

Pain Control after Microlaparoscopy

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Abstract

Study Objective. To evaluate the efficacy of intraperitoneal subdiaphragmatic instillation of 0.5% lidocaine and 0.5% bupivacaine infiltration of cannula sites to control pain after diagnostic microlaparoscopy.

Design. Prospective, randomized study. (Canadian Task Force classification I).

Setting. Day surgery unit of Endogyn Service, Private Endoscopic Associates, Naples, and Department of Gynecologic and Pediatric Sciences, Reggio Calabria University, Catanzaro, Italy.

Patients. Forty women treated for infertility.

Interventions. The treated group received 0.5% intraperitoneal subdiaphragmatic lidocaine 40 ml and 0.5% bupivacaine 5 ml infiltration of cannula insertion sites. The control group received no treatment. In all patients the procedure was performed with atropine 0.5 mg, fentanyl 0.1 mg, droperidol 5 mg, and local anesthesia. Postoperatively, depending on the need, ketoprofene 100 mg or ketorolac 30 mg was administered intramuscularly.

Measurements and Main Results. Postoperative pain score was evaluated by visual analog scale immediately postoperatively and 1, 3, 6, 12, 24, 36, and 48 hours afterward. The treated group had significantly lower pain scores at the end of surgery and at 1-, 3-, ($p < 0.01$), and 6-hour intervals ($p < 0.05$). No significant differences in scores between groups were observed starting from 6 hours postoperatively.

Conclusion. Postoperative intraperitoneal lidocaine and bupivacaine infiltration of cannula sites offered a detectable benefit to women undergoing diagnostic microlaparoscopy. The effect was temporary, but induced a significant decrease in the postoperative pain for approximately 6 hours.

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Administration of local anesthesia during laparoscopy for postoperative pain control has generated great interest, as it should allow the procedures to be performed as day surgery under local or regional rather than general anesthesia, and may eliminate the need

for narcotic analgesics.¹ Indeed, postoperative analgesia requirement in day surgery is considered the most important factor involved in the delay to returning to normal daily activities.² Several authors found that intraperitoneal administration of a local anesthetic is

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CTF I: Evidence obtained from a properly designed, randomized, controlled trial.

effective in reducing the intensity of postoperative pain after diagnostic laparoscopy,³ laparoscopic sterilization,⁴⁻⁷ operative laparoscopy,⁸ and laparoscopic cholecystectomy.¹

Materials and Methods

The 45 women in this preliminary study had infertility lasting more than 2 years and agreed to undergo diagnostic microlaparoscopy under local anesthesia plus conscious sedation. Before surgery they underwent complete clinical history and physical examination, with special attention to metabolic or cardiorespiratory contraindications to the procedure. Each patient signed informed consent after extensive explanation of the procedure.

The women were randomly allocated to one of two groups according to computer-generated assignment. Group A (20 women, mean \pm SD age 32.3 ± 4.2 yrs, weight 65.6 ± 6.3 kg) received intraperitoneal subdiaphragmatic instillation of 0.5% lidocaine 40 ml and infiltration of cannula insertion sites with 0.5% bupivacaine 5 ml after microlaparoscopy. Group B (20 women, mean \pm SD age 33.4 ± 5.1 yrs, weight 67.1 ± 5.5 kg) received no postoperative treatment. The five patients in whom microlaparoscopy was converted to operative laparoscopy were excluded from data analysis.

Operative Procedure

The endoscope was the 3.3-mm Microlap (Karl Storz, Tuttlingen, Germany) with a zero-degree view. A 175-W xenon light source was used for illumination and a new-generation videocamera (Telecam; Storz) was connected to a super-VHS videorecorder and to a high-definition monitor. All operations were performed in the outpatient clinic or a day surgery unit. An emergency cart with defibrillator and complete anesthesiology set with continuous electrocardiographic monitoring was available during the procedure.

Atropine 0.5 mg and fentanyl 0.1 mg were administered preoperatively, followed by slow intravenous injection of droperidol (maximum dose 5 mg). After the abdomen was cleansed, 1% mepivacaine 10 ml was injected slowly periumbilically descending gradually deeper through peritoneum. After making a subumbilical skin incision, a 4.1-mm minitrocar-cannula was pushed directly through peritoneum. The 3.3-mm microendoscope was inserted with insufflation of about 2 L carbon dioxide. The ancillary site, in the midline near the hairline, was anesthetized in the same

manner as the primary site, and a micrograsper was inserted through a 14-gauge needle to obtain reliable pain mapping in case of chronic pelvic pain, and to view the fimbrial end of the fallopian tube at the time of chromoperturbation.

Mean \pm SD operating times were 26.2 ± 4.1 and 27.7 ± 4.4 minutes in groups A and B, respectively (NS).

The women were observed in the recovery room for at least 2 hours and discharged once they were free of discomfort.

Evaluation of Pain

A global impression of pain control during the procedure was obtained by asking each patient for her evaluation on a scale of 1 to 4 (excellent, good, sufficient, poor). The postoperative pain score was determined immediately after surgery and at 1-, 3-, 6-, 12-, 24-, 36-, and 48-hour intervals on a visual analog scale (VAS) of 1 to 10 (none-intolerable).⁹ Patients were given a questionnaire regarding pain that was representative of the VAS. They were also asked to record analgesics taken at home.

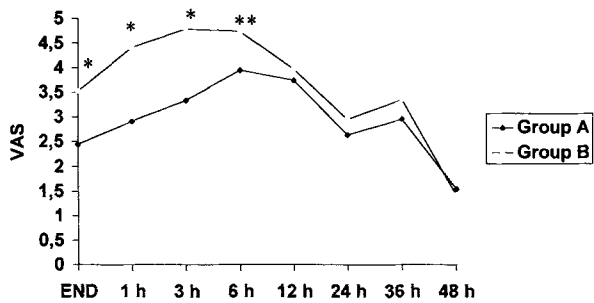
Data Analysis

The goal of the study was to enroll at least 30 patients per group, which would give more than 80% power to detect a difference of 0.75 SD in pain score at the α level of 0.05. Preliminary results in 40 women yielded a probability of 0.808.

Statistical analysis was performed with commercial software (STATISTICA for Windows, Statsoft, Inc.). Differences in age and weight were compared by two-tailed *t* test for unpaired data. The need for postoperative analgesics was evaluated by χ^2 test. Repeated measures analysis of variance was performed to detect differences in postoperative pain scores between groups. Differences in operating time were compared by Wilcoxon rank sum test. In all analyses, statistical significance was assessed at 5%.

Results

Pain scores during the procedure were not statistically different between groups (2.5 ± 0.7 and 2.7 ± 0.8 , respectively, $p > 0.05$). Women in group A had significantly lower scores at the end of surgery and at the 1-, 3- ($p < 0.01$), and 6-hour ($p < 0.05$) intervals (Figure 1). No significant difference was observed between groups at 6 hours and beyond. The need for ketorolac or ketoprofene analgesia was significantly lower in group A (30% vs 75%, $p < 0.05$).



* Group A vs. Group B, $p < 0.01$
 ** Group A vs. Group B, $p < 0.05$

FIGURE 1. Postoperative pain score.

Discussion

Microlaparoscopy with small-diameter scopes enables laparoscopy to be performed in the office and outpatient settings.¹⁰ Our previous study showed the feasibility of microlaparoscopy without general anesthesia in terms of diagnostic efficacy and pain control during the procedure.¹¹ Postoperative analgesia remains an important challenge, however,² and many strategies are employed to manage it.

Intraperitoneal local anesthesia reduced pain after laparoscopies that did not require a great deal of dissection or manipulation of viscera.³ After diagnostic laparoscopy, 63% of patients treated with lidocaine or bupivacaine were pain free, compared with 33% of those who received no treatment.³ Postoperative lidocaine resulted in less shoulder and pelvic pain, as well as a lower rate of analgesic requirements after laparoscopic tubal sterilization.⁴ Intraoperative etidocaine reduced pain after tubal ligation.⁵ Patients had a significant reduction of analgesic requirement when bupivacaine was injected directly into the fallopian tubes during intravenous sedation, compared with women receiving only general anesthesia for tubal sterilization.⁶ Postoperative pain relief also was achieved by administering local anesthetics after operative laparoscopy⁸ and laparoscopic cholecystectomy.¹

Preliminary results of our study indicate effective pain control with postoperative infiltration of cannula sites with bupivacaine and subdiaphragmatic instillation of lidocaine, and underscore the feasibility of microlaparoscopy. Pain control lasted up to 6 hours and reduced the requirement for additional analgesia. In addition, this simple approach was cost effective, and

enhanced patient safety and ease of recovery. It appears to be particularly effective for outpatient minilaparoscopies in which the average discharge time is 2 to 3 hours.

Given encouraging results from this preliminary trial, and eventual confirmation of the results once the study is completed, we anticipate incorporating the technique as part of our routine pain relief protocol for diagnostic microlaparoscopy as well as for traditional laparoscopic procedures.

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