

# Bougie dilators: simple, safe and cost-effective treatment for Crohn's-related fibrotic anal strictures

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## SUMMARY

Anal strictures with fibrotic induration have been shown to develop in up to 50% of all patients with Crohn's disease (CD) with anal ulceration. We evaluate the technical feasibility, safety and long-term efficacy of bougie dilation for a subgroup of patients with symptomatic Crohn's-related fibrotic anal strictures. Bougie dilation is simple to perform, relatively inexpensive and has a low risk of complications.

Anal strictures with fibrotic induration have been shown to develop in up to 50% of all patients with Crohn's disease (CD) with anal ulceration.<sup>1</sup> Clinically significant strictures occur in about 5% of patients with perianal CD. With reduced stool consistency due to the CD, symptoms are often minimal, and the stricture is discovered at examination. When present, the stricture-related symptoms are overflow diarrhea, perineal pain, constipation and/or fecal incontinence.

In the past, dilation was digital or with Hegar dilators. More recently, balloon dilation has become the choice for many,<sup>2</sup> entailing a considerable long-term cost. To the best of our knowledge, there are no published case series of bougie dilation of CD anal strictures. This discussion demonstrates the technical feasibility, safety, long-term efficacy and cost-effectiveness of bougienage for a subgroup of patients with CD-related fibrotic anal strictures.

Ten patients with CD at a single university teaching hospital who had symptomatic fibrotic anal strictures and failure of digital dilation and were treated between 1988 and 2013 were all perceived to have irreversible fibrotic anal strictures (Cardiff classification S2a).<sup>3</sup> They all had symptoms, such as narrowing stools, abdominal distension and overflow diarrhea. All were further characterized by the inability of a single experienced clinician to insert the distal interphalangeal joint of the examining index finger through the stricture. All strictures were 2 cm long or less, except in 1 patient who opted for colostomy.

## BOUGIE DILATION TECHNIQUE

With the patient in the left lateral position and without any prior bowel preparation, stricture dilation was performed using generously lubricated silicone bougies with a tapered Maloney tip (M-Flex, Medovations). Intravenous sedation with fentanyl and diazepam was given. Despite an initial estimated stricture diameter of 5–6 mm in all patients, the procedure was initiated with a # 40- to 44-French bougie. The usual number of bougies per session was 4–5, starting with a 40- or 44-French, and going by double sizes to 56- or 60-French (i.e., 40, 44, 48, 52, 56, 60). Ultimately, dilation up to the biggest bougie (60-French) was achieved in all patients. With the passage of a bougie through a stricture there is often a sensation of it giving way; once this is felt, one knows that the maximum diameter of the bougie has been passed through the stricture. All procedures were performed by a single experienced physician in an endoscopy suite. A total of 308 procedures were performed. Treatment intervals varied according to patient demand.

The median age of patients at first therapy was 42 (interquartile range 25–50) years with a median follow-up of 10 (range 6–25) years. Dilation was

successful in all patients, allowing the full extent of the index finger to be easily passed through the strictures. Bleeding was minimal. All patients reported an immediate improvement in symptoms. Six patients continue to have serial bougienage until 2013. The treatment interval for these patients increased during follow-up; the median number of dilations dropped from 11 in the first 5 years of treatment to 4.5 in the last 5 years ( $p = 0.04$ ). Of 3 patients who have had surgery, 2 did so for unrelated refractory CD and had proctocolectomy and ileostomy. One patient opted for a diverting sigmoid loop colostomy in preference to monthly bougienage. One patient died from an unrelated cause (Table 1).

### POTENTIAL COMPLICATIONS

There are inherent risks to performing anal stricture dilation, with potential bacteremia or exacerbation of a perirectal fistula. Three patients experienced transient fever within hours of bougienage. Subsequent antibiotic prophylaxis with each procedure (ciprofloxacin and metronidazole [500 mg of each orally 3–4 hours before and 6–12 hours after the procedure]) has prevented any recurrence. No other complications were noted. No patients reported subsequent fecal incontinence.

Perhaps the greatest concern with blind bougie dilation is the risk of perforation. We minimized the risk by using highly flexible silicone bougies with a tapered Maloney tip and applying caution with the depth of device insertion. The tactile feedback during insertion of a bougienage provides a further advantage when compared with balloon dilation. No perforations were observed in our patients in a total number of 308 procedures. Furthermore, we have had no instances of new perianal disease or exacerbation of pre-existing disease.

### CONCLUSION

To our knowledge, this is the first published case series of bougie dilation for the treatment of irreversible fibrotic anal strictures in CD. Over time, the intervals between dilations have lengthened, perhaps owing to a change in the biology of the collagen in the strictures.<sup>4</sup>

Bougie dilators have some advantages over other methods. They provide tactile feedback, allowing estimation of the amount of resistance to the passage of the dilator, with avoidance of overdilation and perforation. Another important consideration is cost, as balloon dilators are not reusable and cost CAN \$340 each (CRE Wire Guided Balloon Dilators, Boston Scientific plus Inflation System; Alliance Inflation Handle and Syringe). In contrast, bougie dilators are reusable; a set costs CAN \$3600 (M-Flex Blue Silicone Bougies) and lasts for many years. Another group has shown that bougie dilators are more cost-effective than endoscopic dilators for postoperative benign rectal strictures as well as being equally safe and efficacious.<sup>5</sup>

All patients in this report had colonic CD. Since beginning anti-tumour necrosis factor therapy, 3 of 4 patients require stricture dilation much less frequently. Our experience demonstrates that bougie dilation can be used for the treatment of fibrotic anal strictures due to CD. This therapy is simple to perform, relatively inexpensive and has a low risk of complications. Furthermore, it is the senior author's experience that some of these patients request a repeat dilation because of increasing perianal fistula drainage and report amelioration of the drainage following the procedure. The end result of this form of therapy is not only improved bowel function but, ultimately, avoidance of surgery. Finally, this method can be used in place of balloon dilation, with significant cost savings.

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**Table 1. Characteristics of bougienage therapy**

Patient	No. total procedures	Follow-up	Period; no. of procedures		Current status
			First 5 yr	Last 5 yr	
1	16	1993–2013	6	3	Ongoing dilation
2	14	2003–2013	11	3	Ongoing dilation
3	16	2003–2013	11	5	Ongoing dilation
4	106	1988–2013	34	11	Ongoing dilation
5	56	1993–2013	28	6	Ongoing dilation
6	14	2003–2013	10	4	Ongoing dilation
7	11	2000–2006	8	3	Colectomy and ileostomy, 2006
8	22	1995–2001	18	4	Colectomy and ileostomy, 2001
9	31	1994–1996	31	N/A	Preferred colostomy
10	22	1998–2007	14	8	Died in 2007 (stroke)