ejpmr, 2020,7(3), 1-4

SJIF Impact Factor 6.222

EUROPEAN JOURNAL OF PHARMACEUTICAL AND MEDICAL RESEARCH

www.ejpmr.com

Research Article

ISSN 2394-3211

EJPMR

ENDOSCOPIC INTRALUMINAL TREATMENT OF ESOPHAGEAL STENOSIS IN CHILDREN IN POST BURN PERIOD.

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Article Received on 24/12/2019 **Article Revised on 14/01/2020** **Article Accepted on 04/02/2020**

Relevance. The number of chemical burns of the esophagus and cicatricial stenoses in children does not have a tendency to decrease, which is caused by a significant increase in the use in everyday life of household chemicals containing acids and alkalis, which can cause severe burns of the esophagus, less often stomach.[1, 12]

Post-burn stenosis of the esophagus remains one of the most common causes of dysphagia after tumor and peptic stenoses of the esophagus.[3, 8] Due to the widespread development of endoscopy, the diagnosis of burns of the esophagus and the stomach has significantly improved, their differentiation according to the degree of damage has recently improved, which allows us to predict the further development of the process.[2] There is also no significant difficulty in diagnosing cicatricial stenosis of the esophagus when using esophagoscopy and radiography.[1, 5] Much more difficult is the treatment of chemical burns of the esophagus and its cicatricial stenoses.

The most common method in the treatment of cicatricial stenoses of the esophagus in children is the bougienage method.[1] With its use, good and satisfactory results can be obtained in 78% of children.[8] After reconstructive plastic surgery on the esophagus, 35–40% of the operated ones have various postoperative complications.[1] According to the literature, mortality in such operations ranges from 9 to 15%.[12] In addition, functional outcomes such as swallowing and growth are especially important in childhood. In these cases, a therapeutic alternative is needed - esophageal stenting.

Currently used metal stents (coated or partially coated) can be in the lumen of the esophagus from 3 weeks to 13 months (in adults). In 50% of cases, when they are extracted, there are significant technical problems associated with the fact that a significant hypertrophic reaction of the mucous membrane is observed at the site of the stent standing. There is a significant risk of perforation of the esophagus.[2]

Biodegradable stents from polydioxanone have a therapeutic effect over a long period and remodel the narrowing.[5] Due to the biological decay of the material from which the stent is made, no removal of the structure is required. This method of treatment has not yet found wide application in pediatric practice. There are few works on the use of stents in the treatment of cicatricial stenoses of the esophagus in children and they are based on a small clinical material.[2]

Objective: to study the effectiveness of biodegradable stents in children with cicatricial stenoses of the esophagus.

MATERIALS AND RESEARCH METHODS: the study was based on the data of dynamic examination of 12 children aged from 1.5 to 12 years. In most cases, boys (66.7%) prevailed among all the examined children than girls (33.3%). All patients were admitted in the late post-burn period after 3 months from the moment of chemical burn.

The frequency of burns of the esophagus with an acid reagent was found in 33.3% (4), with alkali - in 58.3% (7) and in 8.3% (1) cases of the reagent could not be clarified.

All children with cicatricial stenoses of the esophagus were given standard clinical, laboratory, instrumental examination and more than 20 bougienage procedures.

All 12 patients, with the consent of their parents, installed biodegradable stents from polydioxanone manufactured by ELLA-CS, Ltd (Fig. 1), which do not require extraction. The stent sizes were selected in accordance with the age dimensions of the esophagus and the length of the scar stricture.

The method of stenting: 6 hours before the procedure, children with cicatricial stenosis were prohibited from ingestion through the mouth. X-ray fluoroscopy of the esophagus was performed in a vertical position to clarify the localization of the stenosis, and the extent of the affected segment was noted on the patient's body surface with radiopaque markers.

The stent was administered under x-ray and endoscopic control, the patients were in a position on the back or in the left anterior oblique position. The length of the stent was selected as follows, so that its ends, especially the proximal, would extend 2-3 cm beyond the stenosis zone. After the stent had been released, the extraction system was removed carefully, avoiding the stent displacement.

RESULTS: Within 48 hours, the stent gradually expanded to its maximum diameter. Immediately after the procedure, endoscopic control was performed (Fig. 2), as well as esophageal X-ray diffraction with water-soluble contrast to assess the stent's patency and exclude such complications as damage to the esophagus.

A day later, a full-fledged X-ray contrast study (Fig. 3) was performed to assess the patency of the stent and its antireflux function. Reflux was evaluated by changing the position of the patient's body. With the free patency of the stent and the absence of gastroesophageal reflux, the patient was allowed to take thick porridge.

Technically successful stents were installed in all children. In 1 child, the stent is installed in the upper third, in 7 in the middle third, and in 4 in the lower third of the esophagus. Balloon dilatation was not used after stent placement. All children achieved a clinical effect, manifested in the relief of symptoms of dysphagia and restoration of full oral nutrition.

In one patient, the position of the stent was required at 3 days after the intervention. The stent was grasped behind a lasso by biopsy forceps, and traction was performed in the proximal direction.

In 3 patients, the stent was degraded after 10 weeks and in 9 patients 12 weeks after administration.

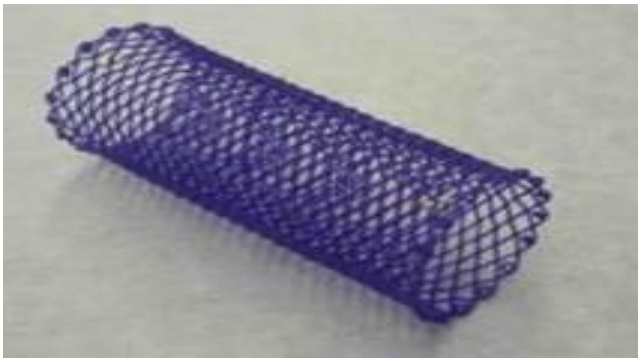
A hyperplastic mucosal reaction that occurs in the region of the ends of the stent (proximal or both) was observed in 2 patients after 2 weeks and 4-5 months, respectively, which led to a narrowing of the lumen of the esophagus and the development of dysphagia. Hyperplastic stenoses were quite easily eliminated by balloon dilatation.

As a result of treatment by stenting, it was possible to keep the physiological lumen of the esophagus in place of the stricture for more than 3 months, saving children from the need for dilatation every 2-3 weeks.

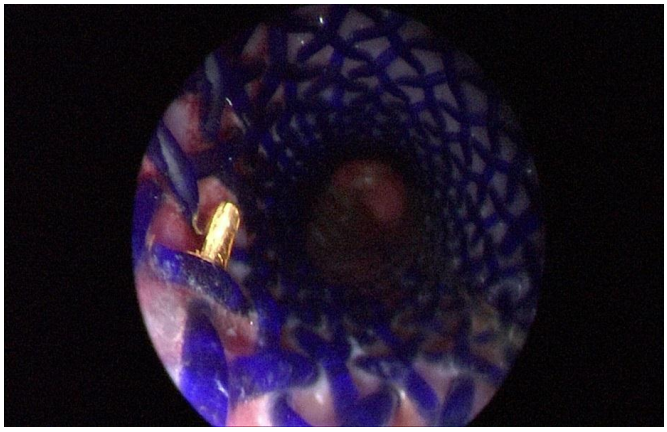
During the time of the stent standing, no dysphagia, pain or any other signs of the disease were observed in the patients. A second-generation proton pump inhibitor was used to treat gastroesophageal reflux. Esophagoscopy and esophagus contrasting at long-term follow-up (8–18 months) showed the safety of the esophageal lumen, corresponding to the stent diameter in 9 children. In 3 patients, there was a narrowing of the lumen by 1/3 of the diameter of the stent, with no signs of dysphagia.

CONCLUSION: Thus, the use of biodegradable stents from polydioxanone can replace systematic bougienage and balloon dilatation in the treatment of cicatricial stenoses of the esophagus after a chemical burn in children. Stenting of esophageal stenoses can be one of the treatment stages in children, with severe strictures that cannot be bougienage and require esophagogastroductive or esophagocolonoplasty.

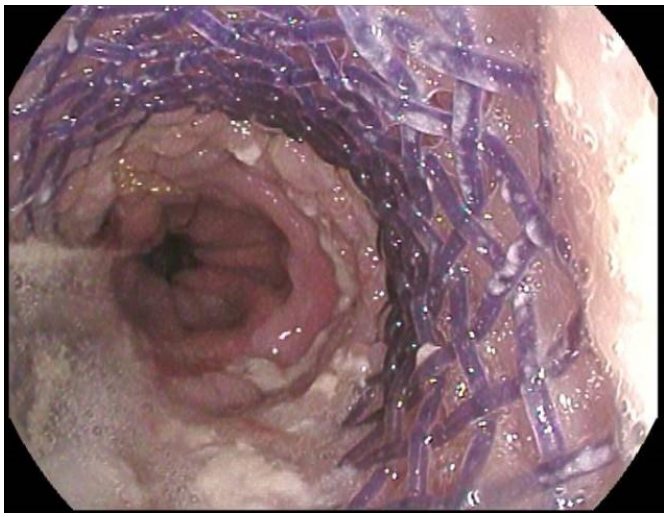
REFERENCE IMAGES



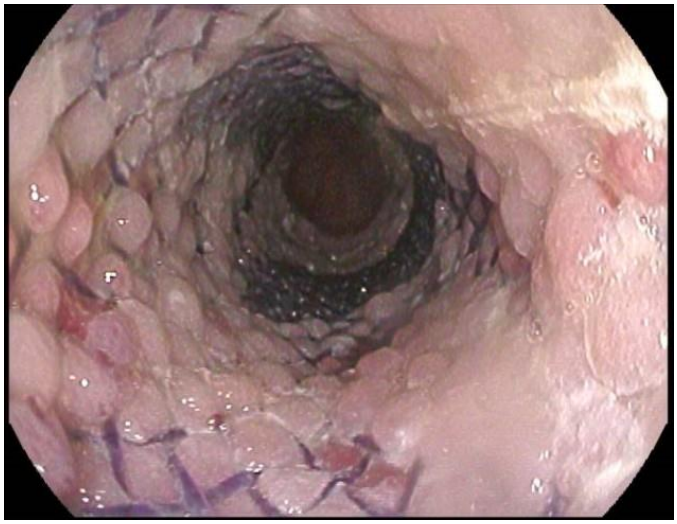
Pic. 1. Biodegrable esophageal stent Baubella B.D.



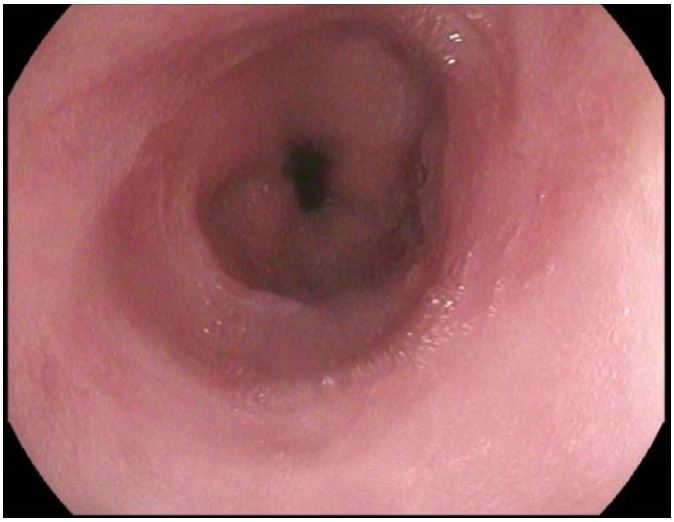
Pic. 2. After Stent deployment.



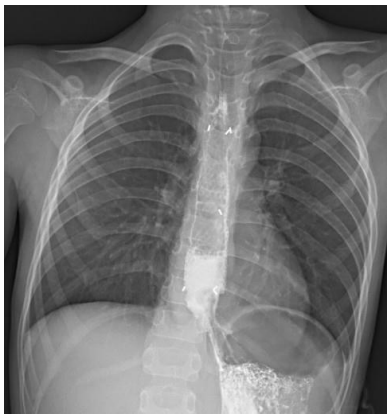
Pic. 4. Two weeks later after stent deployment.



Pic. 5 Six weeks later after stent deployment.



Pic. 6. 6 month later endoscopy after stent deployment.



Pic. 3. Esophageal contrast X-Ray after stent deployment.