Precise Anorectal Sphincter Dilatation—Its Role in the Therapy of Anal Fissures

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For the past 20 years, internal anal sphincterotomy has generally been considered to be the standard operation for an anal fissure. We sought an alternative form of treatment because of the wound complications inherent in this operation. Anal dilatation, precisely performed with a Parks' retractor opened to 4.8 cm or with a 40-mm rectosigmoid balloon, has been found to cure successfully the fissure in 93 percent and 94 percent, respectively, of each group and to be associated with fewer complications. [Key words: Fissure-in-ano; Therapy; Surgery; Dilatation; Adult; Female; Male; Human; Methods]

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Internal anal sphincter hypertonicity, either primarily or as a response following defecation, has long been recognized as a common accompaniment to anal fissures.[1] Indeed, this factor alone is believed to result in perpetuation of anal fissures. Accordingly, the standard operative approach to an anal fissure includes a step to alter this physiologic dysfunction. For many years, a widespread method of accomplishing this has been by means of an internal anal sphincterotomy. However, until internal anal sphincterotomy was popularized, that step was frequently accomplished by means of anal dilatation.

This shift in technique is reflected in remarks in *Surgery of the Anus, Rectum and Colon*, the dependable and classic textbook by Goligher. In the second edition, published in 1967, he states, "From this survey it would appear that simple sphincter stretching is a much better operation for anal fissure than has usually been believed and there is a good deal to be said for making it the first line of surgical attack on the condition."[2] In the third edition, published in 1975, he states, "Lateral subcutaneous internal sphincterotomy is now my preferred operation for the treatment of idiopathic anal fissure."[3]

Many felt that internal anal sphincterotomy was preferred because it was more precise, less traumatic, and possibly more efficacious than dilatation. It was our practice to perform internal anal sphincterotomies, usually in the left midlateral position, as a routine part of operations for anal fissures until 1988. There were two reasons why we felt that an alternative therapy should be evaluated, possibly with a return to the older technique of dilatation.

1. Most importantly, there were complications associated with the sphincterotomy wound itself, including poor or delayed healing of the sphincterotomy incision, with its occasional development into an abscess or fistula. We have had no problem with the results of sphincterotomy on the fissure itself, which were found to be satisfactory. However, wound complications were significant. In a review of 306 cases, Walker *et al.*[4] reported the following: "Major complications (requiring reoperation) caused by fistula, bleeding, abscess, or unhealed wounds occurred in ten patients (3 percent). Minor complications caused by pruritus, persistent wound, pain, bleeding, abscess, discharge, urgency, impaction, or defects of continence occurred in 110 patients (36 percent)." Gordon and Vasilevsky[5] also reported a significant number of wound problems as well as incontinence.

2. Review and reassessment of internal anal sphincterotomy *vs.* dilatation in the treatment of fissures have been ongoing by several authors. These have shown conflicting results but have suggested to us that they are equivalent in their effect on healing of fissures but that dilatation can have fewer complications.[6–8]

We felt that, if a simple, reliable, consistent, less traumatic, reproducible form of dilatation could be

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developed, the objections to dilatation, as far as it being more injurious than sphincterotomy, could be eliminated. Furthermore, the beneficial effects of sphincterotomy on fissures could be accomplished without the need for any incision, thereby reducing the risk of wound complications.

METHODS

Our initial studies were performed utilizing a Parks' retractor opened to a width of 4.8 cm. This resulted in an elliptical dilatation in which the long diameter was 4.8 cm and the short diameter was 2.5 cm. The circumference described by this ellipse is equal to 2π times the square root of $(A^2 + B^2)/2$. "A" and "B" represent the long and short radii of the ellipse. In this case, the circumference is equivalent to 11.99 cm (Fig. 1).

The operation was performed under local anesthesia and as an office procedure. Patients were routinely given conscious sedation with intravenous midazolam and meperidine. Prophylactic parenteral antibiotics were administered to patients at risk for complications of bacteremia.[9] Prior to performing the dilatation, a careful rectal examination, taking advantage of the anesthesia, is performed. The dilatation was sustained for exactly five minutes.

Indications for operation were persistence of the fissure, frequent fissure recurrences, or a severely painful or acute anal fissure. Contraindications included incontinence or high grades of anal stenosis.

RESULTS

One hundred five patients were seen between January 1988 and June 1990. There were 58 males and 47 females. The age and sex distributions are depicted in Table 1. In 30 patients, an associated sentinel pile or anal papilla was also excised. In 98, or 92 percent, the fissure and all wounds associated with the excision of the sentinel pile or enlarged anal papilla were fully healed within three months and there was no evidence of anal stenosis (Table 2). Any fissure or associated wound not healed within 90 days was considered a treatment failure. While dilatations can be performed as part of a hemorrhoidectomy, particularly if there is an associated fissure, those patients were not

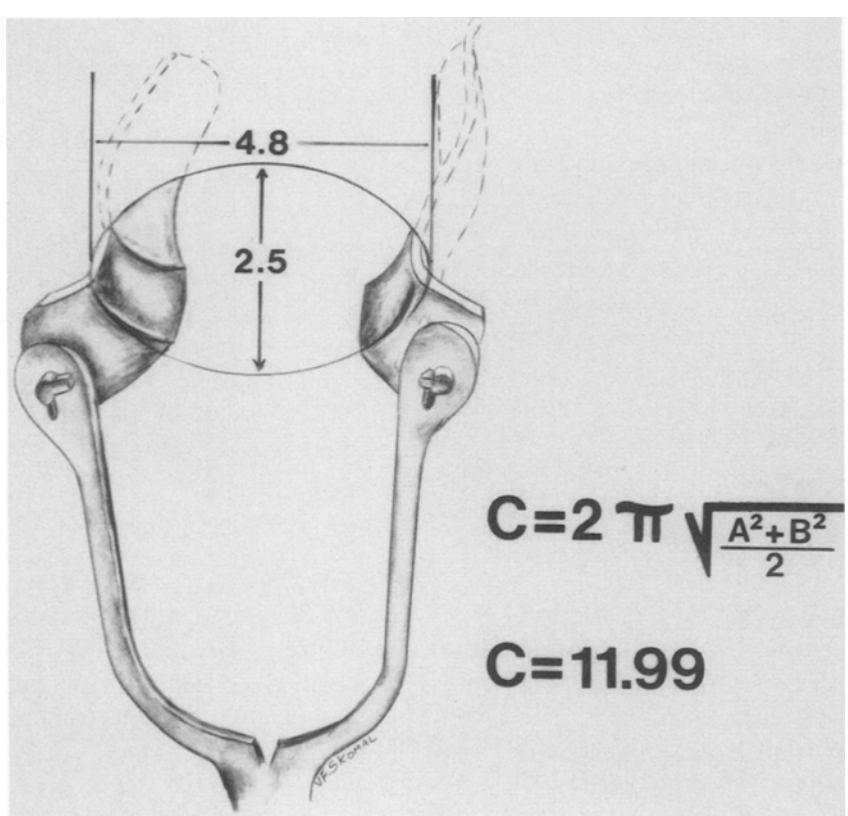

Figure 1. Effect of dilatation with the Parks' retractor technique diagrammatically represented. The circumference of the ellipse (in centimeters) thereby produced is shown.

Table 1.
Patient Population

	Parks'	Balloon
Total patients	105	66
Females	47	27
Males	58	39
Age (yr)		
19–29	25	14
30–39	40	31
40–49	28	12
50–59	6	5
60–69	4	3
70+	2	1
Excision pile or papilla	30	20
Acute fissure	15	10

Table 2.
Results of Treatment

	Parks'	Balloon
Total patients	105	66
Fissure and wounds healed within three months	98 (93%)	62 (94%)
Acute fissure—pain relief within 12 hours	15 (100%)	10 (100%)
Late recurrence	2	—
Incontinence (temporary and partial)	2	0
Thrombosed hemorrhoid	0	1

considered as primarily fissure patients and are not included in this study since the goal of this survey was to assess dilatation regarding fissures only.

Patients who underwent a simple dilatation generally resumed normal activities on the day following the procedure. Among those who underwent dilatation along with excision of a sentinel pile or enlarged anal papilla, nearly all had resumed full activities within one to 3 days following the procedure. Most fissures healed within two weeks, and most other wounds secondary to excision healed within four weeks. Late recurrences occurred in two patients whose fissures or associated wounds had initially healed fully. There were 12 cases of acute or severely painful fissures, and all in this group were largely or totally relieved of their pain within 12 hours of the procedure. Aside from two cases of incontinence to flatus, which were fully corrected within three weeks of treatment with perineal exercises, no complications occurred.

Since June 1990, the dilatation technique has been modified by the substitution of an inflatable balloon for the Parks' retractor. All other aspects of the dilatation have remained unchanged. This was felt to further simplify and standardize the technique of dilatation. This change was undertaken because it was believed that the pressure exerted by the Parks' retractor could vary from patient to patient. With balloon dilatation, this pressure could be held constant and did not vary among patients. A 40-mm-diameter, sausage-shaped, rectosigmoid balloon is rapidly inflated to a pressure of 20 pounds per square inch and left in place for exactly five minutes. This gives a circumference equal to 2π times the radius. The circumference described here, 12.5 cm, is slightly more than that with the Parks' retractor technique (Fig. 2). A 30-mm balloon was utilized on six patients. Utilizing the same formula for the circumference, this is equivalent to 9.42 cm. The 30-mm balloon failed to accomplish healing of the fissure in 50 percent of patients, and it was generally abandoned in favor of the 40-mm device, except in occasional cases of marked anal stenosis.

Indications and contraindications for the balloon dilatation procedure were the same as those listed above for the Parks' retractor technique. In this group, there were 27 females and 39 males. The age and sex distributions of this group of balloon dilatation patients are delineated in Table 1. In these 66 patients, the fissure or associated wounds were fully healed within 90 days in 62, or 94 percent, of the patients. Results generally paralleled those of the Parks' retractor dilatation technique. The results of the treatment of acute anal fissures were also similar to those in the previous group. There were no incidents of incontinence. A single patient developed a thrombosed hemorrhoid following the balloon dilatation that rapidly resolved spontaneously. All patients were followed for a minimum of three months. Thus far, there have been no late recurrences, but long-term follow-up data are not yet available.

DISCUSSION

Anal dilatation has long been recognized as an appropriate treatment for anal fissures, both acute and chronic. Dilatations can be performed in an unanesthetized patient. However, we have not studied this modality of dilatation, and this form of treatment is not the subject of the present study or discussion. Only dilatations performed with the anus anesthetized by general, regional, or local anesthesia are being discussed.

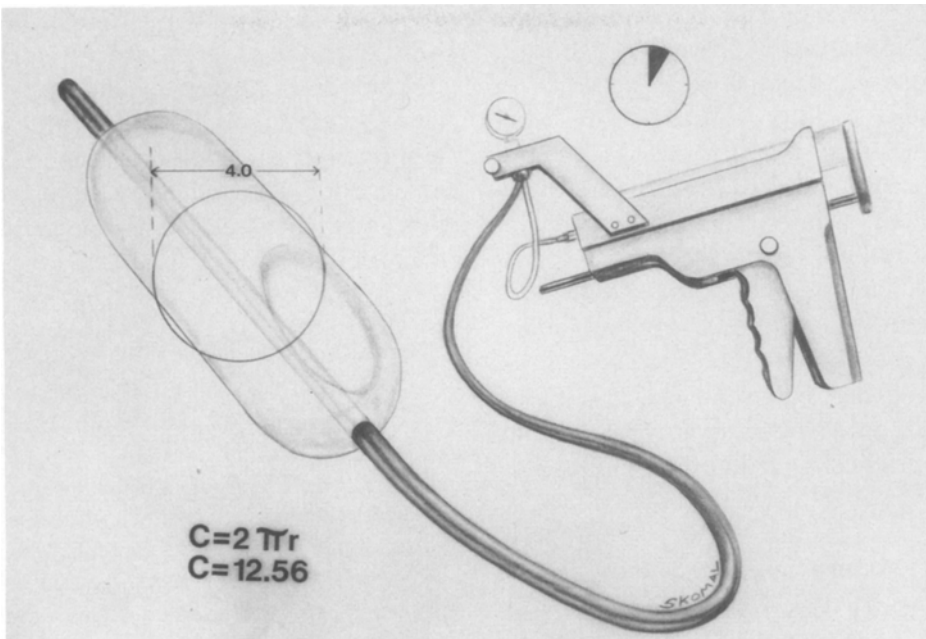

Figure 2. Effect of dilatation with the rectosigmoid balloon technique diagrammatically represented. The circumference of the circle (in centimeters) thereby produced is shown.

Table 3.
Dilatation for Fissures

Year	Author	Technique	Duration
1882	Allingham[10]	2 fingers (F) opposed	NS
1902	Tuttle[11]	2 thumbs	2–6 minutes
1914	Hirschman[12]	Pneumatic balloon; no anesthesia	5–10 seconds every 5–10 minutes
1923	Gant[13]	3 F	NS
1939	Goldbacher[14]	4 F	Several minutes
1957	Hughes[15]	2 F opposed	NS
1960	Buie[16]	3–4 F flexed	NS
1969	Turell[17]	2–3 F	NS
1985	Henry and Swash[18]	4 F	3–4 minutes
1989	Corman[19]	4 F	4 minutes

NS = not stated.

Anal dilatations have varied from surgeon to surgeon and indeed from patient to patient (Table 3). A review of several textbooks of proctology published between 1882 and 1989 reveals the many varied techniques for performing anal dilatations in the treatment of anal fissures.[10–19] These dilatations generally employed the surgeon's fingers as the dilating apparatus and have varied from two to four fingers, sometimes with the fingers in opposing position, occasionally straight or flexed. The duration of the dilatation varied from unstated to two to six minutes when stated. It is interesting that Hirschman,[12] in his 1914 textbook of proctology, describes a pneumatic device identical in principle to the balloon dilator described herein. However, he used it in an awake patient, applying pressure for 5- to 10-second intervals only.

The indications for surgery in anal fissure therapy should not be changed. Most fissures will heal with a program of nonoperative therapy incorporating bulking agents, stool softeners, lubricants, or bland suppositories. Common indications for surgery include the persistence or frequent recurrence of a fissure and an acute or severely painful anal fissure. Wherever and whenever an internal anal sphincterotomy is planned, for either an acute or a chronic

anal fissure, consideration should be given to its replacement with anal dilatation because the latter appears to be associated with fewer complications.

The ability to successfully treat anal fissures without making any perirectal incisions makes anal dilatation particularly attractive for the care of patients with AIDS or Crohn's disease, who occasionally have very painful rectums because of anal fissures or ulcers and in whom the presence of a rectal abscess can be excluded.[20] A contraindication to this procedure is the presence of anal incontinence. Significant anal stenosis is also a relative contraindication. In this latter group of patients with high-grade stenosis, a balloon dilatation of 30 or 40 mm may overstretch the sphincter mechanism and be more traumatic than a properly planned sphincterotomy. We have had no experience in the management of high-grade anal stenosis, with or without associated anal fissures, by means of anal dilatation. Moderate degrees of anal stenosis, both with and without associated anal fissures, have been successfully managed with anal dilatation of the types reported here.

Careful rectal examination under anesthesia is an important step in this operation. It is essential to confirm or establish the correct diagnosis and to exclude other possible entities, especially a rectal abscess and particularly one limited to the intermuscular space. Digital examination, as well as examination with suitable anoscopes or rectal retractors, should be performed. We have employed transrectal ultrasound for several years and did not find that it added to the diagnostic accuracy of a careful anorectal examination. However, others have reported a possible role for this technique.[21]

CONCLUSIONS

This report suggests that precise dilatation, as defined herein, is equivalent to internal anal sphincterotomy in the treatment of anal fissures and is associated with fewer complications. The technique of anal dilatation is simple and readily learned. There are four basic steps to this procedure: 1) conscious sedation, 2) local anesthesia, 3) rectal examination, and 4) dilatation. Many physicians, some already familiar with some or all of these steps, can readily adopt this technique for the care of their patients. Careful examination, both to establish the correct diagnosis and to exclude others, is an essential part of this procedure. There are obvious cost savings in performing a rapid procedure, in an ambulatory setting, with rapid resumption of normal activities. Precise anal dilatation, with either the Parks' retractor or the 40-mm rectosigmoid balloon, has been demonstrated to be both safe and effective. It should be the procedure of choice when an operation is indicated for patients with anal fissures.

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