

Summary

The internal anal sphincter consists anatomically of two portions; an upper part extends down through the upper two-thirds of the 'surgical' anal canal while the lower portion lines the lower one-third. The structure of the two portions is described and the developmental origin of these parts is suggested.

Intermittent rhythmical contraction unrelated to voluntary contraction is seen in the anal canal and corresponds with that part showing the recto-anal inhibitory response. This activity is prominent in Hirschsprung's disease where inhibition fails to occur. The differing rates of this activity are observed in the two parts of the sphincter. Similar activity to that in the upper portion is noted in ectopic anus confirming the anatomical findings of an internal sphincter in the so-called fistulae of imperforate anus.

REFERENCES

- Garry R C (1932) *J. Physiol. (Lond.)* 78, 136
 Johnson F P (1914) *Amer. J. Anat.* 16, 1
 Kohlrausch O (1854) *Zur Anatomie und Physiologie der Beckenorgane.* Leipzig
 Lawson J O N & Nixon H H (1967) *J. pediat. Surg.* 2, 544
 Uhlenhuth E (1953) *Problems in the Anatomy of the Pelvis.* Philadelphia

A Technique for the Removal of Large Villous Tumours in the Rectum¹

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Management of an extensive villous papilloma of the rectum is often difficult. The tumour frequently forms a carpet occupying a considerable portion of the rectal ampulla; it may even encircle it completely. In rare cases the whole rectum and rectosigmoid are involved in the neoplastic process.

A tumour which has not completely encircled the rectum can be removed relatively simply. The principle of the method depends on the fact that the submucosa of the rectum is an easily distensible space. Fluid injected into it spreads rapidly in all directions and distends the space to a thickness of 1-2 cm. The tumour is then removed quite easily by dissecting underneath it in the distended submucous plane (Fig 1). An anal retractor is inserted into the rectum and opened to expose part or all of the tumour. A

needle is then inserted into the submucosa of the normal rectal wall adjacent to the tumour and isotonic saline with adrenaline 1 part in 300,000 is injected. Sufficient saline is used to lift up the whole tumour off the rectal wall muscle. An incision in the normal mucosa surrounding the tumour is made about 1 cm from the edge. Dissection is carried out in the submucous plane close to the circular muscle of the rectum. The whole tumour is removed in one piece if not too large, but it may be necessary to remove it in segments. In this case the retractors are removed and reinserted to expose a fresh portion of the tumour for excision separately. No suturing of the rectal mucosa is required in most cases as even large bare areas of rectal wall will heal with relatively little narrowing of the rectum.

A more extensive procedure is required if the villous papilloma occupies the entire rectal wall. However, it must be stressed that it is never necessary to excise the rectum and perform a permanent colostomy for a benign tumour. The procedure is similar to that already described except that the whole of the lower 8 cm of the rectum is completely denuded of the abnormal mucosa above the pectinate line. If nothing further were done healing would be complicated by a stricture so that the rectal wall must be relined with epithelium. Rectal continence does not depend on the mucosa; the essential factor is the muscle wall (Parks *et al.* 1962). Provided, therefore, the muscle wall can be relined with mucosa a normally functioning anorectal mechanism will result. This has been achieved by pulling a segment of sigmoid colon down through the denuded rectum to the pectinate line. When the whole rectum is involved with villous change the mucosa has to be removed in segments. Once this has been done a lower abdominal incision is made and the upper rectum mobilized. The rectum is transected at the upper level of the mucosal excision and if any tumour remains in the bowel above this point a partial sigmoid colectomy is performed. The upper sigmoid colon is then drawn down through the denuded rectum and sutured to the squamous epithelium of the mid-anal canal at the pectinate line (Fig 2). A few sutures are placed between the muscularis and the cut end of the upper rectum and the wall of the colon. The reconstituted rectum now has two muscle coats and an epithelial lining derived from the colon. A temporary transverse colostomy is then performed and closed three weeks later. In the 2 cases in which this more extensive procedure has been performed the functional results have been excellent and the patient has been normally continent. Before performing this operation one must be sure that there are no areas of malignancy in the villous tumour. It is essential

¹This paper is based on a report previously published in the *Proceedings* (Parks 1968)

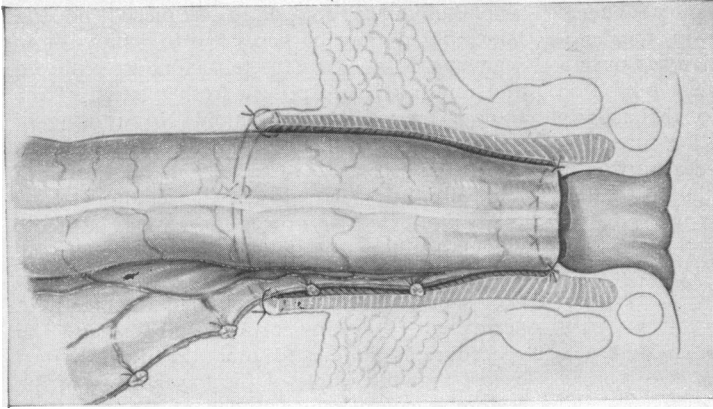


Fig 2 In the case of a large encircling villous papilloma the whole of the mucosa of the rectum is removed from the dentate line upwards to about 12 cm. The abdomen is then opened and the rectosigmoid mobilized. The bowel is transected through the denuded area and if there is residual tumour above this point a segment is resected. The colon is then drawn down through the denuded rectum and sutured to the dentate line. (Reproduced from Parks 1966 by kind permission)

Fig 1 After insertion of anal retractors the submucosa under and around the tumour is infiltrated with isotonic saline containing 1/300,000 of adrenaline. An incision is made around the tumour and the submucosa is dissected free from the circular muscle beneath it. (Reproduced from Parks 1966 by kind permission)

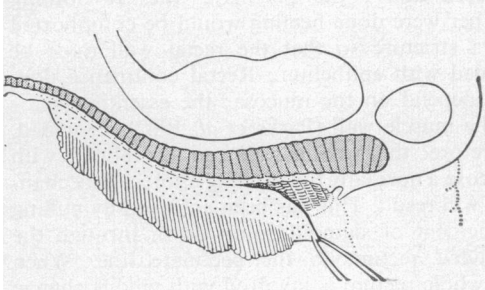


Fig 1b

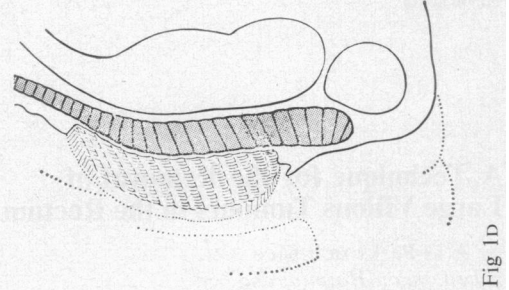


Fig 1d

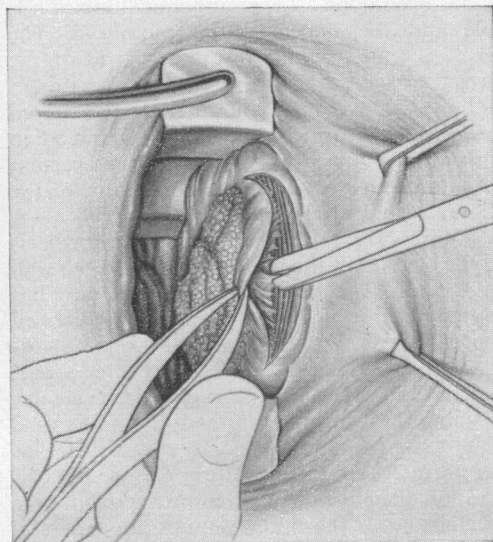


Fig 1a

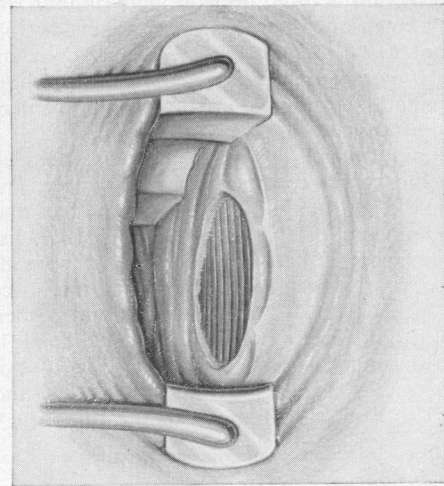


Fig 1c

to check the whole area by careful digital palpation with biopsy of any suspicious zone. Even so, during the course of one operation a suspicious area was found, frozen section proved it to be malignant, and an excision of the rectum was performed.

The lesser procedure for a villous tumour involving only part of the rectum has been performed on 12 occasions. There has been no instance of perirectal sepsis. Although some narrowing has occurred in the course of healing this has not resulted in a rectal stricture.

REFERENCES

- Parks A G
(1966) In: *Clinical Surgery*. Ed. C G Rob, E R Smith & C Naunton Morgan. London; 10, 541
(1968) *Proc. roy. Soc. Med.* 61, 441
Parks A G, Porter N H & Melzak J
(1962) *Dis. Colon Rect.* 5, 407

Surgical Access to the Rectum – a Transsphincteric Exposure

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Complete division of the anal sphincters gives an excellent exposure of the interior of the rectum. When sutured accurately they heal well and leave the patient with normal defaecation and complete anal continence.

I first used this exposure nine years ago and since then I have had occasion to use it in 18 more cases. Mr Henry Thompson, to whom I demonstrated it some two years ago, has used it with complete success since then in at least 4 cases, and Mr H E Lockhart-Mummery has given me details of one case in which he used it successfully. With their permission I have included their cases in this review, making a total of 24 cases, all with normal defaecation and full continence. I feel confident now that this is a safe procedure to use when clear exposure of the interior of the rectum is required. Mr Ian Todd suggested the descriptive name of 'transsphincteric exposure'.

The Operation

The patient is placed on the operating table in the inverted 'V' position, the buttocks being strapped apart with adhesive plaster, as shown in Fig 1. Fig 2 shows the line of incision, extending from the anus just to the left of the midline posteriorly and passing obliquely upwards to the left of the coccyx and lower sacrum. The subcutaneous tissues in the line of the incision are infiltrated with a dilute solution of adrenaline.

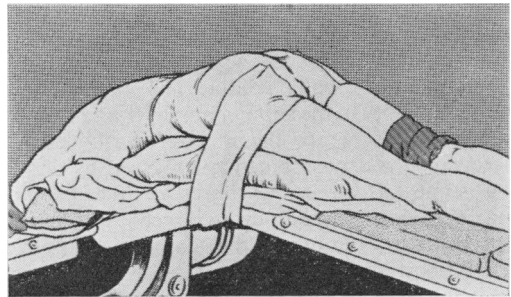


Fig 1 Patient positioned on the operating table

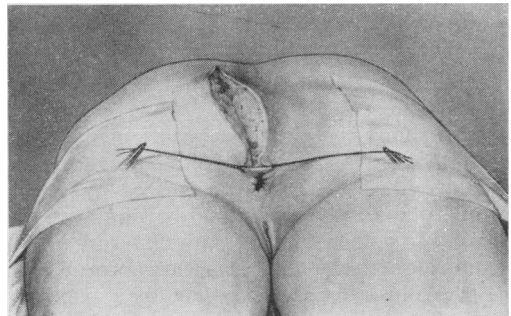


Fig 2 The line of the incision

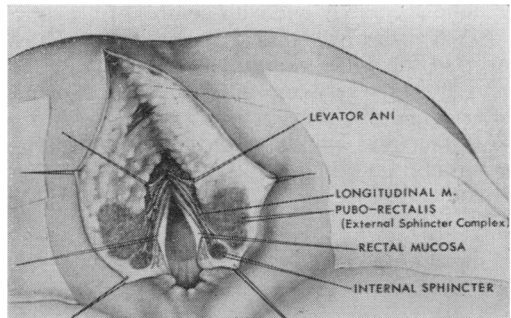


Fig 3 The anatomy encountered as the incision is deepened

The anatomy encountered as the incision is extended into the anal canal and rectum is shown in Fig 3. The lower fibres of the gluteus maximus are seen in the upper end of the wound. What I have called the puborectalis-external sphincter complex presents as a large bundle of muscle. Complete division of this bundle is an essential step in obtaining good exposure, and its accurate suture is probably the most important factor in restoring normal function and continence afterwards. The levator ani is a sheet of variable thickness, merging into the upper and deep aspect of the puborectalis-external sphincter complex. The fascia propria and the muscle coats of the rectum and anus are divided in the line of the