

Practice Parameters for the Management of Hemorrhoids (Revised)

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STATEMENT OF THE PROBLEM

Ten million Americans, just < 5 percent of the population, complain of hemorrhoids. There are many misconceptions regarding their etiology, symptoms, and treatment. Hemorrhoids can be divided into internal hemorrhoids, those above the dentate

line, and external hemorrhoids, those below the dentate line and covered with sensate epithelium.

These guidelines address the evaluation and management of hemorrhoids. A literature search of PubMed and MEDLINE from 1990 to 2003 was conducted using the keyword "hemorrhoid"; embedded references also were reviewed.

Evaluation of Hemorrhoids

The evaluation of hemorrhoids should include a problem-specific history and physical examination: Level of evidence, Class V; Grade of Recommendation, D.

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Levels of Evidence and Grade Recommendation

Level	Source of Evidence
I	Evidence obtained from meta-analysis of multiple, well-designed, controlled studies. Randomized trials with low false-positive and low false-negative errors (high-power).
II	Evidence obtained from at least one well-designed experimental study. Randomized trials with high false-positive and/or false-negative errors (low-power).
III	Evidence obtained from well-designed, quasi-experimental studies, such as nonrandomized, controlled, single-group, pre-post cohort, time, or matched case-control series.
IV	Evidence from well-designed, nonexperimental studies, such as comparative and correlational descriptive and case studies.
V	Evidence from case reports and clinical examples.
Grade	Grade of Recommendation
A	There is evidence of Type I or consistent findings from multiple studies of Type II, III, or IV.
B	There is evidence of Type II, III, or IV, and findings are generally consistent.
C	There is evidence of Type II, III, or IV, but findings are inconsistent.
D	There is little or no systematic empirical evidence.

Adapted from Cook DJ, Guyatt GH, Laupacis A, Sackett DL. Rules of evidence and clinical recommendations on the use of antithrombotic agents. *Chest* 1992;102(4 Suppl):305S–311S. Sacker DL. Rules of evidence and clinical recommendations on the use of antithrombotic agents. *Chest* 1989;92(2 Suppl):S2–4S.

A targeted history and physical examination is the initial step in the evaluation of the patient with hemorrhoids. In addition to the nature, duration, and severity of symptoms, the history should include an assessment of dietary fiber intake and bowel habits. In patients with rectal bleeding, a family medical history is needed to evaluate the possibility of familial colorectal neoplastic syndromes and the need for more extensive colon evaluation.¹ The physical examination should typically include visual inspection of the anus, digital rectal examination, and anoscopy.² The grade of hemorrhoidal disease can be classified using the definitions in Table 1.³ Laboratory evaluation is not typically required.

Evaluation of Rectal Bleeding

Complete colon evaluation with colonoscopy or barium enema with flexible sigmoidoscopy is typi-

Table 1.

Classification of Internal Hemorrhoids

Grade	Physical Findings
I	Prominent hemorrhoidal vessels, no prolapse
II	Prolapse with Valsalva and spontaneous reduction
III	Prolapse with Valsalva requires manual reduction
IV	Chronically prolapsed manual reduction ineffective

cally indicated for patients with rectal bleeding who meet specific criteria: Level of evidence, Class II; Grade of Recommendation, B.

The primary concern of patients with rectal bleeding is the possibility of colorectal neoplasia. Other diagnoses that may need to be excluded include inflammatory bowel disease, other forms of colitis, diverticular disease, and angiodysplasia. A careful history and physical examination are the cornerstones of appropriate use of endoscopic procedures, which may include proctoscopy and/or flexible sigmoidoscopy.⁴ More extensive endoscopic evaluation with complete colonoscopy or flexible sigmoidoscopy combined with barium enema is indicated for those who fulfill the criteria in Table 2.⁵

Medical Treatment for Hemorrhoids

Dietary management consisting of adequate fluid and fiber intake is the primary noninvasive treatment of symptomatic hemorrhoids: Level of evidence, Class II; Grade of Recommendation, B.

Table 2.Indications for Complete Colon Evaluation^a

Age \geq 50 years if no complete examination within 10 years
\geq 40 years with history positive for a single, first-degree relative with colorectal cancer or adenoma diagnosed at age $>$ 60 and no complete examination within 10 years
\geq 40 years if the history is positive for two or more first-degree relatives with colorectal cancer or adenomas diagnosed at age $>$ 60 and no complete examination within 3 to 5 years
Positive fecal occult blood test
Iron-deficiency anemia

^aAdapted from the Multi-Society Task Force on Colorectal Cancers.

The typical symptoms of internal hemorrhoids are rectal bleeding and prolapse. Nonoperative treatment is ineffective for hemorrhoids with significant prolapse (Grades III–IV) and consideration should be given to more aggressive treatment modalities.⁶ For hemorrhoids with lesser prolapse, dietary management with adequate fluid and fiber intake to avoid straining is effective.^{7,8}

Dietary management also is the primary modality in the treatment of hemorrhoidal bleeding. Three recent, randomized, controlled trials studied the use of micronized, purified flavonoids derived from citrus fruits for the control of rectal bleeding in Grades I to II hemorrhoids. In all, the bleeding was relieved rapidly; however, studies had a short follow-up interval, therefore, an assessment of the duration of the benefit is unknown. No complications were reported.^{9–11}

Office Treatment

Most patients with refractory Grades I, II, or III hemorrhoids are candidates for office-based procedures. Hemorrhoid banding is usually the most effective option. Other options include sclerotherapy, infrared coagulation, bicap coagulation, and cryotherapy: Level of evidence, Class I; Grade of Recommendation, B.

Office treatment of hemorrhoids includes several procedures, which all attempt to decrease vascularity, decrease hemorrhoidal volume, and increase fixation of the fibrovascular cushion to the rectal wall. This leads to improvement in the specific symptoms of prolapse and rectal bleeding. In a meta-analysis of 18 prospective, randomized trials, rubber band ligation was found to be the most effective of the office procedures. It is associated with a lower recurrence rate but more overall pain than sclerotherapy or infrared coagulation.^{12,13}

A single hemorrhoid or multiple hemorrhoids may be ligated with rubber bands per session. Multiple ligations, in one study, were associated with an increased likelihood of vagal symptoms, more post-procedure pain, and a higher recurrence rate.¹⁴ Yet in other large series, no increase in complications was associated with multiple ligations.^{15,16} Rubber band ligation is associated with a 65 to 85 percent success rate with longer follow-up being associated with higher recurrence rates.^{17–19} Repeat ligations often are successful at relieving recurrent symptoms.

Sclerotherapy involves injecting a sclerosant into

the apex of the hemorrhoid and is effective in 75 to 89 percent of patients with Grades I, II, and III hemorrhoids.^{18,20} This has been associated with slightly less pain than hemorrhoidal banding.²¹ It has been used in combination with rubber band ligation with increased success rates.²²

Infrared coagulation involves direct application of infrared waves resulting in protein necrosis. It is most applicable to Grades I and II hemorrhoids but is associated with high rates of recurrence when substantial prolapse is present.²³

The application of both direct current and bipolar current has proven useful in the treatment of Grades I to III hemorrhoids. Bicap (bipolar current) has the advantage that treatment application lasts only several seconds compared with eight to ten minutes per application for direct current. Both are associated with a minor complication rate of 10 percent and recurrence rates between 25 and 35 percent.²⁴

Cryotherapy uses cold coagulation to relieve symptoms. In 1,000 cases, it was associated with a 90 percent success rate; however, two-thirds of individuals experienced significant pain and foul-smelling drainage.²⁵ For this reason, cryotherapy is used less commonly in the office treatment of hemorrhoidal disease.

The incidence of minor complications after the various office-based procedures is reasonably similar. A series of 502 patients who underwent hemorrhoid banding reported minor pain in 2 percent, band slippage in 1 percent, development of a symptomatic post banding ulcer in 0.4 percent, and urinary retention and anal pain in < 1 percent each. Major complications occurred in 2.5 percent of patients; these included significant hemorrhage, severe pain from external hemorrhoidal thrombosis, or pelvic infection.¹⁷

Thrombosed External Hemorrhoids

Treatment options include observation or excision; however, excision, within 48 to 72 hours of onset of symptoms, in the office setting under local anesthesia or occasionally in the operating room will result in the most rapid relief from symptoms: Level of evidence, IV; Grade of Recommendation, B.

External hemorrhoids may thrombose spontaneously, possibly secondary to straining at stool or heavy lifting. The exact etiology remains unknown. There is little scientific data comparing treatment options for external hemorrhoidal thrombosis. Clinical experience leads to the recommendation that indi-

viduals with symptoms who present fewer than 48 to 72 hours will be best treated by local excision of the external component. This can commonly be performed in the office setting but may occasionally require treatment in the operating room because of large size, extension within the anal canal, or patient anxiety.²⁶

Thrombosis that has been present for more than 72 hours often can be treated expectantly if the pain is not too severe. In this circumstance, avoidance of constipation, patient analgesia, and ice or sitz baths to the perineum may result in more rapid symptom relief than will surgical excision. Simple incision and evacuation of the clot should be avoided, because the lesion is typically made up of multiple, small, intravascular thromboses rather than a single hematoma. Also, simple incision and drainage often results in rethrombosis at the original site and even extension to include circumferential hemorrhoidal thrombosis.

Surgical Hemorrhoidectomy

Hemorrhoidectomy should be reserved for patients refractory to office procedures, unable to tolerate office procedures, patients with large external hemorrhoids, or patients with combined internal and external hemorrhoids with significant prolapse (Grades III–IV): Level of evidence, I; Grade of Recommendation, B.

An analysis of 18 prospective, randomized trials found surgical hemorrhoidectomy to be the most effective treatment for hemorrhoidal disease.¹²

However, it also was associated with the highest complication rate and the most postoperative disability. As such, individual patient factors and preferences need to be carefully weighed and considered. Surgical options include open or closed hemorrhoidectomy performed with surgical scalpel, diathermy, laser, or ultrasonic scalpel. All are reasonable options with none having a clear advantage over any other.^{27–32}

Stapled hemorrhoidopexy is a new alternative available for individuals with significant hemorrhoidal prolapse. It involves a mucosal and submucosal, circular resection of the hemorrhoidal columns at their apex. In addition, the blood supply is interrupted and hemorrhoids are “fixed” to the distal rectal muscular wall. This is all accomplished by a single firing of a modified, circular anastomotic stapler. Exceptionally rare but potentially devastating complications include anovaginal fistula, substantial hemorrhage, fistula, retroperitoneal sepsis, and rectal perforation. Multiple, prospective, randomized trials have compared traditional (open or closed) hemorrhoidectomy to stapled hemorrhoidopexy. Most have shown decreased postoperative pain and faster return to normal activity. Complication rates have been equal.^{33–40} A single trial compared stapled hemorrhoidopexy to rubber band ligation for Grades III and IV hemorrhoids and found more pain with stapling, but improved relief of symptoms.⁴¹ The stapling procedure is not effective for treating large external hemorrhoids.

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REFERENCES

1. Church J, Simmang C. Practice parameters for the treatment of patients with dominantly inherited colorectal cancer (familial adenomatous polyposis and hereditary nonpolyposis colorectal cancer). *Dis Colon Rectum* 2003;46:1001–12.
2. Fazio FW, Tjandra JJ. The management of perianal diseases. *Adv Surg* 1996;29:59–78.
3. Salvati EP. Nonoperative management of hemorrhoids. *Dis Colon Rectum* 1999;42:989–93.
4. Church JM. Analysis of the colonoscopic findings in patients with rectal bleeding according to the pattern of their presenting symptoms. *Dis Colon Rectum* 1991;34:391–5.
5. Rex DK, Bond JH, Winawer S, *et al*. Quality in the technical performance of colonoscopy and the continuous quality improvement process for colonoscopy: recommendations of the U.S. Multi-Society Task Force on colorectal cancer. *Am J Gastroenterol* 2002;97:1296–308.
6. Keighley MR, Buchmann P, Minervium S, Arbai Y, Alexander-Williams J. Prospective trials of minor surgical procedures and high fibre diet for haemorrhoids. *BMJ* 1997;2:967–9.

7. Webster DJ, Gough DC, Craven JL. The use of bulky evacuants in patients with haemorrhoids. *Br J Surg* 1978;65:291.
8. Moesgaard F, Nielsen MC, Hansen JB, Knudsen JT. High fiber diet reduces bleeding and pain in patients with hemorrhoids. *Dis Colon Rectum* 1982;25:454-6.
9. Thanapongsathorn W, Vajrabukka T. Clinical trial of oral Diosmin (Daflon) in the treatment of hemorrhoids. *Dis Colon Rectum* 1992;35:1085-8.
10. Misra MC, Parshad R. Randomized clinical trial of micronized flavonoids in the early control of bleeding from acute internal hemorrhoids. *Br J Surg* 2000;87:868-72.
11. Ho Y-H, Tan M, Seow-Choen F. Micronized purified flavonoidic fraction compared favorably with rubber band ligation and fiber alone in the management of bleeding hemorrhoids: randomized controlled trial. *Dis Colon Rectum* 2000;43:66-9.
12. MacRae HM, McLeod RS. Comparison of hemorrhoidal treatment modalities: a meta-analysis. *Dis Colon Rectum* 1995;38:687-94.
13. MacRae HM, McLeod RS. Comparison of hemorrhoidal treatments: a meta-analysis. *Can J Surg* 1997;40:14-7.
14. Lee HH, Spencer RJ, Beart RW. Multiple hemorrhoidal banding in a single session. *Dis Colon Rectum* 1994;37:37-41.
15. Chaleoykitti B. Comparative study between multiple and single rubber band ligation in one session for bleeding internal hemorrhoids: a prospective study. *J Med Assoc Thai* 2002;85:345-50.
16. Armstrong DN. Multiple hemorrhoidal ligation: a prospective, randomized trial evaluating a new technique. *Dis Colon Rectum* 2003;46:179-86.
17. Bat L, Melzer E, Koler M, Dreznick Z, Shemesh E. Complications of rubber band ligation of symptomatic internal hemorrhoids. *Dis Colon Rectum* 1993;36:287-90.
18. Johanson JF, Rimm A. Optimal nonsurgical treatment of hemorrhoids: a comparative analysis of infrared coagulation, rubber band ligation, and injection sclerotherapy. *Am J Gastroenterol* 1992;87:1601-5.
19. Savoiz D, Roche B, Glauser T, Dorbrinow A, Ludwig C, Marti MC. Rubber band ligation of hemorrhoids: relapse as a function of time. *Int J Colorectal Dis* 1998;13:154-6.
20. Sim AJ, Murie JA, Mackenzie I. Three-year follow-up study on the treatment of first- and second-degree hemorrhoids by sclerosant injection or rubber band ligation. *Surg Gynecol Obstet* 1983;157:534-6.
21. Chew SS, Marshall L, Kalish L, *et al.* Short-term and long-term results of combined sclerotherapy and rubber band ligation of hemorrhoids and mucosal prolapse. *Dis Colon Rectum* 2003;46:1232-7.
22. Kanellos I, Goulimaris I, Christoforidis E, Kelpis T, Betis 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. *Colorect Disease* 2003;5:133-8.
23. Templeton JL, Spence RA, Kennedy TL, Parks TG, Mackenzie G, Hanna WA. Comparison of infrared coagulation and rubber band ligation for first and second degree hemorrhoids: a randomised prospective clinical trial. *BMJ (Clin Res Ed)* 1983;286:1387-9.
24. Randall FM, Jensen DM, Machicado GA, *et al.* Prospective randomized comparative study of bipolar versus direct current electrocoagulation for treatment of bleeding internal hemorrhoids. *Gastrointest Endosc* 1994;40:403-10.
25. Oh C. Problems of cryohemorrhoidectomy. *Cryobiology* 1982;19:283-6.
26. Jongen J, Bach S, Stubinger SH, Bock JU. Excision of thrombosed external hemorrhoid under local anesthesia: a retrospective evaluation of 340 patients. *Dis Colon Rectum* 2003;46:1226-31.
27. Thorbeck CV, Montes MF. Hemorrhoidectomy: randomised controlled clinical trial of ligasure compared with Milligan-Morgan operation. *Eur J Surg* 2002;168:482-4.
28. 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.
29. Armstrong DN, Frankum C, Schertzer ME, Ambroze WL, Orangio GR. Harmonic scalpel hemorrhoidectomy: five hundred consecutive cases. *Dis Colon Rectum* 2002;45:354-9.
30. Khan S, Pawlak SE, Eggenberger JC, *et al.* Surgical treatment of hemorrhoids: prospective, randomized trial comparing closed excisional hemorrhoidectomy and the harmonic scalpel technique of excisional hemorrhoidectomy. *Dis Colon Rectum* 2001;44:845-9.
31. Arbmán G, Krook H, Haapaniemi S. Closed vs. open hemorrhoidectomy—is there any difference? *Dis Colon Rectum* 2000;43:31-4.
32. Tan JJ, Seow-Choen F. Prospective, randomized trial comparing diathermy and harmonic scalpel hemorrhoidectomy. *Dis Colon Rectum* 2001;44:677-9.
33. Ho YH, Cheong WK, Tsang C, *et al.* Stapled hemorrhoidectomy—cost and effectiveness. Randomized, controlled trial including incontinence scoring, anorectal manometry, and endoanal ultrasound assessments at up to three months. *Dis Colon Rectum* 2000;43:1666-75.
34. Sutherland LM, Burchard AK, Matsuda K, *et al.* A systematic review of stapled hemorrhoidectomy. *Arch Surg* 2002;137:1395-406.
35. Hetzer FH, Demartines N, Handschin AE, Clavien PA. Stapled vs excision hemorrhoidectomy: long-term re-

- sults of a prospective randomized trial. *Arch Surg* 2002;137:337–40.
36. Mehigan BJ, Monson JR, Hartley JE. Stapling procedure for haemorrhoids versus Milligan-Morgan haemorrhoidectomy: randomised controlled trial. *Lancet* 2001;355:782–85.
 37. Pope V, Doran H, Fearn S, Brough W, Wilson M. Randomized, controlled trial comparing quality of life after open hemorrhoidectomy (OH) plus stapled anopexy (SA) [meeting abstract]. *Dis Colon Rectum* 2001;44:A8.
 38. Shalaby R, Desoky A. Randomized clinical trial of stapled versus Milligan-Morgan haemorrhoidectomy. *Br J Surg* 2001;88:1049–53.
 39. Ganio E, Altomare DF, Gabrielli F, Millito G, Canuti S. Prospective randomized multicentre trial comparing stapled with open haemorrhoidectomy. *Br J Surg* 2001;88:669–74.
 40. Senagore AJ, Singer M, Abcarian H, *et al.* A prospective, randomized, controlled trial comparing stapled hemorrhoidopexy and Ferguson hemorrhoidectomy: perioperative and one-year results. *Dis Colon Rectum* 2004;47:1824–36.
 41. Peng BC, Jayne DG, Ho YH. Randomized trial of rubber band ligation vs. stapled hemorrhoidectomy for prolapsed piles. *Dis Colon Rectum* 2003;46:291–97.