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**ORIGINAL ARTICLE**

# Effectiveness of Endoscopic Dilatation for Corrosive Oesophageal Strictures

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## ABSTRACT

**Objective:** The objective of study was to determine the efficacy after endoscopic dilatation in patients of corrosive intake.
**Study Design:** It was descriptive case series
**Setting:** Research was conducted at Medical Unit-III, Services Hospital, Lahore.
**Duration:** Duration of study was 6 months from 1st November 2016 to 30th April 2017.
**Material and Methods:** This study involved 150 patients of age 18-65 years with corrosive intake and dysphagia score ≥ 2. A written informed consent was taken from each patient.
**Results:** Total 150 patients were added in the study. Out of these, 118 patients (78.7%) were females while 32 (21.3%) were males. The age of patient ranged from 18 to 48 years with a mean of 26.72 ±5.61. One hundred thirty two patients (88 %) showed improvement in dysphagia while 18 patients (12 %) did not show any improvement. Efficacy calculated by chi- square test which showed p-value of .000 (statistically significant)
**Conclusion:** 150 patients with dysphagia score ≥ 2 were added in study and dilated with Savary-Gilliard dilator. 132 patients showed improvement in dysphagia with p-value of .ooo (statistically significant).

## INTRODUCTION

Lack of education and prevention measures contribute to the rising prevalence of corrosive substance ingestion in developing countries [1]. The oesophagus is the most common organ affected, and severe complications such as perforations or death can occur suddenly [2]. Patients should be closely watched because the correlation between symptoms and injury severity is not always clear. Strictures, achalasia, gastro-esophageal reflux, and the potential for malignancy are all outcomes that can result from caustic injuries. 3 Since endoscopy can be crucial in detecting any lesion at an earlier stage and planning management accordingly, it is widely regarded as a cornerstone in the diagnosis of corrosive ingestions [1-3].

Benign stricture formation is one of the most common complications, occurring in 9-18% of caustic injury cases. 2, 4. Complex esophageal strictures, on the other hand, have more subtle structural differences from their simpler counterparts. Diameter 12 mm asymmetric, irregular, or angular strictures are considered complex. Strictures are considered simple if they are either symmetrical or concentric and have a diameter of less than 12 mm, or if a diagnostic upper endoscope can pass through them without difficulty [4]. There is a direct relationship between the severity of corrosive injury and the development of strictures [5]. The use of a nasogastric tube [6] or a silicone stent [7] to prevent stricture formation have both been reported in the literature, but sufficient data have reported against the use of such methods due to their potential for causing a number of complications [4].

Both balloons and bougies are currently used for esophageal dilation. Esophageal dilation has been performed using many different types of bougies. However, there are currently two main types of bougies in use: bougies filled with mercury or tungsten (Maloney) and over-the-wire (OTW) polyvinyl bougies (Savary-Gilliard) [4]. Newer and larger studies have reported balloon dilation as a treatment for stricture formation [4, 8].

In order to reduce the likelihood of complications, it is recommended that maximum dilation not exceed 3 mm per session (the "rule of threes"). Consequently, caustic injuries can cause complex strictures, which necessitate multiple sessions to achieve the desired effect [10]. Multiple studies have recommended using steroid injections at the stricture site to prevent stricture recurrence. According to the meta-analysis conducted by De Wijkerslooth [10], this led to a reduction in episodes of recurrent dysphagia.

One hundred twenty-three patients with benign esophageal stricture were treated with endoscopic dilatation in an Indian study with similar methods. Patients with corrosive esophageal strictures and peptic strictures were included. After being exposed to the corrosive, 54 people developed strictures. Of the 47 patients who took the corrosive, 44 (or 93.6%) had their oesophaguses successfully dilated, resulting in complete resolution of their dysphagia. Savary-Gilliard dilators were used for the endoscopic dilatation [9].

With a low recurrence rate, Savary-Gilliard has been shown to be a safe and effective treatment for benign strictures. In terms of price, it's hard to beat. Instead of relying on surgery, which is linked to higher rates of morbidity and mortality, it is increasingly being used as the first line of treatment. It's more cost-effective than balloon dilatation [9]. Dilatation by Savary-Gillard effectiveness data is scarce in Pakistan.

## MATERIALS AND METHODS

This descriptive study was conducted at Medical Unit-3 Services Hospital, Lahore during the period from 1st November 2016 to 30th April 2017. Total 150 patients of either gender with corrosive intake were enrolled in this study. Patients ages were ranging between 18 to 65 years. Patients with any other previous GI problems like gastro esophageal reflux disease, Schatzki's ring, Barrett's esophagus, carcinoma eosophagus and patients with mental disorder were excluded from the study.

Data collection involved two questionnaires, the first one to be filled pre procedure and the second one to be filled 1 month post dilatation. The informed consent was taken before procedure. The data collected from the patient utilizing a pre designed questionnaire assisted by the investigating team members. Questions were read out by the interviewer and responses from the patients were recorded. Patient was encouraged to fill out the questionnaire themselves if applicable. The questionnaire included questions ranging from basic demographics details of the subjects to their dysphagia. Endoscopic guidance was used to place the guide wire if it was possible to pass the stricture with the endoscope. Following that, dilatation was performed without the use of fluoroscopy. In cases of severe narrowing of the esophageal lumen, we were able to insert the guide wire directly through the stricture. After 4 weeks, the effectiveness of endoscopic dilatation was classified based on the degree to which dysphagia had improved (dysphagia score).

Data was analyzed with SPSS data analyzing software version 20. Continuous variables like age and dysphagia score were reported using mean and standard deviation. Categorical variables like gender, marital status and efficacy were summarized as frequency and percentage. Marital status, dysphagia score beyond-dilatation and corrosive type to address effect modifier. Chi-square was applied to check the significance with p-value < 0.05 as significant.

## RESULTS

Total 150 patients were added in the study. Out of these, 118 patients (78.7%) were females while 32 (21.3%) were males (table no. 1 and pie chart number 1)

Table 1: Gender-wise distribution

| Gender | Frequency | Percentage |
|---|---|---|
| Male | 32 | 21.3 |
| Female | 118 | 78.7 |
| Total | 150 | 100 |

The age of patient range from 18 to 48 years with a mean of 26.72 ±5.61 as shown in table 2.

Table 2: Mean age of the patients

| | N | Mean | Std. Deviation |
|---|---|---|---|
| Age of patient | 150 | 26.72 | 5.61 |

124 patients (82.7 %) out of 150 were unmarried and 26 (17.3%) were married as shown in as shown in table. No. 3

Table 3: Marital status of all the patients

| Marital Status | | Frequency | Percent |
|---|---|---|---|
| | Unmarried | 124 | 82.7 |
| | Married | 26 | 17.3 |
| | Total | 150 | 100.0 |

A total of 150 patients were added in this study with dysphagia score of 2 or more. Out of 150, 132 patients (88 %) showed improvement in dysphagia while 18 patients (12 %) did not show any improvement as shown in table no 4 and figure no 1.

Table 4: Efficacy after endoscopic dilatation

| | | Grade of dysphagia | | | Total |
|---|---|---|---|---|---|
| | | able to eat normal diet | able to swallow liquids only | Unable to swallow anything/ total dysphagia | |
| Efficacy | Yes | 132 | 0 | 0 | 132 |
| | No | 0 | 15 | 3 | 18 |
| Total | | 132 | 15 | 3 | 150 |

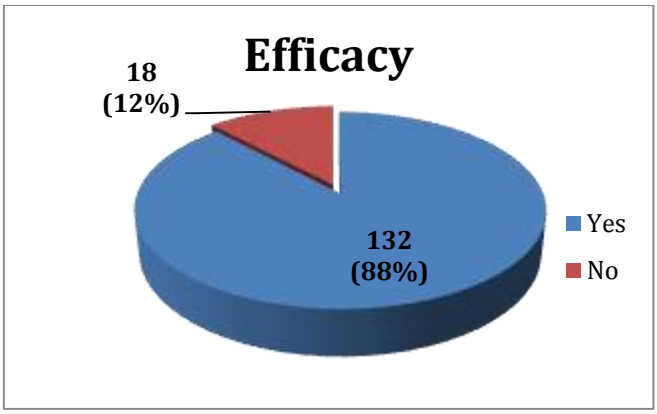


Figure 1:

Efficacy calculated by chi- square test which showed p-value of .000 (statistically significant) as shown in table. No 5

Table 5: Chi-Square Tests

| | Value | df | P- value |
|---|---|---|---|
| Pearson Chi-Square | 150.000[a] | 2 | .000 |
| N of Valid Cases | 150 | | |

## DISCUSSION

Because education and methods for preventing it are sorely lacking in developing nations, an increasing number of cases of corrosive substance ingestion are being reported [1]. Acute complications can be as severe as perforations or even death, with the oesophagus being the most common site involved [2]. In some cases, the oesophagus is the only organ affected. Strictures, achalasia, gastroesophageal reflux disease, and the development of malignancy at a later stage are some of the chronic complications that can result from caustic injuries. Endoscopy is considered to be the gold standard when it comes to diagnosing corrosive ingestions because it can detect any lesion at an earlier stage and allow for appropriate management to be planned. In most cases, dilatation is well tolerated, and there are no major bleeding complications, perforations, or fatalities [1-3].

Benign stricture formation is one of the most common complications; between 12 and 18 percent of caustic injuries result in this sequel. Due to complications that can arise from stricture formation, such as dysphagia, these patients require an esophageal dilatation procedure. You can accomplish this task by either using balloons or bougies. In our institution, Savary Gilliard dilators are utilised for the treatment of post-corrosive stricture on the basis that they are an excellent instrument for relieving dysphagia [4, 5].

The results of our study showed that the Savary-Gilliard dilator provided complete relief for dysphagia in 132 (88%) of 150 patients, which is comparable to the results of other studies carried out both domestically and internationally.

Endoscopic dilatation using a Savary Gilliard dilator was used to treat 123 patients in India who were diagnosed with benign esophageal stricture. The study was very similar to the one that was conducted in India. [9] Of the 47 patients who took the corrosive, 44 (or 93.6%) were successfully dilated, and all of them experienced complete relief from their dysphagia.

A research project that was carried out in Brazil and involved 125 patients with benign esophageal stricture. Endoscopic dilatation with a Savary-Gilliard dilator was performed on all 125 patients, and it was successful in relieving dysphagia in 93 of them (74.4%). Loss of follow-up and involvement of other types of peptic strictures were the reasons why the treatment was only moderately successful [11-12].

One research project carried out in Karachi, which involved participation from a total of twenty-seven patients. Endoscopic dilatation with a Savary-Gilliard dilator was performed, and this helped twenty-two out of twenty-seven patients (81.4%) with their dysphagia [13-14].

In patients with benign strictures, the Savary-Gilliard procedure was found to be both safe and effective, with a low rate of recurrence. It is very efficient with regard to cost. It is increasingly being used as a primary treatment in place of surgery, which is associated with increased morbidity and mortality, and this trend is expected to continue. Only those patients who do not respond to treatment with dilatation should have surgery [15-17].

## CONCLUTION

It is concluded that patients with dysphagia score ≥ 2 were added in study and dilated with Savary Gilliard dilator. 132 patients showed improvement in dysphagia with p-value of .ooo (statistically significant).

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