

# Benign Stenosis of Oesophagus: About 101 Cases in the Digestive Endoscopy Department of the General Idrissa Pouye Hospital (Dakar, Senegal)

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## Abstract

**Introduction:** Benign oesophageal strictures are defined as narrowing of the oesophageal lumen not related to neoplastic pathology. They are frequently encountered during endoscopic practice and are often responsible for a reduction in the quality of life of patients due to the appearance of dysphagia. In sub-Saharan Africa, little data are available on these benign esophageal strictures. The objective of our study was to determine the sociodemographic, diagnostic and therapeutic aspects of benign oesophageal strictures in a digestive endoscopy centre in Senegal. **Patients and Methods:** This was a retrospective, descriptive study analysing reports of upper GI endoscopies performed between January 2015 and December 2017 in a hospital in Senegal. Reports that concluded to have non-neoplastic oesophageal stenosis were collated. Sociodemographic data, indications for and results of endoscopy, and therapeutic modalities were collected. These data were analysed using the Sphinx version 5 software. **Results:** We collected 101 cases of benign oesophageal stenosis, representing a prevalence of 2.1% in the endoscopy centre. The mean age of the patients was 34 years (range 2 and 83 years) with a median of 37.9 years. There was a female predominance with a sex ratio of 0.38 (73 females). Dysphagia, the main symptom, was present in 87 patients (86.1% of cases) with a Dysphagia score greater than or equal to 2 in 51 patients (50.5%). The average duration of this dysphagia, excluding caustic stenosis, was 4 years (extremes 1 and 15 years). Endoscopy revealed simple stenosis in 76 cases (75.2% of cases). A membranous ring of the cervical oesophagus,

suggestive of the Plummer-Vinson syndrome ring, was found in 60 patients (59.4% of cases) and was the primary cause; other aetiologies were dominated by caustic stenosis (19 cases), Schatzki rings (8 cases) and peptic stenosis (4 cases). Endoscopic dilatation was performed in 90 patients (89.1% of cases) with Savary Gilliard bougies (87 cases) and hydrostatic balloons (3 cases). The average number of dilatation sessions was 1.69. In 10 patients (11.1%), refractory stenosis was observed. This stenosis could be resolved after further dilatation in 8 cases before the 8th session. In 2 patients, dilatation failed. **Conclusion:** Benign oesophageal strictures in our digestive endoscopy centre in Senegal mainly affect young adults, with a predominance of women. Diagnosis is often late. Cervical oesophageal rings in the context of Plummer-Vinson syndrome are the main cause. Oesophageal dilatation with bougies is of great therapeutic value.

### Keywords

Stenosis, Oesophagus, Plummer-Vinson, Dilatation

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## 1. Introduction

Benign oesophageal strictures are defined as narrowing of the oesophageal lumen not directly related to neoplastic pathology.

Their prevalence is not well defined but they are frequently encountered during endoscopic practice [1] and are often responsible for an alteration in the quality of life of patients.

Depending on their morphology, stenoses can be considered simple or complex.

In Africa, particularly in sub-Saharan Africa, patchy studies have shown a higher frequency of Plummer-Vinson syndrome and caustic stenosis, probably related to poor socio-demographic and economic conditions [2] [3].

In Senegal, to our knowledge, no study has assessed the epidemiological, diagnostic and therapeutic aspects of benign stenoses in a comprehensive manner.

It is in this context that we conducted this retrospective, descriptive and analytical study over 3 years (January 1, 2015 to December 31, 2017) in the Hepato-Gastroenterology Department of the Idrissa Pouye General Hospital (HOGIP) in Dakar.

The general objective was to determine the epidemiological, diagnostic and therapeutic aspects in the digestive endoscopy department of the General Idrissa Pouye Hospital.

## 2. Patients and Methods

This was a retrospective descriptive and analytical study based on reports of upper GI endoscopies performed at the GI endoscopy unit between January 1, 2015 and December 31, 2017.

We collected all upper GI endoscopy reports documenting to a benign looking esophageal stricture.

EOGD reports with missing data such as age, sex or indication were not included. Similarly, patients with suspected malignant stenoses in whom pathological findings were not found or were concluded to be neoplastic were excluded.

The data were collected on a pre-established form. They were entered using sphinx software version 5.1.0.2. The data were analysed using SPSS (Statistical package for Social Sciences) software. We used the chi-square test and Fisher's test for the comparison of proportions of qualitative variables and Studer's T-test for the comparison of quantitative variables. The threshold of positivity was set at 0.05.

### 3. Results

During the study period, 5040 patients underwent oesogastroduodenal endoscopy. We collected 101 endoscopy reports that concluded to be non-neoplastic oesophageal strictures. The prevalence of benign stenosis was 2.1%.

The mean age was 34 years with extremes of 2 and 83 years. The age group between 20 and 40 years represented 40.6% of the population (**Figure 1**).

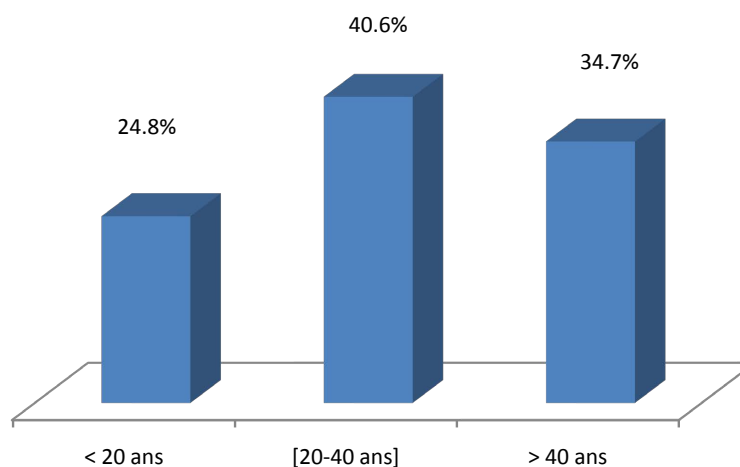
There was a female predominance with a sex ratio of 0.38 (73 females).

Clinically, dysphagia, the main symptom, was present in 87 patients (86.1% of cases) with a dysphagia score greater than or equal to 2 (able to swallow only semi solid foods) in 51 patients (50.5%).

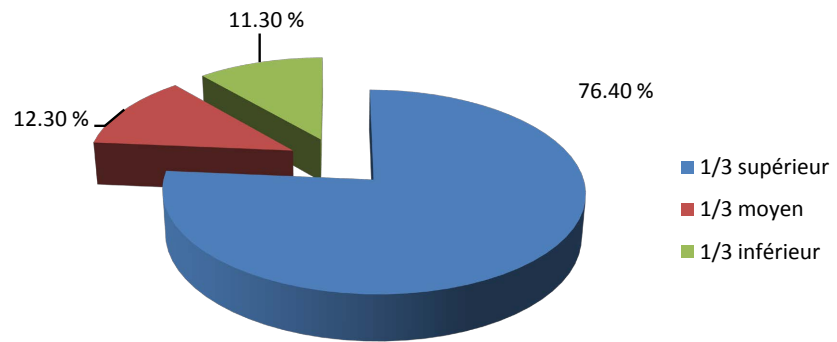
Epigastric pain with esophageal ulceration was noted in 12 patients (11.9%).

Endoscopy showed stenosis of the upper third of the oesophagus in 81 patients (76.4%) (**Figure 2**). The stenosis was impassable in 53 patients (60.9%). The most common cause of benign stenosis was the Plummer-Vinson syndrome ring. It was observed in 71 patients, or 70.2% of the population. Caustic stenosis was the next most common cause, occurring in 19 patients, 18.8% (**Table 1**).

Therapeutic management was by endoscopic dilatation with Savary and Gilliard



**Figure 1.** Distribution of patients by age group.



**Figure 2.** The different sites of stenosis.

**Table 1.** Different causes of stenosis.

Types of stenosis	Numbers	Percentages
Plummer Vinson	71	70.2
Caustic stenosis	19	18.8
Schatzki's ring	4	3.9
Congenital ring	2	1.9
Post-surgical stenosis	2	1.9
Peptic stenosis	1	0.9
Radiation stenosis	1	0.9
Infectious oesophagitis	1	0.9
Total	101	100

bougies in 87 patients and hydrostatic balloon dilatation in 3 patients. In the remaining 11 patients, endoscopic dilatation was not performed. These were mild stenoses that were easily collapsed in asymptomatic patients.

Of the 90 patients who underwent endoscopic treatment, 80 (88.8%) had a favourable outcome. The average number of dilatation sessions was 1.69.

In 10 patients (11.1%), refractory stenosis was observed. This stenosis could be resolved after further dilatation in 8 cases before the 8th session. In 2 patients, dilatation failed.

In multivariate analysis, there was a statistically significant association between female gender and the Plummer Vinson ring ( $P = 0.037$ ), as well as between age < 40 years and the Plummer Vinson ring ( $P = 0.01$ ).

#### 4. Discussion

The age of our patients ranged from 2 to 83 years with an average of 34 years. Sixty-six patients (65.3%) were younger than 40 years.

In the series by Cherquaoui *et al.* [4] in Morocco and Lahcene *et al.* [5] in Algeria, the mean age was 32 and 35 years respectively.

In the West, higher mean ages were reported. Indeed, Lecleire *et al.* [6] in France reported an average age of 68 years for refractory benign stenosis.

This difference could be explained by the fact that in the West, peptic strictures are the leading cause of benign strictures [1], and these most often occur at a relatively advanced age, due to the increasing frequency of GERD with age [7]. Plummer-Vinson syndrome and caustic strictures, which are very common in Africa, occur most often in young people [3] [8] [9].

A female predominance was noted in our study with a sex ratio of 0.38. Similar results were reported in different African studies by Bel Hadji Mabrouk *et al.* [10] in Tunisia and Lahcene *et al.* [5] in Algeria. Rare African studies have reported a male predominance: Oluwole *et al.* [11] in Nigeria.

In the West, the sex ratio varied greatly depending on the series [12] [13].

These differences can be explained by the aetiology of benign stenosis in different series. Indeed, Plummer-Vinson syndrome, the leading cause of benign oesophageal stenosis in Africa, is much more frequent in female subjects. Indeed Dia *et al.* [3] and Fall *et al.* [9] found a sex ratio of 0.21 and 0.1 respectively. In the rare African studies where a male predominance was noted, caustic stenosis was the predominant etiology [14] [15]. In the West where peptic stenosis is very common [1], the risk factors for peptic stenosis are not influenced by gender.

Clinically, dysphagia was the most frequent finding. It was present in 87 patients, 86.1% of the population. In all series, dysphagia was present and its frequency varied between 70% and 99% [3] [16]. The oesophagus is a cylindrical muscular-membranous duct and any significant reduction in the calibre of its lumen will inexorably lead to difficulty in swallowing.

At endoscopy, the stenosis was located in the upper 1/3 of the oesophagus in 76.4% of cases in our study.

These results are similar to those found in the study by Ndayikeza *et al.* [15] in Morocco with involvement of the upper 1/3 of the oesophagus in 48.8% of patients.

In western series where peptic stenosis is the primary reported cause, the lower 1/3 of the oesophagus is the most common site of benign stenosis.

In our series, 60.9% of the cases of stenosis were unable to be passed with an endoscope.

In the studies by Cherquaoui *et al.* [4] all patients had an impassable stenosis at endoscopy.

Similarly, in the study by Bel Hadji Mabrouk *et al.* [10], 60% of patients had an impassable stenosis.

These results can be explained by the fact that patients often consult late, at a stage when the stenosis is very tight, responsible for disabling dysphagia.

Plummer-Vinson syndrome was the most frequent cause of benign stenosis in our study with 71 patients affected.

This condition is not rare in Senegal. Indeed, Dia *et al.* [16] in 2019 reported a series of 186 cases collected in 10 years.

Other series have been reported in North Africa [17] [18].

In the West, this syndrome was common in the first half of the 20th century but currently it has become extremely rare [12].

A relationship was found between gender ( $P = 0.037$ ), age ( $P = 0.00$ ) and the occurrence of Plummer-Vinson syndrome in our study; Plummer-Vinson syndrome occurred in younger women.

The most widely accepted theory of the origin of this syndrome is that of mar-  
tial deficiency with hypersensitivity of certain cells of the oesophageal mucosa [12].

In our regions, nutritional deficiencies, particularly in iron, are frequent. They mainly affect women due to several factors: blood loss during menstruation, multiple pregnancies and breastfeeding. All these factors contribute to the occurrence of Plummer-Vinson's disease in women during the genital period.

Therapeutically, instrumental treatment by endoscopic dilatation was performed in 89.1% of cases in our study. All patients were dilated with bougies.

In several studies, dilatation remains the first-line treatment [19] [20]. The efficacy of both the Savary-Gilliard candles and the hydrostatic balloon is the same [20].

The evolution was favourable because out of 90 dilated patients only 8 cases of refractory stenosis were noted, including 2 cases of failure. No complications were noted during our study. Patients with Plummer-Vinson disease had a favourable outcome with an average of 1.2 dilation sessions. These results are similar to those in the literature where the average varies from 1 to 2 dilatation sessions [3] [18].

Patients with caustic stenosis had a less favourable evolution with an average of 2.6 sessions. These results are similar to those of the study by Mohamed *et al.* [21] in Morocco with an average of 2.6 sessions. Seydou *et al.* [22] report in their study in Mali an average of 5 dilatation sessions. This can be explained by the fact that caustic stenoses are generally very fibrous, complex and most often require iterative dilatation sessions.

## 5. Conclusion

Benign oesophageal strictures in our digestive endoscopy centre in Senegal are mainly found in young adults, with a predominance of women. Diagnosis is often late. Cervical oesophageal rings in the context of Plummer-Vinson syndrome are the main cause. Oesophageal dilatation with bougies is of great therapeutic value.

## Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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