

Tailored excisional treatment for high-grade haemorrhoidal disease

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Abstract Patients affected by high-grade haemorrhoid with a fibrous internal pile or an important external component are suitable for an excisional procedure. The aim of this study is to evaluate the outcome of different excisional treatments such as Milligan and Morgan haemorrhoidectomy, Ferguson haemorrhoidectomy and Pexy-excision carried out according to a tailored treatment on each pathological pile. All the consecutive patients that underwent an excisional procedure for high-grade haemorrhoids in two different centres were considered for the present study. From January 2010 to December 2012, 135 patients affected by high-grade haemorrhoidal disease were treated with excisional procedures. No statistically significant differences were noted regarding age, sex distribution, symptoms, Goligher grade, length of surgery, number of pathological piles treated and number of pathological piles excised for each patient between groups. The Ferguson and

Pexy-excision procedures yield better results in terms of pain and healing than open haemorrhoidectomy, whereas recurrence and complications are similar after 1 year. Excisional procedures are safe and effective for the treatment of high-grade haemorrhoids mostly if performed according to a tailored project. An increase in the number of pathological piles treated corresponded to an increase in the need of analgesics regardless of the procedure performed.

Keywords Haemorrhoidectomy · Haemorrhoidopexy · Pain · Excision · Tailored treatment

Introduction

Haemorrhoid is a common disease among the general population but its real incidence is unknown as many patients never consult their medical practitioner. Ten million Americans complained of haemorrhoids with a prevalence rate of 4.4 % [1].

The causes are still debated: descensus of anal vascular cushions, straining to defecate, reduction of venous return and a predisposition of congenital weakness of the venous wall have been suggested to contribute to its appearance [2].

The main symptom is bleeding but also mucosal prolapse, pain, thrombosis, mucus discharge and itching are reported.

Those cases involving the presence of a IV degree haemorrhoid with a fibrous internal pile or with an important external component are most suitable for an excisional procedure such as Milligan and Morgan haemorrhoidectomy, Ferguson haemorrhoidectomy or Pexy-excision haemorrhoidal procedure (PEHP).

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The aim of this study is to compare different excisional treatments such as Milligan and Morgan haemorrhoidectomy, Ferguson haemorrhoidectomy and Pexy-excision performed according to a tailored treatment project on each pathological pile.

Patients and methods

All patients referred to the Valdarno or Valdichiana outpatient clinics were included in a prospective maintained database: those symptomatic for haemorrhoids and with piles including additional external components, such as skin tags or eversion of the dentate line, external pile congestion and any fibrous or irreducibility of an internal pile were evaluated for this study as candidates for surgical treatment.

The tailored treatment project consisted of an excisional procedure on specifically high-grade piles only. In the presence of other internal pathological piles, a haemorrhoidopexy with sutures is performed.

All our patients were evaluated according to our internal protocol for haemorrhoidal disease: all patients underwent a complete clinical evaluation with complete medical history, clinical examination, and anoscopy.

Those with suggestive signs and symptoms of neoplastic disease or faecal incontinence or constipation, were invited to undergo further diagnostic tests such as colonoscopy or specific examinations.

Exclusion criteria were age under 18 years, acute haemorrhoidal thrombosis, fecal incontinence and previous anorectal intervention.

All patients were clinically evaluated both prior to discharge and again after 1, 2 and 4 weeks from the procedure. Successively, all patients were requested to undergo a further clinical evaluation at 1 year from the operation.

The outcome of the surgical procedure was evaluated according to the necessary number of postoperative days of self-administered analgesics [painkiller days (PKD)] as the primary end point: this represents an objective evaluation of the incidence of pain in the patients' everyday life and the limits regarding a complete return to work.

Secondary end points were short- and long-term postoperative complications, re-admission and relapse occurrence at the 1-year follow-up.

All the procedures were performed with the patients in the lithotomy position, under spinal anaesthesia with the auxiliary of a 28-mm-diameter anal retractor (Surg Mini Light-Scope Sterile, THD spa, Correggio, Italy).

Milligan and Morgan haemorrhoidectomy and Ferguson haemorrhoidectomy were reserved for those patients with anatomically irreducible internal piles, either with or without an important symptomatic external component,

while PEHP was reserved for those patients with an internal pile that seemed to be reducible but externally retracted by a fibrous bridge with the anoderm or with the eversion of the dentate line and associated with an important symptomatic external component.

In 1937, Milligan and Morgan described their excisional procedure for haemorrhoids: they suggested the complete mobilization of the pathological haemorrhoid up to the vascular pedicle inside the anal canal followed by pedicle ligation and the internal pile excision [3].

Ferguson haemorrhoidectomy was first described in 1952 and is similar to the Milligan and Morgan technique except for the dissection that is mainly carried out in the anal canal without pulling the haemorrhoid out and for the suture of the mucosal defects that is conducted to close the wound at the end of the procedure [4].

PEHP has its basis in the Resi Neto technique but is conducted considering each single pile as a separate entity: through the anoscope window each pathological pile is observed. The first stitch is passed through the needle twice, then placed and tied to the internal apex of the pathological pile. From this stitch a running suture goes outward up to 1 cm from the dentate line and retied achieving the haemorrhoidopexy. The external component is excised with diathermy from the skin towards the dentate line and allows a better repositioning of the internal pile reducing the mechanical traction of the anoderm on the facing anal mucosa [5].

Statistical analysis

The continuous variables are shown as mean values \pm SD, while the categorical variables are shown as absolute and percentage occurrences. The comparison between the normal variables in the two independent samples was made using Student's *t* test, while in the case of non-normal distribution the Mann–Whitney test was used. The data were collected in a prospectively recorded database. SPSS 16.0 (SPSS Inc., Chicago, IL, USA) was used for the statistical analysis. Statistical significance was calculated applying two-tailed tests with a *p* value of <0.05 .

Results

From January 2010 to December 2012, 135 patients, mean age 52 years (range 21–82), with 54 women (40 %), affected by high-grade haemorrhoidal disease were treated with excisional procedures.

Only high-grade piles were excised while the other internal pathological piles underwent a Pexy procedure according to a tailored treatment project on each pathological pile.

Table 1 Main results between groups

	Group 1 Milligan and Morgan 40 pts	Group 2 Ferguson 51 pts	Group 3 PEHP 44 pts
Age	44.50	56.45	47.28
Sex (male)	22 (55 %)	32 (65 %)	27 (61.5 %)
Goligher grade (IV degree)	37 (92.5 %)	46 (90 %)	37 (84 %)
Mean number of treated piles	3.2	3.1	2.9
Mean number of excised piles	1.7	1.4	1.6
Days of painkillers	9.2	6.3	6.7

Patients were divided into three groups according to the anatomical situation and the surgical procedure selected: Group 1 consisted of 40 patients treated with Milligan and Morgan haemorrhoidectomy, Group 2 consisted of 51 patients treated with Ferguson haemorrhoidectomy and Group 3 consisted of 44 patients who underwent PEHP.

The main symptom was bleeding (95 %), but also prolapse (74 %), pain (34 %), tenesmus (14 %), and itching (19 %) were reported.

No statistically significant differences were noted according to age, sex distribution, symptoms, Goligher grade, length of surgery, number of pathological piles treated and number of pathological piles excised for each patient between groups.

According to the tailored treatment project, we evaluated the number of pathological piles treated, either the high-grade piles or the internal piles: In Group 1, the mean number of treated piles was 3.2, while the number of excised piles was 1.7; in Group 2, the mean number of treated piles was 3.1 and the number of excised piles was 1.4; and then in Group 3, the mean number of treated piles was 2.9 and the number of excised piles was 1.6 (Table 1).

The PKD mean value was 9.2 days for Group 1, 6.3 days for Group 2 and 6.7 days for Group 3. The use of painkillers was mainly related to defecation.

This result sustains the possibility that Ferguson and PEHP procedures can be overlapped according to PKD, while Milligan and Morgan procedure proved to be much more painful.

The possible role of other variables such as age, Goligher grade, number of pathological piles treated and number of excisions at a multivariate analysis was further evaluated: an increase in the number of pathological piles treated corresponded to an increase in PKD (Pearson = 0.329, $p = 0,002$) (Fig. 1). No other factors showed a significant impact on the outcome.

Urinary retention (18 patients) was the only short-term complication referred with no statistical difference between groups.

Only four long-term complications were referred: one case of haemorrhoidal thrombosis occurred 1 week after the procedure (PEHP group) and three cases of severely delayed healing of the external excision (all from the Milligan and Morgan group).

Minor episodes of bleeding and mucous discharge were referred which all resolved spontaneously: no patient needed to be re-admitted and no patient showed signs or symptoms of recurrence after 1-year follow-up.

Discussion

The modern and more effective approach to haemorrhoidal disease is the tailored approach.

Customizing the treatment means both choosing the best treatment for each patient and each situation but also choosing the best treatment for each single pathological pile according to its anatomical situation [6, 7].

When haemorrhoidectomy is indicated, the Milligan and Morgan procedure, Ferguson procedure, PEHP, and other excisional surgical procedures can be possible solutions.

In the excisional procedures, most common problems are severe postoperative pain, bleeding and long-term complications such as anal stenosis of different degrees [6, 7].

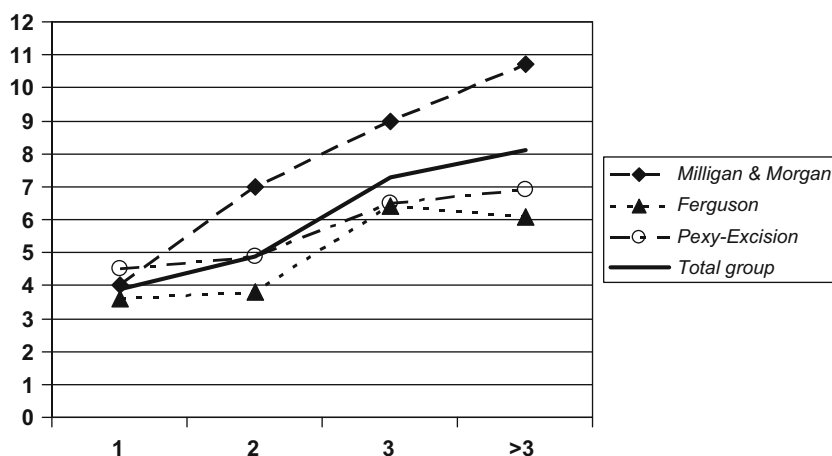
Recent studies conducted on the pathogenesis and the anatomy of the haemorrhoidal disease have confirmed the idea that surgical excision is not always mandatory [8].

Some less invasive procedures have been introduced in the last decades: stapled haemorrhoidopexy [9], Doppler-guided haemorrhoidal artery ligation (HAL Doppler, THD) [10], and suture haemorrhoidopexy [11]. These procedures have reduced the incidence of postoperative pain and complications at the expense of a higher recurrence rate that may be due to an incorrect patient selection and nontailored treatment.

Goligher IV grade, rigid fibrous internal pile, residual prolapsing piles despite the internal suspension, eversion of the dentate line, large skin tags, prominent external component are all particular anatomical situations that prompt the surgeon to decide on an excisional procedure.

Considering that stapled haemorrhoidal prolapsectomy only partially modifies the anal verge in fourth degree haemorrhoids and whenever bulky cutaneous fibrous folds are present these only regress partially, giving the patient the impression of persistence of the haemorrhoidal prolapse, in cases of advanced haemorrhoidal disease (with extensive skin tags, fourth degree piles, etc.) stapling improves but does not directly solve these pathologies as

Fig. 1 Correlation between painkiller days (PKD) and piles treated



necessary in order to obtain patient satisfaction and a clinical result.

According to the anatomical situation and the tailored treatment project on each pathological pile, we reported that the three groups evaluated were comparable according to the number of pathological piles and the number of pathological piles excised.

Ferguson procedure and PEHP have shown the same postoperative PKD value: this result shows that there are no differences in postoperative pain related to the extension of the area excised.

Milligan and Morgan procedure has proved to be much more painful and is maybe due to the larger residual wounds.

Closed haemorrhoidectomy gives better results in terms of pain and healing than open haemorrhoidectomy, whereas recurrence and complications are similar after 1 year, as noted also by other authors [12].

Aiming to reduce pain after Milligan and Morgan procedure the use of Ligasure could be considered [13]. The use of Ligasure is a better alternative than conventional excision in treating prolapsed haemorrhoids (grades III and IV) since it reduces operating time, postoperative pain, and time off work, and allows surgical wounds to heal faster, with minimal comparable side effects and a low recurrence rate.

In the study of Arbman et al. [14] in the Milligan and Morgan patients, only 18 % had completely healed wounds after 3 weeks, that went up to 40 % after 30 days [12] and symptoms of delayed wound healing were significantly more frequent than in the closed group. This was confirmed in our results.

The multivariate analysis also gave us another result: an increase in the number of pathological piles treated corresponded to an increase in the number of PKD while an increment of Goligher grade did not correspond to an increase in PKD.

This highlights that Goligher classification is only an anatomical and behavioural classification with no bearing on clinical outcome results as reported also in literary production [15] and that future studies should explore new classifications based on different parameters better connected to the procedures adopted nowadays and able to foresee the outcome.

There were no differences in postoperative short- and long-term complications: urinary retention seems to be related mainly to the anaesthesia adopted and could be overcome with local anaesthesia while the case of postoperative thrombosis of the external plexus is really infrequent as the single case of delayed healing but needs to be clarified.

This confirms that an excisional procedure conducted, as in our experience, only on pathological piles and not extended rigidly on the three main sites described in literary production, corresponds to very few postoperative complications.

Conclusion

The tailored treatment project drove our decision making towards the best excisional treatment to be adopted.

Milligan and Morgan haemorrhoidectomy, Ferguson haemorrhoidectomy and PEHP are three possible surgical options to treat haemorrhoidal disease when excision is indicated.

Ferguson haemorrhoidectomy and PEHP can be overlapped for some aspects such as postsurgical PKD and postoperative complications but there are a few differences that suggest some specific indications which are mainly related to the anatomical situation.

On the other hand, the results obtained with Milligan and Morgan haemorrhoidectomy suggest that this procedure is related to worse results in terms of pain and healing.

However, pain is mainly related to the number of piles treated.

Further studies are mandatory to better evaluate their applicability in each peculiar situation and deepen the tailored treatment project on each pathological pile.

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Bibliography

- Johanson JF, Sonnenberg A (1990) The prevalence of hemorrhoids and chronic constipation. An epidemiologic study. *Gastroenterology* 98:380–386
- Thomson WH (1975) The nature of haemorrhoids. *Br J Surg* 62:542–552
- Milligan ET, Morgan CN, Jones LE, Officer R (1937) Surgical anatomy of the anal canal and operative treatment of haemorrhoids. *Lancet* 11:1119–1194
- Ferguson JA, Heaton JR (1959) Closed hemorrhoidectomy. *Dis Colon Rectum* 2:176–179
- Neto JAR, Reis JA Jr, Kagohara O, Neto JS (2005) Semi-open hemorrhoidectomy. *Tech Coloproctol* 9:159–161
- Arezzo A, Podzemny V, Pescatori M (2011) Surgical management of hemorrhoids. State of the art. *Ann Ital Chir* 82:163–172
- Ross NP, Hildebrand DR, Tiernan JP, Brown SR, Watson AJ (2012) Haemorrhoids: 21st-century management. *Colorectal Dis* 14:917–919
- Aigner F, Bodner G, Gruber H et al (2006) The vascular nature of hemorrhoids. *J Gastrintest Surg* 10:1044–1050
- Longo A (1998) Treatment of haemorrhoidal disease by reduction of mucosa and haemorrhoidal prolapse with a circular stapling device: a new procedure. In: *Proceedings of 6th World Congress of Endoscopy Surgery*, Monduzzi Editore, Naples, pp 777–784
- Morinaga K, Hasuda K, Ikeda TA (1995) Novel therapy for hemorrhoids: ligation of the hemorrhoidal artery with a newly devised instrument (Moricorn) in conjunction with a Doppler flow meter. *Am J Gastroenterol* 90:610–613
- Faraq AE (1978) Pile suture: a new technique for the treatment of hemorrhoids. *Br J Surg* 65:293–295
- Arroyo A, Pérez F, Miranda E, Serrano P, Candela F, Lacueva J, Hernández H, Calpena R (2004) Open versus closed day-case haemorrhoidectomy: is there any difference? Results of a prospective randomised study. *Int J Colorectal Dis* 19:370–373
- Sakr MF (2010) LigaSure versus Milligan–Morgan hemorrhoidectomy: a prospective randomized clinical trial. *Tech Coloproctol* 14:13–17
- Arbman G, Krook H, Haapaniemi S (2000) Closed vs. open hemorrhoidectomy—is there any difference? *Dis Colon Rectum* 43:31–34
- Gerjy E, Lindhoff-Larson A, Nystrom P-O (2008) Grade of prolapsed and symptoms of haemorrhoids are poorly correlated: result of a classification algorithm in 270 patients. *Colorectal Dis* 10:694–700