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LETTER TO THE EDITOR

Sclerotherapy for hemorrhoidal disease: Recent evolutions of an oldies goldy

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Abstract

Treatments for low degree hemorrhoids (I-III degree) are numerous and so are their counterparts for higher degrees. These treatments present nebulous differences in terms of indications and outcomes among techniques. Methods previously abandoned due to side effects and long-term results have recently rejoined the mainstream due to recent peculiar modifications: Hemorrhoidal sclerotherapy is enjoying a new age of interest due to the use of the foam form of polidocanol, which is more effective than the liquid one. Various articles have already shown promising results and the logical next step is the combination of polidocanol foam with rubber-band ligation (the historical counterpart of sclerotherapy) in a technique called "sclerobanding". In this article, we comment on the publication by Qu *et al* further modifying the use of sclerobanding through an endoscopic delivery for patients with grade II-III internal hemorrhoids, and present results compared with endoscopic rubber band ligation. The results achieved are promising.

Key Words: Three percent polidocanol foam; Bleeding hemorrhoids; Hemorrhoidal disease; Sclerotherapy; Symptomatic hemorrhoids

Core Tip: Sclerotherapy is living a new golden age due to the use of safer and more effective solutions. Polidocanol foam has achieved positive results even in peculiar settings such as bleeding patients or as a bridge treatment while waiting for definitive surgery. Endoscopic Polidocanol foam sclerobanding allows the precise application of banding and injection of the drug *via* direct visualization during endoscopy. Results are superior to rubber band ligation and the technique is a promising, practical, cost-effective approach for low-grades hemorrhoids.

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TO THE EDITOR

Treatments for low degree hemorrhoids (I-III degree) are numerous, so are their counterparts for higher degrees, and present nebulous differences in terms of indications and outcomes among techniques. Usually administered in an ambulatory setting, postoperative pain is not unusual and more severe complications (bleeding and perineal sepsis) can still occur. The two most used techniques, sclerotherapy and rubber band ligation, have alternatively been favored according to the historical moment and the available knowledge. However, recent positive results achieved in the treatment of varicose veins have suggested a potential application also in hemorrhoid disease, opening the way to a resurgence for the use of sclerotherapy.

Historical perspective

Sclerotherapy dates back to the 19th century as the first invasive treatment described for the treatment of hemorrhoids[1]. The injection of sclerosing agents was easy to perform and quite effective in shrinking engorged vessels, therefore immediately received widespread acceptance. Over the years, the liquid form of polidocanol progressively replaced phenol oil due to the better safety profile[2], while more recently polidocanol foam form has progressively taken over. Historically, sclerotherapy has been considered a second-line treatment of I-III degree hemorrhoids after rubber band ligation[3]. This is confirmed by a survey published in 2018 conducted on more than 32000 patients in which over 90% of II degree hemorrhoids were treated with rubber band ligation[4]. However, recent results achieved with polidocanol foam sclerotherapy are shifting this approach, suggesting that sclerotherapy could become the first-line approach for II-III degree hemorrhoids, and leaving rubber band ligation to recurrent cases[5].

Polidocanol foam

Polidocanol foam is a non-ionic emulsifier and surfactant developed in 1931 and commonly used for products such as hair conditioners, shampoos, facial creams and body lotions[6]. Its medical activity lies in the ability to produce concentration-dependent cell injury. The intravascular injection exposes endothelial cells to death but the foam formulation allows the displacement of blood cells and therefore their preservation. The local inflammatory reaction elicited is responsible for the long-term sclerosis and vessel sealing mechanism[6].

The first trial published on polidocanol foam described its application on first degree hemorrhoids, where this was compared to the liquid product (130 patients, randomized in two groups)[2]. It immediately allows the injection of lower volumes and smaller concentrations without compromising outcomes and safety profiles[2]. Numerous articles followed this initial trial: Polidocanol foam resolved bleeding in 78% of 50 patients at three-months follow-up[7], in 93%-96% at one year and in 90.2% at three years (66-183 patients, according to studies)[8-11], reduced the hemorrhoidal disease symptom score and the short health scale for hemorrhoidal disease from a median of 11 and 18 respectively to 0 and 4 (66-183 patients)[8-10], and produced high satisfaction rates at one and three months of follow-up (98% and 88% respectively) in two large series (130 and 2000 patients)[2,12]. Furthermore, it proved easy to use, effective (one or two sessions were usually sufficient to achieve bleeding control) and safe (complications reported consisted in seven cases of significant bleeding, two rectal abscesses, eleven hemorrhoid thromboses, one tenesmus, and one urinary retention). Polidocanol foam also achieved positive results in peculiar settings, such as in 228 patients with background bleeding disorders (both pharmacological-induced and congenital)[13], residual hemorrhoidal disease following open hemorrhoidectomy in 18 patients[14], and high-grade hemorrhoids as a bridge ambulatory treatment during the Covid-19 pandemic in 19 patients [15,16]. All of these characteristics favored the definitive adoption of Polidocanol foam for the treatment of low-grade hemorrhoids[9,13,16].

The next logical step was to compare polidocanol foam with its historical counterpart, rubber band ligation. Trials presented higher success rates (88.3% *vs* 66.7%), lower recurrence rates (16.1% *vs* 41.2%), lower complications rates (10.0% *vs* 30.0%) on 120 patients[11], and less postoperative pain for Polidocanol sclerotherapy on 74 randomized patients[17]. These findings were also confirmed later in a meta-analysis between sclerotherapy (200 patients) and rubber band ligation (127 patients)[18]. Furthermore, results of polidocanol foam almost reached those of more invasive techniques for the treatment of hemorrhoids such as hemorrhoidal dearterialization (150 patients *vs* 109 patients)[19].

Recent evolutions

Another step forward in the rediscovery of sclerotherapy has been the combination of polidocanol foam with rubber band ligation in a technique called "sclerobanding"[20]. Theoretically, the combination of sclerotherapy with rubber band ligation would act simultaneously on dilated vessels: Polidocanol foam injections would lift the diseased mucosa for the subsequent banding, and would act as a direct part of the treatment producing the inflammation and subsequent fibrosis of vessels[21]. Sclerobanding proved safe: Only four patients with III degree hemorrhoids manifested minor complications which resolved at 3 months of follow-up (three cases of thrombosis and one of defecatory urgency)[22]. Similar to sclerotherapy alone[13], sclerobanding also has been tested on patients with bleeding disorders. One out of 51 patients

required completion hemorrhoidectomy, 6 cases of postoperative pain and one case of thrombosis were recorded[23]. The present article further moves forward the concept of sclerobanding, using an endoscopic delivery and comparing results achieved with those of endoscopic rubber band ligation alone. The authors have confirmed better results achieved for the combination of sclerobanding over rubber band ligation alone, while the endoscopic visualization of the base of engorged vessels helped the proper delivery of the treatment while providing adequate documentation of it[24].

Compared to other solutions used for hemorrhoidal sclerotherapy (hypertonic 50% dextrose saline, sodium tetradecyl sulfate, phenol oil, aluminum potassium sulfate, and tannic acid), polidocanol foam has proved more effective with less side-effects[25]. Numerous developments could start from this point. Future lines of research could involve the local effects and safety profile of different polidocanol formulations (additives, microencapsulation, and gas types), the use of ultrasound imaging (endoanal or transperineal) to guide precise and tailored injections, the experimentation of different concentrations to achieve in peculiar settings (*i.e.*, bleeding diathesis) and the optimal sclerosis with the minimum of side effects.

CONCLUSION

Sclerotherapy is currently living a new golden age due to the use of polidocanol foam. The product evolution, safety and low postoperative pain, new delivery methods (retroflexed endoscopy), the efficacy in difficult settings (bleeding patients, bridge treatment for higher degree hemorrhoids) and, finally, the combination with rubber band ligation (sclerobanding) have definitely opened the way for a diffuse adoption of the technique. The current article further confirms the positive results, while the endoscopic delivery allows a direct visualization of the hemorrhoid base during the drug delivery, improving efficacy and furnishing a clear documentation of the treatment performed.

FOOTNOTES

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