Hemorrhoidectomy: Open or Closed Technique?

A Prospective, Randomized Clinical Trial

Rasim Gençosmanoğlu, M.D.,* Orhan Şad, M.D.,*
Demet Koç, M.D.,† Reşit İnceoğlu, M.D.‡

From the Units of *Surgery and †Anesthesiology, Marmara University Institute of Gastroenterology, and ‡Department of General Surgery, Marmara University School of Medicine, Istanbul, Turkey

PURPOSE: Hemorrhoidectomy is the treatment of choice for patients with third-degree or fourth-degree hemorrhoids. However, whether the closed or open technique yields better results is unknown. The purpose of this study was to compare these techniques with respect to operating time, analgesic requirement, hospital stay, morbidity rate, duration of inability to work, healing time, and follow-up results. METHODS: In this prospective and randomized study, 80 patients with third-degree or fourth-degree hemorrhoidal disease were allocated to either the open-hemorrhoidectomy (Group A, n = 40) or the closed-procedure group (Group B, n = 40). Open hemorrhoidectomy was performed according to the St. Mark’s Hospital technique, whereas the Ferguson technique was used for the closed procedure under general anesthesia with the patient in the jackknife position. RESULTS: Mean operating time was significantly shorter in Group A (35 ± 7 vs. 45 ± 8 minutes, P < 0.001). Analgesic requirement on the day of surgery and the first postoperative day was also significantly lower (P < 0.05). The morbidity rate was higher in Group B (P < 0.05). Length of hospital stay and duration of inability to work were similar in both groups (P > 0.05). Healing time was significantly shorter in Group B (2.8 ± 0.6 vs. 3.5 ± 0.5 weeks, P < 0.001). Median follow-up time was 19.5 (range, 4–40) months. The only late complication (anal stenosis) was observed in one patient in Group B. CONCLUSIONS: Although the healing time is longer, the open technique is more advantageous with respect to shorter operating time, less discomfort in the early postoperative period, and lower morbidity rate. [Key words: Hemorrhoidectomy, open; Hemorrhoidectomy, closed]


PATIENTS AND METHODS

This study was conducted at the Marmara University Institute of Gastroenterology and the Hospital of Marmara University Medical School Foundation. Between January 1997 and December 1999, all patients who were referred to the authors for third-degree or fourth-degree internal and/or external hemorrhoidal disease were considered as candidates for the trial. Cases with concomitant anorectal disorder, such as anal fissure and polyp, were excluded. After the initial evaluation, patients were invited to participate in the trial. All eligible cases gave informed consent to participate. Ultimately, 80 patients were enrolled and were randomly allocated into two groups according to the last digit of the medical record number (odd numbers: Group A, open technique; even numbers: Group B, closed technique). An oral solution containing 43.2 g of monobasic sodium phosphate and 16.2 g of dibasic sodium phosphate in 90 ml (Fleet® Phospho-soda®, C. B. Fleet Co., Inc., Lynchburg, VA) was used for regular preoperative bowel preparation. Prophylactic antibiotics were not used. All patients were operated on under general anesthesia in the jackknife position. The same anesthesia protocol (e.g., anesthetic agents and intraoperative fluid administration) was used throughout the study. During surgery, the patients received lactated Ringer’s solution at a rate of
5 ml/kg/h. They were allowed to eat their regular diet after the first postoperative day. Stool softeners were prescribed preemptively only in cases with a history of chronic constipation (four cases in Group A and seven in Group B).

**Operations**

All operations were conducted by the same team of two surgeons. Open hemorrhoidectomy was performed according to the St. Mark’s Hospital technique and closed hemorrhoidectomy according to the Ferguson technique. In both groups, 1 to 2 ml of diluted adrenaline (0.0125 mg/ml in saline) was injected into the submucosa to elevate the hemorrhoidal plexus away from the sphincters and to reduce bleeding during resection (Fig. 1A). Diathermy was used at a level of 40 to 60 watts (pure cut) for dissection (Fig. 1B), and the pedicle was ligated with 000 polyglactin (Vicryl®, Ethicon, Brussels, Belgium) before excision (Fig. 1C). Three-quadrant hemorrhoidectomy was performed in each patient (Fig. 1D). In the closed-technique group, the mucosa was approximated with the same suture material (Fig. 1E). Intra-anal dressing was not used in either group.

**Pain Evaluation**

A numeric rating scale for postoperative pain (0 = no pain; 10 = worst pain) was used to guide analgesic treatment. Patients who had scores over 4 were given 1 g of metamizole sodium (Novalgine®, Hoechst Marion Roussel, Istanbul, Turkey) intramuscularly. After a 30-minute interval, if the patient still had a score over 4, 1.5 mg/kg pethidine hydrochloride (Aldolan®, Liba, Istanbul, Turkey) was given intramuscularly (hospitalized patients). After the first postoperative day, metamizole was given in the form of 500-mg tablets only. Pain status was assessed daily for seven days postoperatively. A scoring system based on an analgesic requirement was used, where 0 = no need for analgesic, 1 = need for analgesic once a day, 2 = twice a day, 3 = three times a day, and 4 = need for opioids. Patients were classified into two groups: low (score 0–2) and high (score 3–4) analgesic requirement.

**Follow-Up**

All patients were followed up for a median of 19.5 (range, 4–40) months, weekly in the first postoperative month, then every three months. Healing time was defined as the period from the date of operation to the date of complete mucosal healing.

**Statistical Analysis**

The Mann-Whitney U test was used to compare hospital stay, duration of inability to work, and median time interval between surgery and first analgesic demand. Chi-squared test was used for analysis of postoperative analgesic requirement. Student's t-test for analysis of operating time and healing time, and Fisher's exact test for analysis of morbidity rate. A result was considered statistically significant if the P value was less than or equal to an alpha-level of 0.05.

**RESULTS**

There were 14 males (35 percent) and 26 females (65 percent) with a median age of 40.5 (range, 27–68) years in Group A and 18 males (45 percent) and 22 females (55 percent) with a median age of 39.5 (range, 26–63) years in Group B. Distribution of patients according to type of hemorrhoidal disease is shown in Figure 2. Three patients (7.5 percent) in Group A and 2 (5 percent) in Group B had undergone previous surgery for hemorrhoidal disease. The mean operating time in Group A (35 ± 7 minutes) was significantly shorter than in Group B (45 ± 8 minutes; Student’s t-test, df = 78; 95 percent confidence interval (CI) of the difference −13, −6; P < 0.001; Table 1). No significant differences were observed in the duration of hospital stay or the mean duration of inability to work (2.5 ± 0.9 vs. 2.8 ± 0.7 days, P > 0.05 and 11.3 ± 2.4 vs. 13.8 ± 3.1 days, P > 0.05, respectively). Mean healing time was significantly shorter in Group B (3.5 ± 0.5 weeks in Group A and 2.8 ± 0.6 weeks in Group B; Student’s t-test, df = 78; 95 percent CI of the difference −1.1, −0.5; P < 0.001).

There was no significant difference in the median time interval between surgery and first analgesic demand (P > 0.05). Five patients in Group B and one in Group A required opioid analgesic in the first three hours (P = 0.03). On the day of surgery and the first postoperative day, the frequency of patients who were in the high analgesic requirement category was significantly higher in Group B (operation day: 10/40 vs. 22/40, P = 0.006; day 1: 7/40 vs. 15/40, P = 0.045). After the second postoperative day, there was no