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CORROSIVE INDUCED GASTRIC OUTLET OBSTRUCTION AND ITS SURGICAL MANAGEMENT: A RETROSPECTIVE OBSERVATIONAL STUDY FROM GUJRANWALA, PAKISTAN

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ABSTRACT

Objective: This study is conducted to see the effect and role of surgery in patients with gastric outlet obstruction (GOO) due to corrosive intake.

Patients and methods: A retrospective observational study was conducted at Gujranwala Medical College Teaching Hospital Gujranwala (GMCTH), from January 2022 to December 2025. The study involved 50 patients, who were admitted for surgical management of Gastric outlet obstruction due to corrosive intake.

Results: Among the 50 patients, 82% (n = 41) were female patients and 18% (n = 9) were male patients. The mean age was 24.8 years for male patients and 30.8 years for female patients. The main cause of corrosive induced GOO was the suicidal intake of acid, accounting for 90% of cases. Common symptoms at presentation included vomiting, dysphagia and odynophagia, early satiety, and weight loss. Definitive surgery was performed in one stage in 88% of patients, with Heineke–Mikulicz pyloroplasty being the most common procedure (70%), whereas gastrojejunostomy was done in (30%). Postoperative complications were in 20% of patients, with vomiting and wound infection being the most common. The overall mortality rate was 4%. Notably, improvements in GOO symptoms were observed in 94% of patients. **Conclusion:** Corrosive injuries, particularly in the females, had a significant problem due to the easy access of washroom hydrochloric acid. We witnessed that most of the patients in our hospital have had Gastric outlet obstruction. It is recommended to have a public awareness campaign on corrosives. Early surgical interventions within 4-6 weeks after ingestion is required to prevent weight loss and to reduce prolonged hospitalization

KEYWORDS: Corrosive injuries, gastric outlet obstruction, surgical management, outcomes.

INTRODUCTION

Corrosive damage to the upper gastrointestinal (GI) tract poses a significant public health issue, especially in low- and middle-income countries where improper storage methods and inadequate healthcare resources worsen the situation.[1] Such injuries frequently result in serious complications, like gastric outlet obstruction (GOO), which mainly impacts at-risk groups, like children. The range of problems different as compare to international data where it is most common in younger age groups specially Pediatric group and most accidental. But in Pakistan, it is mostly reported as a suicidal attempt in adult groups. The most commonly available acids like toilet-cleaning acid hydrochloric acids are ingested more frequently in Pakistan.[2,3] Such dangerous practices emphasize the immediate necessity for preventive strategies and enhanced public awareness initiatives.The degree and seriousness of corrosive injuries rely on various factors, such as the type of substance, the quantity consumed, and the length of exposure. Alkalis induce liquefactive necrosis, resulting in extensive tissue infiltration and harm to the esophagus, while acids produce coagulative necrosis, mainly impacting the stomach.[4] A frequent physiological reaction to corrosive ingestion is pylorospasm, which extends the duration of contact between acids and the gastric mucosa, leading to significant fibrosis and ultimately GOO.[5,6] Gastric injury frequently impacts the antrum or distal part of stomach, mainly because of the pileup of caustic substances in this area. This aggregation is frequently the outcome of pylorospasm, which extends the duration of exposure to the harmful material, resulting to considerable damage.[7] Such harm causes significant fibrosis, eventually leading to stricture and eventually GOO. Addressing this issue is essential to avoid additional complications and possible successful treatment therapy. Despite advancements in surgical methods, the probable best timing and kind of treatment for post-corrosive GOO is still debatable.[8,9] One school of thought is in support of postponing repairs, contending that the highest level of fibrosis evolves gradually[10],while other advise prompt surgical action to avert issues like weight reduction and extended hospitalization.[11] This debate underlines the need for guidelines based on evidence that are tailored to low-resource settings.

MATERIALS AND METHOD

During the 4 years from January 2022 to December 2025, 50 patients presented with gastric outlet obstruction (GOO) due to corrosive intake. Our center is referral center in District Gujranwala from surrounding areas. In every patient, nutrition was supported with calorie-dense enteral formulas administered orally or via jejunostomy, and anaemia and electrolyte imbalances were addressed prior to surgery.

Exclusion criteria: Patients with significant corrosive damage to the esophagus and stomach manifesting as perforation or gangrene, as well as those with serious esophagogastric scarring requiring the replacement of both, were not included in this study.

Inclusion criteria: All other patients with GOO were included in the study.

Procedure: We did both Endoscopy of upper Gastrointestinal track and Barium studies like swallow and meal of the patients before surgery. All patients with GOO after optimization were prepared for surgery.Nasogastric tube was passed in all the patients preoperatively and abdomen opened through midline incision decision of procedure was made on table depending upon size of stricture as per ward policy if size of stricture is more than 5 cm then gastrojejunostomy was done and if size of stricture was less than 5cm then Heineke–Mikulicz pyloroplasty was done. Drain was placed in all patients and abdomen closed by mass closure with prolene 1 and skin closed with prolene 2/0. Postoperative pt was kept NPO for 3 days after that NG was removed and oral sips allowed, semi solids allowed next day and patients normally discharges on 5th day if there is no any postoperative complication.

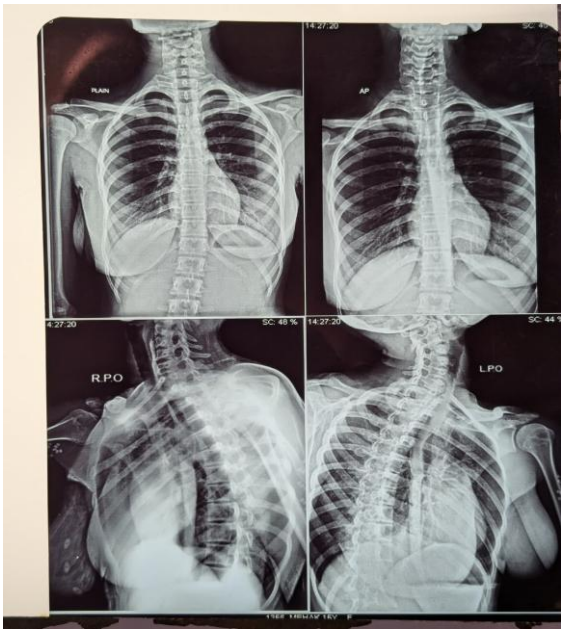


Fig. 1:

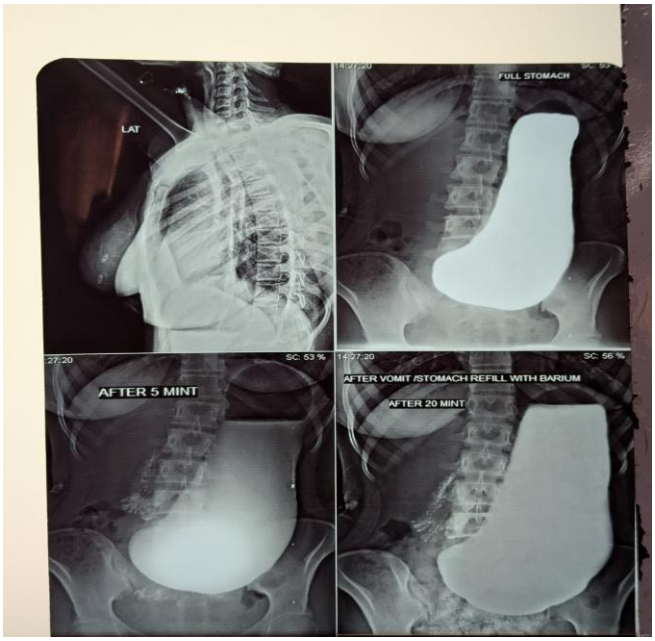


Fig. 2:

RESULTS

The study included 41 female patients and 9 male patients with median age of 25 years as shown in Table 1. 38(76%) patients have ingested corrosive for suicidal intents and 12 (24%) have accidental ingestion of Corrosives. All the 50 patients have acid intake with no case of alkali intake was seen. Most of patients have Vomiting as the prime complaint with 44 (88%) patients others symptoms are dysphagia odynophagia, weight loss and abdominal pain shown in Table 2.

The interval between corrosive injury and presentation is immediate within 24 hours to 4 months (median 4 weeks). twelve patients (24 %) presented with associated esophageal stenosis which was managed by endoscopic dilatation. Nutrition was maintained with enteral feeding orally or through a jejunostomy. Twenty patients (40 %) had feeding jejunostomy done before definitive surgery. Definitive management for gastric outlet obstruction (GOO) was either Pyloroplasty or Gastrojejunostomy Time of definitive repair was in most patients within 6 weeks to prevent weight loss and nutritional deficiency 31 (62%) patients within 6 weeks and 19 (38%) after 6 weeks (Table 3).Post operative complications was vomiting post operative in 10 (20%) patients which was managed conservatively in most of the patients only 2 (4%) required endoscopy postoperatively.

Wound infection was seen in 9 (18%) patients in which 3 (6%) patients need tension suture, anastomotic leak in 3 (6%) patients in which 2 (4%) died postoperativly both due to septicemia , 1(2%) managed conservatively shown in Table 4.

Table 1. Demographic characteristics of the study groups

Age in Years	Male (n=9)	Female (n=41)	Total (n=50)
1-20	4	17	21
21-40	4	20	24
Above 40	1	4	5

Table 2. Preoperative characteristics of the study groups.

Variables	Male (n=9)	Female (n=41)	Total (n=50)
1.Intention for corrosive ingestion			
Suicidal	5	33	38
Accidental	4	8	12
2. Type of ingested substance			
Acid	9	41	50
Alkali	0	0	00
3. Presenting symptoms			
Vomiting	8	36	44
Dysphagia	3	9	12
Odynophagia	2	6	8
Weight loss	9	39	48
Abdominal pain	2	12	14
4. Associated esophageal stricture Endoscopy findings			
Complete obstruction	1	2	3
Partial obstruction	2	10	12
5. Time from ingestion to presentation			
< 1 Month	7	30	37
> 1 Month	2	11	13

Table 3. Surgical management of the study groups.

Variables	Male (n=9)	Female (n=41)	Total (n=50)
1. Definitive surgical procedure			
Heineke–Mikulicz pyloroplasty	7	34	41
Gastrojejunostomy	2	7	9
2. Time to definitive repair			
Less than 6 weeks	6	25	31
More than 6 weeks	3	16	19

Table 4. Postoperative complications and outcomes among the study groups

Variables	Male (n=9)	Female (n=41)	Total (n=50)
1. Postoperative complications			
Vomiting	2	8	10

Wound infection	2	7	9
Aspiration pneumonia	0	0	0
Anastomotic leak*	1	2	3
Mortality	0	2	2
2. Postoperative outcomes			
Improved	8	39	47
Not improved	1	2	3

DISCUSSION

A retrospective observational study was conducted at Gujranwala Medical College Teaching Hospital Gujranwala(GMCTH), from January 2022 to December 2025. The study involved 50 adult patients Among the 50 patients, 82% (n = 41) were female patients and 18% (n = 9) were male patients. While in Nasr, Burkan, et al [12] A total of 77 patients were included in the study, comprising 45 (58.4%) males and 32 (41.6%) females. In our study there were 21 patients between 14-20 years of age The mean age was 24.8 years for male patients and 30.8 years for female patients while the majority (77%) of patients were pediatric, with 59 cases involving children under the age of 5, consistent with the findings reported by Nasr et al.[13] Our study showed 38 (76%) patients have ingested corrosive for suicidal intents and 12 (24%) have accidental ingestion of corrosives consistant with Ayyaz, Faraz Mahmood, et al.[14] and contrary to Shuwail, Anas Mohammed, et al.[15] 75 patients presented with a history of accidental corrosive ingestion. The interval between corrosive injury and presentation is immediate within 24 hours to 4 months (median 4 weeks) with 37(74%) presented early within 4 weeks and 13(26%) presented late after 4 weeks because of lack of awareness, illiteracy and long distance from healthcare facility while in Shuwail, Anas Mohammed, et al.[15] 40 (51.9%) patients presented early with 1 to 2 weeks after ingestion and ,remaining 37 (48.1%) patients presented late unless they had complete obstruction at pyloric end of stomach from 7 days to as late as 6 years after intake of corrosive

In most cases, nonsurgical treatment of corrosive gastric injury through endoscopic dilatation is inadequate. Small segment of gastric narrowing can be managed by endoscopic dilation [16], but most patients require surgery [17,18-20]. The surgical treatment of corrosive gastric stricture is mostly postponed because of overall health issues, anemia, and the time required for gastric inflammation to resolve so that the degrees of scarring become clear [16,18]. Numerous patients require feeding jejunostomy. Sadly, for low-income patients, proper nutrition is challenging to sustain via jejunostomy nutrition, and they require to resume their work as soon as they can. In this situation, conclusive surgery for gastric outlet obstruction is taken into account. Early conclusive surgery has been noted by Tseng et al. in a cohort of 31 patients over 2 months of harm [21]. Hwang et al. contrasted early conclusive surgery within 1 to 4 months post-injury with postponed surgery and determined that prompt conclusive intervention can provide improved quality of existence to the individuals [22]. In this study, 28 patients (78%) experienced timely conclusive surgery for gastric outlet blockage within three months with no deaths or notable health complications.

The primary objective of surgery in corrosive GOO is to alleviate blockage with adequate stomach capacity. For short-segment stricture in the distal stomach, stricturoplasty or Pyloroplasty, Heineke–Mikulicz technique or Y-V flap, can be accomplished [16]. In this series, we conducted Heineke–Mikulicz-type stricturoplasty yielding favorable results. Worry regarding later fibrosis leading to additional constriction of the gastric outlet is valid, yet we have not come across so far but follow-up is still continue. Despite numerous reports concerning the potential for future malignancy arising in corrosive esophageal stricture [23,24], There are almost no case of cancer arising in corrosive gastric stricture [16]. So gastric resection is not considered not in near future for corrosive.

In cases of long segment of stricture gastrojejunostomy was preferred. For prevention of biliary re-flux, Roux-en-Y gastrojejunostomy was preferred. As 15 (30%) patients had esophageal strictures that was managed by endoscopic dilatation so long term follow up and dilatation may be required for these patients.

Follow-up

Every patient experienced weight gain, and hypoproteinaemia was rectified in 6 to 8 weeks. Fifteen individuals with associated esophageal damage are undergoing regular dilatation. Patients who underwent stricturoplasty experience upper GI endoscopy every three months during the initial year and subsequently a period of 6 months was utilized to evaluate the gastric outlet. Which is satisfactory so far. Of the 9 patients who underwent gastrojejunostomy, two individuals experienced stomal ulceration that healed with treatment. All individuals with corrosive damage to the esophagus and the stomach needs continuous monitoring throughout life.

CONCLUSION

Harmful injuries to the upper gastrointestinal tract present a major health issue especially in the female group. Efficient administration, encompassing timely surgical action within 4–6 weeks post Ingestion is crucial for enhancing patient care results. Moreover, precautionary steps, such as public awareness initiatives and more stringent rules concerning the storage of corrosive materials, are essential to lower the occurrence of these injuries. Additional studies are required to create efficient strategies for management and prevention of

corrosive damage primarily leading to obstruction of the gastric outlet obstruction is frequent. For Gastric outlet obstruction pyloroplasty is frequently done as it is more anatomical as compare to gastrojejunostomy.

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