may be aggravated by straining in the squatting position. Once prolapse occurs, further engorgement of these vascular cushions occurs leading to pain and inflammatory response. Anal spasm then prevents reduction and pathological changes with thrombosis, oedema and inflammatory changes occur.

Chronicity is caused by repeated prolapse and congestion of these vascular cushions. The vascular cushions hence prolapse easily and allow the anal sphincters to constrict resulting in haemorrhoidal congestion, oedema and pain.

Conventional surgical haemorrhoidectomy attacks the symptoms alone without regards to restoration of normal physiology by fixation of the congested anal cushions. Staped haemorrhoidectomy on the other hand corrects the primary pathology resulting in resolution of haemorrhoidal symptoms. By an elegant reduction of prolapsed haemorrhoidal tissue, the technique then excises redundant lower rectal mucosal and fixes the prolapse back into its proper place on the wall of the anal canal. Fixation of this prolapse into muscle may be important to help prevent subsequent re-displacement and recurrence.

As previously mentioned, once reduced, the engorged haemorrhoidal tissues rapidly decongest and shrink. This theory is borne out in clinical practice. However, even staped haemorrhoidectomy on its own cannot deal adequately with very massive haemorrhoidal prolapse. Massive haemorrhoids are prolapsed haemorrhoids more than 3 cm in extent above the anal verge. In this situation, there is not enough space within the staple housing to contain the massive redundant tissue of the prolapsed haemorrhoids. If stapping as originally described is performed, much residual haemorrhoids will remain prolapsed and hence symptomatic relief will not be obtained. Thankfully this situation is very rare. We have now encountered 10 cases out of more than 1400 cases of staped haemorrhoidectomy done to date. A modified staped haemorrhoidectomy technique has been developed in the department to deal with massive haemorrhoidal prolapse with the use of one circular PPH stapler and we have found it safe and efficacious. This procedure is currently being described.

Staped haemorrhoidectomy or one of its modifications is an excellent method of dealing with circumferential prolapsed haemorrhoids and indeed is our procedure of choice if surgical therapy for haemorrhoids is deemed necessary.

REFERENCES


### Table 1 Results of radical and four piles haemorrhoidectomy.

<table>
<thead>
<tr>
<th></th>
<th>Group 1 (n = 14)</th>
<th>Group 2 (n = 14)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)*</td>
<td>48(29-68)</td>
<td>37(22-56)</td>
</tr>
<tr>
<td>Duration of surgery (min)*</td>
<td>30(5-50)</td>
<td>10(5-25)</td>
</tr>
<tr>
<td>Length of hospital stay (days)*</td>
<td>3(2-6)</td>
<td>3(2-6)</td>
</tr>
<tr>
<td>Skin releasing incision</td>
<td>21</td>
<td>0</td>
</tr>
<tr>
<td>Secondary or reactionary bleeding</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Complete continence</td>
<td>14</td>
<td>12</td>
</tr>
<tr>
<td>Incontinence to fluid</td>
<td>0</td>
<td>1</td>
</tr>
<tr>
<td>Incontinence to flatus</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Mucosal ectropion</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Flap dehiscence</td>
<td>5</td>
<td>0%</td>
</tr>
<tr>
<td>Re-structuring necessary</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Anal stricture</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>St Mark's dilators</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Anoplasty</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Residual skin tags or piles</td>
<td>2</td>
<td>9%</td>
</tr>
<tr>
<td>Residual symptoms</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

*Values are median (range). ‡Neither of these patients developed residual piles. ¶Residual skin tags or piles. §Flap dehiscence.

Anal fissure hurts and surgical relief is prompt and mostly for keeps. Historically a dorsal sphincterotomy directly into the fissure was used, but this then evolved into lateral anal sphincterotomy, arguably to avoid a ‘gutter’ deformity alleged at the time to result in minor incontinence in some. But even lateral anal sphincterotomy had some problems, otherwise surgeons would not have tried modifications, such as partial bilateral sphincterotomy.

The cat was really firmly set among the pigeons by Khubchandani and Reed’s report in a large series of 1335 patients of flatus incontinence after lateral anal sphincterotomy in 35%, and accidental bowel movements in 5% (1). Not everyone would agree with incidences of incontinence as high as this, and might plump for a ballpark figure for any incontinence around 5%. Nonetheless many patients would feel it their right to be informed of such a surgical risk, and might take successful action if not adequately counselled.

Women have a much shorter anal sphincter than men, and surgical sphincterotomy often divides the entirety of it, whatever the surgeon’s actual intention. For example, 9 out of 10 women after lateral anal sphincterotomy at St Mark’s Hospital had had complete division of their internal anal sphincter (2). As up to 35% of women undergoing their first vaginal delivery can be shown on ultrasound examination to have occult damage to their anal sphincter (3), it is not hard to see how the added injury of sphincterotomy might not lead to significant faecal incontinence in some of them.

As a result of these worries regarding incontinence, there has been a rush to try new, pharmacological therapies, which, although less effective than surgery, nevertheless cannot lead to permanent incontinence. First off the blocks was nitroglycerine paste (4), followed rapidly by intra-sphincteric injection of botulinum toxin (5), and later by newer, second generation creams such as dilataxin 2% and betahistine 0.1%, both of which drop resting anal pressure but without the side effect of headache (6).

How effective have these creams been? Many studies have shown healing rates between 60-70% with nitroglycerine, but headache is frequent and relapse relatively common (7-9). Our own experience with placebo has around 30% healing (9); another trial using 2% lignocaine gel found just under 44% healed (10). One randomised study had an unusually low rate of fissure healing on placebo at 8% (11), not in my view really compatible with most surgeon’s experience in their office practice when treating fissures with bulk laxatives and local anaesthetics alone, nor with much of the rest of the literature.

Botoxin A toxin is perhaps more effective, in one recent randomised study healing 66% of fissures at 2 months, compared to 60% on nitroglycerine paste (12). But there are issues with injecting ‘one of the most potent poisons known to man’ into the anal sphincter for a benign condition, and antibiotics to botulinum A toxin may develop in up to 10% of patients so treated, raising the possibility that repeated therapy may not always be possible (13).

It is really against this background that the Canadian study by Richard et al in this issue can be considered. Only 82 patients were treated, of whom 38 underwent lateral anal sphincterotomy. A 5% chance of flatus or worse incontinence on a sample size of 38 patients is hardly likely to be demonstrated, and predictably it was not. Furthermore, the gender bias in the randomisation acts to obscure any disadvantage in females where the greatest concern lies. There were 22 men treated by internal anal sphincterotomy compared to only 16 women, whereas the potentially less damaging nitroglycerine was used in only 15 men and nearly twice as many women (29). A 5% risk of incontinence in only 16 women treated by sphincterotomy was even less likely to emerge.

The other problem with this paper is the very poor response to nitroglycerine, really equivalent at 30% with what we and others have achieved with placebo (9,10) (although not Lund and Schofield’s trial mentioned earlier (11) and far less than the 60-70% response generally experienced by others using nitroglycerine (7-9, 14). The primary outcome measure was healing at 6 weeks, whereas nearly all other research has looked at healing at 8 weeks. In Lund and Schofield’s trial (11) only 45% had healed at 6 weeks compared with 68% at 8 weeks. In our own randomised trial (9) only 25% of fissures had healed at 6 weeks.
with 0.2% nitroglycerine, rising to 65% at 8 weeks. This does suggest that treatment duration, at least insofar as pharmacological agents are concerned, was suboptimal in the Canadian study. The authors do not describe a preliminary pilot experience with nitroglycerine, nor do they present anorectal physiology data from each centre to indicate that each locally formulated product was in fact formulated to drop resting anal pressure sufficiently to heal anal fissures. Users should also be aware that nitroglycerine is unstable in air and light; in plastic tubes it leaches out and rapidly loses potency. Even so, it is likely, at least in some centres, that an active formulation was used, given the evidence that the dose had to be reduced during the course of the study because of headache, a side effect frequently seen with nitroglycerine (although not with the newer agents, such as diltiazem) (6). At the same time, however, the very fact of this dose reduction during the course of the trial strongly suggests at least some unfamiliarity with nitroglycerine.

The trial therefore compares potentially variable and untested (for efficacy) formulations of nitroglycerine by surgeons, apparently not familiar with its use and probably evaluating its effect (for efficacy) formulations of nitroglycerine by surgeons, apparently not familiar with its use and probably evaluating its effect

For the resection of flat tumors of the colon and rectum, endoscopic mucosal resection (EMR) is usually performed. Conventional snare polypectomy is not an appropriate procedure for flat lesions and for early invasive lesions, or lesions with a possible early cancer invasion in the submucosa.

**TECHNIQUE OF EMR**

The technique of EMR is as follows. Physiological saline is injected in the submucosa near the tumor. The injection of saline elevates the mucosa including the lesion, and thus snaring becomes feasible. To have a sufficient elevation, saline injection should be made at multiple sites around the tumor. The first injection should be made at the site proximal to the tumor, resulting in the elevation of the lesion towards the side of the colonoscope. This makes the colonoscopic view of the entire lesion much easier. A snare wire is placed at the site of the round mucosal cutting line and is tightened. Electrical current, usually in cutting or blended mode, is turned on to remove the lesion. The author prefers to use blended current to prevent bleeding.

**HYALURONIC ACID INJECTION AND PRE-SNARE CUTTING**

When a larger tumor is to be removed with the method of EMR, hyaluronic acid injection and pre-snare cutting are useful. Hyaluronic acid that is usually used for the treatment of arthritis is diluted 5 times. The diluted hyaluronic acid is injected into the submucosa as stated above. Because hyaluronic acid is resistant against absorption and diffusion, the elevation of the mucosa with the lesion stays for much longer time than the usual saline injection. After having had the injection of the hyaluronic acid into the submucosa, the mucosa surrounding the lesion is cut by using a electro-coagulation needle. By moving the tip of the colonoscope, the elevated mucosa around the lesion is cut for 360 degrees by using cutting current. When the mucosa around the tumor is cut completely, the area encircled by the mucosal cut shrinks. After having had the shrinkage, the snaring becomes much easier. A snare wire is placed at the site of the round mucosal cutting line and is tightened. Electrical current, usually in cutting or blended mode, is turned on to remove


9) Carapeti EA, Kamm MA, Melville D, McDonald PJ, Chadwick SJD, Phillips RKS, ‘Randomised controlled trial shows that glyceryl trinitrate heals anal fissures, higher does are not more effective, and there is a high recurrence rate’. Gut. 44, (1999): 727-730.


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the lesion. With this method, large sessile tumors such as 30-40mm in diameter can be removed. When it is not possible to remove the entire lesion in one piece, piece meal EMR is performed.

**Observation of the Surrounding Mucosa and the Fulguration of the Residual Lesion**

Particularly when a large sessile lesion is removed by the method of EMR, it is important to know whether there is any residual neoplastic tissue left behind. Meticulous observation should be made with a help of magnifying view if a magnifying colonoscope is available. When a residue of a lesion is found, it is either re-snared or destroyed by fulguration. The defect can be closed by using large “clips”, which is not always necessary.

**Complications**

Bleeding and perforation are the two major possible complications. When bleeding occurs after snaring, clips for hemostasis is usually used. This is the most effective and safe way of having hemostasis. Injection of high concentration NaCl with epinephrine or pure ethanol injection has been reported to have a hemostatic effect against bleeding after EMR. However, because of the possible danger of perforation, we do not use such solutions for hemostasis. When a perforation is suspected due to the colonoscopic findings after EMR, closure of the defect by large clips is often helpful to prevent overt perforation. When a perforation is not possible to be closed with this method, or when perforation became manifest after colonoscopy, either conservative or surgical (open or laparoscopic) approach should be made.

**Laparoscopic Total Mesorectal Excision**

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**Positioning of Patient; Trocar Sites**

The whole procedure is conveniently described in 4 stages:

1. **Mobilization of the Sigmoid Colon and Rectum**

   The chief surgeon and the assistant are operating via the first port at the right iliac fossa for use by the chief surgeon, whereas the assistant operates via two 5mm ports on left iliac fossa. The patient's thigh will be in the way of the chief surgeon's right hand. Two ports (one 5mm, one 5-12mm) are created on the patient's foot end. This position avoids unnecessary ‘paradoxical movement’ and potential ‘mirror-images’ for both surgeons.

   In positioning the patient on the operating table it is important that hip flexion should be kept to a minimum, or otherwise the hip flexors will have to be cut to avoid ‘contraction’ of the anterior abdominal wall. Two cotton tapes are then tied around the bowel through the windows15. By grasping the lower cotton tape to and fro, the assistant could provide the necessary counter-traction and exposure for subsequent mesenteric division and rectal mobilization. The retroperitoneum is incised medially to the left ureter, and the left hypogastric nerve is cautiously identified. The presacral space is then entered at a plane anterior to the left presacral hypogastric nerve. The sigmoid colon is then swung to the left side, and the peritoneum at the base of the sigmoid mesentery is incised. After a ‘window’ at the base of the mesosigmoid has been established, the division of the peritoneum could safely continue superiorly just anterior to the aorta, until the origin of the inferior mesenteric artery is encountered. The inferior mesenteric artery is divided with staples at the aorta. Further superior dissection leads to the inferior mesenteric vein, which is likewise divided. To ensure a subsequent tension-free colo-anal anastomosis low down in the pelvis, it is important that division of the inferior mesenteric vessels should be as close to the aorta as possible (i.e. high ligation).

   Attention is now turned to the pelvis. The rectum is retracted upward and forward, and the loose areolar plane between the mesorectum and the presacral fascia (with the hypogastric nerves lying on it) is identified. The right and left hypogastric nerves should now be clearly visualized on the presacral fascia as two structures going downward and diverging outward in the pelvis. This presacral plane is dissected and followed as far as is comfortable. The dissection then moves to the right and then to the left of the rectum. Attention is then turned to the anterior dissection. The rectum is pulled cephalad in order to expose the rectovesical or rectouterine pouch. The anterior peritoneal reflection is then incised. In the male, the plane is developed between the anterior mesorectum and the seminal vesicles and in the female between the anterior mesorectum and the upper vagina. In the female a useful trick here is to have a second assistant’s finger in the vagina: by ‘retracting’ the vagina upward from below, the rectovaginal plane could be easily established. Following this, the lateral ligaments on either side of the rectum are divided, and the whole rectum (and mesorectum within the fascia propria) is mobilized down to the pelvic floor muscles. The length of the mesorectal margin distal to the tumour could be conveniently