Intractable constipation in children treated by forceful anal stretch or anorectal myectomy: preliminary communication

N V Freeman FRCS FRCSEd
Wessex Regional Centre for Paediatric Surgery
Southampton General Hospital, Southampton SO9 4XY

Summary: Sixty-one children with intractable constipation admitted between 1978–1981 under the care of the author were studied retrospectively. Ten of these patients were also studied prospectively by means of defaecating proctograms, and pre- and postoperative evoked anal potentials. It was found that 85.7% of the children who had anorectal myectomies benefited from the procedure. The possible mechanism by which the improvement is achieved is discussed.

Methods

The case sheets of 87 children admitted to Southampton General Hospital under the care of the author for a forceful anal stretch or anorectal myectomy were reviewed. Twenty-six patients were excluded from the study as they were suffering from either Hirschsprung's disease or congenital imperforate anus. The remaining 61 patients had previously all suffered from severe constipation for at least 6 months, which had not responded to the usual methods of treatment. They were followed up for at least 6 months following the surgical procedure.

Ten patients had preoperative dynamic proctograms, but only 5 had postoperative proctograms. The defaecating proctograms (dynamic proctograms) were carried out in a similar manner to that described by Kelly (1969). Pre- and postoperative evoked anal potentials (Freeman *et al.* 1980) were carried out in 9 patients, 5 of whom had the test done immediately preoperatively and also one month postoperatively; in 4, only a postoperative test was carried out.

Anorectal myectomy was performed under general anaesthesia, according to the method described by Bentley (1961). Starting at the anal valves, a full-thickness, 1 cm wide strip of the muscle wall of the posterior anal canal was cut upwards for 8–10 cm, thereby including half of the internal sphincter.

Forceful anal stretch was carried out under general anaesthesia on a day-case basis. The anus was stretched to at least four fingers, until some give of the pectin band was felt.

Results

Overall there was improvement in 82% of the children, with 85.7% of those having an anorectal myectomy showing a good result. Table 1 shows the results in 61 patients more than 6 months postoperatively. This includes 5 in whom anal stretch was followed by improvement, but who then relapsed; they then had a myectomy, with good results.

Table 1. Results of surgical treatment for constipation, 1978–81 (> 6 months postoperatively)

Surgical procedure	No. of patients	Excellent No soiling No laxatives	Marked improvement No soiling Still on laxatives	No change
Anal stretch	28	8	14	6
Myectomy	16	4	10	2
Anal stretch followed by myectomy	5	4	—	1
Anal stretch for fissure	12	10	—	2
Total	61	26	24	11

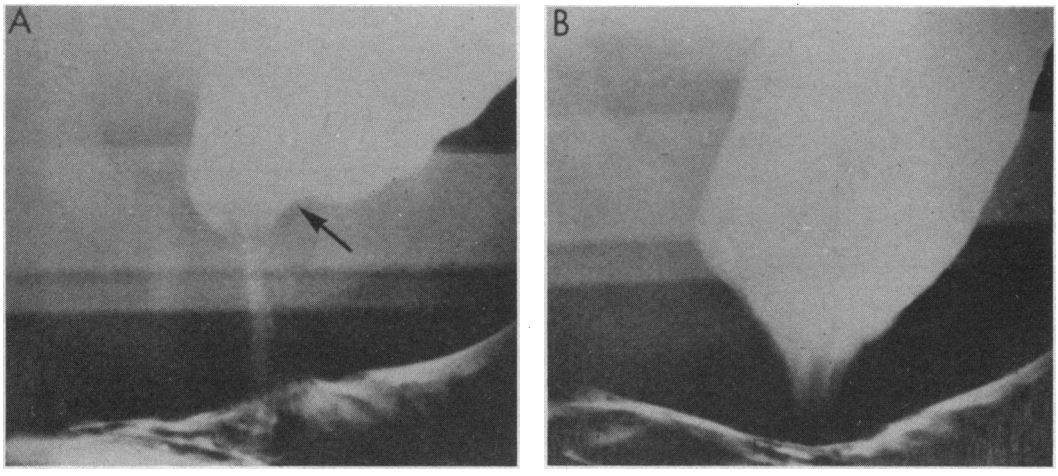

Figure 1. Defaecating proctogram. X-rays of rectum and anal canal showing (A) the relaxed postion, with the arrow indicating the puborectalis muscle; (B) the descent of the perineum, shortening and widening of the functional anal canal

There were no differences noted in the form or latency of the evoked and resonses pre- or postoperatively. Pre- and postoperative defaecating proctograms were compared by making line drawings of the outline of the rectum and anal canal in the relaxed and in the straining position. In all 5 patients who had both pre- and postoperative proctograms, shortening and widening of the anal canal was noted postoperatively.

Discussion

The results show that children with chronic constipation have a chance of improvement or cure when treated by means of a forceful anal stretch or anorectal myectomy. The question is why?

The nature and role of rectal sensation is still poorly understood. Evoked anal potentials appear to be a useful tool to measure anal canal sensation (Freeman *et al.* 1980). The physiological mechanism of defaecation is still debated. Dynamic proctography illustrates the mechanics of defaecation (Figures 1 and 2).

The following hypothesis is suggested for the improvement following anal stretch or myectomy. Contrary to most descriptions, the rectum is not normally empty of faeces, except soon after defaecation. Mass movement of colonic contents, usually after a meal, causes a sudden distension of the rectum, triggering the 'anorectal reflex'. Relaxation of the functional anal canal occurs with descent of the faecal bolus to the level of the pectinate line, where sensory sampling takes place. If it is convenient to defaecate the relaxation will persist and faeces are expelled. If it is not convenient, voluntary contraction of the puborectalis occurs, closing the upper part of the 'functional canal' and moving the faecal bolus off the sensory area back into the

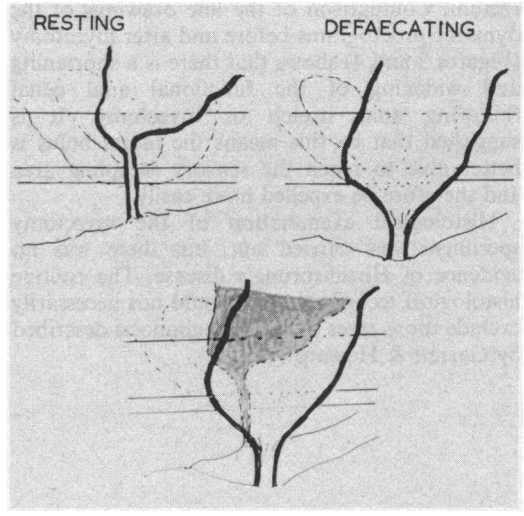

Figure 2. Line drawings of the dynamic proctogram shown in Figure 1. The upper diagrams show the anal canal in the relaxed or resting position and during straining (defaecating). The lower diagram shows the upper two line drawings superimposed. Note the descent of the whole perineum, and the widening and shortening of the anal canal during defaecation

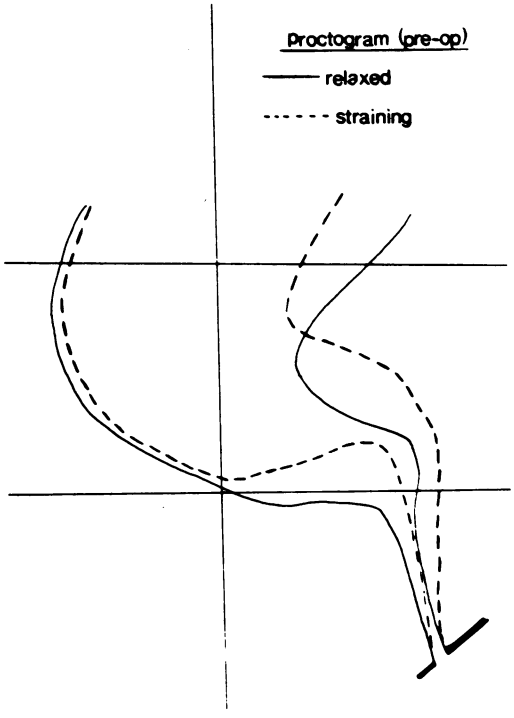

Figure 3. Line drawing of a defaecating proctogram before anal stretch, showing the relaxed and straining positions. Note length of the functional anal canal

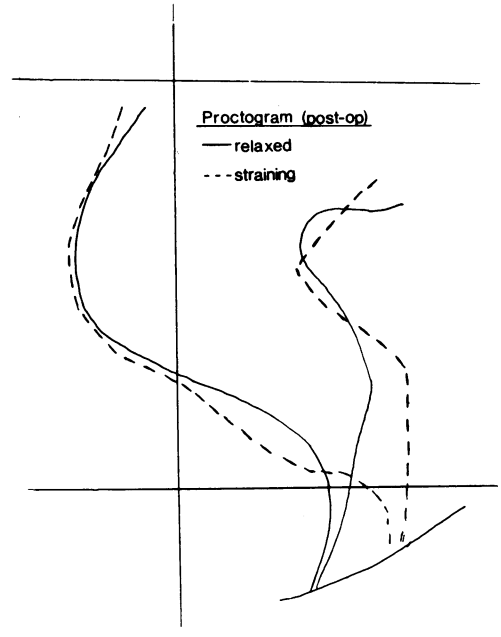

Figure 4. Line drawing of defaecating proctogram one month after a forceful anal stretch. Note ability to relax and shorten the functional anal canal

rectum. Comparison of the line drawings of the dynamic proctograms before and after myectomy (Figures 3 and 4) shows that there is a shortening and widening of the functional anal canal following anal stretch or myectomy. It is suggested that by this means the faecal bolus is better able to reach the sensory sampling area and therefore be expelled more easily.

Histological examination of the myectomy specimens was carried out, but there was no evidence of Hirschsprung's disease. The routine histological technique used would not necessarily exclude those cases of hypoganglionosis described by Garrett & Howard (1981).

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References

Bentley J F R
(1961) *Archives of Disease in Childhood* **41**, 144–147
Freeman N V, Burge D M, Soar J S & Sedgewick E M
(1980) *Zeitschrift für Kinderchirurgie* **31**, 22–30
Garrett J R & Howard E R
(1981) In: Development of the Autonomic Nervous System (Ciba Foundation Symposium 83). Ed. G Burnstock. Pitman Medical, London; pp 326–344
Kelly J R
(1969) *Journal of Pediatric Surgery* **4**, 432–436