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Original Article

Lessons from the first 70 patients operated by doppler-guided haemorrhoidal artery ligation with mucopexy in a French team specialising in surgical proctology

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ABSTRACT

Background: Doppler-guided haemorrhoidal artery ligation with mucopexy is a minimal-invasive surgical technique. It is both effective and less painful than conventional haemorrhoidectomy.
Methods: We gathered records on all patients operated on between November 2012 and June 2014. Pre- and postoperative scores were calculated during consultation and then by phone. Unsuccessful surgical treatment was defined by persistent haemorrhoid symptoms within three months following the procedure and relapse defined by recurrent symptoms after the third postoperative month.
Results: During the period analysed, 70 patients underwent consecutive surgical procedures for haemorrhoid prolapse (52%), bleeding (29%), or both (17%). Hospitalisation was outpatient or overnight for 87% of patients. There were no complications in 92.7% of cases. The average period away from work was 11 days (± 6.5). The time between the procedure and last postoperative consultation, followed by telephone contact, was respectively 2.7 months (± 5.8) and 16.5 months (± 4.9). At the time of the postoperative telephone call, the Thaha et al. score decreased by 5.6 ($p < 0.001$), while the quality of life score decreased by 2 ($p < 0.001$). The Wexner score remained the same or improved for all patients except one. Treatment was unsuccessful for 6/67 patients (9%) and 10/61 patients (16.4%) experienced a subsequent recurrence in haemorrhoid symptoms. Only those over 51 years old were statistically associated with more frequent recurrences ($p = 0.044$).

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Conclusion: Doppler-guided haemorrhoidal artery ligation with mucopexy is an effective technique in the medium-term. Good tolerance in makes this treatment an attractive alternative to conventional haemorrhoidectomy.

Lições dos primeiros 70 pacientes operados por ligadura de artéria hemorroidária guiada por doppler com mucopexia por uma equipe francesa especializada em proctologia cirúrgica

Palavras-chave:
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THD®

RESUMO

Experiência: A ligação de artéria hemorroidária com mucopexia orientada por Doppler é técnica cirúrgica minimamente invasiva. Esse procedimento é efetivo e menos doloroso do que a hemorroidectomia convencional.

Métodos: Reunimos os prontuários de todos os pacientes operados entre novembro de 2012 e junho de 2014. Foram calculados escores pré-operatórios e pós-operatórios durante as consultas e, em seguida, por telefone. Tratamento cirúrgico malsucedido foi definido como a persistência dos sintomas de hemorroidas dentro de três meses após o procedimento, e recidiva foi definida por sintomas recorrentes depois do terceiro mês do pós-operatório.

Resultados: Durante o período analisado, 70 pacientes passaram por procedimentos cirúrgicos consecutivos para prolapso de hemorroida (52%), sangramento (29%), ou ambos (17%). Para 87% dos pacientes, a hospitalização foi ambulatorial ou de pernoite. Não ocorreram complicações em 92,7% dos casos. O período médio de absenteísmo foi de 11 ± 6,5 dias. Os tempos transcorridos entre o procedimento e a última consulta no pós-operatório, seguida pelo contato telefônico, foram de respectivamente 2,7 ± 5,8 meses e 16,5 ± 4,9 meses. Por ocasião do contato telefônico no pós-operatório, o escore de Thaha et al. diminuiu em 5,6 pontos ($p < 0,001$), enquanto o escore de qualidade de vida diminuiu em 2 pontos ($p < 0,001$). O escore de Wexner permaneceu igual ou melhorou para todos os pacientes, exceto um. O tratamento não obteve sucesso para 6/67 pacientes (9%); e 10/61 pacientes (16,4%) sofreram uma subsequente recorrência nos sintomas hemorroidários. Apenas aqueles participantes com mais de 51 anos demonstraram associação estatística com recorrências mais frequentes ($p = 0,044$).

Conclusão: A ligação de artéria hemorroidária com mucopexia orientada por Doppler é técnica efetiva no meio termo. A boa tolerância faz com que esse tratamento seja uma alternativa efetiva à hemorroidectomia convencional.

Introduction

The frequency of haemorrhoid symptoms in the general population varies between 4 and 35%.[1] Most often this is bleeding or prolapse.[2] Treatment involves lifestyle and dietary guidelines, medical treatment (topical treatments, bowel regulators) and/or instrumental treatment (sclerosis, infrared photocoagulation (IRC), rubber band ligation (RBL), etc.). However, it is estimated that 10% of patients undergo surgery.[3,4] Triple pedicle haemorrhoidectomy, as described by Milligan and Morgan,[5] is the reference technique in Europe where three wounds are left open. This causes pain that can be intense and requires daily care. Initial hospitalisation and absence from work for 2 to 4 weeks are unavoidable in most cases.[6] The Doppler-guided haemorrhoidal artery ligation technique described by Morinaga et al.[7] is proven to be less painful ($p < 0.005$) with a shorter hospital stay ($p < 0.0001$) and a faster return to work ($p < 0.0005$) compared to haemorrhoidectomy.[8] Along with the rate of recurrent prolapse, about 12–30% in some studies,[9,10] the technique has advanced with the addition of mucopexy procedures.[11] The Doppler-guided haemorrhoidal artery ligation with mucopexy technique was compared to the Longo technique in at least six randomised controlled trials and showed a shorter hospital stay and rapid return to work with equal effectiveness in the short term.[12–21] The technique was also compared to haemorrhoidectomy in at least six randomised controlled trials, which confirmed that it was equally effective in the short term, less painful and led to a reduced hospital stay with a faster return to work.[12,17–21] In this context and given the growing interest in this technique among patients and practitioners, we assessed the tolerance and effectiveness of this treatment in our first patient participants.

Material and methods

We studied a Paris-based bicentric cohort (Groupe Hospitalier Paris Saint Joseph and Clinique du Louvre) involving patients that underwent consecutive surgical procedures between 26 November 2012 and 03 June 2014. Patients were reviewed during consultation and subsequently contacted by telephone. The analysis criteria included: sex, age, previous medical and surgical treatment for haemorrhoidal disease, number of bowel movements per day, symptoms duration, reason for surgery, the number of ligations and mucopexy procedures performed during the operation. The haemorrhoid severity symptom scale by Thaha et al. (Table 1)[22] ranging from 0 (normal) to 19 (pathological), the impact on quality of life scale, ranging from 0 (none) to 5 (really bad), and the Wexner faecal incontinence scale were assessed before and after the procedure, during the consultation and then by phone. The hospitalisation period, time away from work and pain intensity (visual analogue scale (VAS)) were assessed by the nurse within the first 3 h and possible complications were compiled. The failure rate (defined as the persistence of haemorrhoidal symptoms within three months after surgery) and relapse rate (defined by recurrent symptoms after the third postoperative month) and their treatments were evaluated. The Doppler-guided haemorrhoidal artery ligation with mucopexy technique was performed using a windowed anoscope equipped with a Doppler probe and a light source. After introduction, the Doppler signal identified the position of the haemorrhoidal arteries (normally located at 1H, 3H 5H, 7H, 9H and 11H) and ligation was carried out with a 2-0 absorbable running-X suture at the maximum intensity of the Doppler signal. Mucopexy was carried out for the prolapse using a longitudinal continuous suture with final knot at the proximal fixation point. Analgesics, nonsteroidal anti-inflammatory drugs and laxatives were routinely prescribed for postoperative treatment. The association between patient characteristics, treatment and therapeutic outcome was carried out by Fisher's exact test for categorical data, taking into account the small number of patients for certain categories. Continuous data (or more than 3 categories) were split according to the median value for this statistical analysis. Continuous values across several patient groups were compared using analysis of variance and the Student's *t*-test. The data were analysed with SAS version 9.0 (SAS Institute, Cary, NC).

Table 2 – Preoperative characteristics.

Preoperative characteristic	
Male/female	41/28 (59.4%/48.6%)
Average age at time of procedure (years ± SD)	52 ± 11.8
Average duration of symptoms (years ± SD)	8.4 ± 7.9
Number of stools per day (n, %)	
<1	2 (2.9%)
1	57 (82.6%)
2	6 (8.7%)
>3	4 (5.8%)
Impact of quality of life (average ± SD)	3.51 ± 0.74

SD, standard deviation.

Results

Seventy patients underwent surgical procedures during the period analysed. One patient was excluded from the study as he did not attend the postoperative consultation and could not be reached by phone. One patient refused to answer questions by phone and 2 patients could not be contacted by telephone. However, these 3 patients were reviewed in consultation so their data were included in the final analysis. The main preoperative characteristics for the 69 patients are presented in Table 2. The Thaha et al. preoperative score was 7.2 (± 2.8). The symptoms had an impact on quality of life for 97.1% ($n = 67$) of patients surveyed. The average quality of life score was 3.5 (± 0.7). The Wexner score was 0 in 88.4% ($n = 61$) of patients and between 1 and 13 in 8 other patients. The main surgical indications for patients were haemorrhoid prolapse (69.6%, $n = 48$), bleeding (46%, $n = 32$) or both (17.4%, $n = 12$). The number of artery ligations in the perioperative period were between 3 and 7 (average of 5.1 ± 0.8), and the number of mucopexy procedures was between 4 and 7 (average of 5.2 ± 0.8), knowing that 78.2% ($n = 54$) of patients underwent at least 5 ligatures and 76.8% ($n = 53$) underwent at least 5 mucopexy procedures. During the postoperative period, 11.6% of patients experienced no pain and 63.8% ($n = 44$) of patients had a VAS of at least 5. The average was 4.9 (± 2.5). In terms of hospitalisation, 87% of patients underwent outpatient or overnight procedures. There were no complications in 92.7% of cases and all complications that occurred were minor (Table 3). Twenty-one patients (30.4%) did not have to take time off work as they were not working at the time of the procedure (unemployed, studying,

Table 1 – Haemorrhoid symptom severity scale by Thaha et al.

Score	Pruritus	Pain	Prolapse	Bleeding	Soiling	Incontinence to gas
	Never	Never	Never	Never	Never	Never
1	Occasional	With stool	With straining	Spotting	Spotting	<1/week
2	Frequent	Frequent	Reducible	Dripping into pan	Occasional	<1/week
3	Permanent	Permanent	Permanent	Without stool	Frequent, with stool	Constant
4				Staining undergarments		

Thaha et al.[22]

Table 3 – Postoperative characteristics.

Postoperative characteristics	
Duration of hospitalisation	
Outpatient	34 (49.3%)
1 night	26 (37.7%)
2 nights	7 (10.1%)
3 nights	2 (2.9%)
Complications	
None	64 (92.75%)
Bleeding from eschar separation	1 (1.45%)
Faecal impaction + bladder distension	1 (1.45%)
Pus (fistula)	1 (1.45%)
Low-grade fever	1 (1.45%)
Post operative VAS within 3 h	
<4	17 (24.6%)
4–6	33 (47.9%)
>6	19 (27.5%)
Impact of quality of life (average ± SD)	1.67 ± 2.80 $p < 0.001$

Table 4 – Haemorrhoid symptom severity score by Thaha et al.[22]

Score de Thaha (0–19)	Preoperative ($n = 69$)	Postoperative ($n = 66$)	
0–5	22	61	
6–10	39	3	
11–15	7	1	
16–19	1	1	
Average ± SD	7.23 ± 2.78	1.67 ± 2.80	$p < 0.001$

retired). Four patients (8.3%) were able to return to work the next day. The 44 patients that took time of work were away for an average of 11 days (± 6.5). The average time between the procedure and last postoperative consultation, followed by telephone contact, was respectively 2.7 months (± 5.8) and 16.5 months (± 4.9). The preoperative Thaha et al. score was 7.2 (± 2.8) compared to 1.7 (± 2.8) at the time of the postoperative telephone call, with an average decrease of 5.6 (± 2.6) ($p < 0.001$) (Table 4). The quality of life score was 3.5 (+/0.7) compared to 1.5 (± 0.8) at the time of the postoperative telephone call, with an average decrease of 2 (±1) ($p < 0.001$). The Wexner score remained unchanged during the postoperative period for 61 patients (100%) as it was normal before the surgical procedure. For patients that had an abnormal preoperative score ($n = 8$), the Wexner score remained unchanged for 3 patients, improved for 4 patients and was worse for 1 patient who complained of increased post-surgical incontinence to gas. The treatment was deemed unsuccessful for 6/67 patients (9%) at the time of the telephone call. Among the initially satisfied patients, 10/61 (16.4%) relapsed. The time between the procedure and recurrence was 8.6 months (± 5.7) (Table 5). Possible predictors for recurrence such as gender, symptom history, previous treatment, preoperative symptom severity or quality of life scores, number of ligations and mucopexy procedures during surgery, as well as the reason for surgery, were analysed but were not significant. Only ages higher than 51 years were a predictive factor for recurrence ($p = 0.044$).

Table 5 – Medium term effectiveness.

Failure	6 (9%)
Bleeding	1 (16.7%)
Prolapse	1 (16.7%)
Recurrence	10 (16.4%)
Prolapse	8 (80%)
Prolapse + bleeding	2 (20%)
Treatment for recurrence/failure	
None	5 (31.2%)
Instrumental treatment	9 (56.2%)
Instrumental and surgical treatment	1 (6.3%)
Surgical treatment	1 (6.3%)

Discussion

This retrospective study shows that the Doppler-guided haemorrhoidal artery ligation with mucopexy technique relieved haemorrhoidal symptoms in 91% of patients. Haemorrhoid prolapse and bleeding represented the main surgical indications (98.6%) as previously described in the literature.[23–25] However, recurrent episodes of external haemorrhoidal thrombosis did not seem to be a good indication for the treatment. One of the advantages of this treatment is that it can be performed in an outpatient setting.[26] In this study, the treatment was carried out as an outpatient procedure in 49.3% of cases and as an overnight procedure in 37.7% of cases. Clinique du Louvre favoured overnight hospitalisation as part of its operations, explaining why the majority of patients did not undergo outpatient procedures. We now offer outpatient hospitalisation systematically. Patients who were hospitalised for more than one night lived far from the healthcare site, were elderly, lived alone and/or presented with significant comorbidities. Another advantage of this treatment is the rapid return to work,[26] partly due to the lack of local postoperative care, unlike haemorrhoidectomy procedures.[21] Fourteen percent of patients included in the study immediately returned to work. However, the return to work for other patients took place 11 days on average after the procedure. This result is due to patients being routinely advised not to return to work until the first postoperative consultation, which took place some ten days after the procedure. We now routinely instruct patients not to return to work for 7 days. Longer periods away from work occurred as 2 patients requested that this period be extended during the postoperative consultation because of hygiene issues at their workplace. Another advantage of this treatment is that it is well-tolerated and there is a low rate of complications.[26] The pain VAS within the first 24 h was greater or equal to 5 in 63.8% of cases throughout the study. This significant value shows that this treatment is not painless. However, we regret that the administration of analgesics (by request or routine) and subsequent VAS were not specified during the study as we thought that the surgical treatment was less painful than conventional haemorrhoidectomy.[21] With regards to complications, none arose in 92.7% of cases and all complications that occurred were minor. Only one patient required hospitalisation for complications (faecal impaction and acute urinary retention). No fissures, stenosis or haemorrhoidal thrombosis occurred, unlike studies by Ratto et al.[24] and Sheyer et al.[27] Finally, Wexner scores higher than 0 were

mainly due to soiling in relation to haemorrhoidal disease and not to continence disorders. Moreover, continence was maintained or even improved in all patients, except for one patient who experienced increased incontinence to gas with no clear explanation. The treatment had a less significant effect on prolapse than on bleeding. However, as suggested by Ratto et al.,[24] some patients interviewed by telephone perhaps confused skin tags with haemorrhoidal prolapse. Among the patients who have been operated, 16.4% experienced a recurrence in their haemorrhoid condition at the time of the telephone follow-up at 16.5 months on average. This can be explained by the fact that 40.6% of patients had permanently prolapsed haemorrhoids before the surgical procedure (Goligher grade IV). However, the haemorrhoid symptom severity and quality of life score significantly decreased during the postoperative period. Furthermore, this study involved the first 70 patients that underwent surgical procedures in our team, which suggests better results for the future. Finally, 56.2% of patients that relapsed were alleviated by a simple instrumental treatment carried out during consultation and only 2 patients received a triple pedicle haemorrhoidectomy. Recurrences were also far more frequent in elderly patients. This result has not been, to our knowledge, reported in the literature. We did not find any clear explanation. This study has methodological weaknesses (limited staffing, retrospective and telephone assessment, time-restricted follow-up). However, the results obtained for these 70 consecutive patients with only one lost to follow-up appear to be representative of the current practice for the Doppler-guided haemorrhoidal artery ligation with mucopexy technique.[25–27]

Conclusion

Doppler-guided haemorrhoidal artery ligation with mucopexy is an effective technique. Moreover, it is an interesting alternative to triple pedicle haemorrhoidectomy, given that treatment is well-tolerated and has a low rate of complications.

Conflicts of interest

Elise Pommaret and Vincent de Parades received payment for travel to surgical meeting. The other authors declare no conflicts of interest.

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