Anal Encirclement with Polypropylene Mesh for Rectal Prolapse and Incontinence

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Seventeen selected patients (mean age, 74 years)—14 with rectal prolapse and 3 with persisting anal incontinence after previous operations—underwent high anal encirclement with polypropylene mesh. There was no operative mortality. Prolapse recurred in 2 (15 percent) of the 13 patients followed up for 6 months or more (mean, 3.5 years). Three (27 percent) of the 11 patients with associated anal incontinence improved functionally, as did the three operated on for persisting incontinence, but only one patient regained normal continence. No breakage, cutting out, or infection related to the mesh was observed. Because of the risk of fecal impaction encountered in three of our patients, the procedure is not advocated for severely constipated patients. Despite the somewhat disappointing results regarding restoration of continence, we find this method useful in patients with rectal prolapse who are unfit for more extensive surgery, in controlling the prolapse to an acceptable degree. [Key words: Fecal incontinence; Rectal diseases; Rectal prolapse]

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In the treatment of rectal prolapse, the best results are achieved by abdominal rectopexy, with a low recurrence rate, acceptably low mortality, and cure of associated fecal incontinence in approximately two-thirds of patients.[1,2] In elderly patients, however, mortality rates as high as 10 percent have been reported.[3] Therefore, in the elderly and frail, perineal procedures, which rarely are associated with any mortality, are preferred by most surgeons.[4–10] Unfortunately, these procedures are frequently associated with high recurrence rates,[11, 12] and, if foreign materials are used, the risk of ensuing infection must also be taken into consideration. Removal of the prosthetic material may then become necessary, with the danger of the prolapse recurring.[13]

In 1979 we introduced in our department the anal encirclement operation described by Notaras[14] for the treatment of rectal prolapse and anal incontinence. Different from the original technique, which involved the use of polyester mesh, we have used polypropylene, which was shown to be associated with very low infection rates when used in abdominal rectopexies[1,2] and has proved to be inert in the presence of infection.[15] So far we have had no mesh infections, and control of the prolapse among 17 patients managed with this method has been satisfactory.

PATIENTS AND METHODS

Seventeen female patients with a mean age of 74 years (range, 51–93 years) underwent anal encirclement with polypropylene mesh between October 1979 and March 1990. In 14 patients this was done for complete rectal prolapse of 7 years' duration on average (range, 6 months–25 years), in 2 patients for mucosal prolapse and persisting anal incontinence after abdominal rectopexy for rectal prolapse, and in 1 patient for remaining anal incontinence after Thiersch's encirclement with silk, originally performed for mucosal prolapse and incontinence following *cauda equina* syndrome.

Eleven patients had previously undergone surgery of the anal canal or pelvic floor (Table 1). Six patients had had operations for rectal prolapse, and, of these, four had been operated on twice.

Sigmoidoscopy was performed on all patients preoperatively, and barium enema was performed on all but one, who was 93 years of age. An adenoma was revealed in two cases, and diverticular disease of the left colon was revealed in seven.

Advanced age and central nervous disorders were the most frequent reasons for selecting a perineal approach instead of a transabdominal one to control the prolapse (Table 2). Surgery was performed under general (n=12) or spinal (n=5) anesthesia, with the patient in the lithotomy position. A 2-cm-wide double-folded polypropylene mesh (Prolene®, Ethicon, Inc., Somerville, NJ) was

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Table 1.
Previous Surgery of the Anal Canal and Pelvic Floor in 11 Patients

Procedure	
For rectal prolapse	
Abdominal rectopexy	2
Anterior resection	2
Delorme's operation	2
Thiersch's encirclement	3
Levatorplasty	1
Others	
Hemorrhoidectomy or excision of mucosal prolapse	5
Posterior colporrhaphy	1
Suprapubic and vaginal operations for urinary incontinence	1
Hysterectomy	3

Table 2.
Factors Influencing Selection of a Perineal Approach Instead of an Abdominal One for Control of Rectal Prolapse

Cause	
Advanced age	5
Senile dementia	3
Cerebrovascular accident	1
Cardiovascular disease	3
Severe bronchial asthma	1
Schizophrenia	1

used to encircle the upper part of the anal canal at the level of the anorectal ring as previously described.[14] Preoperative bowel preparation and prophylactic antibiotics were used. Operation time averaged 58 minutes (range, 40–77 minutes).

All patients were followed up postoperatively and, in addition, were requested to attend a follow-up examination. If the patient was unable to arrive owing to poor health, additional data were received by telephone. Three patients had died of unrelated causes since the operation. Of the 14 patients having surgery for rectal prolapse, the length of follow-up was 6 months to 10 years (mean, 3.5 years), for 13 patients, and, for the 3 patients operated on for persisting anal incontinence, length of follow-up was 3, 3, and 19 months. Eleven (79 percent) of the 14 patients with rectal prolapse reported preoperative anal incontinence of varying degrees. Anal incontinence was graded as minor (impaired control of flatus and/or liquid stool and/or soiling of undergarments), moderate (impaired control of normal stool), or severe (total incontinence of flatus and normal stool).

RESULTS

In one patient the rectum was breached during dissection of the rectovaginal space. The defect was immediately closed by suture, with an uneventful postoperative course. Postoperative hospital stay ranged from 6 to 20 days (mean, 10.5 days). There were no operative deaths. A patient with previous myocardial infarction developed reinfarction in the immediate postoperative period (Table 3). In one case a sinus was formed 9 months following surgery around a polypropylene suture used for mesh fixation. After removal of the suture, the sinus healed and no signs of mesh infection developed. Three patients suffered from one or more episodes of fecal impaction, which were subsequently easily controlled by paying special attention to bowel management with the use of laxatives. Two patients were constipated preoperatively and four postoperatively. Regular or irregular use of laxatives was preoperatively reported by 7 patients and postoperatively by 12.

Recurrence of the prolapse was demonstrated in two patients at 2 and 4 months following surgery. One patient was recently reoperated on by tightening the mesh, which was obviously left too loose initially. In the second patient, reoperation was not considered because of severe mental illness and because she had already had two previous unsuccessful repairs of the prolapse, *viz.* Delorme's operation and anterior resection. Mucosal prolapse caused inconvenience in one patient and was successfully managed with rubber band ligation.

Only one patient who had the procedure done for rectal prolapse and associated minor incontinence regained normal continence after the operation. Two other patients with rectal prolapse experienced substantial improvement in continence,

Table 3.
Postoperative Complications in 11 Patients

Complications	
Early	
Myocardial infarction	1
Urinary tract infection	4
Urinary retention requiring prolonged catheterization (3–17 days)	5
Late	
Recurrent prolapse	2
Mucosal prolapse	3
Fecal impaction	3
Suture sinus	1

Table 4.
Effect of Surgery on Anal Continence

Anal Continence	Preoperative	Postoperative
Normal	3	4
Incontinence		
Minor	4	7
Moderate	9	5
Severe	1	1
Total	17	17

although the grade of incontinence was not altered in one of these two patients (Table 4). For the three patients operated on for persisting anal incontinence, the incontinence was alleviated from moderate to minor after surgery.

DISCUSSION

The classic Thiersch's perianal wiring operation for rectal prolapse has largely been abandoned because of poor results. Complications of the procedure are wire breakage, cutting through the skin, and fecal impaction; recurrence rates of 45–56 percent have been reported.[12,16] As alternatives to Thiersch's wiring, many modifications using a variety of synthetic materials have been advocated and have produced better results. These procedures are safe and well tolerated by the elderly and debilitated patients, are usually associated with no mortality and insignificant morbidity, and are therefore suited for patients unfit for major abdominal surgery. In the present series, the only serious postoperative complication during hospital stay was the myocardial infarction observed in one patient.

One disadvantage of the use of synthetic materials is infection, which usually necessitates removal of the foreign material, resulting in recurrence of the prolapse.[13] Polypropylene has proved to be inert, and, even though a perianal mesh would become infected, the infection often resolves without the need for removal of the mesh.[15] Preoperative mechanical bowel preparation and administration of antibiotics are routine measures in perineal operations and actually are important aspects of the procedure, especially if foreign materials are to be implanted. Particular attention should also be paid to meticulous surgical technique to avoid contamination and hematoma formation predisposing to infection. Although the rectum was breached in one of our cases, no wound or mesh infections were seen. With the exception of a suture sinus, no local complications such as breakage or erosion and no subjective discomfort related to the mesh were encountered. Similar favorable experience with the method using polyester mesh was reported earlier.[14] The lack of these local complications is likely due to the high placement of the mesh. This, on the other hand, means that the procedure cannot be performed under local anesthesia, which is a disadvantage in dealing with extremely high-risk patients.

An important aspect of the surgical technique seems to be the determination of correct tightness of the circumanal ring. Exceedingly loose encompassment likely leads to recurrence of the prolapse, as was the case in one of our patients. Exceedingly tight encompassment, on the other hand, may cause fecal impaction. Our practice was to tighten the mesh so that the anal canal would admit an index finger snugly. To avoid fecal impaction, we have not treated severely constipated patients with this method, and this policy seems justified as there was a tendency toward increased bowel management problems after surgery. To allow normal defecation, some authors advocate the use of elastic materials, mostly silicone.[5,17] Prostheses made of silicone, however, are prone to local complications including breakage, cutting out, and infection.[5]

Recurrence rates for perineal repairs of rectal prolapse vary considerably in reported series. Our figure (15 percent) for a group of elderly patients with many previous unsuccessful operations for the prolapse compares well with earlier results of between 8 percent and 47 percent for anal encirclement procedures using synthetic materials[13,15,17] and also with those of between 6.8 percent and 16.6 percent reported for Delorme's operation.[4,8,18] We admit that follow-up was relatively short in some of our patients, but it was not possible to obtain true long-term results for these elderly patients with many serious medical problems. Because the circumanal operations do not correct the basic abnormality, and also because of the gratifying results obtained by perineal rectosigmoidectomy, with no associated mortality and with recurrence rates of 0 percent to 4.8 percent,[7,9,19] some authors prefer this perineal repair and find only a limited place for the encirclement procedures in the treatment of rectal prolapse.[9] There are, how-

ever, reports of much worse results for rectosigmoidectomy, with recurrence rates of up to 50 percent.[11,12]

Regarding control of anal incontinence associated with rectal prolapse, perineal procedures are inferior to abdominal ones.[9] However, excellent results were reported for perineal excision of the prolapse supplemented with posterior repair of the levator ani muscle, with cure of associated anal incontinence in nearly all patients.[7,20] Good functional outcome was also obtained by the use of intersphincteric rectopexy and synchronous postanal repair.[21] Our functional results were more or less unsatisfactory and clearly inferior to those in an earlier report from our department for abdominal repair of rectal prolapse.[22] Those three patients having surgery for persisting anal incontinence were improved but not fully cured of their incontinence. Despite the high placement of the mesh around the puborectal sling, the mesh does not seem to provide sphincter support to the extent that it would effectively help in controlling rectal contents.

The present method proved to be safe among the elderly and infirm patients, with no associated mortality and minimal local complications, and to control the rectal prolapse to an acceptable degree. The results for control of associated anal incontinence were not fully satisfactory, and, in the presence of troublesome incontinence, perineal procedures including repair of the pelvic floor, although more extensive, seem to be indicated. Nevertheless, among elderly and high-risk patients, we consider this procedure to have its place in the management of rectal prolapse.

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