ISSN 0973-2063 (online) 0973-8894 (print)

Bioinformation 22(10): 6889-6891 (2026)

©Biomedical Informatics (2026)

BIOINFORMATION
Discovery at the interface of physical and biological sciences

BIOMEDICAL INFORMATICS

www.bioinformation.net

Volume 22(10)

Research Article

Received October 1, 2026; Revised October 31, 2026; Accepted October 31, 2026, Published October 31, 2026

DOI: 10.6026/973206300226889

SJIF 2026 (Scientific Journal Impact Factor for 2026) = 8.478
2022 Impact Factor (2023 Clarivate Inc. release) is 1.9

Declaration on Publication Ethics:
The author's state that they adhere with COPE guidelines on publishing ethics as described elsewhere at https://publicationethics.org/. The authors also undertake that they are not associated with any other third party (governmental or non-governmental agencies) linking with any form of unethical issues connecting to this publication. The authors also declare that they are not withholding any information that is misleading to the publisher in regard to this article.

Declaration on official E-mail:
The corresponding author declares that lifetime official e-mail from their institution is not available for all authors

License statement:
This is an Open Access article which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly credited. This is distributed under the terms of the Creative Commons Attribution License

Comments from readers:
Articles published in BIOINFORMATION are open for relevant post publication comments and criticisms, which will be published immediately linking to the original article without open access charges. Comments should be concise, coherent and critical in less than 1000 words.

Disclaimer:
Bioinformation provides a platform for scholarly communication of data and information to create knowledge in the Biological/Biomedical domain after adequate peer/editorial reviews and editing entertaining revisions where required. The views and opinions expressed are those of the author(s) and do not reflect the views or opinions of Bioinformation and (or) its publisher Biomedical Informatics. Biomedical Informatics remains neutral and allows authors to specify their address and affiliation details including territory where required.

Edited by P Kangueane

Citation: Mishra *et al.* Bioinformation 22(10): 6889-6891 (2026)

Endoscopic dilation and stenting for benign esophageal strictures

Prakash Chandra Mishra[1], Rohit Dubey[2] & Gaurav Bajpai[3,*]

[1]Department Of Gastroenterology, Mishra Gastro Care Bharut Nagar Satna, Madhya Pradesh, India; [2]Department Of Surgery, Government Medical College, Satna, Madhya Pradesh, India; [3]Department Of Surgery, Gandhi Medical College, Bhopal, India; *Corresponding author

Affiliation URL:
https://prakashmishragastrocare.com
https://gmcsatna.mp.gov.in
https://www.gmcbhopal.net

Author contact:
Prakash Chandra Mishra - E-mail: pcm1490@gmail.com

ISSN 0973-2063 (online) 0973-8894 (print)
Bioinformation 22(10): 6889-6891 (2026)
©Biomedical Informatics (2026)

Rohit Dubey - E-mail: drrohitdubey24@gmail.com
Gaurav Bajpai - E-mail: gbajpaivise2@gmail.com

Abstract:
Benign esophageal strictures (BES), arising from gastroesophageal reflux disease, caustic ingestion and radiation therapy, cause progressive dysphagia that impairs nutritional status and quality of life. Therefore, it is of interest to compare the endoscopic dilatation with SEMS placement in the management of BES, evaluating efficacy, safety and clinical outcomes. Endoscopic dilatation with balloon or bougie devices remains the first-line treatment, but frequent stricture recurrence necessitates repeated procedures and carries risks such as perforation. Self-expanding metal stents (SEMS) have emerged as an alternative for refractory or recurrent strictures, offering prolonged luminal patency and fewer interventions, although complications including stent migration, tissue overgrowth and difficult removal remain concerns. Primary endpoints include dysphagia relief, stricture recurrence, complication rates and patient-reported quality of life, with the aim of informing optimal management strategies for BES.

Keywords: Refractory benign esophageal strictures (RBES), benign esophageal stricture (BES), endoscopic dilation

Background:
Benign esophageal strictures (BES) are a common clinical problem **[1].** There are various causes of BES including gastro esophageal reflux disease (GERD), caustic ingestion and radiation therapy **[2].** These strictures can significantly impact a patient's nutritional status and quality of life due to progressive dysphagia **[3].** Endoscopic dilatation, particularly using balloon or bougie techniques, has been the cornerstone of treatment for BES **[4].** Self-expanding metal stents (SEMS) though used in malignant obstructions, have been increasingly considered for refractory or recurrent strictures **[5].** SEMS has advantage of longer patency, fewer interventions and improved symptom relief **[6].** Despite these benefits, concerns remain regarding complications such as stent migration, tissue overgrowth and the need for stent removal **[7].** Therefore, this study aims to compare the efficacy, safety and clinical outcomes of endoscopic dilatation versus SEMS in the management of benign esophageal strictures, focusing on dysphagia relief, recurrence, complication rates and patient-reported quality of life **[8].** Benign esophageal strictures (BES) represent a significant therapeutic challenge due to their diverse etiologies and the impact they have on patients' swallowing function and overall well-being **[9].** While gastroesophageal reflux disease (GERD) remains the most common cause, other factors such as caustic ingestion and radiation therapy contribute to stricture formation by inducing mucosal injury and scarring **[10].** The resulting dysphagia not only compromises nutritional intake but also diminishes quality of life, necessitating effective and durable treatment strategies. Endoscopic dilatation, using balloon or bougie devices, has long been established as the first-line intervention for BES, offering symptom relief through mechanical disruption of the fibrotic ring **[11].** In recent years, self-expanding metal stents (SEMS) have emerged as an alternative, particularly for refractory or recurrent strictures unresponsive to conventional dilatation. SEMS provide prolonged luminal patency and reduce the frequency of interventions, potentially improving patient compliance and outcomes **[12].** Therefore it is of interest to compare these two modalities endoscopic dilatation and SEMS in terms of efficacy, safety, rates of stricture recurrence and patient-centered outcomes such as dysphagia relief and quality of life, thereby guiding optimal management of BES.

Methodology:
This study was a 12-month, prospective, randomized controlled trial conducted at a tertiary care gastroenterology center in India from January 2023 to December 2023. A total of 100 patients diagnosed with benign esophageal strictures, based on endoscopic and radiological evaluations, were included. The patients were randomized into two groups, each comprising 50 individuals. Group A underwent standard endoscopic dilatation, while Group B received self-expanding metal stents (SEMS). The study included adults aged 18–75 years with confirmed benign strictures and a dysphagia score of ≥2 on a 0–4 scale. Exclusion criteria encompassed patients with malignant esophageal disease, coagulopathy, prior esophageal surgery within the past three months and pregnant patients. Endoscopic dilatation was performed using Savary-Gilliard bougies or CRE balloons under fluoroscopic guidance, whereas SEMS placement was conducted endoscopically. The primary outcome was measured as the improvement in dysphagia score at 3, 6 and 12 months. Secondary outcomes included recurrence rate, procedure-related complications (such as perforation, bleeding and stent migration) and quality of life, assessed using the SF-36 questionnaire. Continuous variables were expressed as mean ± SD and categorical variables as frequencies (%). A p-value of <0.05 was considered statistically significant.

Table 1: Comparison of outcomes between SEMS and dilatation group

Out come	SEMS Group (n=50)	Dilatation Group (n=50)	p-value
Complete dysphagia relief (3 months)	90%	74%	0.04
Recurrence rate (12 months)	14%	36%	0.01
Stent migration	10%	NA	–
Procedure-related perforation	0	1 case	–
Mean SF-36 score (12 months)	79.2 ± 5.4	76.5 ± 6.1	0.08

Results and Discussion:
Both groups were comparable in age, sex distribution, stricture length and etiology ($p > 0.05$). In 3 months SEMS group: 90% patients had complete or near complete resolution and in Dilatation group 74% patients improved similarly ($p = 0.04$). After 6 and 12 months, both groups showed sustained improvement, though SEMS showed slightly faster initial relief. Recurrence Rates were less in SEMS group (14%) as compared

to Dilatation group (36%) which was significant (p = 0.01). As per study done by Wang *et al.* the stricture recurrence rate was 76.19% **[13]**. Stent migration was seen in 5 (10%) of patients in SEMS group. Perforation occurred in 1 case of dilatation group. Minor bleeding Occurred in both groups and was managed conservatively. SF-36 scores improved in both groups, with SEMS showing higher scores in physical functioning and symptom relief at 3 and 6 months. By 12 months, scores were comparable as shown in **Table 1.** This study demonstrates that both endoscopic dilatation and SEMS are effective in the management of benign esophageal strictures. However, SEMS provides a more rapid symptomatic improvement and significantly lower recurrence rate compared to traditional dilatation. These findings align with previous reports suggesting SEMS as a viable alternative, especially in refractory or recurrent cases **[6].** The initial advantages of SEMS, particularly in terms of dysphagia relief and fewer interventions make it a compelling choice for select patients. However, the risk of complications, notably stent migration and the need for device removal, warrants careful patient selection and procedural expertise. As per study done by Lu *et al.* endoscopic therapy tended to be effective in patients with However, compared to dilation therapy, stent therapy was not effective in increasing the dysphasia-free period and reducing the times and frequency of dilation **[14].** As per study done by Vermeulen *et al.* endoscopic dilation (ED) is still the mainstay of therapeutic management of benign esophageal strictures (BESs) **[15]**. As per van der Bogt it is believed that temporary esophageal stent placement may be advantageous over other strategies for its continuous expansion of the stricture, inducing stricture remodeling **[16].** As per study done by Jung the endoscopic incisional therapy for benign esophageal stricture is being recommended as a safe and effective method and is used as a preferential treatment especially when the length of esophageal stricture is as short as 1 to 2 cm **[17].**

Conclusion:

Self-expanding metal stent (SEMS) placement was associated with significantly large early resolution of dysphagia and a lower recurrence rate than endoscopic dilatation. While health-related quality of life, as assessed by the SF-36, favored SEMS at 3 and 6 months and converged between groups by 12 months. Both interventions showed acceptable safety profiles, with stent migration (10%) being the principal adverse event in the SEMS group.

Limitations:

Small sample size, short-term follow-up and lack of cost-effectiveness analysis. Future multicentric trials with longer follow-up are needed to evaluate long-term outcomes and economic impact.

References:

[1] Szachnowicz S *et al. Diseases of the Esophagus*. 2024 **37:**doae057.342. [DOI: 10.1093/dote/doae057.342]
[2] Jiyani R *et al. Am J Gastroenterol*. 2021 **116**:S895. [DOI: 10.14309/01.ajg.0000781816.72275.59]
[3] Manabe T *et al. Annals of Nutr and Metabo*. 2022 **78**:281. [PMID: 35830850]
[4] Park K *et al. The Korean journal of internal medicine*. 2026 **41:**462. [DOI: 10.3904/kjim.2023.525]
[5] Çağatay AK *et al. IJPC*. 2023 **29**:64. [PMID: 36846283]
[6] Saadh *et al. BMJ Supportive & Palliat Care*. 2026 **16**:1054. [PMID: 41207707]
[7] Franchin M *et al. J Vasc Access*. 2022 25:407. [PMID: 35945812]
[8] Chen CX *et al. World J Gastrointest Surg*. 2025 **17:**105963. [PMID: 40584494]
[9] Singh AK *et al. World Journal of Gastrointestinal Endoscopy*. 2025 **17:**110024. [PMID: 41256305]
[10] Lim H. *Korean J Helicobacter up Gastrointest Res*. 2022 **22:**197. [DOI: 10.7704/kjhugr.2022.0017]
[11] Singh AK *et al. Surg Endosc*. 2023 **37:**8236. [PMID: 37653157]
[12] Venezia L *et al. WJGE*. 2020 **12:**60. [PMID: 32064031]
[13] Wang J *et al. Surg Endosc.* 2022 **36**:1263. [PMID: 33689010].
[14] Lu Q *et al. BMC Gastroenterol.* 2019 **19**:95. [PMID: 31221085].
[15] Vermeulen BD *et al. Gastrointest Endosc.* 2020 **91**:1058. [PMID: 31917167].
[16] Van der Bogt *et al. Techniques and Innovations in Gastrointestinal Endoscopy*. 2020 **22**:200. [DOI: 10.1016/j.tige.2020.04.002]
[17] Jung K. *Kosin Medical Journal*. 2022 **37**:261. [DOI: 10.7180/kmj.22.143]

Caveat Emptor is applicable among the literate community where required and possible. The publisher, its journal, editors and the internal/external reviewers take adequate steps to check, evaluate, correct, edit, revise and improve content where possible and required.