



Endoscopic cicatrectomy for corrosive esophageal strictures just below the piriform fossa



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ARTICLE INFO

Article history:

Received 29 December 2014

Received in revised form

6 January 2015

Accepted 8 January 2015

Key words:

Corrosive esophageal stricture

Cicatrectomy

Surgical intervention

ABSTRACT

Corrosive esophageal strictures have been primarily treated using balloon dilatation or endoscopic bougienage. However, many patients experience recurrence after dilatation, and surgical interventions such as esophageal replacement have been attempted. We have performed endoscopic cicatrectomy using a laryngoscope for corrosive esophageal stricture just below the piriform fossa to minimize surgical invasiveness. In this case reported, repeated balloon dilatation therapy failed, and the combination of endoscopic cicatrectomy and intralesional triamcinolone acetonide injections proved most effective even though multiple cicatrectomies were required. If esophageal strictures are close to the piriform fossa, endoscopic cicatrectomy could be one useful surgical option.

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Corrosive substances, whether acid or alkali, can cause significant esophageal strictures. Balloon dilatation or endoscopic bougienage is often chosen as the primary treatment for esophageal strictures. However, many patients with corrosive esophageal strictures develop recurrence of symptoms after dilatation. Surgical intervention has been used in cases requiring repeated dilatation or showing failure of dilatation therapy [1,2]. Esophagectomy or esophageal replacement is often required as surgical intervention [3], but both are invasive, especially in children. A case of corrosive esophageal stricture just below the piriform fossa is reported. Repeated balloon dilatation therapy failed, and endoscopic cicatrectomy was performed using a laryngoscope as a type of minimally invasive surgery.

1. Case report

A 5-month-old girl presented with chemical burns from the angulus oris to the thoracic part of the esophagus due to a bactericide (Phtharal: Disopa®; Johnson & Johnson, Tokyo, Japan). At that time, she was diagnosed with labial burns, epiglottic atrophy, and paralysis of the left vocal fold. Gastrografin swallow did not show

dysphagia or esophageal stenosis, and esophagoscopy showed only mucosal erosion from the piriform fossa to the thoracic part of the esophagus (Fig. 1a). At 9 months of age, dysphagia appeared, and esophagoscopy showed an esophageal stricture, approximately 1 mm in diameter, just below the piriform fossa (Fig. 1b). Gastrostomy was therefore performed, and a 5-Fr tube was inserted in the nasal cavity as a stent to the gastric fistula to prevent complete obstruction. From 10 months of age, balloon dilatation and intralesional injections of dexamethasone or triamcinolone acetonide were started. The stricture was membranous and dilated immediately, but it stenosed again within 1–2 weeks. She could be fed orally just after dilatation, but dysphagia appeared again about 2 weeks later. Balloon dilatation was repeated 13 times in 22 weeks, but no amelioration of constriction was obtained (Fig. 1c).

It was felt that surgical intervention might be necessary. However, esophagectomy or esophageal replacement was thought to be overly invasive and difficult, because the stricture was positioned just below the piriform fossa. Endoscopic cicatrectomy and triamcinolone acetonide injection using a laryngoscope were performed. Ethics committee approval was not required at that time and we got informed consent from her parents. At this time, the patient weighed 7.2 kg. The operation was performed by supine position with stretching her neck. After the 5-Fr stent tube was replaced with a guide wire, the laryngoscope (Nagashima Medical Instruments, Tokyo, Japan) (Fig. 2) was inserted along the guide wire and fixed to the stenotic area (Fig. 3a). Under microscopic

Institutional review board exemption was obtained about case report.

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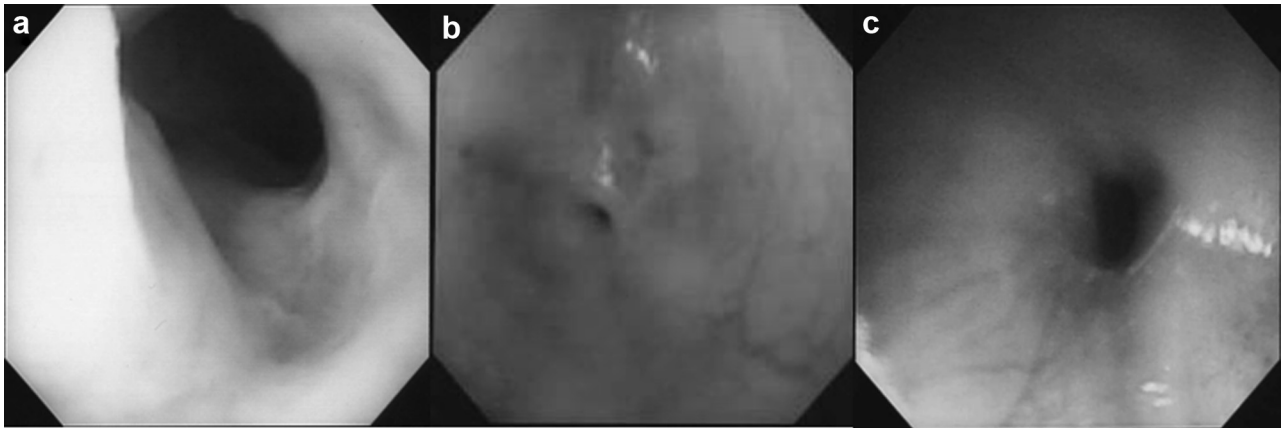


Fig. 1. a) Esophagoscopy shows only mucosal erosion from the piriform fossa to the thoracic part of the esophagus after a chemical burn. b) Esophageal stricture approximately 1–2 mm in diameter just below the piriform fossa has developed 4 months after injury. c) The stricture remains unaffected by 13 attempts of repeated balloon dilations.

view, the membranous cicatrix was resected using osteotrite forceps (Fig. 3b–d), and then the caudal mucosa was sutured to the cranial mucosa using 4-0 Monocryl (Ethicon, Tokyo, Japan) with a 13-mm needle (Fig. 3e). The length of the stenosis was approximately 2 mm, so suturing was easy. Triamcinolone acetonide was injected around the suture. Two weeks postoperatively, the narrowest segment of the lumen remained around 5 mm (Fig. 3f). Balloon dilatation and intralesional triamcinolone acetonide injections were performed twice afterward every 2 weeks, but no change in lumen diameter was achieved. Endoscopic cicatreotomy and triamcinolone acetonide injection were therefore performed twice for 4 weeks, dilating the narrowest segment of the lumen to around 8 mm. Endoscopic cicatreotomy was then performed every 2 weeks for 18 weeks, but triamcinolone acetonide was recalled from the market, and dexamethasone was injected instead. Although this procedure was performed 9 times, the lumen was maintained at only around 6 mm. The combination of endoscopic cicatreotomy and intralesional dexamethasone injections was not very effective. She and her parents felt swallowing foods difficult after 2 weeks of operation. After re-entry of triamcinolone acetonide onto the market, the lumen was dilated over 10 mm with two procedures by the combination of endoscopic cicatreotomy and intralesional triamcinolone acetonide injections. Esophagoscopy then did not show esophageal stricture (Fig. 4). And then, she could be fed orally with no problems. But very slight stenosis remained when we checked it using soft balloon. Then the stenosis was dilated by balloon with triamcinolone acetonide local injection, and the interval of manipulation was increased (Fig. 5). After 10 sessions

of manipulation, the stricture was not evident even by soft balloon. And dilation was no longer necessary for no symptoms by 7 years 4 months of age. No recurrence of stricture has been apparent for 5 years and 11 months.

2. Discussion

Esophageal stricture may develop in 7–15% of patients with corrosive burns, forming within 3–4 weeks after injury [2,4]. Esophageal dilatation, such as esophageal bougienage or balloon dilatation as applied in the current case, has been the primary treatment for focal esophageal stricture. Fluoroscopically guided esophageal balloon dilatation is generally considered a safe, easy, and effective treatment for a variety of esophageal strictures in children. Overall success rates of balloon dilatation including stenosis after esophageal anastomosis have been reported within the range of 67–90%, although the success rate in patients with corrosive esophageal stricture is low (29–70%). Furthermore, the rupture rate of balloon dilatation for corrosive esophagitis is higher than for postoperative strictures, since corrosive esophagitis increases tissue resistance and reduces tissue elasticity due to progressive fibrosis and dense scarring [2]. The patient in the present case underwent balloon dilatation 13 times in 22 weeks, but no amelioration of constriction was obtained. Thirteen is a substantial number of attempts, and alternative options should be explored after this stage is reached.

Surgical interventions have been used in patients for whom balloon dilatation has been required repeatedly or has failed. If

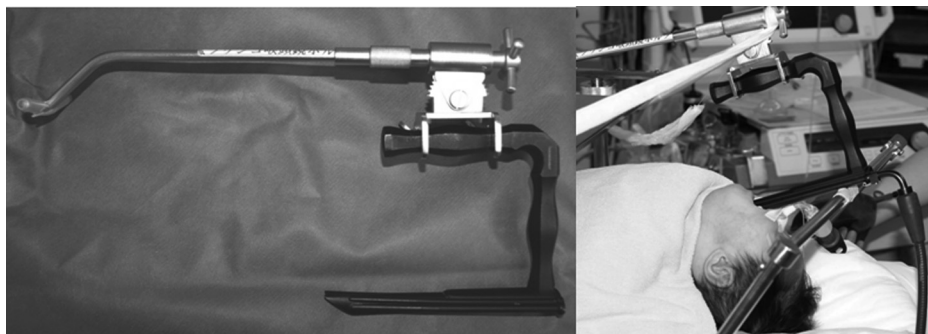


Fig. 2. Laryngoscope (Nagashima Medical Instruments, Tokyo, Japan) and patient's position.

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