

## The problem of pain after day-surgery haemorrhoidectomy

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Received 18 September 1997; accepted 13 October 1997

### Abstract

A total of 185 patients underwent day surgery haemorrhoidectomy with postoperative discharge after 24 h. An open technique (Milligan-Morgan) was adopted in 177 cases (97.8%) and a closed technique (Ferguson) in 8 cases (2.2%). In all cases, anaesthesia was achieved by the posterior perineal block: effective analgesia was obtained in 52.4% of the cases (very good and good analgesia) and postoperative analgesic effectiveness reached 5–10 h in most patients (49.2%), while in 9.2% of the cases analgesia was effective for up to 15 h or over. Innervation complexity and early wound stimulation make a painless haemorrhoidectomy impossible. It was not found that any particular surgical technique was superior to another. No evident advantages could be found in closed haemorrhoidectomies or laser/diathermic dissection nor was routine internal sphincterotomy found useful. Pain control was mainly entrusted to the action of pharmaceutical agents. In the operating theatre, the posterior perineal block can be followed by long term local anaesthetic or NSAIDs infiltration of muco-cutaneous wounds. During the postoperative period, lasting 30 days, pain assessment is not an easy task but this can be performed by Graphic Rating Scale. Pain at rest was moderate to acute during week 1 in 64.3% of the cases, while being light or absent in 35.7%. By week 2, pain had become moderate to acute in 29.2% of the patients, being light or absent in 70.8%. Finally, by week 3, only 10.8% of the patients reported moderate to acute pain (and this was due to complications ensuing such as haemorrhage or stenosis). Pain intensity increased at defecation, with 86% of the patients reporting acute moderate pain in week 1. A more gradual reduction of pain at evacuation was noted in later weeks compared to that at rest. Only in 2.7% of the cases did we have to resort to major analgesia during the first 24 h. In all other cases, NSAIDs (Ketorolac) sufficed with i.m. injections of 30 mg up to three times a day before discharge and 10 mg orally up to three times a day once the patient had returned home. Effective anaesthesia, competent surgery, a close follow up and regularly administered minor analgesics provide effective postoperative pain control after day surgery haemorrhoidectomy. As a result, the operation is no longer feared, as next to normal physical activity was reported towards the end of week 1 in 94.1% of the cases. Most patients expressed full satisfaction with their treatment 30 days after surgery. © 1998 Elsevier Science B.V. All rights reserved.

*Keywords:* Haemorrhoidectomy; Surgery

### 1. Introduction

Haemorrhoidectomy pain assessment and control are of great importance, not only because of the frequency of the procedure, but also because patients are becoming increasingly aware of difficulties arising from a

more autonomous and personally responsible management of the postoperative period. This growing awareness is due to the feasibility of day or short stay surgery. Immediate discharge or only a single night's hospitalisation means that the patient must cooperate more in dealing with postoperative problems [1].

The type of pathology, ano-perianal innervation complexity and open surgical wounds (nowadays, early bowel motion is commonly preferred) make painless haemorrhoidectomy almost impossible.

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## 2. Patients and methods

From March 1994 to February 1997, 185 patients were submitted to day surgery haemorrhoidectomy for 3rd and 4th degree haemorrhoids: 84 Milligan-Morgan haemorrhoidectomies, 41 Milligan-Morgan with posterior anoplasty, 34 Milligan-Morgan with skin bridge reconstruction, 18 Milligan-Morgan with lateral internal sphincterotomy (coexistence of anal fissure) and 8 Ferguson haemorrhoidectomies.

The anaesthetic technique was the posterior perineal block (P.P.B.) described by Marti [1] and modified by us [2]. This consists of deep infiltration of the ischio-rectal fossae and the retrorectal space (block of the pudendal nerves, the inferior haemorrhoidals and the anococcygeals) and perianal surface infiltration of superficial perineal branches (including the minor ischiatic). The anaesthetic mix used up to March 1996 (143 haemorrhoidectomies) was lidocaine (0.5–1%), sodium bicarbonate 1M and adrenaline (1:200 000). The last 42 haemorrhoidectomies were performed with a mix of mepivacaine (1%), sodium bicarbonate 1M and adrenaline (1:200 000).

So as to better assess intraoperative P.P.B. analgesic effectiveness, four levels were used: (A) very good, (B) good, (C) poor (an i.v. administration of 1–2 cc of fentanyl was necessary) and (D) conversion to general anaesthesia.

Postoperative pain was assessed by a Graphic Rating Scale (0–10), containing a colour scale so as to provide the patient with a visual image in addition to the normal verbal indications set for each level: it was thought that such a method could at least partly solve the problem of obtaining more exact quantification of pain. To obtain yet more precision, a third parameter overlapping verbal and visual indications was included, using a numerical: 0, absence of pain; 1–3, light pain; 4–6, relatively moderate pain; 7–9, acute pain; 10, unbearable pain. At complete recovery (30 days postoperative), the patient was asked to define the pain he had suffered according to the three parameters adopted, verbal, visual and numerical. Pain was evaluated at different stages of the postoperative recovery period: during the first 24 h, during weeks 1, 2 and 3 of recovery, and distinguishing the pain suffered at rest during the day from that suffered at the act of defecation. Bowel motion was considered an important parameter and so as to reach early regular evacuation during the postoperative period, 15 ml of lactulose laxative were administered every day. When non-evacuation exceeded the 3rd day of the postoperative period, a stronger sennoside base cathartic was additionally administered. All patients were administered a routine analgesic dose of 30 mg i.m. of Ketorolac up to three times daily while in hospital and 10 mg b.m. up to three times daily on their homecoming. During the initial 24

h, only particularly worried or still suffering patients were administered a sublingual dose of 0.2 mg of buprenorphine.

## 3. Results

Of the 185 patients, 91 (49.2%) underwent surgery with optimum analgesic results, 80 (43.2%) with good analgesia, 14 (7.6%) requested administration of fentanyl *e.v.*, while there were no cases requiring general anaesthesia. During the immediate postoperative period, analgesic effectiveness was < 5 h in 60 cases (32.4%), 5–10 h in 91 cases (49.2%), 10–15 h in 17 cases (9.2%) and > 15 h in 17 cases (9.2%).

A total of 143 (77.3%) patients were discharged on the 1st day, 34 (18.4%) were hospitalised for 2 days and 8 (4.3%) remained for 3 days.

During the first 24 h, 13 cases (7%) suffered from urinary retention and a Foley catheter was inserted, to be removed after 1 day in 12 cases and after 5 days in the case of a young woman. In 4 patients (2.1%) mild postoperative bleeding occurred from cutaneous wounds.

A total of 74 patients (40%) achieved spontaneous postoperative evacuation on the 1st day, 54 (29.2%) on the 2nd and 37 (20%) on the 3rd day. A total of 21 patients (11.3%) had to resort to a cathartic on the 4th day.

During the 1st week, only 37 (20%) reported acute daytime pain, while 82 patients (44.3%) found the pain relatively moderate; 55 (29.7%) reported light but tolerable pain and 11 (6%) absolutely no pain. By the 2nd week, only 13 (7%) still complained of strong pain, 41 (22.2%) moderate, 103 (55.7%) light and 28 (15.1%) did not report any pain whatsoever. By the 3rd week, only 3 (1.6%) of the patients (who had undergone further surgery for severe haemorrhage and this on the 8–9th day) reported acute pain, while 17 (9.2%) (using dilators for evidence of anal stenosis) reported moderate pain, 66 (35.7%) had light pain, and the majority 99 (53.5%), had no pain at all (Table 1).

On evacuation, 115 (62.2%) of the patients in week 1 complained of acute pain, 44 (23.8%) reported moderate pain and 26 (14%) reported little pain. During week 2, 51 (27.6%) reported acute pain, 79 (42.7%) moderate

Table 1  
Postoperative pain assessment at rest

	Week 1 (%)	Week 2 (%)	Week 3 (%)
Acute	37 (20)	13 (7)	3 (1.6)
Moderate	82 (44.3)	41 (22.2)	17 (9.2)
Light	55 (29.7)	103 (55.7)	66 (35.7)
No pain	11 (6)	28 (15.1)	99 (53.5)

Table 2  
Postoperative pain assessment on evacuation

	Week 1 (%)	Week 2 (%)	Week 3 (%)
Acute	115 (62.2)	51 (27.6)	15 (8.1)
Moderate	44 (23.8)	79 (42.7)	49 (26.5)
Light	26 (14)	47 (25.4)	81 (43.8)
No pain	0 (0)	8 (4.3%)	40 (21.6)

pain, and 47 (25.4%) little pain, while 8 (4.3%) reported no pain. Finally, in week 3, only 15 (8.1%) had acute pain, 49 (26.5%) moderate pain, 81 (43.8%) little pain, and 40 (21.6%) reported no pain at all (Table 2).

A total of 5 patients (2.7%) needed to be given a sublingual dose of buprenorphine (0.2 mg) during the first 12 h postoperatively. Besides these, there was no need for further administration of major analgesics. Ketorolac was administered in doses defined above for 3 days in 34 cases (18.4%), for 1 week in 71 cases (38.4%), for 2 weeks in 45 cases (24.3%) and for 3 weeks in 30 cases (16.2%). A total of 5 cases (2.7%) needed no analgesics at all (Table 3).

To assess pain control effectiveness, patients were asked to define the limits imposed on their living habits by symptoms in their postoperative recovery period. Most patients replied they could already lead more or less normal lives in week 1, some answered they had made long journeys home only 2 days after undergoing surgery or that they had gone out or resumed their normal working lives (136 patients, i.e. 73.5%). A total of 38 patients (20.6%) reported difficulties when seated, when walking and or when performing normal activities. Only 11 patients (5.9%) said they had stayed at home in bed but these had also been particularly nervous and anxious prior to surgery. Only 15 patients (8%) could not lead a normal life by week 2, while the remaining 170 (91.9%) had resumed normal working activities. By week 3, only three (1.6%) still complained of some pain, but these were cases which had undergone a longer period of recovery because of additional surgery for haemorrhage (Table 4).

Table 3  
Analgesic (NSAIDs) administered in the postoperative period

	Patients	%
3 Days	34	18.4
1 Week	71	38.4
2 Weeks	45	24.3
3 Weeks	30	16.2
No analgesics	5	2.7

Table 4  
Daily activity limitation

	Week 1 (%)	Week 2 (%)	Week 3 (%)
No limitation	136 (73.5)	170 (91.1)	182 (98.4)
Moderate	38 (20.6)	15 (8)	3 (1.6)
Severe	11 (5.9)	0 (0)	0 (0)

#### 4. Discussion

Even today, haemorrhoid surgery is still an object of fear for patients, not so much for the postoperative complications that could arise but more as result of the pain inherent in defecation. The problem is not surgical as this is technically simple. It is the long lasting postoperative discomfort that creates the problem. Surgery is commonly only resorted to when the pathology reaches its advanced stage (3rd or 4th degree). It is with this background that attempts have been made to improve operating techniques and to provide postoperative pharmaceutical relief from ensuing pain.

The Milligan-Morgan haemorrhoidectomy [3] proposed in 1937 involved haemorrhoidal pedicle excision and low tying at the level of or below the dentate line ('5 min job'), an operation causing intense postoperative pain. This led to high tying above the dentate line, thus obtaining haemorrhoid pedicle excision at the insensitive rectal mucosa level [4]. In 1956, Parks [5], focusing on postoperative pain pathophysiology, stressed the pathogenetic importance of three elements: mistaken involvement of sensitive mucosa and internal sphincter fibres in pedicle tying, the presence of extensive wounds, the positioning of an ano-rectal tampon. The tampon set aside, the attempt to eliminate the algogenic stimulus from muco-cutaneous wounds led to growing interest in closed techniques proposed by Parks in Great Britain [5] and Ferguson in the USA [6]. Goligher [16], however, showed that, as far as postoperative pain is concerned, closed haemorrhoidectomies had no edge on their open counterparts. Nor do any trials exist that provide an objective and valid comparison of Milligan-Morgan and Ferguson type haemorrhoidectomies in terms of postoperative pain. Furthermore, Ferguson haemorrhoidectomy is more likely to cause swelling, hematoma and subsequent suture dehiscence, thus transforming a closed haemorrhoidectomy into an open one.

Sphincter spasm can become an important factor. Eisenhammer [8] in the 50's proposed haemorrhoidectomy combined first with anal stretching and then with internal sphincterotomy. No significant reduction of postoperative pain however has been brought about by the application of this method, though it produces worse results as far as continence [7].

With the introduction of new technology (high frequency diathermy [9] and lasers [10]), pain control has turned to haemorrhoidal pedicle dissection. Coagulation or vaporization of blood vessels and nerve fibres reputedly causes less tissue oedema, specifically at cutaneous skin bridges and therefore less painful stimulation. These advantages have generally been considered more theoretical than realistic by us and others [11].

Pain control by drugs seems more feasible. In the operating theatre, even under general anaesthesia, the muco-cutaneous dissection of the pedicles with the St. Mark's technique tends to be performed no longer with saline plus adrenaline 1:200 000, but with a local anaesthetic plus adrenaline. The anaesthetics most widely used in proctology are lidocaine (L), mepivacaine (M) and bupivacaine (B), plus other new anaesthetics now appearing in clinical practice. L and M possess similar properties, namely limited latency and intermediate effective action (70°–90°), while B possesses greater latency and a prolonged effect. After haemorrhoidectomy, wound infiltration with preferably protracted action local anaesthetic can be performed [12]. A limited dose of ethanol is sometimes used to obtain alcoholic neurolysis. NSAIDs, because of their anti-inflammatory and analgesic properties are widely adopted to provide infiltration of surgical wounds and underlying external sphincter fibres [13]. Furthermore, intrasphincteric injection of these drugs causes a drop in pain transmission to the perianal trigone, diminishing prostaglandin release, thus avoiding the risk of urinary retention [14].

Other anaesthetic techniques can replace conventional general anaesthesia. However, epidural, spinal and caudal blocks each involve their own particular problems. The epidural technique requires a competent anaesthetist, due to rachis pathologies (arthrosis), and often causes urinary retention, cephalgia and serious peripheral vasodilation. Selective spinal technique must always involve an anaesthetist specialised in this sector. Caudal block, on the other hand, is marked by a high failure incidence due to the difficulty of the needle insertion into the sacral hiatus, the latter being blocked by anatomic malformation or because of age linked calcification. In our opinion, loco-regional anaesthesia with the posterior perineal block (P.P.B.) is of great practical interest [1,2]. Above all, it can be effected by the surgeon himself and is easy to execute. Intraoperative analgesia is so good that we have not had to resort to i.v. administration of other analgesics in >7.6% of our patients. Sphincter relaxation is comparable to that obtained under general anaesthesia. P.P.B. eliminates vagal reflex risks inherent in sphincter stimulation and anal stretching manoeuvres. Postoperative analgesia is long-lasting, 5–10 h in most cases (49.2%), and in some patients up to >15 h (9.2%). It drastically reduces the risk of urinary retention. Unlike general anaesthesia,

there is no danger from induction (although slight) and it allows immediate postoperative mobility and earlier discharge. On the other hand, surgery on a conscious patient requires more careful manoeuvring. The vasoconstrictor added to the anaesthetic means that extremely accurate and meticulous hemostasis must be achieved because of the patient's impending early discharge. Finally, P.P.B. execution time and latency waiting time (10 min) makes the total operation time longer than that needed for a conventional operation under general anaesthesia [2].

With regards to postoperative recovery, Goligher [16] greatly stressed differing pain reports from patient to patient. The evaluation is highly subjective due to physiological variables (individual pain thresholds, sex and age), psychological factors (anxiety, depression), socio-economic and ethnocultural differences that condition assessment of pain. Some operated patients did not remember any great pain, while others reported a very painful recovery period and saw defaecation as an atrocious experience, comparable to a hot iron bar in the anus or fragments of broken glass, needing morphine. In fact, more recently, even morphine administration has been proposed through a subcutaneous pump [17], but this seems, in our opinion, extremist. Some authors [18,19] have reported in a randomised study, that fentanyl transdermal administration improves haemorrhoidectomy pain for day care patients returning home. However, this is not available in all countries.

Only very few of our patients (5, i.e. 2.7%) needed major analgesics and this was only during the first 24 h. Buprenorphine was chosen for its high effectiveness on the central nervous system and for its partial agonistic/antagonistic features. It possesses long lasting action and a low risk addiction factor. Administered sublingually (0.2 mg), it takes effect after 20 min and lasts 6–8 h. Short term administration moderates the potential side effects found in all opiates (including constipation) [15].

In all other cases, even in those patients reporting acute pain, the situation seems well controlled with non-steroidal analgesics (NSAIDs) i.m. for 24 h and then b.m. Patients were advised regular and staged taking of the drug so as to maintain effective plasma concentration and to avoid taking it only when maximum pain was felt. In this way, stable and effective pain control can be obtained [20]. From the NSAIDs we chose Ketorolac, the action of which causes prostaglandin synthesis inhibition (specifically PGE<sub>2</sub>/PGF<sub>2</sub>  $\alpha$ ), causing peripheral stimulus pain relief and preventing receptor sensitivity of physical or chemical agents in inflamed tissues. It is generally known that NSAIDs should be used with care as a result of their possible serious side effects. More specifically, the fact that Ketorolac alters platelet function and prolongs

bleeding time could theoretically lead to postoperative haemorrhaging. Its constipative action must also be taken into account, even if this is not as intense as that of the opiates. However, at the advised dosage, we or others for that matter have not encountered any significant clinical problem [15].

Constant pain decreasing as time goes on seems to mark the progressive stages of wound healing. In fact, analysis of Table 1 reveals that moderate-acute pain in most cases (82 patients, i.e. 44.3%) during week 1 progressively dropped in intensity in the following week, so much so that the patients who complained about moderate-acute pain by week 3 were only 44.9% of the total. These were cases which underwent further surgery due to significant complications on the 8–9th day for haemorrhage (4 patients, i.e. 2.1%) and others (26 patients, i.e. 14%) who used a dilator due to the development of stenosis. It is of interest that 11% of patients did not report any pain whatsoever during the week 1 and received no analgesics, thus confirming the wide range of subjective pain thresholds.

In our experience, in most cases (162 patients, i.e. 89.2%), the first bowel motion was spontaneously achieved by the 3rd postoperative day. Only in few cases (20 patients, i.e. 10.8%) did we have to resort to a mild aperient. Early evacuation prevents stenotic granulation tissue when the skin bridges are too thin or necrotic. On the other hand, pain does indeed reach higher intensities at defecation, as a result of the wounds being stimulated by faeces. The patients suffering acute pain at evacuation (62.2%) were more than double those at rest (20%). Results showed the pain relief rate slowing down at defecation over the following 2 weeks because of the still incomplete healing of wounds. In all cases, Ketorolac provided effective pain control. A total of 105 patients (56.8%) were administered the above at full dosage during week 1. It was then reduced up to discontinuation over the following weeks (45 patients (24.3%) over week 2, 30 patients (16.2%) over week 3).

Further proof that orally taken minor analgesics provide effective pain control, regardless of intensity, lies in the high percentage of cases (73.5%) which reported no significant alterations in daily life and habits during week 1 and no modification of sleeping or mood patterns. Finally, at the end of the postoperative period, over 149 (92%) of the patients expressed their full satisfaction regarding surgical treatment.

Flavonoids have also been proposed for use, early in the postoperative periods. Their antagonising action on phlogosis mediators produces positive microcirculation effects, protecting basal membrane and media tunic of the vessels from degeneration. Furthermore, catecholamine activity on the smooth muscle fibres of the venule wall is prolonged, thus diminishing stasis and oedema [21]. Blood vessels become less vulnerable to

bacterial attack (fibrinolysis) and trauma (defecation). Therefore, anti-inflammatory action greatly reduces algogenic stimulus and postoperative haemorrhage risks.

The role played in pain control by early wound infection with eventual microabscesses would suggest intraoperative and postoperative antibiotic use (full dosage of metronidazole for 7 days) [22]. Nevertheless, antibiotic prophylaxis is generally not adopted in minor proctological surgery.

Finally, the use of anaesthetic creams (i.e. a mix of prilocaine and lidocaine) to reduce postoperative perianal pain on injection of local anaesthetics is not found suitable for pain relief subsequent to defecation trauma. Further, cream application on recent ano-perianal wounds seems to question one of the axioms of proctology, namely whether surgical wounds should be frequently washed out and disinfected. Vegetable extract creams with anti-inflammatory action in early use should also be seen just as negatively, but these could be useful later at complete healing.

## 5. Conclusions

To conclude, it must be admitted that though painless surgery is out of the question, effective anaesthesia, operating dexterity and a thorough follow-up by the surgeon (and the end of out of date management concerning rectal tampons and protracted constipation) have endowed routine hemorrhoidectomy with a new reputation. Gone are negative connotations that transformed a simple surgical operation into a dreaded one that was even sometimes repudiated by patients who needed to undergo it.

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