Journal of Visceral Surgery (2016) 153, 213—218

Available online at
ScienceDirect
www.sciencedirect.com

Elsevier Masson France
EM|consulte
www.em-consulte.com/en

RECOMMENDATIONS

Guidelines for the treatment of hemorrhoids (short report)☆

T. Higuero[a,*], L. Abramowitz[b,c], A. Castinel[d], N. Fathallah[e], P. Hemery[f], C. Laclotte Duhoux[g], F. Pigot[h], H. Pillant-Le Moult[e], A. Senéjoux[i], L. Siproudhis[j], G. Staumont[k], J.M. Suduca[k], B. Vinson-Bonnet[l]

[a] *11, boulevard du général Leclerc, 06240 Beausoleil, France*
[b] *Unité de proctologie médico-chirurgicale, hôpital Bichat, 46, rue Henri-Huchard, 75018 Paris, France*
[c] *95, rue de Passy, 75016 Paris, France*
[d] *43, bis rue de Strasbourg, 33000 Bordeaux, France*
[e] *Institut de proctologie Léopold-Bellan, hôpital Saint-Joseph, 185, rue Raymond-Losserand, 75014 Paris, France*
[f] *5, rue Marceau, 44000 Nantes, France*
[g] *43 bis, rue de Strasbourg, 33000 Bordeaux, France*
[h] *Hôpital Bagatelle, 203, route de Toulouse, BP 50048, 33401 Talence cedex, France*
[i] *CHP Rennes Saint-Grégoire, 6, boulevard de la Boutière, 35760 Saint-Grégoire, France*
[j] *Service de gastroentérologie, CHU Pontchaillou, 35033 Rennes cedex 9, France*
[k] *Clinique St.-Jean Languedoc, 20, route de Revel, Cs 37707, 31077 Toulouse cedex 4, France*
[l] *Service de chirurgie digestive, centre hospitalier inter-communal de Poissy Saint-Germain-en-Laye, 10, rue du Champ-Gaillard, BP 73082, 78303 Poissy cedex, France*

Available online 18 May 2016

KEYWORDS
Hemorrhoids;
Treatment;
Guidelines

Summary Hemorrhoids are a common medical problem that is often considered as benign. The French Society of Colo-Proctology (*Société nationale française de colo-proctologie* [SNFCP]) recently revised its recommendations for the management of hemorrhoids (last issued in 2001), based on the literature and consensual expert opinion. We present a short report of these recommendations. Briefly, medical treatment, including dietary fiber, should always be proposed in first intention and instrumental treatment only if medical treatment fails, except in grade ≥ III prolapse. Surgery should be the last resort, and the patient well informed of the surgical alternatives, including the possibility of elective ambulatory surgery, if appropriate. Postoperative pain should be prevented by the systematic implementation of a pudendal block and multimodal use of analgesics.

☆ Statement: the French Society of Colo-Proctology presents updated guidelines for the management of hemorrhoids, last issued in 2001.

* Corresponding author.
E-mail address: docteur@higuero-gastro.com (T. Higuero).

http://dx.doi.org/10.1016/j.jviscsurg.2016.03.004
1878-7886/

Introduction

The French Society of Colo-Proctology (*Société nationale française de colo-proctologie* [SNFCP]) recently (2014) reviewed and updated its recommendations for the management of hemorrhoids.

Methodology

We followed the methodology for preparing guidelines of the French Health Authorities (*Haute Autorité de santé* [HAS]) that specifies grades of recommendation based on the scientific level of evidence provided by the literature:

- grade A: scientific evidence obtained from level of evidence 1 in the literature (properly designed high power randomized controlled trials (RCTs), meta-analyzes of RCTs and decision analyzes);
- grade B: scientific presumption from a level of evidence of the literature (RCTs of low power, non-randomized comparative studies and well-conducted cohort studies);
- grade C: low level of evidence from level of evidence 3 or 4 of the literature (comparative studies with considerable bias, retrospective studies and case series).

In the absence of data in the literature, proposals for recommendation were submitted to the opinion of all the members of the SNFCP with a numeric grading system from level 1 to 9. Taking into account all the answers, consensual professional opinions could be determined and named expert agreement (EA). For some assertions, in the absence of scientific proof, the author's opinion was named ''expert opinion''.

Medical treatment of hemorrhoids

Hemorrhoids are a benign condition with non-specific symptoms. Therefore, a clinical examination is necessary for diagnosis. The goal of medical treatment is to relieve the symptoms.

General principles

They are as follows:

- localized topical treatments (suppositories, creams or ointments) combining, to varying degrees, locally applied corticosteroids, anesthetics, lubricants, protectors and veinotonics;
- modifiers of intestinal transit that are intended to regulate the consistency or frequency of stools (dietary fiber, osmotic laxatives, mucilage, agents that slow transit);
- phlebotonics including diosmin, troxerutin, derivatives of *Ginkgo biloba*, and hydroxy-ethylrutosides;
- Non-steroidal anti-inflammatory drugs (NSAIDs) that act on pain and inflammation, peripheral and central analgesics for pain and corticosteroids for the inflammation.

Results and recommendations

In the short term, topical treatments improve symptoms [1] (level 2). However, their long-term benefit has not been demonstrated. It is recommended to prescribe them for acute manifestations of hemorrhoids (level 2) (grade B).

Dietary fiber (in food or as mucilage) halves bleeding and the recurrence of symptoms [2,3] (level 2). Its use is recommended in the treatment of acute episodes and to prevent recurrence (level 2) (grade B).

Phlebotonics are effective for acute symptoms of internal hemorrhoidal disease [4] (level 1). They reduce the risk of recurrence of symptoms at 6 months. It is recommended to prescribe them for short-term use in cases of acute manifestations of hemorrhoidals (bleeding and pain) (level 1) (grade A). However, the effectiveness of this therapeutic class may be overestimated by the absence of publications on negative trials (gray area).

There are no scientific data evaluating NSAIDs, cortisone and its derivatives, or central and peripheral analgesics for the treatment of hemorrhoids. Nevertheless, it is recommended to prescribe them for pain due to thrombosed hemorrhoids (strong expert agreement EA1).

Despite the lack of published data, co-prescription is common in practice. For thrombosed hemorrhoids, it is recommended to propose a treatment containing NSAIDs, analgesics, regulators of transit, topical preparations and phlebotonics. In cases of internal hemorrhoids, it is recommended to provide a treatment that includes regulators of transit, topical preparations and phlebotonics. NSAIDs and analgesics may be added for pain (strong expert agreement EA2).

Topical preparations [1] and phlebotonics [4] are well tolerated (level 2).

Special cases

In cases involving anal fissure, a combination of topical treatment and laxatives can be used to treat both conditions. For anal suppuration and inflammatory bowel disease, their treatment should take priority over that of hemorrhoids.

In pregnant and postpartum women, regulation of intestinal transit can reduce the risk of developing hemorrhoids. CRAT (the Reference Center for Teratogenic Agents) (www.lecrat.org) allows the use of topical treatments, laxatives, paracetamol and phlebotonics for hemorrhoids in pregnant or lactating women. However, one should consult the up-to-date CRAT data before prescribing NSAIDs, corticosteroids or analgesics. For NSAIDs, corticosteroids, and analgesics, it is necessary to refer to the up-to-date CRAT data. In children, local treatments and laxatives may be prescribed and NSAIDs in cases of thrombosed hemorrhoids.

There is no need to modify the local or general medical treatment of hemorrhoids when introducing antiplatelet or immunosuppressive drugs. The rules for the use of NSAIDs should be followed.

Instrumental treatment of hemorrhoids

The term instrumental treatment includes physical methods of treating internal hemorrhoids that cause rectal bleeding or reducible prolapse, in an office-based procedure. Thrombosed hemorrhoids, external and/or internal, are not an indication for instrumental treatment.

General principles

The common principle is to induce fibrotic scarring at the apex of the internal hemorrhoidal plexus. Whatever the technique used, one must privilege single-use devices; when used, reusable equipment must be sterilized after each use according to standard procedures.

The three main instrumental treatments of hemorrhoids validated in the literature are infrared photocoagulation, rubber band ligation, and sclerotherapy [5].

Results and recommendations

Rubber band ligation, infrared photocoagulation and sclerotherapy are recommended in cases of bleeding due to grade I and II hemorrhoids, or after failure of medical treatment [6] (level 1) (grade A). In the short term, the effectiveness of these three instrumental techniques is comparable for grade I and II hemorrhoids with the disappearance or improvement of symptoms in 70—90% of cases [6] (level 2). At 4 years, these initial good results deteriorate with less than half of patients remaining asymptomatic and only 20% after sclerotherapy [7] (level 2). Rubber band ligation is more effective than infrared photocoagulation or sclerotherapy in cases of prolapse, and requires fewer sessions [7] (level 2).

For grade II prolapse, rubber band ligation is effective in two out of three cases at one year, less than for pedicle hemorrhoidectomy or hemorrhoidopexy, but with less morbidity [8] (level 1). Ligation can be recommended for localized or moderate hemorrhoidal prolapse before proposing surgery [6] (level 2) (grade B). In cases of grade III prolapse, pedicle hemorrhoidectomy and hemorrhoidopexy are more effective than rubber band ligation and should be preferred [8,9] (level 1) (grade A). Ligation is not recommended in cases of circular grade III and grade IV prolapse [8] (level 2) (grade B).

Performing three ligations in one session gives results comparable to those of three ligations in three successive sessions [10] (level 1) (grade A). Improved transit increases the efficiency of rubber band ligations (level 2) (grade B).

Complications

Side effects of infrared photocoagulation are minor: transient moderate pain, minimal rectal bleeding with exceptional heavier bleeding until the 10th day after the procedure. No other significant complications have been reported.

Adverse effects of sclerosing injections are common: moderate pain, minor rectal bleeding and seeping. Possible complications are mainly infections, which are potentially serious.

The side effects of rubber band ligation, although minor, are more common than with other instrumental methods (level 2): vagal symptoms, pain, and/or low abundance rectal bleeding. Immediate intense pain secondary to positioning the elastic too low may require removal of the band. Complications are possible (1—5% of cases): internal or external thrombosed hemorrhoids, dysuria, intense pain, and/or perianal abscess. Rare cases of heavy bleeding requiring a hemostatic act are possible until the 15th day after the procedure. Exceptional very serious infectious complications, essentially pelvic cellulitis, have been reported. Patients should be informed of the early signs: anorectal pain together with urinary disorders.

There is no consensus on the value of systematic antibiotic prophylaxis for rubber-band ligature or sclerotherapy (expert agreement EA3). However, it is justifiable, especially for patients at risk of infection such as diabetics and the immunocompromised (expert opinion).

Special cases

Active inflammatory bowel disease and perianal suppuration are contra-indications for instrumental treatment. In cases of pregnancy or severe immunosuppression, rubber band ligation and sclerotherapy are contra-indicated (strong expert agreement EA4). According to the good practice recommendations instrumental treatments are of low bleeding risk [11]. An antiaggregatory dose of aspirin need not be interrupted for an instrumental procedure. Other antiplatelet agents, anticoagulants and severe coagulopathy increase the risk of bleeding.

In summary, rubber band ligation is the validated instrumental technique that is most effective in the long-term with fewer sessions, especially for prolapse for which it can be proposed from the outset. In the absence of prolapse, the risk-benefit balance is less favorable and rubber band ligation should be proposed as second line treatment after photocoagulation or sclerotherapy [6] (level 2) (grade B).

External thrombosed hemorrhoids

The incision or excision of external thrombosed hemorrhoids (ETH) is not systematic, its indication depends on the intensity of pain and local conditions. It is recommended in cases of a single or a limited number of painful ETH with little or no edema. Incision or excision can shorten the duration of symptoms and reduces bleeding in cases of partially ruptured ETH. ETH can be treated at each recurrence by a new incision or excision procedure. In contrast, internal thrombosed hemorrhoids should not be incised or excised because of the risk of bleeding complications and fissures (strong expert agreement EA5).

The incision or excision of ETH is possible in pregnant women, in immunosuppressed patients, in those with active ulcerative colitis or active Crohn's disease and in patients on low dose aspirin for anti-aggregation. For patients taking other antiplatelet agents or anticoagulants and in cases of severe coagulopathy, then medical treatment is to be privileged.

Surgical treatment

General principles

Surgical treatment should be proposed after the failure of medical treatment and possibly after instrumental treatment, where their respective indications have been followed.

Resections of the pedicules of hemorrhoidal tissue or hemorrhoidectomy are the conventional surgical methods, benefiting from the emergence of innovative techniques and devices in the last two decades such as thermofusion and the ultrasonic scalpel. In parallel new concepts concerning the surgical treatment of internal hemorrhoids that preserve the hemorrhoidal tissue have been developed. These include hemorrhoidopexy by circular stapling or the Longo procedure, Doppler guided hemorrhoidal artery ligation (DGHAL) and mucopexy. In principle, hemorrhoidopexy, DGHAL and mucopexies should only be used to treat internal hemorrhoids.

Results and recommendations

Pedicle hemorrhoidectomy is effective for all types of hemorrhoidal pathologies. It is superior to rubber band ligation in resolving symptoms at long-term [8] (level 1). There is no difference in efficacy, duration of hospital stay, postoperative pain and complications between the open and closed pedicle hemorrhoidectomy, but healing is faster for the closed technique [12] (level 1). Pedicle hemorrhoidectomy is recommended regardless of the stage of the hemorrhoids [5] (level 1) (grade A). It should be the first line treatment in cases with acute complications (e.g. hyperalgesic and/or necrotic polythrombosed hemorrhoids resistant to medical treatment), severe anemia, and stage IV hemorrhoids.

Circular stapled hemorrhoidopexy is indicated in cases of grade II and III hemorrhoids [13] (level 1) (grade A). Overall, hemorrhoidopexy is comparable to pedicle hemorrhoidectomy. While In the short term, hemorrhoidopexy shows better postoperative tolerance, a shorter hospital stay and faster resumption of normal activities; in the long term it is less effective than hemorrhoidectomy with a three to five times more frequent rate of recurrence of prolapse [14] (level 1). Circular stapled hemorrhoidopexy is not recommended in cases of grade IV prolapse [15] (level 2) (grade B).

Most case series evaluating Doppler guided hemorrhoidal arterial ligation (DGHAL), with or without mucopexy, provide only a low level of evidence making it difficult to make recommendations. Open studies show efficacy at one year in nearly 9 out of 10 cases [16] (level 4) and in three out of four at five years [17] (level 4). Recurrence of the prolapse is more common in cases of grade III hemorrhoids and especially for grade IV [16] (level 4). DGHAL is not recommended in cases of grade IV prolapse [16,18] (level 4) (Grade C) but is recommended for grade II and III hemorrhoids [19] (level 2) (grade B). Recurrence is lower in cases of associated mucopexy (expert opinion).

At one year, DGHAL has comparable efficacy to closed hemorrhoidectomy with better postoperative tolerance, a shorter hospital stay and faster return to activities [20,21] (level 2). DGHAL associated with mucopexy could be proposed as an alternative to hemorrhoidopexy (level 2) (grade B).

Complications

Postoperative pain (POP) is less intense and shorter after hemorrhoidopexy than following hemorrhoidectomy, becoming virtually imperceptible for both techniques beyond 21 days [13,14] (level 1). Complications, both immediate (urinary retention, thrombosis, hemorrhage, fecal impaction) and late (infection, stenosis, incontinence, urgency) have been reported after hemorrhoidectomy and hemorrhoidopexy at similar rates [13—15] (level 1). The incidence of urinary retention is common (8—10%). The risk of bleeding varies between 4 and 15% [15,22] (level 1). Thus, in the organization of postoperative care, it is recommended to consider the risk of bleeding that can persist for 3 weeks (strong expert agreement EA6). Anal stenosis and continence disorders are reported in less than 5% of patients. It is recommended not to perform sphincterotomy during hemorrhoid surgery [23] (level 2) (grade B) and care should be taken in the use of anal retractors (level 2) (grade B). Very rare but potentially severe infectious complications have also been reported after hemorrhoidopexy (retrorectal hematoma, pelvic cellulitis and rectal perforation with peritonitis).

DGHAL combined with mucopexy are techniques that are currently under evaluation with low rates of morbidity to date [16] (level 4).

Special situations

During pregnancy and in the immediate postpartum period, hemorrhoidal surgery should be reserved for severe complications that are resistant to medical treatment. In the case of inflammatory bowel disease, it is advisable only to operate during a quiescent phase, in the absence of progressive anorectal disease and of suppuration, and to prefer partial single pedicle procedures. There are no contraindications to hemorrhoidal surgery in patients infected with HIV (strong expert agreement EA7). There are no data in the literature regarding immunocompromised patients. Hemorrhoidectomy, circular stapled hemorrhoidopexy and DGHAL are considered as having a moderate risk of bleeding according to recent good practice guidelines [11]. They can be performed when the patient is on an antiaggregatory dose of aspirin. It is recommended not to stop aspirin treatment, even when indicated as primary prevention. The risk of bleeding with anticoagulants and antiplatelet agents other than aspirin should be balanced against the cardiovascular risk associated with discontinuation of the treatment.

Management of post-operative pain (POP)

Laxatives or bran begun a few days before surgery are recommended because they make the first stool less painful (Level 1) (grade A). Pudendal blocks using local anesthetics with a long half-life given early-on in the procedure are recommended as they reduce POP for about 24 h [24] (level 1) (grade A). Multi-pedicle hemorrhoidectomy is more painful than other techniques (level 1). Associated sphincterotomy is not recommended to decrease POP because of the risk of incontinence [23] (level 1) (grade A). The use of scissors, a cold scalpel or electrocoagulation does not influence POP (level 1). In contrast the use of thermofusion (LigaSure™) [25] (level 1) and ultracision (Harmonic scalpel) [26] (Level 2) can reduce early POP.

Analgesics should be administered with the premedication or intraoperatively to anticipate early postoperative pain, and continued postoperatively. As first-line treatment non-opioid analgesics should be used: paracetamol combined with non-steroidal anti-inflammatory drugs because of the side effects of opiates (urinary retention, nausea, vomiting, constipation) [27]. Nefopam administered immediately after surgery increases the risk of urinary retention. Weak opioids (codeine and tramadol) are useful in case the analgesics mentioned are ineffective, especially when lifting the pudendal block (strong expert agreement EA8).

Prospect for ambulatory hemorrhoidal surgery

Ambulatory care hemorrhoidal surgery is an elective surgery. It is recommended to comply with the medical-social eligibility criteria for ambulatory procedures. Written information should be provided to the patient concerning the

treatment of POP and the possibility of postoperative complications. It is advisable to contact patients by phone the next day or the day after the procedure. The choice of surgical technique should not be decided according to the mode of patient management, ambulatory or not (strong expert agreement EA9).

Postoperative bleeding is a cause of failure of ambulatory management after hemorrhoidopexy [28] (level 3) and requires readmission after hemorrhoidectomy [28] (level 3). Acute urinary retention is the main cause of failure of ambulatory management whatever the type of procedure [29] (level 3) and is exacerbated by spinal anesthesia [29] (level 2). It is recommended not to use the technique of spinal anesthesia without adaptation (reduction of doses, short acting local anesthetic) (strong expert agreement EA10). POP is also a cause of failure in outpatients. It is recommended to use infiltration techniques or perineal block with a long-acting anesthetic agent [30] (level 1) (grade A). Fecal impaction and urinary retention are reasons for readmission, especially after pedicle hemorrhoidectomy.

In conclusion, prior to discharge following ambulatory surgical treatment it is recommended to prescribe laxatives and analgesics, to ensure urination has occurred (or the absence of a swollen bladder), and the absence of POP or bleeding (strong expert agreement EA11).

Conclusions

The management of hemorrhoids involves confirmation of the diagnosis, meeting the needs and expectations of the patient, and to master the various treatment alternatives, or at least, to be aware of their indications and limitations.

Medical treatment should always be proposed in first intention, which may be sufficient for acute events and in cases of grade I and II hemorrhoids. Instrumental treatment is recommended in case of failure of medical treatment or immediately for grade III localized prolapses for which rubber band ligation should be preferred. Surgical treatment should be offered in the event of failure of both medical and instrumental treatment, or immediately for advanced prolapse. The patient should be reliably informed of the surgical alternatives and be able to participate in the choice of technique, the final decision depending on the surgeon. POP should be prevented by the systematic implementation of a pudendal block and multimodal use of analgesics. Elective routine outpatient surgery is possible provided that the patient's safety can be assured.

Acknowledgement

Critical Reading Committee: Laurent Abramowitz, Paul Bendfredj, Dominique Bouchard, Carole Cordonnier, Hubert Dereux, Paul Dieterling, Jean-Luc Faucheron, Philippe Godeberge, Michel Gompel, Thierry Higuero, Frédéric Juguet, Pierre Moreau, François Mion, Vincent de Parades, François Pigot, Elise Pommaret, Agnès Senéjoux, Laurent Siproudhis, Denis Soudan, Marc Souffran, Ghislain Staumont, Jean Jacques Tassou, Christian Thomas, Béatrice Vinson-Bonnet and other unamed members of the French Society of Colo-Proctology (SNFCP).

We thank Dr Alison Foote (Grenoble Clinical Research Center) for critically editing the manuscript.

Disclosure of interest

The authors declare that they have no competing interest.

References

[1] Jiang Z, Tang W, Cao J. Double-blind randomized clinical trial in evaluating the efficacy and safety of rectum mucosa protector in the treatment of acute hemorrhoids. Chin J Surg 2001;39:53—5.
[2] Alonso-Coello P, Guyatt G, Heels-Ansdell D, et al. Laxatives for the treatment of hemorrhoids. Cochrane Database Syst Rev 2005;19:CD004649.
[3] Alonso-Coello P, Mills E, Heels-Ansdell D, et al. Fiber for the treatment of hemorrhoids complications: a systematic review and meta-analysis. Am J Gastroenterol 2006;101:181—8.
[4] Perera N, Liolitsa D, Iype S, et al. Phlebotonics for haemorrhoids. Cochrane Database Syst Rev 2012;15:CD004322.
[5] Abramowitz L, Godeberge P, Staumont G, Soudan D, for the Société Nationale Française de Colo-Proctologie. Guidelines for Clinical Practice for the treatment of hemorrhoidal disease. Gastroenterol Clin Biol 2001;25:674—702.
[6] MacRae HM, McLeod RS. Comparison of hemorrhoidal treatment modalities. A meta-analysis. Dis Colon Rectum 1995;38:687—94.
[7] Kanellos I, Goulimaris I, Christoforidis E, Kelpis T, Betsis D. A comparison of the simultaneous application of sclerotherapy and rubber band ligation, with sclerotherapy and rubber band ligation applied separately, for the treatment of haemorrhoids: a prospective randomized trial. Colorectal Dis 2003;5:133—8.
[8] Shanmugam V, Thaha MA, Rabindranath KS, Campbell KL, Steele RJC, Loudon MA. Systematic review of randomized trials comparing rubber band ligation with excisional haemorrhoidectomy. Br J Surg 2003;92:1481—7.
[9] ShanmugamV, Muthukumarasamy G, Cook JA, Vale L, Watson AJM, Loudon MA. Randomized controlled trial comparing rubber band ligation with stapled haemorrhoidopexy for Grade II circumferential haemorrhoids: long-term results. Colorectal Disease 2010;12:579—86.
[10] Poon GP, Chu KW, Lau WY, et al. Conventional vs. triple rubber band ligation for hemorrhoids. A prospective, randomized trial. Dis Colon Rectum 1986;29:83683—8.
[11] SFED/HAS. Antiplatelet agents: consideration of thrombotic and hemorrhagic risk of endoscopy in coronary patients (Recommendation of Good Practice in partnership with the French Health Authority, June 2012); 2012 http://www.sfed.org/documents_sfed/files/recommandations/Antiagregplaqendo_rbp.pdf.
[12] Ho YH, Buettner PG. Open compared with closed haemorrhoidectomy: meta-analysis of randomized controlled trials. Tech Coloproctol 2007;11:135—43.
[13] Nisar PJ, Acheson AG, Neal KR, Scholefield JH. Stapled haemorrhoidopexy compared with conventional hemorrhoidectomy: systematic review of randomized, controlled trials. Dis Colon Rectum 2004;47:1837—45.
[14] Lumb KJ, Colquhoun PH, Malthaner R, Jayaraman S. Stapled versus conventional surgery for hemorrhoids. Cochrane Database Syst Rev 2006;18:CD005393.
[15] Giordano P, Gravante G, Sorge R, Ovens L, Nastro P. Long-term outcomes of stapled hemorrhoidopexy vs conventional hemorrhoidectomy: a meta-analysis of randomized controlled trials. Arch Surg 2009;144:266—72.
[16] Pucher PH, Sodergren MH, Lord AC, Darzi A, Ziprin P. Clinical outcome following Doppler-guided haemorrhoidal artery ligation: a systematic review. Colorectal Dis 2013;15:284—94.
[17] Avital S, Inbar R, Karin E, Greenberg R. Five-year follow-up of Doppler-guided hemorrhoidal artery ligation. Tech Coloproctol 2012;16:61—5.
[18] Faucheron JL, Gangner Y. Doppler-guided hemorrhoidal artery ligation and rectoanal repair (HAL-RAR) for the treatment of

grade IV hemorrhoids: long-term results in 100 consecutive patients. Dis Colon Rectum 2011;54:226—31.
[19] Giordano P, Nastro P, Davies A, Gravante G. Prospective evaluation of stapled haemorrhoidopexy versus transanal haemorrhoidal dearterialisation for stage II and III haemorrhoids: three-year outcomes. Tech Coloproctol 2011;15:67—73.
[20] Bursics A, Morvay K, Kupcsulik P, Flautner L. Comparison of early and 1-year follow-up results of conventional hemorrhoidectomy and hemorrhoid artery ligation: a randomized study. Int J Colorectal Dis 2004;19:176—80.
[21] Sajid MS, Parampalli U, Whitehouse P, Sains P, McFall MR, Baig MK. A systematic review comparing transanal haemorrhoidal de-arterialisation to stapled haemorrhoidopexy in the management of haemorrhoidal disease. Tech Coloproctol 2012;16:1—8.
[22] Pigot F, Juguet F, Bouchard D, Castinel A, Vove JP. Prospective survey of secondary bleeding following anorectal surgery in a consecutive series of 1,269 patients. Clin Res Hepatol Gastroenterol 2011;35:41—7.
[23] Mathai V, Ong BC, Ho YH. Randomized controlled trial of lateral internal sphincterotomy with haemorrhoidectomy. Br J Surg 1996;83:380—2.
[24] Luck AJ, Hewett PJ. Ischiorectal fossa block decreases posthemorrhoidectomy pain: randomized, prospective, double-blind clinical trial. Dis Colon Rectum 2000;43:142—5.
[25] Milito G, Cadeddu F, Muzi MG, Nigro C, Farinon AM. Haemorrhoidectomy with Ligasure vs conventional excisional techniques: meta-analysis of randomized controlled trials. Colorectal Dis 2010;12:85—93.
[26] Chung CC, Ha JP, Tai YP, Tsang WW, Li MK. Double blind, randomized trial comparing Harmonic Scalpel™ hemorrhoidectomy, bipolar scissors hemorrhoidectomy and scissors excision: ligation technique. Dis Colon Rectum 2002;45:789—94.
[27] White PF. Multimodal analgesia: its role in preventing postoperative pain. Curr Opin Investig Drugs 2008;9:76—82.
[28] Beattie GC, McAdam TK, McIntosh SA, Loudon MA. Day case stapled haemorrhoidopexy for prolapsing haemorrhoids. Colorectal Dis 2006;8:56—61.
[29] Cosenza UM, Conte S, Mari FS, et al. Stapled anopexy as a day surgery procedure: our experience over 400 cases. Surgeon 2013;11(Suppl. 1):S10—3.
[30] Ong CH, Chee Boon Foo E, Keng V. Ambulatory circular stapled haemorrhoidectomy under local anaesthesia versus circular stapled haemorrhoidectomy under regional anaesthesia. ANZ J Surg 2005;75:184—6.