

Obstruction of the Gastric Outlet Caused by Corrosion in Children

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Abstract:

Background: It is commonly known that while alkalis harm the oesophagus, acid harms the stomach. Sulphuric acid is a typical corrosive. The antral epithelium is damaged by this corrosive, which is typically consumed unintentionally. The aim of this research was to study the gastric outlet obstruction induced by corrosion.

Methods: This study examines stomach outlet obstruction caused by caustic intake retrospectively. Between January 2021 and June 2022, the paediatric surgery department admitted 20 patients. H/O of corrosive intake, kind, time, type of injury, treatment, and time of development were taken. Endoscopy and an upper GIT barium meal X-ray were performed to diagnose a gastric outlet obstruction. Anaemia, starvation, and preoperative fluid and electrolyte abnormalities were all treated. Before the operation, the gut was also prepared. All patients received endotracheal general anaesthesia during their procedures. The recovery time went without incident. Beginning on the fourth or fifth POD, feedings progressed from liquid to semisolid to normal. Complications following surgery were noted. The seventh POD saw the release of patients After 10 to 21 days after receiving conservative treatment, individuals experienced gastric outlet obstruction. In order to relieve obstruction, surgery was done. Five to two months of follow-up were given to every patient. Patients' general health conditions, serum albumin levels, haemoglobin percentages, and upper GIT endoscopies were assessed throughout follow-up.

Results: 20 patients in all, 12 men and 8 women, mean age of about 5 years, range of 2 to 9 years, and accidental intake of corrosive. The gastric outlet obstruction developed over a 14-day period, with a range of 10 to 21 days. At first, odynophagia and dysphasia were complications. But after 11 to 21 days, the latter acquire a stomach outlet obstruction. An average operation lasts 1.4 hours. A posterior gastro-jejunostomy was performed. There were no notable postoperative problems. All patients were doing well when checked again. Overall health, appetite, and weight growth improved. There was no operation redone.

Conclusions: By exercising caution in our families, as well as in every element of our community, such as in the fight against terrorism, we can lessen conditions that can be avoided. Surgery performed early has great results. Having a gastrojejunostomy is a relatively safe procedure with little morbidity and a great long-term result.

Keywords: Corrosive ingestion, Pyloric stenosis, and Gastric outlet obstruction Gastro-jejunostomy.

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Introduction

In impoverished nations like India, corrosive ingestion is prevalent. Suicidal, homicidal, or accidental ingestion are all possible. Once more, corrosive can be an acid or an alkali. Due to the accompanying short- and long-term problems, such as bleeding, perforation, systemic issues (renal insufficiency, hepatic dysfunctions, and DIC),

oesophageal stricture, fistula, gastric outlet obstruction, and cancer, corrosive ingestion is a significant medical and social issue [Figure 1]. GOO is an inflammation-related scream that causes scarring, cicatrization, and finally the formation of strictures at the pylorus and antrum of the stomach. Patients are typically treated conservatively at first.

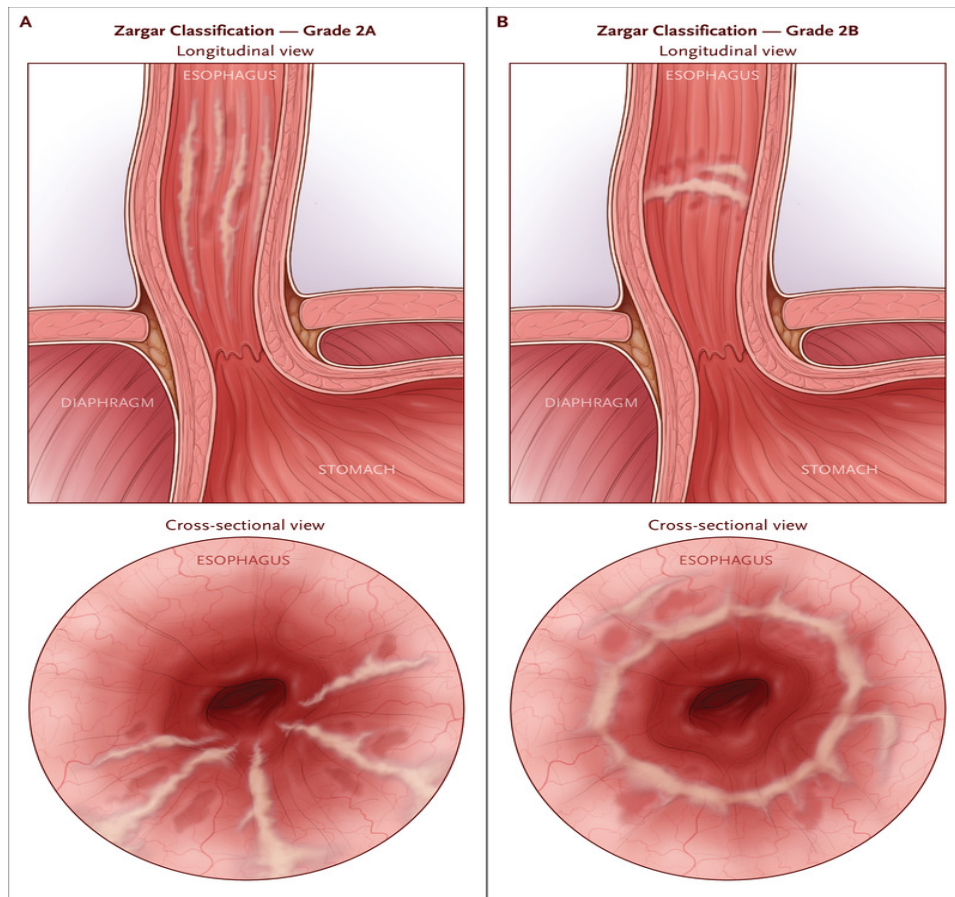


Figure 1: Ingestion of corrosive substances.

The exothermic reaction that results from neutralizing acids or alkalis is not encouraged because it could cause more damage than good. Similar to this, steps to dilute the corrosive with milk, water, or other substances are not very useful because the precise amount of the injury can be identified within minutes after ingestion. Several people could get GOO in little 11 to 21 days.

Twenty patients were involved in this investigation. They are all paediatric age ranges. They accidentally drank acid, that is, they drank it as a beverage. They had conservative treatment at first but later developed GOO. Surgery was done to address this problem. Five to twelve months of follow-up were provided following surgery.

Methods:

This study was a GOO due to the corrosive effects of consumption. It is a retrospective study on people who have GOO after consuming something caustic. Between January 2021 and June 2022, the paediatric surgery department admitted 20 patients.

The H/O of corrosive intake, kind of injury, time, and length of treatment for development GOO and operation were recorded. Endoscopy and a barium meal X-ray of the upper GIT were performed to diagnose GOO. Anemia was treated before surgery, as well as the nutritional state and fluid and electrolyte abnormalities. Before the operation, the gut was also prepared. All patients received endotracheal general anaesthesia during their procedures.

Starting on the fourth or fifth postoperative day, liquid postoperative nutrition was followed by semisolid and solid food. The seventh POD saw the release of patients. Five to twelve months of follow-up were given to every patient. Patients' general health conditions, serum albumin levels, Hb%, and endoscopies were assessed throughout follow-up.

Results:

Table 1 represents the baseline demographic data of the children enrolled in this research.

Table 1: Baseline demographic of Patients

Sl. No	Age	Gender	Symptoms	Onset of GOO	Operation Technique	Post-Operation Complications	Follow-up
1.	3	Male	Diarrhea for 12 days	13 days	Gastro jejunostomy	None observed	Good

2.	8	Female	Epigastric pain for 4 months	14 days	Gastro jejunostomy	None observed	Good
3.	5	Female	Vomiting for 1 month	14 days	Gastro jejunostomy	None observed	Good
4.	7	Male	Epigastric pain for 5 month	21 days	Gastro jejunostomy	None observed	Good
5.	3	Male	Diarrhea for 21 days	11 days	Gastro jejunostomy	None observed	Good
6.	2	Male	Vomiting for 14 days	12 days	Gastro jejunostomy	None observed	Good
7.	6	Female	Epigastric pain for 14 days	13 days	Gastro jejunostomy	None observed	Good
8.	5	Male	Vomiting for 23 days	11 days	Gastro jejunostomy	None observed	Good
9.	2	Male	Diarrhea for 25 days	14 days	Gastro jejunostomy	None observed	Good
10.	4	Female	Epigastric pain for 3 months	15 days	Gastro jejunostomy	None observed	Good
11.	6	Male	Epigastric pain for 4 month	15 days	Gastro jejunostomy	None observed	Good
12.	3	Female	Vomiting for 22 days	11 days	Gastro jejunostomy	None observed	Good
13.	5	Male	Diarrhea for 9 days	12 days	Gastro jejunostomy	None observed	Good
14.	4	Female	Vomiting for 15 days	13 days	Gastro jejunostomy	None observed	Good
15.	2	Male	Vomiting for 2 months	16 days	Gastro jejunostomy	None observed	Good
16.	5	Male	Vomiting for 45 days	19 days	Gastro jejunostomy	None observed	Good
17.	4	Male	Diarrhea for 7 days	11 days	Gastro jejunostomy	None observed	Good
18.	7	Female	Vomiting for 17 days	17 days	Gastro jejunostomy	None observed	Good
19.	9	Female	Epigastric for 8 days	13 days	Gastro jejunostomy	None observed	Good
20.	5	Male	Diarrhea for 4 days	18 days	Gastro jejunostomy	None observed	Good

There were 20 patients in all, 12 men and 8 women, in our study. Age range: 3 to 10 years, mean age 6.375. Sulphuric acid was the corrosive type. Corrosive was accidentally consumed. GOO took 17 days on average to develop, with a range of 11 to 21 days. Oesophaitis and gastritis were the initial side effects. But after 11 to 21 days, the latter develop GOO. Diagnosis using upper GIT barium meal X-ray and endoscopy.

Prior to surgery, all patients had optimization. After consuming corrosive, the average operating period was roughly 31 days. An average operation lasts 1.4 hours. A posterior gastro-jejunostomy was performed.

There were no notable postoperative problems. All patients were healthy upon follow-up. Overall health, hunger, weight gain, and a regular way of life. There was no re-do procedure.

Discussion

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Following caustic consumption, gastric mucosa damage typically develops along the lesser curvature and pre-pyloric area.

Corrosive acids have a lower viscosity and specific gravity than liquid alkalis, which causes them to pass down the esophagus more quickly and cause damage largely to the stomach's antrum and pylorus. Reflex pylorospasm and acid stasis at the antrum as a result increase the sensitivity of the antral epithelium [1].

Additional variables that could have an impact include the corrosive substance's composition, concentration, fasting time, and patient positioning during the occurrence. It is commonly known that alkalis injure the esophagus whereas acid damages the stomach. Sulphuric acid is a corrosive that is frequently found.

This caustic, which is typically ingested unintentionally, damages the antral epithelium [2].

5 to 65% of individuals experience gastric outlet obstruction as a result. Early gastritis development is followed by GOO, and therapy is typically conservative and doesn't involve a gastric lavage [3]. The exothermic reaction that results from neutralising acids or alkalis is not encouraged because it could cause more damage than good. In a similar vein, procedures to dilute the corrosive with milk, water, or other substances are largely ineffective because the precise extent of the harm can be identified within minutes of intake [4]. Parenteral broad spectrum antibiotics are administered to every patient with second degree or more caustic burns [5]. The goal of using intravenous proton pump inhibitors is to lessen the insult to the damaged gastric mucosa [6].

Instead of a gastrostomy, a jejunostomy was performed for feeding purposes [7]. After consuming something corrosive, GOO can start to manifest 5 days to 5 years later as post-prandial epigastric fullness, persistent non-bilious vomiting, visible peristalsis, and a succation splash [8]. As a result of a stomach injury, a process known as "delayed gastric syndrome" occurs. Up to two weeks after consumption, there is complete recovery, followed by the onset of early satiety, weight loss, and vomiting [9]. Diagnoses can be made using the past, the present, and the future. Uncertainty exists regarding the type and timing of surgery for corrosive-induced pyloric stenosis.

Early surgery is rarely reported [10]. If the patient exhibits any symptoms of esophageal perforation, peritonitis, or uncontrolled large hematemesis, immediate surgical intervention is required. Many surgical techniques, including pyloroplasty, gastrojejunostomy, partial gastrectomy, and total gastrectomy, have been described to treat blockage of corrosive damage [11]. To reduce the likelihood of a malignant alteration, the majority of the centre prefers to resect scarred stomachs. Even if Billroth I surgery is the preferred choice. Nonetheless, Billroth II operation is used when it is not practicable [12].

However, keeping in mind the findings of Hsu et al. [13] who reported that in more than 750 oesophageal and 20 000 gastric malignancies, there is no evidence of malignancy developing from a background of caustic intake, gastrojejunostomy may be a viable alternative. This procedure, known as a "physiological antrectomy," is less invasive than all other types of stomach resection and carries a low risk of stoma ulceration in patients who have histamine rapid achlorhydria.

Corrosive poisoning has a high morbidity rate. Therapy for these patients should be phased to allow for the full development of scarring as well as to allow for proper feeding. As there is no

indication of malignancy, gastrojejunostomy is our option after adequate nourishment.

Conclusion

Prudence in the home and in every facet of our community can help to avert avoidable situations. Adult education is crucial in this regard, as is legislation that ensures proper labelling and safe packing in child-resistant containers. Surgery performed early has great results. A gastrojejunostomy is a very safe procedure that has a low morbidity rate and great long-term results.

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