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Pilot study of education for self-dilation and upkeep in patients with simple esophageal stricture

Estudio piloto de educación para autodilatación y mantenimiento en el paciente con estenosis esofágica simple

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ABSTRACT

Esophageal strictures continue to be a worrying pathology in endoscopy services. Without national statistics it is nevertheless known that several etiologies prevent a single esophageal dilation from being effective in patients. Dilators have been used since ancient times to treat esophageal strictures. The current state of the art in softness allows for the possibility of self-dilatation. Relatively low morbidity and mortality have allowed the application of this treatment to extend worldwide. Knowledge of its indications is fundamental to improve symptoms and the reduce the risk of bronchoaspiration in patients with simple stenosis. A research protocol was planned at the General Hospital of Mexico. Its objective is the education on simple esophageal stenosis home management by self-dilatation and proper training.

RESUMEN

La estenosis esofágica sigue siendo una patología preocupante en los servicios de endoscopia y por supuesto en los servicios de cirugía de tubo digestivo superior. Sin estadísticas a nivel nacional, se sabe que existen varias etiologías que impiden que una sola dilatación esofágica sea efectiva en el paciente con estenosis esofágica simple. Los dilatadores se han utilizado desde tiempos antiguos para tratar las estenosis esofágicas, tanto que su evolución actual ha desempeñado un papel tan importante en la suavidad y la posibilidad de generar la autodilatación. La morbilidad y mortalidad relativamente nula han permitido que se extienda a nivel mundial la aplicación de este tratamiento; pero es fundamental el conocimiento de sus indicaciones, las cuales señalan la necesidad de alimentación, mejorar sintomatología y reducir el riesgo de broncoaspiración en el paciente con estenosis simple. El Hospital General de México alberga un porcentaje de población amplio en la mayoría de sus servicios, representando una muestra estratégica para cualquier tipo de investigación en nuestro país, por lo que se planeó un protocolo de investigación acerca de la educación de estenosis esofágica simple y su manejo a futuro en casa mediante autodilatación con el debido entrenamiento, y por supuesto, el estudio de cada tipo de estenosis individual.

INTRODUCTION

Esophageal stricture is an uncommon pathology worldwide and its evaluation is different in each patient. For centuries, keystone treatment has been the dilation of esophageal light. Since the 17th century[1-4] it has evolved from using a whalebone to endoscopic controlled radial pressure with a balloon. Its greatest success is in asymptomatic non-recurrent patients. Careful patient selection and goals have allowed the development

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of a technique specific to each endoscopic surgeon.[1]

Esophageal stricture is an intrinsic decrease in the light of the esophagus assessed by endoscopy, resulting from various etiologies.[1]

They are divided into simple and complex, and the initial diameter, the possibility of passing the endoscope and its symmetry are evaluated.

Simple: concentric and symmetric, luminal diameter > 12 mm, or those that allow the passage of the endoscopy equipment.

Complex: < 12 mm, asymmetric and angular, without passing of the endoscope.

Simple stenoses were evaluated in this protocol, being short, straight, and focal. Most of them are peptic and allow the passage of the endoscope, requiring two or three dilations, to prevent recurrence. Up to 35% of them require a new intervention.

Complex stenoses are characterized by being long (> 2 cm), tortuous, and of a small diameter that impedes the passage of the endoscope. They are associated with ingestion of caustics, radiation, ischemic anastomosis, photodynamic therapy or sclerotherapy for the management of Barrett's esophagus or neoplasms, or as a complication of common procedures that can be underestimated, as the placement of a nasogastric tube.[5] They are known to have a high recurrence despite multiple treatments. Refractory and recurrent stenoses require at least four sessions of dilation and usually recur in less than two to four weeks.

The typical symptomatology is progressive with dysphagia, from solids to liquids. Patients refer to being able to ingest only a liquid diet and perform maneuvers on each swallow to free the passage of the liquid.

Esophageal dilation

Esophageal dilation with polyvinyl chloride dilators is the universal treatment because it allows an immediate, firm, flexible and well-known response so that the patient has the comfort to continue with his daily activities.[4]

Treatment material

There are, worldwide, optimal and adequate treatments classified according to each patient's pathology:

Esophageal dilators are the first materials for treatment, they are flexible, offer radial and longitudinal force, and provide an immediate effect. One disadvantage is that dilation is a blind procedure and should only be indicated in those patients well aware of their disease and its complications. This means knowing the type of stenosis and the etiology, being aware of symptoms, and being able to undergo dilation before it becomes an emergency.

Metal-guided dilators offer doctor and patient the security of being in the esophageal light and applying the appropriate treatment. Usually, the guide tip is located in the gastric antrum to continue the introduction of the dilator, either under fluoroscopic or endoscopic vision. Reports suggest the latter practice as safe and accurate. It takes longer to perform and should be done by trained physicians.

The controlled radial expansion uses a hydropneumatic dilation balloon that can be done through the working channel of an endoscope. The application of radial force is as effective at 10 seconds as it is at two minutes. It is important to know the anatomy of each stenosis in each patient, since the risk of perforation is always present, being the risk higher than in the procedures mentioned above.

SELF-DILATION

Methods of self-dilation have been described in several countries, they have been demonstrated to be reliable, safe and effective to avoid the surgical approach of simple refractory stenosis, that in which it is not possible to reach a diameter greater than 14 mm in five sessions, in two weeks.[2]

These methods provide independence from the hospital, the ease of performing the procedure at home and improve the conditions that prevented an adequate

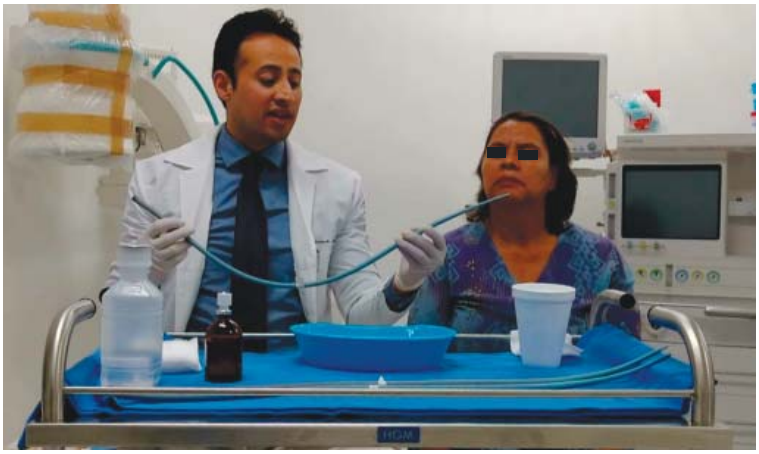

Figure 1: *The patient is clearly instructed in the method of self-dilatation.*

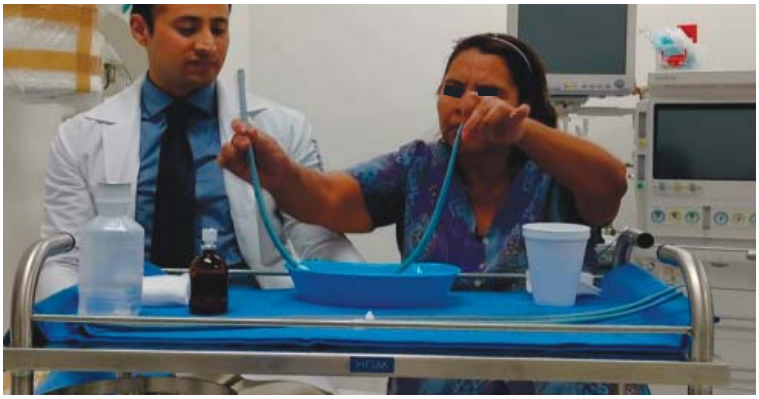

Figure 2: *The patient begins self-dilatation with proper dilator lubrication.*

Figure 3: *Self-dilation starts.*

passage of the bolus through the esophagus. The methods and techniques have been adequately described.[4-8]

Education begins in the endoscopy room, with a previous upper endoscopy to ensure there is a simple stenosis, to measure and classify it, and to design a strategy for treatment. Afterward, the teaching continues with the dilators, explaining their calibers, and lengths, as well as their markings (10 cm distal to the stenosis), the procedure, the lidocaine mouthwashes, correct lubrication, previous cleaning and the adequate moment for action. The patient must pass the dilator through the mouth and pharynx and thence to the esophagus, through the area of stenosis. Finally, they must extract the dilator carefully by themselves.

In Mexico, esophageal strictures are mostly due to the accidental ingestion of caustics by children, or even adults. It is also a complication of gastroesophageal reflux. One of the treatments with less affection to the esophageal anatomy and that allows adequate rehabilitation is the use of a dilator. This is why we propose it to patients who can perform this procedure at home with comfort and safety. Contraindications are greater in patients with pharyngeal or cervical deformities, or large thoracic aneurysms. Also, the risk of perforation is greater in the case of malignant stenosis.

Cardiopulmonary disease is a relative contraindication and such patients should be thoroughly evaluated. The risk-benefit ratio must be individualized and carefully considered. Severe coagulopathy is also a condition where it should be deferred.

METHODS

Clinical records from the General Hospital of Mexico were reviewed to evaluate patients with a history of esophageal stricture of any etiology.

A table was drawn up with their names, type of stricture, last date of dilation, number of dilations, the material used, and the caliber used for the previous dilation in French units. Their telephone numbers were sought and they were requested by the Gastrointestinal Endoscopy Service.

Figure 4: *The patient takes the self-dilating dilator.*

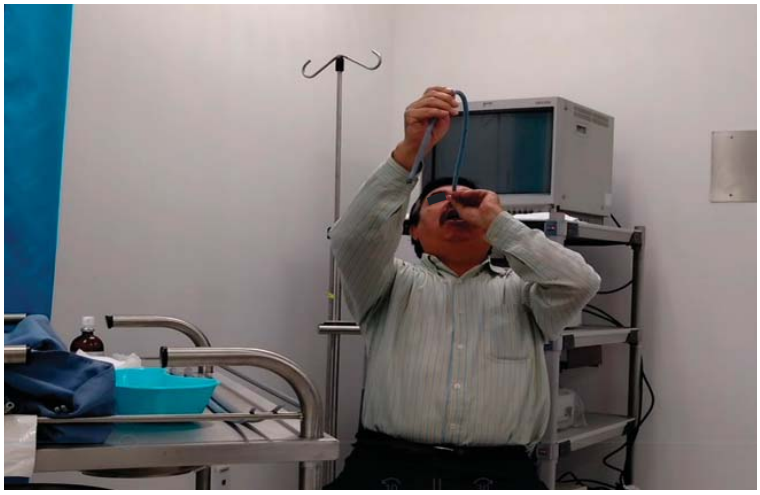

Figure 5: *The patient is given confidence to start the procedure himself.*

All patients diagnosed with simple esophageal stenosis (less than 2 cm in length, passable through the endoscope, not associated with diverticula, carcinoma, hiatal hernia, tortuosity, or alteration in esophageal shape) were selected. The ideal candidates were those with stenosis in the middle and distal esophagus.

Sample

- All patients diagnosed with esophageal stricture of any etiology.

Inclusion criteria

- Patients over 18 years of age.
- With simple esophageal stricture of any cause (peptic, caustic and authorize self-dilation at home).

Exclusion criteria

- Patients with complex stenoses previously evaluated by endoscopy, including neoplastic and post-operative ones.
- Pregnant patients.
- Patients under 18 years of age.

Each patient meeting these inclusion criteria was appointed for an explanation of the procedure to be performed.

1. Initial panendoscopy was done, to assess the length of the stricture, its type, and classification. Always with done with a Savary dilator, and taking of a biopsy.
2. Once the assessment concluded, the patient is educated. Doubts about the stenosis, etiology, treatment, and procedure to be used are addressed.
3. The patient must be able to understand the mechanism to be followed and then agree to sign an informed consent for self-dilation.[8]
4. Education consists of the following steps:
   a. Placing the patient in a room of the Endoscopy Service, without noise or external distractors. If they have a family member available, they are allowed to support them.
   b. The self-dilation must be performed on the same day as the diagnostic and therapeutic endoscopy and not later than 48 hours following this event. More time may result in restenosis of the patient's esophageal tract.
   c. A Maloney dilator of the same caliber measured in French or smaller should be used for pre-dilation.
   d. The dilator should cross 10 to 12 cm distal to the stricture and marked with tape so that the patient can identify the site where they should perform the dilation (since not having a mark, could mean an incomplete procedure).[4]
   e. Once the patient has understood the procedure several elements are

Figure 6: *The dilator is self-removed safely.*

given to them for self-treatment: a plastic kidney tray with sterile water, Maloney-type dilators, lubricating gel, and gauze pads. The dilator is correctly lubricated.

f. The patient is seated in a chair and asked to take the dilator with both hands and direct them towards his mouth, passing through his pharynx, into the esophagus by swallowing and keeping the mark on his upper dental arch holding the dilator in his esophagus for only two seconds, and removing it slowly, as they are not expected a tolerance due to position and stimulation.
g. An endoscopy is performed, verifying that there are no complications.
h. Three patients were located with the described clinical characteristics, which allowed education for esophageal dilatation, adequately evaluating their background and explaining each and every one of their doubts in a clear, simple manner and with understandable language.

CASE 1

A female 56-year-old patient with no personal history of pathology or major surgery. Since age 35 she had had gastroesophageal reflux, which resulted in esophageal stricture. A simple, short, 12 mm stenosis was located at approximately 30 cm from the dental arch, the squamocolumnar junction was found one centimeter below. Endoscopy showed an image with the characteristics described *(Figure 1)*. The patient was educated after endoscopy and dilation was satisfactorily achieved, starting with a 28 French Maloney type dilator and scaling the caliber up to 30 French *(Figures 2 and 3)*. With this treatment, an immediate dilation of 13 mm was achieved without signs so restenosis. At the last check-up, the patient had an adequate passage of the alimentary bolus without complications, which was verified by monthly endoscopy for up to six months.

CASE 2

Male 66-year-old diabetic patient with four years of evolution. He was diagnosed with gastroesophageal reflux disease 15 years before and treated with proton pump inhibitors with an adequate response. The patient stopped taking the treatment for four years for economic reasons, despite the persistence of heartburn and retrosternal pain. He came to our hospital for evaluation. On endoscopy, a simple concentric esophageal stenosis was evident, from one to 29 centimeters from the upper dental arch, with an approximate circumference of 10 mm. We proposed management by self-dilation. After acceptance and training on the technique, the patient was discharged for follow-up, established at six months with monthly endoscopic evaluation. This allowed the endoscopic team to assess adequate permeability and passage, and to document the clinical improvement reported by the patient *(Figures 4 to 6)*.

DISCUSSION

Esophageal stricture in Mexico has a similar frequency when compared to worldwide statistics. It has decreased, probably due to proton pump inhibitors and the prevention of different pathologies, including the ingestion of caustics.[3-6] Patients in our hospital's

Gastrointestinal Endoscopy Unit have various etiologies of simple esophageal stenosis. We can attend to each of them individually and propose the self-dilation procedure once the characteristics of these patients have been evaluated.[9]

The Canadian literature already mentioned this resolution using self-dilation with 26 patients, since the 1960s with Sullivan's team, giving great importance to gastroesophageal reflux stenosis, 7 reserving treatment for those patients in whom the stenosis was constant and prevented adequate evolution and, of course, nutrition.

The fears this procedure can trigger are reduced by giving doctor-patient confidence; by explaining that it is a safe method, it will reduce the number of endoscopies to be performed and there will always be support from the doctor.

New Zealand, a developed country, demonstrated that costs and the number of endoscopic events can be reduced.[6]

It has even been mentioned that the procedure performed by the patient himself, with polyvinyl dilators, has not had significant differences as compared with controlled radial dilation, proposed in those stenoses that do not respond, an example of which are radiation stenoses.[5] It should be noted that the rule of "3" consisting of dilation with two more diameters, consecutive from the initial diameter, should always be respected to avoid complications.[4-6]

Finally, although there is extensive experience worldwide with esophageal stenosis and dilation itself, it is in the last few decades that a more open approach to dilation has been adopted and proposed to patients. Although this series is small, we are trying to implement it and keep up with the world literature to achieve large volumes of patients.[5-8,10]

The purpose of this educational project is to offer another option to those candidates to perform the self-dilation at home, obtaining benefits such as a decrease of transfers, costs, time, accessibility, and clinical improvement.

Training for the endoscopic physician in this type of technique and patient education is indispensable. Audiovisual and written information can be accessed through various endoscopic associations, such as the American Society for Gastrointestinal Endoscopy (ASGE) in their clinical guide: esophageal self-dilation: a teaching guide for physicians (dv049).

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