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REVIEW ARTIKEL

Benign Esophageal Stricture: Recent Advances in Endoscopic Dilation and Adjunctive Therapy

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ABSTRACT

Benign esophageal stricture is a clinically heterogeneous fibrostenotic condition that impedes swallowing, eating, medication intake, and overall health maintenance. Endoscopic dilation is still the best way to treat strictures, but many patients have them come back or don't respond to treatment, so they need to have the procedure done again and try different methods. This narrative literature review examines published evidence from the past decade regarding endoscopic dilation and alternative treatments for benign esophageal strictures. Evidence suggests that an etiology-based approach is optimal. For instance, peptic and inflammatory strictures necessitate vigorous intervention of the underlying inflammatory catalyst. Short anastomotic rings and focal mesh are good options for incisional therapy. Complex caustic, radiation-induced, and post-endoscopic resection strictures frequently require serial dilations in conjunction with alternative treatments. Recent advancements have improved patient selection instead of replacing dilation. There are still not many good comparative trials. Subsequent research ought to establish standardized definitions, document patient-reported outcomes, and develop risk-stratification algorithms for early adjunctive therapy.

Keywords: *esophageal dilation, esophageal stricture, incisional therapy, esophageal stent, mitomycin C*

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INTRODUCTION

Benign esophageal stricture is a non-malignant narrowing of the esophageal lumen that causes dysphagia due to mucosal damage, long-term inflammation, fibrosis, and changes in tissue structure (Burr & Everett, 2019). This condition is clinically significant because not treating it quickly enough or not treating it at all can lead to food impaction, weight loss, aspiration, repeated trips to the emergency room, and a lot of extra work for doctors (Boregowda et al., 2021).

The most prevalent causes vary by. region and practice type. Nonetheless, contemporary studies consistently include peptic reflux injury, postoperative anastomotic strictures, caustic ingestion, radiation injury, eosinophilic esophagitis, pill-induced injury, and stenosis following endoscopic resection for superficial neoplasia. In situations where caustic ingestion and delayed referral worsen the disease burden, treatment planning must consider stricture length, quantity, curvature, luminal diameter, etiology, nutritional status, and local endoscopic proficiency (Fugazza & Repici, 2021).

Endoscopic dilation is an important part of treatment because it quickly brings the lumen back to its normal size, can be done over and over, and is less invasive than surgery (Sami et al., 2018). Nonetheless, the persistence or rapid recurrence of dysphagia after serial dilations remains a significant challenge, leading to increased interest in the last ten years in supplementary therapies designed to combat fibrosis, remodel scar tissue, or maintain lumen patency between procedures (Siersema, 2019).

This review focuses on recent progress in endoscopic dilation and adjunctive therapy for benign esophageal strictures, highlighting practical evidence that guides treatment decisions in adult clinical practice, while also recognizing pediatric and post-endoscopic resection data that enhance overarching management principles.

METHODS

We compiled this narrative review by searching for English-language articles published from January 2016 to April 2026 in PubMed, Google Scholar, association guidelines, and publisher databases. The search terms included “benign esophageal stricture,” “refractory benign esophageal stricture,” “esophageal dilation,” “bougie,” “balloon dilation,” “intralesional steroids,” “incision therapy,” “radial incision and cutting,” “mitomycin C,” “esophageal stent,” “biodegradable stent,” “self-dilation,” “eosinophilic esophagitis,” and “post-endoscopic submucosal dissection stricture.”

Priority is assigned to systematic reviews, meta-analyses, randomized or prospective studies, and retrospective cohort studies published in journals indexed in prominent biomedical databases that provide clinical insights. Older, important studies are not used as main sources unless they are needed to explain terms.

DEFINITION AND CATEGORIZATION IN THE CLINICAL SETTING

If benign strictures are short, straight, localized, and allow the passage of a standard endoscope, they are usually called simple. Complex

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strictures, however, are longer, angular, uneven, very narrow, or have more than one (Sami et al., 2018). This distinction is clinically important because uncomplicated peptic rings usually only respond to a limited number of dilation sessions. On the other hand, complicated strictures caused by caustic agents, radiation, anastomosis, and post-resection procedures have a higher chance of coming back and causing problems (Boregowda et al., 2021).

It is important to know the difference between strictures that come back and those that don't. Refractory strictures are usually those that don't reach a target diameter, which is usually 14 to 15 mm, even after several short-term dilations. On the other hand, recurrent strictures reach the target diameter at first but can't keep the lumen open for a long time (Siersema, 2019). Different guidelines and studies come up with different numbers for the exact limit. This idea is still important because it stops things from getting worse too quickly after just one or two procedures and keeps things from getting worse without a change in strategy (Everett, 2019).

It is important to standardize dysphagia evaluation before and after therapy. This should include reproducible dysphagia scores, dietary tolerance, the need for re-intervention, and documentation of any adverse events (Thanawala & Lynch, 2025). In inflammatory conditions such as eosinophilic esophagitis, symptom improvement may not accurately indicate disease activity, requiring distinct evaluation of mechanical caliber and mucosal inflammation (Aceves et al., 2022).

EVALUATION AND RISK CATEGORIZATION PRIOR TO THE PROCEDURE

Before dilation, the endoscopist must assess the mucosal appearance, stricture location, length, diameter, quantity, inflammation, ulceration, suspicion of malignancy, and the feasibility of traversing the stricture (Sami et al., 2018). A biopsy is essential when the endoscopic appearance is atypical, deteriorating, ulcerated, irregular, or associated with concerning indicators, as cancer may mimic benign stenosis and must not be overlooked (Thanawala & Lynch, 2025).

Cross-sectional imaging, barium esophagography, or fluoroscopy guidance may be advantageous when the lumen is excessively narrow, convoluted, proximal, elongated, or postoperative, and when the endoscopist cannot precisely determine the esophageal axis (Everett, 2019). It's also important to look at the risk of aspiration and make sure the patient is getting enough nutrition, since many stubborn cases need to be treated multiple times and may get worse if the patient loses weight or eats less (Burr & Everett, 2019).

After endoscopic submucosal dissection, risk stratification must be conducted with utmost precision, as post-ESD stenosis is intricately associated with the dimensions, length, depth, and positioning of the circumferential mucosal defect in the cervical region (Lin et al., 2021). In these high-risk lesions, prophylactic measures utilizing steroid-based therapies, protective materials, or temporary stents may be considered before the establishment of permanent strictures (Duan et al., 2024).

ENDOSCOPIC DILATION: MODERN TECHNIQUES AND EMPIRICAL EVIDENCE

Endoscopic dilation aims to disrupt or elongate fibrotic tissue sufficiently to enable oral intake

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while minimizing the risk of deep wall injury (Sami et al., 2018). Bougies that are guided by

wire, like the Savary-Gilliard dilator, use both axial and radial forces along the guidewire. Balloons, conversely, utilize regulated radial forces observable directly via the endoscope (Josino et al., 2018).

A meta-analysis evaluating bougie and balloon dilation for benign esophageal strictures indicated no significant differences in symptom relief, 12-month recurrence, bleeding, or perforation rates. However, post-procedural pain may be less common with balloon dilation (Josino et al., 2018). Pediatric data suggests that both methods can be efficacious, with device selection influenced by anatomical factors, operator proficiency, fluoroscopic accessibility, stricture etiology, and financial considerations (Fakıoglu et al., 2023).

In uncomplicated strictures, progressive dilation of up to 15 mm in a single session has been observed without adherence to the conventional "rule of three" in carefully selected patients, suggesting that this traditional guideline should not be applied inflexibly in all cases (Robles-Medranda et al., 2019). But for very tight, long, angular, corrosive, radiation-induced, or postoperative strictures, the best option is still conservative, stepwise dilation. The risk of perforation increases when the tissue plane is distorted or deeply fibrosed (Sami et al., 2018).

The target diameter should be customized based on the patient's symptomatic response, stricture etiology, and dietary practices. A lot of treatment algorithms still want a lumen caliber of at least 14 to 16 mm and repeat sessions every one to two weeks until that is reached (Siersema, 2019). A multicenter retrospective study showed that a

high-frequency dilation program can increase the post-dilation diameter in many benign strictures. Radiogenic strictures, conversely, may behave differently and require a more meticulous regimen (Graf et al., 2024).

People with peptic strictures need a lot of acid suppressants and reflux control because just stretching the area doesn't stop acid from hurting it again (Burr & Everett, 2019). Eosinophilic esophagitis requires anti-inflammatory treatment via dietary elimination, proton pump inhibitors, topical steroids, or biologic therapy, as appropriate, since dilation increases caliber without mitigating eosinophilic mucosal inflammation (Dellon et al., 2025).

INTRALESIONAL CORTICOSTEROID INJECTION

The goal of intralesional corticosteroid injections is to stop collagen from building injections is to stop collagen from building up, slow down fibroblast activity, and stop scars from coming back after they have been broken down by dilation (Szapáry et al., 2018). Triamcinolone is generally injected into the four quadrants of the stricture either before or after dilation; however, the dosage, depth, and frequency of sessions vary widely across studies (Henskens et al., 2020).

Some research shows that steroid injections can make the time between periods of not having dysphagia longer and lower the need for repeat dilations in some benign strictures that come

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back. The extent of the benefit is contingent upon the underlying cause (Szapáry et al., 2018). A systematic review demonstrated more consistent benefits in strictures arising from gastric ulcers,

corrosive agents, and radiation, in contrast to anastomotic strictures, highlighting that steroid injections should not be considered a universal solution for all refractory stenoses (Henskens et al., 2020).

Steroid injections are generally low-cost and technically viable; however, they should be avoided or postponed in instances of active infection, considerable ulceration, uncontrolled inflammation, or suspected malignancy (Everett, 2019). In eosinophilic esophagitis, localized anti-inflammatory therapy must address the underlying condition through topical oral steroids or other guideline-recommended medical interventions, rather than relying solely on intralesional injections for persistent strictures (Dellon et al., 2025).

ENDOSCOPIC INCISIONAL THERAPY AND STRICTUROTOMY

Endoscopic incision therapy utilizes a needle blade, an insulating-tipped blade, or a comparable cutting instrument to transect fibrotic rings or radial scar bands, rather than elongating them circumferentially (Fugazza & Repici, 2021). This technique is optimal for short, focal, membranous, or anastomotic strictures, as controlled radial cutting can modify the configuration of scar tissue while minimizing damage to extensive segments (Tan & Liu, 2016).

Experience with pediatric patients suggests that endoscopic electrocautery incision therapy may act as an adjunct for refractory benign strictures and could delay or prevent surgical reconstruction in specific instances (Manfredi et al., 2018).

Anastomotic data in adult patients confirms the effectiveness of radial incision or incision therapy when repeated balloon dilation fails. Nonetheless, retreatment remains prevalent, and long-term durability is not assured (Z. C. Zhang et al., 2022).

Endoscopists proficient in advanced therapeutic techniques should perform incisional therapy, as the risk of perforation is contingent upon visualizing the stricture axis, precisely controlling the depth, and preventing full-thickness injury. In complicated, recurrent disease, the combination of incisional therapy with balloon dilation or steroid injection may be considered; however, the evidence primarily comes from small cohorts and diverse protocols (Norton et al., 2024).

TEMPORARY STENTING

Temporary esophageal stenting provides continuous radial expansion and maintains patency between endoscopic sessions, while exhibiting diminished device-related risks in comparison to simple dilation (Spaander et al., 2021). A systematic review and meta-analysis indicated that stenting for refractory benign esophageal strictures achieved clinical success in approximately 40% of cases, with migration and adverse events occurring frequently (Fuccio et al., 2016).

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According to the updated ESGE guidelines, temporary stent placement should only be considered after other methods of dilation have failed. For hard-to-treat benign strictures, it prefers fully covered, self-expanding metal stents to partially covered devices. This is because fully covered stents are easier to remove (Spaander et al., 2021). Partially covered stents may become embedded due to tissue hyperplasia, whereas fully covered stents are more easily removable; therefore, stent selection requires a balance between ease of removal and fixation (van der Bogt et al., 2020).

Biodegradable stents are attractive because they don't need to be taken out, but the current evidence is limited by small sample sizes, a lack of consistency in definitions of clinical success, and a lack of diversity (Gkolfakis et al., 2020). A recent meta-analysis of biodegradable stents demonstrated considerable technical success; however, the longevity of symptom resolution remains inconsistent, requiring further prospective trials (Tyč et al., 2025).

In some cases, using clips or stitches to hold the stent in place can help, but it makes things more complicated and doesn't stop pain, reflux, bleeding, overgrowth, or recurrence after the stent is taken out (Dua, 2025). For these reasons, stenting should only be used as a last resort for carefully chosen strictures that don't respond to other treatments. It should not be used as a standard treatment after early recurrence (Lu et al., 2019).

TOPICAL MITOMYCIN C AND ANTIFIBROTIC THERAPY

Mitomycin C is an antibiotic that stops fibroblasts from growing and making collagen. It also fights cancer. This is why it can be used on the skin after dilation in cases of recurrent fibrotic strictures. There is limited data on adults; however, a pilot study and a literature review indicated that topical mitomycin C, when used in conjunction with dilation, reduced the frequency of subsequent dilation procedures in complex recurrent benign strictures (Bartel et al., 2016).

The most persuasive clinical indication for mitomycin C is in pediatric caustic strictures, where a systematic review and meta-analysis of randomized trials showed that adding topical mitomycin C to endoscopic dilation led to better resolution of dysphagia and fewer dilation sessions (Flor et al., 2021). However, the dosage, application method, timing, and long-term safety have not been standardized; therefore, mitomycin C should be considered an adjunct in particular cases rather than a standard first-line treatment (Thanawala & Lynch, 2025).

SELF-DILATION AND PATIENT-CENTRED MAINTENANCE THERAPY

Self-guided esophageal dilation moves some parts of maintenance therapy from the endoscopy suited to a trained patient. This usually means supervised self-guided bougienage after the lumen has been dilated to a safe initial diameter (van Halsema et al., 2018). This method is most effective for patients who are motivated, reliable, possess a straight stricture that is proximal or

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easily accessible, exhibit stable cognition, lack high-risk anatomy, and can promptly obtain medical assistance in the event of bleeding or severe pain (Halland et al., 2024).

In a structured case series, self-dilation exhibited clinical efficacy in a significant cohort of therapy-resistant patients and reduced the need for repeated endoscopic dilation (van Halsema et al., 2018). Recent prospective data, featuring a minor randomized component, suggest that esophageal self-dilation may be safe and effective, dependent on rigorous training, patient selection, and follow-up (Halland et al., 2024).

Patient-operated or self-powered balloon systems have been examined for difficult benign strictures, including those following endoscopic resection, with preliminary multicenter data suggesting feasibility and notable short-term clinical success (Li et al., 2024). This method is still being tested in many places, and we need to think carefully about patient safety, training, availability, and medical-legal liability (Norton et al., 2024).

ETIOLOGY-SPECIFIC MANAGEMENT

Peptic strictures necessitate management via dilation and continuous acid suppression, as chronic reflux exacerbates inflammation and results in recurrent scarring (Burr & Everett, 2019). If recurrent peptic strictures persist despite appropriate proton pump inhibitor therapy and dosing, physicians should investigate adherence, nocturnal acid reflux, hiatal hernia, motility disorders, and the necessity for surgical intervention to manage reflux in certain instances (Thanawala & Lynch, 2025).

Anastomotic strictures generally respond to repeated dilatations; however, short focal anastomotic rings that recur after multiple dilatations are optimal candidates for incisional therapy or radial incision and cutting (Tan & Liu, 2016). Comparative data following upper gastrointestinal surgery suggest that incisional therapy may reduce strictures in particular anastomotic stenoses compared to balloon dilatation alone, although careful patient selection remains essential (Pih et al., 2021).

Caustic strictures are usually long, have many angles, and are very fibrotic, which makes them harder and more dangerous than simple peptic strictures (Fugazza & Repici, 2021). Dilation should be performed incrementally, typically utilizing fluoroscopy, and accompanied by nutritional assistance. At the same time, giving more mitomycin C or putting in a stent should only be done after careful thought about the limited evidence and the risk of recurrence (Flor et al., 2021).

Radiation-induced narrowing may demonstrate less predictable responses to aggressive dilation due to the risk of deeper ischemic fibrosis and impaired healing linked to radiation injury (Graf et al., 2024). For these patients, smaller, more gradual increases, longer intervals, and close monitoring for perforation or fistula are usually better than quick increases in diameter (Sami et al., 2018).

Eosinophilic esophagitis is a distinctive fibroinflammatory condition characterized by

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dilation that mitigates fibrostenotic dysphagia yet does not modulate inflammatory stimuli (Dougherty et al., 2017). The ASGE consensus and ACG guidelines recommend the combination of dilation with anti-inflammatory therapy and monitoring, rather than utilizing dilation as a singular treatment for patients with active eosinophilic inflammation (Aceves et al., 2022; Dellon et al., 2025).

Post-ESD narrowing requires prevention and swift detection, as considerable circumferential mucosal damage can result in severe stenosis, despite technically successful resection (Lin et al., 2021). Meta-analytic data suggest that stenting may alleviate post-ESD stenosis in certain high-risk scenarios, particularly when utilizing a protective closure approach. However, negative effects and variability limit its consistent use (B. Z. Zhang et al., 2021).

After ESD, steroid strategies have improved. A comparative meta-analysis indicated that a combined local and systemic steroid strategy may be more efficacious than single-modality prophylaxis in preventing esophageal strictures following ESD (Zhou et al., 2024). These preventive data must be differentiated from the management of mature refractory strictures, which are marked by less reversible dense fibrosis (Duan et al., 2024).

PRACTICAL THERAPEUTIC ALGORITHM

A practical algorithm starts by ruling out a benign cause, then assessing the complexity of the stricture, doing a biopsy if needed, improving nutrition, and treating the underlying cause (Sami et al., 2018). For uncomplicated strictures, symptom-directed bougie or balloon dilation to a specified diameter is generally sufficient. Proton pump inhibitors, EoE anti-inflammatory therapy, or other treatments tailored to the underlying etiology may be incorporated as necessary (Burr & Everett, 2019).

If Dysphagia comes back quickly or the target diameter can't be reached after a few sessions, the case should be moved to the recurrent or refractory category and discussed using an escalation plan based on the cause (Siersema, 2019). Steroid injection is appropriate for particular peptic, corrosive, radiation-induced, and inflammatory strictures; incisional therapy is ideal for short focal anastomotic strictures; stenting is intended for salvage therapy; and self-dilation may be offered to meticulously selected patients following supervised training (Henskens et al., 2020).

If the best endoscopic treatment doesn't work or if complications like fistula, perforation, severe malnutrition, or complete obstruction make it unsafe to do endoscopic treatment again, surgery is the last option (Boregowda et al., 2021). Surgical reconstruction carries considerable morbidity; therefore, referral to a multidisciplinary center is essential before initiating prolonged ineffective endoscopic treatment, which may lead to nutritional deterioration and the loss of therapeutic options ((Thanawala & Lynch, 2025).

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EVIDENCE GAPS AND FUTURE DIRECTIONS

The existing literature is limited by small sample sizes, inconsistent definitions of refractory disease, varying target diameters, mixed adult and pediatric cohorts, and heterogeneous reporting of dysphagia and quality-of-life scores (Everett, 2019). Subsequent research should differentiate among peptic, anastomotic, caustic, radiation-induced, eosinophilic, and post-ESD strictures, as conflating these phenotypes may obscure therapeutic outcomes (Fugazza & Repici, 2021).

We need comparative trials right away to figure out the best time for steroid injections, standardized mitomycin C protocols, criteria for choosing incisional therapy, the best time to place a stent, strategies to keep it from moving, and training programs for self-dilation (Norton et al., 2024). Patient-reported outcomes, nutritional endpoints, cost-effectiveness, and the frequency of anesthetic exposures should be taken into account, as just counting the number of procedures does not give a full picture of the burden of recurrent stricture disease (Halland et al., 2024).

Regenerative strategies, mucosal protection, tissue-engineered matrices, and pharmacological antifibrotic therapies exhibit potential for the treatment of post-resection strictures. Most of them are still in the testing phase, though, and they need to be tested in multiple centers before they can be used as standard care (Ye et al., 2024). The primary objective is not to supplant dilation, but to identify patients requiring additional treatment promptly, prior to the recurrence of mechanical trauma that perpetuates the cycle of injury and fibrosis (Singh et al., 2025).

CONCLUSION

Endoscopic dilation remains the primary treatment for benign esophageal strictures. Present evidence does not indicate that it is superior to bougie or balloon dilation for the majority of patients. Over the past decade, a notable advancement has been the introduction of more complex, etiology-focused adjunctive therapies, rather than a singular, universal, innovative intervention. Intralesional steroid injections may reduce recurrence in certain inflammatory and fibrotic phenotypes. Incisional therapy is most effective for brief, targeted anastomotic strictures. Mitomycin C has a limited but appropriate role in certain complex caustic or refractory diseases. Fully covered temporary stents are a way to save a person's life, but they raise a lot of worries about moving and side effects. Self-dilation can help make the procedure easier for patients who have been well-trained. Future research should develop standardized definitions, classify by etiology, and prioritize outcomes that are significant to patients, including sustained oral intake, nutritional restoration, adverse effects, and quality of life.

REFERENCES

Aceves, S. S., Alexander, J. A., Baron, T. H., Bredenoord, A. J., Day, L., Dellon, E. S., Falk, G. W., Furuta, G. T., Gonsalves, N., Hirano, I., Konda, V. J. A., Lucendo, A. J., Moawad, F., Peterson, K. A., Putnam, P. E., Richter, J., Schoepfer, A. M.,

Straumann, A., McBride, D. L., … Katzka, D. A. (2022). Endoscopic approach to eosinophilic esophagitis: American Society for Gastrointestinal Endoscopy Consensus Conference. *Gastrointestinal Endoscopy*, *96*(4). https://doi.org/10.1016/j.gie.2022.05.013

Bartel, M. J., Seeger, K., Jeffers, K., Clayton, D., Wallace, M. B., Raimondo, M., & Woodward, T. A. (2016). Topical Mitomycin C application in the treatment of refractory benign esophageal strictures in adults and comprehensive literature review. *Digestive and Liver Disease*, *48*(9). https://doi.org/10.1016/j.dld.2016.06.024

Boregowda, U., Goyal, H., Mann, R., Gajendran, M., Patel, S., Echavarria, J., Sayana, H., & Saligram, S. (2021). Endoscopic management of benign recalcitrant esophageal strictures. In *Annals of Gastroenterology* (Vol. 34, Number 3). https://doi.org/10.20524/aog.2021.0585

Burr, N. E., & Everett, S. M. (2019). Management of benign oesophageal strictures. In *Frontline Gastroenterology* (Vol. 10, Number 2). https://doi.org/10.1136/flgastro-2018-101075

Dellon, E. S., Muir, A. B., Katzka, D. A., Shah, S. C., Sauer, B. G., Aceves, S. S., Furuta, G. T., Gonsalves, N., & Hirano, I. (2025). ACG Clinical Guideline: Diagnosis and Management of Eosinophilic Esophagitis. *American Journal of Gastroenterology*, *120*(1). https://doi.org/10.14309/ajg.0000000000003194

Dougherty, M., Runge, T. M., Eluri, S., & Dellon, E. S. (2017). Esophageal dilation with either bougie or balloon technique as a treatment for eosinophilic esophagitis: a systematic review and meta-analysis. In *Gastrointestinal Endoscopy* (Vol. 86, Number 4). https://doi.org/10.1016/j.gie.2017.04.028

Dua, K. S. (2025). Endoscopic Management of Refractory Benign Esophageal Strictures: What's New? *American Journal of Gastroenterology*, *120*(4). https://doi.org/10.14309/ajg.0000000000003057

Duan, Y., Jia, W., Liang, Y., Zhang, X., Yang, Z., & Yang, Q. (2024). Progress in the treatment and prevention of esophageal stenosis after endoscopic submucosal dissection. In *Clinics and Research in Hepatology and Gastroenterology* (Vol. 48, Number 3). https://doi.org/10.1016/j.clinre.2024.102290

Everett, S. M. (2019). Endoscopic management of refractory benign oesophageal strictures. In *Therapeutic Advances in Gastrointestinal Endoscopy* (Vol. 12). https://doi.org/10.1177/2631774519862134

Fakıoglu, E., Güney, L. H., & Ötgün, İ. (2023). Esophageal dilation through bouginage or balloon catheters in children, as the treatment of benign esophageal strictures: results, considering the etiology, and the methods. *Ulusal Travma ve Acil Cerrahi Dergisi*, *29*(5). https://doi.org/10.14744/tjtes.2022.03881

Flor, M. M., Ribeiro, I. B., De Moura, D. T. H., Marques, S. B., Bernardo, W. M., & De Moura, E. G. H. (2021). Efficacy of endoscopic topical mitomycin c application in caustic esophageal strictures in the pediatric population: A systematic review and meta-analysis of randomized controlled trials. In *Arquivos de Gastroenterologia* (Vol. 58, Number 2). https://doi.org/10.1590/S0004-2803.202100000-38

Fuccio, L., Hassan, C., Frazzoni, L., Miglio, R., & Repici, A. (2016). Clinical outcomes following stent placement in refractory benign esophageal stricture: A systematic review and meta-analysis. *Endoscopy*, *48*(2). https://doi.org/10.1055/s-0034-1393331

Fugazza, A., & Repici, A. (2021). Endoscopic Management of Refractory Benign Esophageal Strictures. In *Dysphagia* (Vol. 36, Number 3). https://doi.org/10.1007/s00455-021-10270-y

Gkolfakis, P., Siersema, P. D., Tziatzios, G., Triantafyllou, K., & Papanikolaou, I. S. (2020). Biodegradable esophageal stents for the treatment of refractory benign esophageal strictures. In *Annals of Gastroenterology* (Vol. 33, Number 4). https://doi.org/10.20524/aog.2020.0482

Graf, C., Reden, M., Blasberg, T., Knabe, M., May, A., Ell, C., Wedi, E., Wetzstein, N., Michael, F., Zeuzem, S., Bojunga, J., & Friedrich-Rust, M. (2024). Correction: Is a higher frequency of esophageal dilations more effective in treating benign esophageal strictures? Retrospective, multicenter study. *Endoscopy International Open*, *12*(02). https://doi.org/10.1055/a-2256-4239

Halland, M., Prichard, D. O., Kahn, A., Lavey, C. J., Katzka, D. A., & Alexander, J. A. (2024). Esophageal Self-Dilation in Benign Refractory Esophageal Strictures: Outcomes from a Randomized Controlled Trial and a Prospective Observational Study. *Digestive Diseases and Sciences*, *69*(8). https://doi.org/10.1007/s10620-024-08402-z

Henskens, N., Wauters, L., & Vanuytsel, T. (2020). Intralesional steroid injections in addition to endoscopic dilation in benign refractory esophageal strictures: A systematic review. In *Acta Gastro-Enterologica Belgica* (Vol. 83, Number 3).

Josino, I. R., Madruga-Neto, A. C., Ribeiro, I. B., Guedes, H. G., Brunaldi, V. O., De Moura, D. T. H., Bernardo, W. M., & De Moura, E. G. H. (2018). Endoscopic dilation with bougies versus balloon dilation in esophageal benign strictures: Systematic review and meta-analysis. *Gastroenterology Research and Practice*, *2018*. https://doi.org/10.1155/2018/5874870

Li, L., Xu, N., Wang, P., Liu, L., Gong, W., Bi, Y., Ru, N., Su, S., Wang, N., Xiang, J., Han, K., Chai, N., & Linghu, E. (2024). A novel self-inflatable balloon for treating refractory benign esophageal strictures: a prospective, single-arm, multicenter study. *International Journal of Surgery (London, England)*, *110*(4).

https://doi.org/10.1097/JS9.0000000000001120

Lin, N., Lin, J., & Gong, J. (2021). Risk factors of postoperative stricture after endoscopic submucosal dissection for superficial esophageal neoplasms A meta-analysis. In *Medicine (United States)* (Vol. 100, Number 51). https://doi.org/10.1097/MD.0000000000028396

Lu, Q., Yan, H., Wang, Y., Lei, T., Zhu, L., Ma, H., & Yang, J. (2019). The role of endoscopic dilation and stents in refractory benign esophageal strictures: A retrospective analysis. *BMC Gastroenterology*, *19*(1). https://doi.org/10.1186/s12876-019-1006-0

Manfredi, M. A., Clark, S. J., Medford, S., Staffa, S. J., Ngo, P. D., Hamilton, T. E., Smithers, C. J., & Jennings, R. W. (2018). Endoscopic electrocautery incisional therapy as a treatment for refractory benign pediatric esophageal strictures. *Journal of Pediatric Gastroenterology and Nutrition*, *67*(4). https://doi.org/10.1097/MPG.0000000000002008

Norton, B. C., Papaefthymiou, A., Aslam, N., Telese, A., Murray, C., Murino, A., Johnson, G., & Haidry, R. (2024). The endoscopic management of oesophageal strictures. In *Best Practice and Research: Clinical Gastroenterology* (Vol. 69). https://doi.org/10.1016/j.bpg.2024.101899

Pih, G. Y., Kim, D. H., Na, H. K., Ahn, J. Y., Lee, J. H., Jung, K. W., Choi, K. D., Song, H. J., Lee, G. H., & Jung, H. Y. (2021). Comparison of the Efficacy and Safety of Endoscopic Incisional Therapy and Balloon Dilatation for Esophageal Anastomotic Stricture. *Journal of Gastrointestinal Surgery*, *25*(7). https://doi.org/10.1007/s11605-020-04811-3

Robles-Medranda, C., Oleas, R., Alvarado-Escobar, H., Puga-Tejada, M., Baquerizo-Burgos, J., & Pitanga-Lukashok, H. (2019). Treating simple benign esophageal strictures with savary-gilliard dilators: Is the rule of three still necessary? *Arquivos de Gastroenterologia*, *56*(1). https://doi.org/10.1590/s0004-2803.201900000-21

Sami, S. S., Haboubi, H. N., Ang, Y., Boger, P., Bhandari, P., De Caestecker, J., Griffiths, H., Haidry, R., Laasch, H. U., Patel, P., Paterson, S., Ragunath, K., Watson, P., Siersema, P. D., & Attwood, S. E. (2018). UK guidelines on oesophageal dilatation in clinical practice. *Gut*, *67*(6). https://doi.org/10.1136/gutjnl-2017-315414

Siersema, P. D. (2019). How to Approach a Patient With Refractory or Recurrent Benign Esophageal Stricture. *Gastroenterology*, *156*(1). https://doi.org/10.1053/j.gastro.2018.11.040

Singh, A. K., Singh, A., Kochhar, R., & Manrai, M. (2025). Esophageal strictures: Management beyond dilation. *World Journal of Gastrointestinal Endoscopy*, *17*(11).

https://doi.org/10.4253/wjge.v17.i11.11002
4

Spaander, M. C. W., Van Der Bogt, R. D., Baron, T. H., Albers, D., Blero, D., De Ceglie, A., Conio, M., Czakó, L., Everett, S., Garcia-Pagán, J. C., Ginès, A., Jovani, M., Repici, A., Rodrigues-Pinto, E., Siersema, P. D., Fuccio, L., & Van Hooft, J. E. (2021). Esophageal stenting for benign and malignant disease: European Society of Gastrointestinal Endoscopy (ESGE) Guideline - Update 2021. In *Endoscopy* (Vol. 53, Number 7). https://doi.org/10.1055/a-1475-0063

Szapáry, L., Tinusz, B., Farkas, N., Márta, K., Szakó, L., Meczker, Á., Hágendorn, R., Bajor, J., Vincze, Á., Gyöngyi, Z., Mikó, A., Csupor, D., Hegyi, P., & Eross, B. (2018). Intralesional steroid is beneficial in benign refractory esophageal strictures: A meta-analysis. In *World Journal of Gastroenterology* (Vol. 24, Number 21). https://doi.org/10.3748/wjg.v24.i21.2311

Tan, Y., & Liu, D. (2016). Endoscopic incision for the treatment of refractory esophageal anastomotic strictures: Outcomes of 13 cases with a minimum follow-up of 12 months. *Revista Espanola de Enfermedades Digestivas*, *108*(4).

Thanawala, S. U., & Lynch, K. L. (2025). Management of Esophageal Strictures. In *Gastrointestinal Endoscopy Clinics of North America* (Vol. 35, Number 3). https://doi.org/10.1016/j.giec.2025.02.002

Tyč, D., Vaněčková, N., Hanuš, J., & Krulichová, I. S. (2025). Biodegradable Stents for the Treatment of Refractory Benign Esophageal Strictures: Systematic Review and Meta-Analysis. *Digestion*. https://doi.org/10.1159/000546377

van der Bogt, R. D., Nikkessen, S., Bruno, M. J., & Spaander, M. C. W. (2020). Stents for benign esophageal strictures. In *Techniques and Innovations in Gastrointestinal Endoscopy* (Vol. 22, Number 4). https://doi.org/10.1016/j.tige.2020.04.002

van Halsema, E. E., 't Hoen, C. A., de Koning, P. S., Rosmolen, W. D., van Hooft, J. E., & Bergman, J. J. (2018). Self-dilation for therapy-resistant benign esophageal strictures: towards a systematic approach. *Surgical Endoscopy*, *32*(7). https://doi.org/10.1007/s00464-018-6037-z

Ye, S., Hu, J., Zhang, D., Zhao, S., Shi, X., Li, W., Wang, J., Guan, W., & Yan, L. (2024). Strategies for Preventing Esophageal Stenosis After Endoscopic Submucosal Dissection and Progress in Stem Cell-Based Therapies. In *Tissue Engineering - Part B: Reviews* (Vol. 30, Number 5). https://doi.org/10.1089/ten.teb.2023.0316

Zhang, B. Z., Zhang, Y., Wang, Y. D., Liao, Y., Zhang, J. J., Wu, Y. F., Xiao, T. Y., Sun, S. Y., & Guo, J. T. (2021). Stent placement to prevent strictures after esophageal endoscopic submucosal dissection: A systematic review and meta-analysis. *Diseases of the Esophagus*, *34*(9). https://doi.org/10.1093/dote/doab015

Zhang, Z. C., Xu, J. Q., Xu, J. X., Xu, M. D., Chen, S. Y., Zhong, Y. S., Zhang, Y. Q.,

Chen, W. F., Ma, L. L., Qin, W. Z., Hu, J. W., Cai, M. Y., Yao, L. Q., Li, Q. L., & Zhou, P. H. (2022). Endoscopic radial incision versus endoscopic balloon dilation as initial treatments of benign esophageal anastomotic stricture. *Journal of Gastroenterology and Hepatology (Australia)*, *37*(12). https://doi.org/10.1111/jgh.16005

Zhou, S., Chen, X., Feng, M., Shi, C., ZhuoMa, G. S., Ying, L., Zhang, Z., Cui, L., Li, R., & Zhang, J. (2024). Efficacy of different steroid therapies in preventing esophageal stricture after endoscopic submucosal dissection: a comparative meta-analysis. In *Gastrointestinal Endoscopy* (Vol. 100, Number 6). https://doi.org/10.1016/j.gie.2024.08.017