INTERNATIONAL JOURNAL OF MEDICAL AND APPLIED SCIENCES
eISSN:2320-3137
Earthjournals Publisher
www.earthjournals.in

RESEARCH ARTICLE

Endoscopic dilatation of Anastomotic esophageal strictures secondary to post surgical correction of Esophageal Atresia (EA) with Tracheoesophageal fistula (TEF) in children

Umadevi Malladi, PS kumar, Ramanna Macharla, Rohan Reddy

Dept Gastroenterology, Gandhi Hospital, Hyderabad, Telangana state, INDIA

Corresponding author: Dr Umadevi Malladi MD,DM

Publication history: Received on 6/6/2016, Published online 30/06/2016

ABSTRACT:
Back ground : survival of Patients with Esophageal Atresia with Tracheoesophageal fistula has improved a lot in the last decades. The increase in survival caused a number of young children with post op esophageal strictures referred for endoscopy management. Objective –To assess efficacy and safety of endoscopic dilatation of post Op Anastomotic strictures in Pts with EA and TEF surgical correction Methods –retrospective analysis of clinical endoscopic data obtained in pts with Post op Anastomotic strictures between March 1995 to July 2014. Data of 42 out of 60 pts were analysed ,38%(16 /42)SG dilators used in initial part of the study i.e, between 1995 to 2004 With the availability of CRE Balloons in all strictures were dilated with CRE balloons 28/42 strictures were located centrally in 38pts (90.46 %) and was eccentric in 4 pts.(9.52)Associated pseudodiverticula above the stricture noted in 12 pts(28.5 %).: the number of dilatation varied from 2 to 16 sessions mean being 4.6 Complications secondary to procedure were observed in 5 pts(11.9%) , fever in 3pts(7.1%) Minor bleed in 2 pts(4.7%). And perforation in one and treated conservatively In SG group and we have not encountered any mortality. No significant difference between SG dilators and CRE balloon
Conclusions – Endoscopic dilatation of post op esophageal strictures in Pts with Esophageal Atresia and TEF with SG dilators /CRE balloon dilatation is Safe and effective with less number of complications. Endoscopic dilatation under Local xylocaine anesthesia is feasible

Key words – Esophageal atresia , Tracheoesophageal fistula , Anastomotic Esophageal stricture endoscopic dilatation

INTRODUCTION

Esophageal Atresia with or without Tracheoesophageal fistula is the most common congenital anomaly of esophagus.1. The overall incidence of this anomaly range from 1 in every 2500 to 4500 live births 2. First successful repair is performed in 1941 by Dr Cameron Height The reported incidence of Anastomotic stricture after esophageal Atresia repair has varied in case series from as low as 9% to as high as 80%3. Survival of Infants with Esophageal Atresia (EA) with Tracheo esophageal fistula(TEF) improved to 95 % in specialized centers 1 However Anastomotic complications are frequent and remain important cause of post operative morbidity. Anastomotic strictures developed in 74 (37.2%) of 199 patients. The cornerstone of esophageal stricture treatment is dilation with either balloon or bougie. The goal of esophageal dilation is to increase the luminal diameter of the esophagus while also improving dysphagia symptoms.

Dilatations of over 2weeks to 2months are undertaken before labeling the strictures as refractory .Once a stricture becomes refractory to esophageal dilation, there are several treatment therapies available as adjuncts to dilation therapy. These therapies include intralesional steroid injection, mitomycin C, esophageal stent placement, and endoscopic incisional therapy.

Anastomotic strictures result in thickening of esophageal wall with fibrosis at the area of anastomosis Significant predisposing factors included the use of braided silk sutures (relative risk 1.72 and 1.49, compared

with polyglycolic acid and polypropylene sutures), the presence of gastro esophageal reflux and leakage of the anastomosis (relative risk 2.29 and 2.04, respectively).4Tracheomalacia, personnel factors, and recurrent fistula did not affect the rate of stricture formation

Anastomotic strictures have high morbidity with severe consequences In addition to malnutrition, weight loss, food impaction as almost all the pts have strictures in immediate post cricoids region and upper esophagus which may lead to aspiration and recurrent pulmonary infections

Endoscopic dilatation remains main stay of therapy in these pts as it is easy, done under guidance and offer great relief of dysphagia with lower rates of complications. The most frequently used dilators are Savery Gilliard (SG) dilators and CRE (controlled radial expansion) balloons.

MATERIAL AND METHODS :

we have analysed retrospectively all children who underwent endoscopic dilatation for Anastomotic stricture post EA/TEF repair were analysed over a period of 20yrs from May 1995 to May 2014 in dept of Gastroenterology , Osmanania general hospital and Gandhi hospital in Hyderabad . All patients were referred from Niloufer children Hospital Hyderabad. Initial assessment consists of, detailed clinical history and examination. Contrast enhanced radiological examination of esophagus done in all pts. Nutritional status of patients, BMI, Noted. All pts parents were informed of the possible complications, need for hospitalization, efficacy of treatment offered and Informed consent obtained in all cases.

Endoscopic procedures were performed under Lignocaine topical anesthesia with airway protection and a minimum fasting period of 6 hrs. On esophagoscopy, the location, diameter, morphological aspects of the stricture were assessed to facilitate the most appropriate dilator. The guide wire was inserted under endoscopic control under fluoroscopy. Dilatation sessions repeated at an average interval of 15 days with the use of at most 3 dilators with progressively increasing diameters per session. After the procedure, post procedure all children were Kept NBM for 6 hrs and treated with antibiotics and sucralfate, PPSs for 5 days .patients remained under observation for Overnight and discharged next day The ideal final diameter of the esophageal lumen was based on patient's symptoms, feeding difficulties history and nutritional status. Relief of dysphagia, improvement of nutrition and weight gain during the follow up were used as clinical parameters to determine the response to endoscopic treatment as well as the interval between the sessions . Patients were followed biannually on opd basis for a period of 2yrs to 3 yrs post completion of dilatation

The following dilators were used: Savery Gilliard dilators (6mm to 12mmm) , CRE balloon (6mm to 12 mm) and were chosen according to the endoscopic, radiologic characteristics of the stricture .

RESULTS:

A total of 62 children under went endoscopic dilatation between 1995 and 2014, however only 42 pts data analysed for lack of follow up .A total 42 children aged between 6 months and 1½ years at the time of initial presentation were assessed. Of these 42 pts 41 were males and one was female.

They are subjected to total number of 286 dilatations with arrange of 2- 16 sessions per patient (mean 6.2 dil, median 4dilatation) all the strictures were secondary surgical correction of ES / TEF. In 38 %(16 /42)SG dilators used in initial part of the study i.e, between 1995 to 2004 With the availability of CRE Balloons in all strictures were dilated with CRE balloons from 2004 onwards in 62%(28/42)stricture opening is located centrally in majority of cases 38 (90.46 %) and was eccentric in 4 pts.(9.52)Associated pseudodiverticula above the stricture noted in 12 pts(28.5 %).Complications secondary to procedure were observed in 5 pts(11.9%) ,

INTERNATIONAL JOURNAL OF MEDICAL AND APPLIED SCIENCES
Earthjournals Publisher
eISSN:2320-3137
www.earthjournals.in

fever in 3pts(7.1%) Minor bleed in 6 pts(4in SG group and 2 In CRE group . one pts had perforation after SG dilatation and treated conservatively6 . we have not encountered mortality.

Efficacy: The number of dilatation varied from 2 to 16 sessions mean being 4.6. We did not observe any relation between time gap between surgery and commencement of dilatation schedules.

During follow up: post procedure lower respiratory tract infections were commonest in 22 pts (11.8%) food Impaction noted in 5 pts(11.9 %).. food impaction in two pts, one had fruit seed another had large curry leaf . one had ground nut Indicating the necessity of counseling parents in food care ,all were removed successfully Lower respiratory tract infections responded to antibiotics of these 2 pts (4.7%)required hospitalization

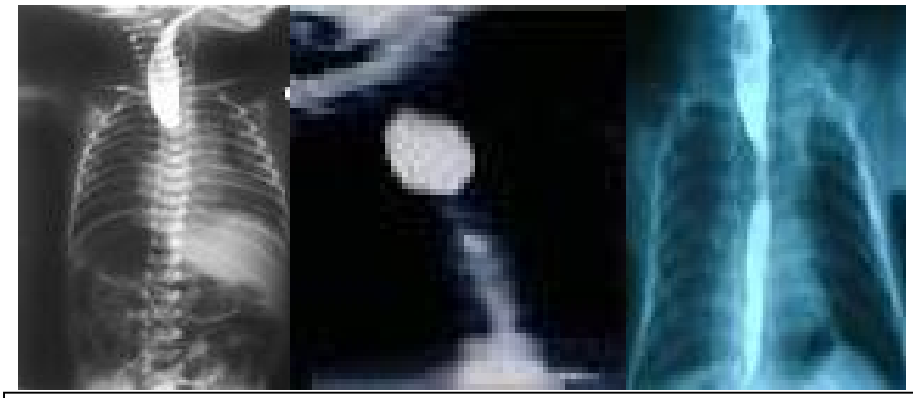
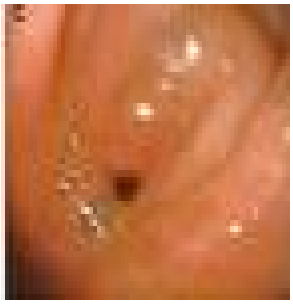


Fig1: Barium swallow appearances In Post Op Anastomotic strictures – Upper and mid esophagus

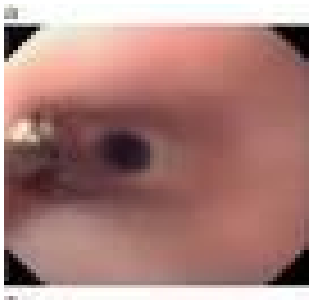
Fig2: CRE Balloon dilatation – Post CRE dilatation esophageal lumen

Table 1- complications on follow up

Complications	SG group (N=16)	CRE balloon (N=26)
FB impaction	2/16	3/26
Minor bleeding	4	3
Respiratory infections	6/16	5/26
Pneumonia req Hospitalization	2/16	1/26
Perforation	1/16	0/26



Eccentric opening with pseudodiverticula



Central opening

Fig3: Endoscopic Morphological appearances

DISCUSSION:

The incidence of esophageal strictures in pediatric population varies with the geographic regions and endoscopy unit referral centers. The increase in survival of infants with esophageal Atresia / TEF increasing with the availability of well equipped Neonatal intensive care units and personnel. The increase in survival with resultant successful surgery increase referral to endoscopic dilatation is on rise .strictures secondary to surgical correction often show better response to endoscopic treatment requiring few dilatations sessions for an appropriate lumen diameter and majority become asymptomatic after 5 yrs of age .

In our study out of 42 pts 41 were males and one was female child where as significant number of female children were analysed in study of Michael et al (out of Forty-one patients with confirmed EA/TEF 26 were males and 15 were females3 Congenital anomalies were associated in 28 (68%).5we have not seen any congenital anomalies in the post op children

Esophageal stricture dilatation must be performed in a safest possible fashion , when using Savery Gilliard dilators in pediatric patients especially younger ones one should always remember the length of esophagus is small in children , in general the procedure does not require the use of fluoroscopy .

However it is important in presence of technical problems with guide wire placement, especially in presence of eccentric lumen, pseudo diverticulae and distorted anatomy

The ideal final diameter of esophageal lumen is determined by the patient's clinical conditions,6 considering the improvement of dysphagia, nutritional status weight gain in our cases it was 12mm.

We had minor complications in 11.3% of pts where as 4.8 % in Bittencourt et al 7. we could achieve adequate dilatation in all and none of our pt has developed recurrence. Perforations are one of the most dreaded complications of dilatation especially in children with considerable morbidity 8 They remain asymptomatic after 5 yrs with the spurge in the growth Gastro esophageal reflux symptoms we have not encountered however in a series of 74 pts . Ant reflux surgery was carried out in 19 (25.7%) of the 74 patients 9

Refractory strictures requiring surgery were not uncommon in a series of 74 pts 71 patients responded to dilatation alone, whereas three required stricture resection or esophageal substitution. All three patients requiring surgical intervention 9

CONCLUSIONS :

This study shows that endoscopic dilatation of Anastomotic esophageal strictures after surgical correction is safe, effective with good success rate. And has lower rate of complications .patients should be monitored

on individual basis even after achieving adequate esophageal lumen proper nutritional care and preparation of feeds plays a very important role during the treatment as food impaction is common problem . We want to stress the point that all these dilatations are done under Lignocaine topical anesthesia, and we have not encountered refractory strictures requiring surgery

REFERENCES:

1.Chittmittrapap.S1, Spitz L, kiely EM , Brereton RJ - Anastomotic stricture following repair of Esophageal Atresia. J Pediatr surg 1990 May;25(5):508-11.

2.Michael A Manfredi MD Endoscopic management of Anastomotic strictures secondary to esophageal atresia Gastroenterological clinics January 2016 Issue1, Pages 201-219

3 .Banjar HH, Al-Nassar SI Gastro esophageal reflux following repair of Tracheoesophageal fistula Saudi Med J 2005 May; 26(5):781-5.

4 .Michael P Holden, Geoffrey H wooler Tracheoesophageal Fistula and esophageal Atresia Results of 30 years Experience Preview –Article Jul 1970 – Thorax

5.harmon CM, Coran AG congenital anomalies of the esophagus in children ;Paediatric surgery Phildelphia, PA Mosby Elsevir 2006:P1051-81

6 Guitron A ,Adalid R,Nares J, Mena G, benign esophageal strictures in children –results of endoscopic dilatation Rev Gastroenterol Mex 1999:64:12-5

7. Bitten court PF, Carvalho SD, Ferreira AR, Melo SF, Andrade DO, Figueiro Filho PP endoscopic dilatation of esophageal strictures in children and adolescents J pediatric(Rio J) 2006:82:127-31.

8.Martinezl,Rivas S, Hernandez F , Avila LF Murcia J Et al Aggressive conservative management of Esophageal perforations in children J pediatric surg 2003 :38:685-9

9. Kovesi T,Rubin S long term complications of Tracheoesophageal fistula and esophageal atresia ;Chest 2004;126-915-25

Paper cited as: Umadevi Malladi, PS kumar, Ramanna Macharla, Rohan Reddy. Endoscopic dilatation of Anastomotic esophageal strictures secondary to post surgical correction of Esophageal Atresia (EA) with Tracheoesophageal fistula (TEF) in children**. International Journal of Medical and Applied Sciences, 5(2), 2016, pp.7-11.**