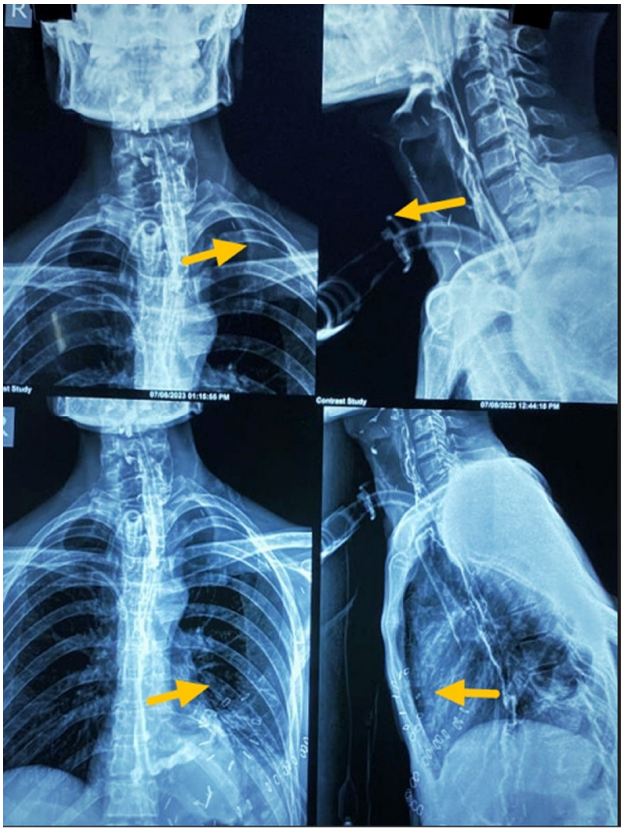




Fig. 4: Showing Image A with Pharyngo-esophageal posterior wall anastomosis, Image B with PMMC-Flap Pharyngo-esophageal anastomosis, Image C with Neolumen formed by inverted skin of PMMC-Flap.



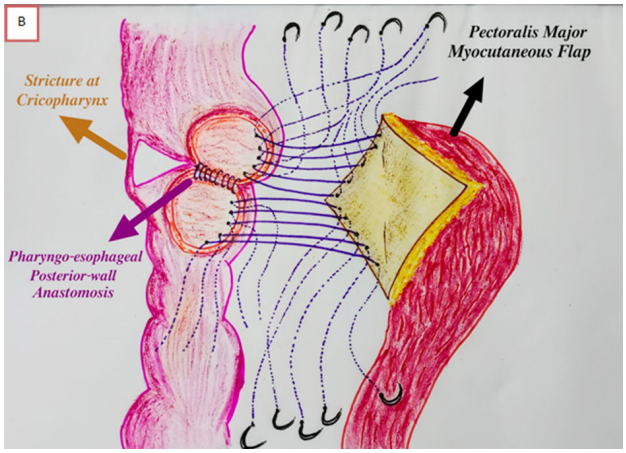


Fig. 5: showing image A with Barium swallow showing easy flow of contrast through upper pharyngo-esophageal PMMC Flap anastomosis and lower esophago-jejunal anastomosis without any leak of contrast, Image B with pictorial presentation of pharyngo-esophageal PMMC Flap-anastomosis.

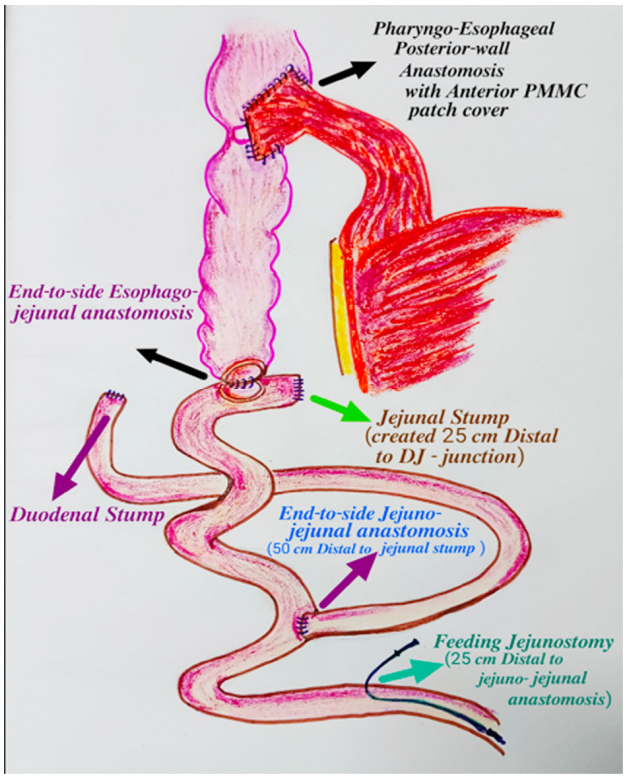


Fig. 6: Showing Image with pictorial presentation of various anastomosis that are performed

This patient of corrosive ingestion had a successful recovery after surgery and started taking diet orally after post-operative day 14 with normal barium swallow and no any dysphagia. No other post-operative complication was witnessed.

DISCUSSION

Corrosive gastrointestinal injuries are rising

gradually especially in developing countries and factors responsible are lack of education, easy access to corrosive agents like toilet cleaners, known psychiatric illness and low socio-economic status with lack of motivation for leading a better life. Early emergency resuscitation post-corrosive ingestion and Nutritional rehabilitation in the form of feeding jejunostomy had been the pillars of prime importance till definitive surgery. Endoscopic serial dilatations of corrosive strictures form the initial step in management of these patients provided stomach is intact and not heavily damaged by corrosive injury. Strictures refractory to endoscopic dilatations or heavily damaged stomach or previous gastrectomy requires surgical interventions in form of Bypass surgeries to maintain continuity of gastrointestinal tract.[5] Bypass procedures do not eliminate corroded part of esophagus which remains at risk of developing neoplastic changes later in life.[1] Bypass procedures are done to improve quality of life of patients as most of the patients are young. Another problem that is seen on long term follow up is Dysmotility which is more prevalent in lower third of esophagus possibly due to damage to vagus nerve by the cicatrisation process respectively.[8] Difficult neck anastomosis done to bypass strictures may be reinforced with Myocutaneous flaps like PMMC-flap or Sternocleidomastoid-flap (SMMC-flap).

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