

Endoscopic Balloon Dilatation for the Treatment of Caustic Induced Pyloric Strictures

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Abstract

Background: To study the role of endoscopic balloon dilatation, as a cost effective and safe method, for the treatment of caustic induced pyloric strictures.

Methods: In this descriptive study 28 consecutive patients who presented with caustic ingestion and were enrolled for endoscopic balloon dilatation were included. Patients with complete pyloric channel occlusion, and long, tortuous strictures were excluded. All patients were admitted to hospital before starting dilatations. Barium X-rays were performed to rule out complete obstruction and to assess the length of stricture and patients with complete obstruction and long tortuous strictures were excluded. Intravenous fluids/Total Parenteral Nutrition and Proton pump inhibitors were given where necessary. Procedures were carried out under conscious sedation during endoscopy without fluoroscopic monitoring. Through the scope balloons of varying sizes, with the advantage that the same balloon can be dilated to different diameters (12.5 to 18 mm) were used. The time for dilation was 4 to 12 weeks after caustic ingestion.

Results: The average age of the participants was 21 years. There was a female preponderance with 82% females. The average number of dilatations were 4, with a range of 1 to 12. Successful dilatation both early and late were 82.6% while 17.4% were unsuccessful. Only 1(3.6%) case of perforation was reported which was managed conservatively. Bleeding was seen in 53.6% cases, which was minor and self limiting. Mild pain was reported in 30% of the cases.

Conclusion: Endoscopic Balloon Dilatation is a safe and effective mode of treatment and suitable alternative to surgery in selected cases of caustic induced pyloric stenosis.

Key Words: Endoscopic balloon dilatation, Caustic ingestion, Gastric outlet obstruction

Introduction

The ingestion of corrosive agents can cause extensive damage to the gastrointestinal tract. This can lead to

significant morbidity requiring prolonged and repeated hospitalization. In the acute stage, the damage may be so severe that perforation of the esophagus and the stomach as well as death can ensue.¹

Long-term complications of the gastrointestinal strictures, including esophageal stricture (ES) and gastric outlet obstruction (GOO), may develop from weeks to years after ingestion of corrosive agents.² ES and GOO are considered different entities, but in patients injured by the ingestion of corrosive agents, they may occur independently or they may occur concurrently in up to 20%.³

Endoscopy can be used to assess the degree and extent of damage of gastrointestinal tract within the first 48 hours, and later it can also be used to treat strictures developing in the esophagus and stomach.⁴⁻⁶ Previous studies have reported the successful use of the endoscopic balloon dilation (EBD) to treat corrosives-induced ES or GOO.⁶⁻⁹

Kochhar et al¹⁰ reported that 8 of their 23 patients with GOO had a history of caustic ingestion, and they required 2-9 sessions of EBD, as compared to 1-3 sessions for peptic-GOO cases. In another recent study on 41 patients, they showed that caustic-induced GOO could be treated with EBD in 39 of these patients, with no recurrences over 18-58 months of follow up.¹¹ The 39 patients required a mean of 5-8 sessions (range 2-13 sessions) to reach the end point of 15 mm. EBD and recommended it as a safe and effective treatment modality in the management of caustic-induced GOO. In contrast, the use of EBD to treat patients who have both ES and GOO has not been formally evaluated. Once they occur concurrently, endoscopic treatment can be more complicated.

Patients and Methods

In this descriptive study patients who presented with caustic ingestion and were enrolled for endoscopic balloon dilatation were included. Study was performed in gastrointestinal unit of Pakistan Institute of Medical Sciences, Islamabad, from January 2011 till January 2014. Patients with complete pyloric channel occlusion, and long, tortuous strictures were excluded.

All patients were admitted to hospital before starting dilatations. Barium X-rays were performed to rule out complete obstruction, to assess the length of stricture and patients with complete obstruction and long tortuous strictures were excluded. Intravenous fluids/Total Parenteral Nutrition and Proton pump inhibitors were given where necessary. Procedures were carried out under conscious sedation during endoscopy without fluoroscopic monitoring. Through the scope balloons of varying sizes, with the advantage that the same balloon can be dilated to different diameters) (12.5 to 18 mm) were used. The time for dilation was 4 to 12 weeks after caustic ingestion.

Results

Average age of the participants was 21 years. There was a female preponderance (82%). Average number of dilatations were 4, with a range of 1 to 12. The dilatations intervals were 1 per week in 21 patients and 1 per 2 weeks in 7 patients. Balloon inflation time was 30 to 60 seconds depending on patients' tolerance. Successful dilatation both early and late were 23 (82.6%) while 5 (17.4%) were unsuccessful. Only 1(3.6%) case of perforation was reported which was managed conservatively. Bleeding was seen in 15 cases (53.6%)

Table 1: Endoscopic balloon dilatation for caustic induced pyloric stenosis- Characteristics (n=28)

Findings	No(%)
Outcome	
Successful	23 (83)
Unsuccessful	05 (17)
Complications experienced during procedure	
Bleeding	15(54)
Pain	8(30)
Perforation	5(16)
Follow up	
Symptom free	22 (78.57)
Restenosis	6 (21.43)

This was minor and self limiting. Eight patients felt mild pain during procedure requiring no intervention. On follow up 6 patients developed re stenosis within 6 to 18 months ,requiring re dilatation or surgical intervention(Table 1).

Discussion

The current study reveals a very high rate of successful dilatation in 82.6% of the cases, with very few complications, thus confirming the safety and efficacy of endoscopic balloon dilatation in patients

with benign pyloric strictures. This is in line with other published studies. Kochhar and colleagues suggested that EBD is also a safe and effective treatment option in patients with gastric outlet obstruction and reported that persistent symptom relief could be successfully achieved in 95.1% of the patients with an extremely low perforation rate (2.4%).¹¹ A study by Yi-Chun Chiu, in contrast to our study, found that during EBD, there was a very high rate of complications including perforations(n = 6, 16.7%), ineffective dilations (n = 5, 13.9%) and active bleeding (n = 2, 5.6%).¹² The overall incidence of major complications was 3.3% per dilation session(8/239), including 2.5% (6/239) with perforation and 0.8% (2/239) with bleeding. As already referred, our study's success rate was much higher i.e 82.6% and only 3.6% cases reported perforation however in about 53.6% of the cases, minor bleeding was reported.

These complications may occur while inflating a balloon catheter within a straight stricture induces perforation caused by severe laceration on the narrowest area of the stricture during radial expansion or inflating a balloon catheter within an angulated stricture erecting it forward and resulting in perforation of the distal end of the angulations instead of curving at the corner.

Another similar study showed that technical success with EBD was achieved in 16 of 19 (84.2%) patients, and only two major complications (bleeding and pharyngeal edema) occurred in a total of 125 dilatation sessions (1.6%).¹³In another recent study on 41 patients, they showed that caustic-induced GOO could be treated with EBD in 39 of these patients, with no recurrences over 18-58 months of follow up.¹¹ The 39 patients required a mean of 5-8 sessions (range 2-13 sessions)to reach the end point of 15 mm. Only 2 patients failed to respond, one who had a perforation and another who had recurrent pain during each dilation. Only one patient had a supplementary procedure in the form of electrosurgical incision to augment the effect of EBD. However, they excluded patients with active ulceration and did not include patients with stricture length more than 2.5 cm.¹⁴

Conclusion

Endoscopic Balloon Dilatation is a safe and effective mode of treatment and suitable alternative to surgery in selected cases of caustic induced pyloric stenosis.

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