International Surgery Journal
Senajaliya M et al. Int Surg J. 2020 Jan;7(1):197-200
http://www.ijsurgery.com
pISSN 2349-3305 | eISSN 2349-2902

DOI: http://dx.doi.org/10.18203/2349-2902.isj20195969

Original Research Article

Comparative study of oesophageal stricture balloon dilatation with and without triamcinolone 1% intralesional injection

Milan Senajaliya[1], Hardik Astik[1]*, Nimesh Verma[1], Vipul Chaudhari[2]

[1]Department of Surgery, [2]Department of Preventive and Social Medicine, Government Medical College, Surat, Gujarat, India

Received: 02 December 2019
Revised: 17 December 2019
Accepted: 18 December 2019

***Correspondence:**
Dr. Hardik Astik,
E-mail: dr.hardik.astik@gmail.com

ABSTRACT

Background: The objective of the study was to effect of steroids in the long term outcome of esophageal benign stricture after endoscopic balloon dilation in terms of recurrence.
Methods: With purposive sampling, 50 cases were taken in these studies who were admitted with strictures at any location along the esophagus and of any size at New Civil Hospital, Surat. The indoor patients for a three year period were retrieved using a prepared case sheet proforma on the basis of the patient's demographic profile and clinical findings. Patients had undergone endoscopic balloon dilation for esophageal benign stricture. In 25 patients endoscopic dilation was followed by submucosal injection of long-acting steroid triamcinolone and the remaining 25 patients were taken as a control.
Results: All patients have normal dietary intake including solid food at the time of discharge. All patients under study were regularly followed quarterly. Overall stricture recurrence can be reduced by intralesional triamcinolone injection providing stricture length <6 cm. Stricture >6 cm required a repeated procedure or other treatment modalities, In study group duration between endoscopic dilatation sessions fell significantly over a post dilatation period of 3 to 12 months.
Conclusions: In addition to endoscopic dilatation, intralesional trimicinolone injection is safe, effective and significantly decrease stricture rate and decrease endoscopic dilatation sessions.

Keywords: Balloon dilatation, Esophageal stricture, Triamcinolone

INTRODUCTION

Oesophageal strictures can be subdivided into those with malignant causes and those that are benign. Malignant oesophageal strictures are usually due to carcinoma, and in these cases, dilation is used only as a supplementary procedure in addition to stent placement, or in order to complete another procedure. Common benign causes include peptic injury, Schatzki rings, oesophageal webs, radiation injury, caustic ingestion, and anastomotic strictures.[1,2]

Dilation has been the customary treatment for benign oesophageal strictures, and dilation techniques have developed from the use of whale-bones and rigid bougienage in the seventeenth and eighteenth centuries to the present-day use of wire-guided, flexible, polyvinyl bougies (Savary-Gilliard; Wilson-Cook Medical Inc., Winston-Salem, North Carolina, USA) and through the scope balloon dilators.[3]

Depending on their characteristics and on the response to treatment, oesophageal strictures can be differentiated

into two structural types-simple or complex. Simple oesophageal strictures are focal, straight, symmetrical, or concentric, with a diameter of >12 mm, and they are often amenable to treatment with standard techniques such as bougienage or balloon dilation. Common etiologies for simple strictures include Schatzki rings, webs, and peptic injury; they may also develop following sclerotherapy. In these strictures, only one to three dilation sessions are usually required in order to achieve symptomatic relief, but after initial treatment, they may recur in up to 30%-40% of patients during the long-term follow-up. Complex strictures are long (>2 cm), tortuous, and asymmetrical and are associated with a severely compromised luminal diameter (<12 mm).[4]

Mechanism inducing oesophageal stricture is ulceration followed by fibrosis and collagen deposition.[5] It is a well-known fact that intralesional injection of steroid has a good success rate in case of keloid and burn scar management. Various research also shows that ISI after endoscopic balloon dilatation successfully in case of benign as well as caustic oesophageal stricture.[6,7] Fibrosis and collagen is the reason for oesophageal stricture and stenosis.[8]

Triamcinolone prevents cross-linking of collagen which causes contraction of scar tissue. If the scar tissues are loosened and ISI into scar tissue, fibrosis and contracture are prevented.[9] Steroids also decrease the fibrotic healing process after endoscopic balloon dilation.[8]

There is no evidence that mature fibrosis responds to steroid therapy, but with endoscopic balloon dilatation with ISI decrease the duration between repeated dilatation and steroids help to decrease the length of longer stricture to short stricture.[10]

Here we made an attempt to find out the success of sub-mucosal steroid injection at stricture site in endoscopic oesophageal stricture balloon dilation in terms of recurrence, which is a major drawback of this procedure in our setup of government hospital catering poor patients.

METHODS

In this prospective study of oesophageal benign stricture with purposive sampling, 50 cases were taken in these studies who were admitted with strictures at any location along the esophagus and of any size at New Civil Hospital, Surat between 2015 to 2018. The data of indoor patients were retrieved using a prepared case sheet Performa on the basis of the patient's demographic profile and clinical findings. Patients had undergone endoscopic balloon dilation for oesophageal benign stricture. In 25 patients endoscopic dilation was followed by submucosal injection of long-acting steroid triamcinolone and the remaining 25 patients were taken as a control. Diabetics as a comorbid medical condition were excluded from the study. Patients of all age groups were taken in this study.

Procedure

Patients were undergone endoscopic balloon dilation for oesophageal benign stricture. Triamcinolone was injected at 3, 6, 9, and 12 o'clock position at the stricture site. Triamcinolone, a long-acting steroid 1 ml (40 mg) was injected submucosally with special needle.

Data collection methods

The information collected using interview technique facilitated by the guidelines (questionnaire) prepare for asking questions. The information noted in the questionnaire form.

Data management and analysis

After the completion of data collection, data entry was done into the Excel data file. Data analysis was done by Epi info version 6.04 software.

RESULTS

Patients have undergone endoscopic balloon dilation for oesophageal benign stricture of various lengths and at different sites. In 25 patients endoscopic dilation was followed by submucosal injection of long-acting steroid Triamcinolone and the remaining 25 Patients were taken as a control. The impact on stricture recurrence was given special consideration.

Table 1: Age and sex wise distribution of the case and control.

Age (in years)	Cases		Control	
	Male (%)	Female (%)	Male (%)	Female (%)
0-10	Nil	Nil	Nil	Nil
11-20	4 (33.3)	7 (53.8)	Nil	5 (45.4)
21-30	5 (41.7)	4 (30.8)	5 (35.7)	3 (27.3)
31-40	1 (8.3)	2 (15.4)	9 (64.3)	2 (18.2)
41-50	2 (16.7)	Nil	Nil	1 (9.1)
>51	Nil	Nil	Nil	Nil
Total	12 (100.0)	13 (100.0)	14 (100.0)	11 (100.0)

More than two-fifth cases (41.7%) males were in the age group of 21-30 years and the highest female (53.8%) in the age group of 11-20 years. Female was also higher in the age group of 11-20 year in the control group whereas 31-40 year age group for male (64.3%).

In the present study, corrosive acid ingestion was the most common etiology (88.0%) in cases and 92.0% in control groups. The anastomotic stricture was the second cause in both groups.

Table 2: Distribution of patients according to types of etiology.

Etiology	Study group			Control group		
	Cases	Recurrence	%	Cases	Recurrence	%
Corrosive acid ingestion	22	6	27.27	23	13	56.52
Anastomotic stricture	3	1	33.33	2	2	100
Total	25	7	28	25	15	60

Table 3: Distribution of case and control according to the site of stricture.

Site	Study group			Control group		
	Cases	Recurrence	%	Cases	Recurrence	%
Upper esophagus	14	4	28.57	15	8	53.33
Mid esophagus	7	2	28.57	5	5	100
Lower esophagus	4	1	25	5	2	40
Total	25	7	28	25	15	60

Table 4: Stricture length distribution.

Length (cm)	Study group			Control group		
	Cases	Recurrence	%	Cases	Recurrence	%
0-1.9	0	0	0	0	0	0
2-3.9	10	2	20	8	3	37.5
4.0-5.9	12	2	16.66	11	7	63.63
6.0-7.9	3	3	100	5	4	80
8.0-10.0	0	0	0	1	1	100
Total	25	7	28	25	15	60

The upper esophagus was the most common site of stricture in each group followed by the mid and lower esophagus.

In this comparative study, we had included oesophageal stricture having a length of 10 cm or less. In the study group and in the control group 48% and 44% of patients had a stricture length of 4.0 to 5.9 cm respectively.

Table 5: Impact of steroid.

Group	Cases	Recurrence	%
With steroid	25	7	28
Without steroid	25	15	60
Total	50	22	44

In our study intralesional trimicinolone decrease duration of endoscopic dilation, decrease recurrence, decrease periodic dilation index and increase symptom-free duration.

DISCUSSION

An oesophageal stricture diagnosed on the basis of patient symptoms, radiological evidence, and endoscopy study.[11,12] Treatment for the oesophageal stricture includes endoscopic dilatation and intralesional steroid injection and stent placement. Endoscopic dilatation is the cornerstone treatment amongst all available options.[1] Two options for oesophageal dilatation include through the scope balloons and wire-guided bougies to achieve targeted oesophageal diameter, In the majority of the patients, the symptomatic improvement achieved 15-18 mm diameter.[1,13] The high rate of recurrence found in intractable strictures requiring repeated dilatations.[14,15] Holder et al. were the first to report intralesional steroid (triamcinolone) injection into oesophageal strictures of dogs and children.[16,17] Kocher et al reported significantly decrease the requirement of endoscopic dilatation sessions after receiving intralesional steroid injection.[18] Lee et al reported symptomatic improvement and sessions less frequent endoscopic intervention after endoscopic dilatation and intralesional steroid injection.[19] Endoscopic dilatation with intralesional steroid injection increases dysphagia free period.[11]

In the present study, all patients has normal dietary intake including solid food at the time of discharge. All patients under study were regularly followed quarterly. Overall stricture recurrence can be reduced by intralesional triamcinolone injection providing stricture length <6 cm. Stricture >6 cm required a repeated procedure or other treatment modalities, In the study group, the duration between endoscopic dilatation fell significantly over a post dilatation period of 3 to 12 months. Multiple strictures, stricture with dense fibrosis involving are notorious for recurrence.

CONCLUSION

In addition to endoscopic dilatation, intralesional triamcinolone injection is safe, effective and significantly decrease stricture rate and decrease endoscopic Dilatation sessions.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee of Government Medical College Surat

REFERENCES

1. Kim JH, Shin JH, Song HY. Benign strictures of the esophagus and gastric outlet: interventional management. Korean J Radiol. 2010;11(5):497-506.
2. Siersema PD, de Wijkerslooth LRH. Dilation of refractory benign Oesophageal strictures. Gastrointestinal Endoscopy. 2009;70(5):1000-12.
3. Classen M, Tytgat GNJ, Lightdale CJ. Gastroenterological endoscopy. 2nd ed. Thieme: 2010; 496.
4. Classen M, Tytgat GNJ, Lightdale CJ. Gastroenterological Endoscopy 2nd Edition. Thieme. 2010: 323.
5. Robert HD, Management of the patient with benign Oesophageal stricture. Surg Clin North Am. 1983;63:885-903.
6. Ketchum LD, Smith J, Robinson DW, Master FW. The treatment of hypertrophic scar, keloid and scar contracture by triamcinolon acetonide. Plast Reconstr Surg. 1977;11:169-72.
7. Kochhar R, Ray JD, Sriram PVJ, Kumar S, Singh K. Intralesional steroids augment the effects of endoscopic dilation in corrosive oesophageal strictures. Gastrointest Endosc. 1999;49:509-13.
8. Mendelson HJ, Maloney WH. The treatment of benign strictures of the esophagus with cortisone injection. Ann Otol Rhino Laryngol. 1970;79:900-4.
9. Berenson GA, Wyllie R, Caulfield M, Steffen R. Intralesional steroids in the treatment of refractory Oesophageal strictures. J Pediatr Gastroenterol. 1994;18:250-2.
10. Altintas E, Kacar S, Tunc B, Sezgin O, Parlak E, Altiparmak E, et al. Intralesional steroid injection in benign Oesophageal strictures resistant to bougie dilation. J Gastroenterol Hepatol. 2004;19:1388-91.
11. Takahashi H, Arimura Y, Okahara S, Kodaira J, Hokari K, Tsukagoshi H, et al. A randomized controlled trial of endoscopic steroid injection for prophylaxis of oesophageal stenoses after extensive endoscopic submucosal dissection. BMC Gastroenterol. 2015;15:1.
12. Schoepfer A. Treatment of eosinophilic esophagitis by dilation. Digestive Dis. 2014;32:130-3.
13. Hirdes MMC, van Hooft JE, Koornstra JJ. Endoscopic Corticosteroid injections do not reduce dysphagia after endoscopic dilatation therapy in patients with benign esophagogastric anastomotic stricture. Clin Gastroenterol Hepatol. 2013;11(7):795-801.
14. Haller JA, Andrews HG, White JJ, Tamer MA, Cleveland WW. Pathophysiology and management of acute corrosive burns of the esophagus: results of treatment in 285 children. J Pediatr Surg. 1971;6(5):578-84.
15. O'neill JA, Betts J, Ziegler MM, Schnaufer L, Bishop HC, Templeton JM. Surgical management of reflux strictures of the esophagus in childhood. Ann Surg. 1982;196(4):453-60.
16. Ashcraft KW, Holder TM. The experimental treatment of Oesophageal strictures by intralesional steroid injections. J Thoracic Cardiovascular Surg. 1969;58:685-91.
17. Holder TM, Ashcraft KW, Leape L. The treatment of patients with Oesophageal strictures by local steroid injections. J Pediatr Surg. 1969;4:646-53.
18. Kochhar R, Makharia GK. Usefulness of intralesional triamcinolone in treatment of benign Oesophageal strictures. Gastrointestinal Endoscopy. 2002;56:829-34.
19. Lee M, Kubik CM, Polhamus CD, Brady CE III, Kadakia SC. Preliminary experience with endoscopic intralesional steroid injection therapy for refractory upper gastrointestinal strictures, Gastrointestinal Endoscopy. 1995;41(6):598-601.

Cite this article as: Senajaliya M, Astik H, Verma N, Chaudhari V. Comparative study of oesophageal stricture balloon dilatation with and without triamcinolone 1% intralesional injection. Int Surg J 2020;7:197-200.