

Virgin and Recurrent Groin Hernia: A Comparison of Patient Recovery Following Endoscopic Preperitoneal Herniorrhaphy

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ABSTRACT

Introduction: The advantage of minimally invasive hernia repair techniques remains controversial. One of the more established indications for this technique's use is the presence of a recurrent hernia. No prior study has compared the recovery following endoscopic repair of virgin and recurrent hernias.

Patients and Methods: Between July 15, 1994 through August 16, 1996, one primary surgeon supervised the performance of 373 hernia repairs on 250 patients. Twenty-two patients underwent endoscopic preperitoneal herniorrhaphy for unilateral recurrent groin hernia (RH), while 105 patients underwent repair of a virgin unilateral hernia (VH) in the absence of prior contralateral open hernia repair. No significant differences were seen for age (VH: 54, RH: 64), male:female ratio (VH: 92:13, RH: 22:0), operative time (VH: 58 min, RH: 59 min), anesthetic used, IV fluid requirements or blood loss ($p > 0.05$ for all comparisons). At the time of discharge, all patients were given a postoperative survey and asked to record their level of pain, narcotic use, and level of activity on the day of surgery and postoperative days 1, 2, 3, 7, 14, and 28.

Results: Patients undergoing repair of virgin hernias had statistically significant increased levels of pain and/or narcotic use on the day of surgery and postoperative days 1, 2 and 3. Despite these differences, level of activity and return to work/normal activity (VH: 6.35 \pm 3.44 days, RH: 6.40 \pm 2.67 days) were the same for the two groups.

Conclusion: Despite the differences in pain perception and narcotic use in the early postoperative period, overall patient recovery appears similar for the two groups. Differences seen are likely due to a lack of any prior surgical pain to serve as a benchmark for comparison.

Key Words: Laparoscopic preperitoneal herniorrhaphy, Recurrent groin hernia.

INTRODUCTION

Laparoscopic herniorrhaphy, as an alternative to open herniorrhaphy, has not received the same widespread acceptance as laparoscopic cholecystectomy. As such, present indications for this technique are still in evolution. Since its introduction, several different techniques have been described.¹⁻³ As this minimally invasive approach has developed, one of the more widely accepted indications has been the presence of recurrent groin hernia. The virgin tissue planes available laparoscopically for the repair of recurrent hernias makes this approach more suitable.

To our knowledge, no prior studies have compared the recovery following unilateral virgin and recurrent endoscopic preperitoneal hernia repairs. Presented herein is a study comparing intraoperative and postoperative data for patients undergoing unilateral endoscopic herniorrhaphy for either virgin or recurrent hernias.

PATIENTS AND METHODS

From July 15, 1994 to August 16, 1996, a total of 250 patients underwent repair of 373 hernias by a single surgeon (A.L.S.) in a teaching setting. All repairs were performed on an elective, outpatient basis. Twenty-two patients underwent repair of a unilateral recurrent groin hernia (RH), while 105 patients underwent repair of a unilateral virgin hernia (VH) in the absence of prior contralateral open hernia repair. (The remaining 125 patients underwent repair of bilateral hernias.) The male:female ratio was 22:0 for RH and 92:13 for VH ($p > 0.05$). Mean age was 64 for RH (range 24 - 82) and 54 for VH (range 18 - 89) ($p > 0.05$). Type of anesthesia was likewise similar for the two groups (**Table 1**). (Note: all patients presenting with recurrent hernias had previously undergone open hernia repairs.)

The technique used involved a totally extraperitoneal approach. Patients were positioned supine. Preoperative antibiotic prophylaxis consisted of a single dose of cefazolin or vancomycin. The preperitoneal space was created with the use of a Preperitoneal Distension Balloon (PDB, Origin Medsystems, Menlo Park, CA) and was maintained with CO₂ insufflation at a pressure of 12 mm mercury. For all hernia repairs, dissection was carried out to identify and/or expose Cooper's ligament, the inferior epigastric vessels, the internal ring, the spermatic cord and the iliofemoral vessels.

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Table 1.
Patient demographics.

	Virgin Hernia Repair	Recurrent Hernia Repair
Number	105	22
Male:female	92:13*	22:0*
Mean age	54*	64*
Anesthesia	71 general* 34 epidural*	13 general* 9 epidural*

*p > 0.05

A single sheet of polypropylene mesh (range: 3 X 5 to 4 X 6 inches) was used to perform all repairs in this series. A keyhole incision was created superiolaterally in the mesh to allow the mesh to wrap around the cord, thus recreating the internal ring. The mesh was fixed to the anterior abdominal wall and Cooper's ligament, using either the Endoscopic Multifire Stapler (EMS, Ethicon Endo-Surgery, Cincinnati, OH) or the Tacker (Origin Medsystems, Menlo Park, CA). No mechanical fixation of the mesh was performed below the iliopubic tract except at Cooper's ligament.

At the completion of the repairs, 30 cc of 0.25% bupivacaine with epinephrine (1:100,000) were placed into the preperitoneal space for the purpose of postoperative analgesia. Postoperative pain control was managed with oral acetaminophen with codeine (Tylenol #3) in all patients.

At the time of discharge, all patients were sent home with a postoperative questionnaire. They were asked to qualify their level of pain as well as keep track of their level of activity and number of narcotic analgesic pills ingested. Patients were asked to log these criteria on the day of surgery as well as postoperative days (one), (two), (three),

(seven), (14) and (28). Patients were also asked to record their return to work or, if retired or unemployed, when they were able to resume full "normal" activity (**Table 2**).

Initially, patients were asked to mail these forms back to the surgeon's office upon completion of the survey. With these response rates less than 100 percent, the forms were collected and discussed at the first postoperative visit (at 2-3 weeks postop) if the patients had returned to full activity.

All statistical calculations were made using SigmaStat software. Statistical methods included t-test, chi-square test and Mann-Whitney rank sum test.

RESULTS

Intraoperative data are summarized in (**Table 3**). No significant differences were seen for operative time, IV fluid requirement, or blood loss. All hernia repairs were successfully completed endoscopically, with no conversions to open technique required.

Postoperative surveys were collected through mail follow-up or at the time of the first postoperative visit. The overall response rate was 81 of 127 (64%). Response rates for the two groups were 16/22 (73%) for RH and 65/105 (62%) for VH (p = 0.10). Responses were collated and are summarized in **Figures 1-7**. The legend for these figures is given in **Table 2** (i.e., P0, P1, ..., N0, N1, ..., A1, A2, etc.).

Patients undergoing virgin hernia repair reported more pain than patients undergoing recurrent hernia repair on the day of surgery and postoperative days 1, 2 and 3 (p < 0.05 for all comparisons). In addition, these same patients also reported greater narcotic use on postoperative days 2 and 3 (p < 0.05). Interestingly, during this period of increased

Table 2.
Postoperative patient survey.

Patients were asked to record responses to the following three criteria on the day of surgery as well as postoperative days 1, 2, 3, 7, 14, and 28. They were also asked to record the date of return to work and/or full "normal" activity. (note: notations in parentheses are legends for Figures 1-7)

PAIN	NARCOTIC PILLS TAKEN	LEVEL OF ACTIVITY
None (P0)	None (N0)	Mostly in bed (A1)
Mild, on walking stairs (P1)	One (N1)	Minimal walking (A2)
Mild, on walking (P2)	Two (N2)	Normal walking (A3)
Moderate, on walking (P3)	Three (N3)	Back to work, light duty (A4)
Moderate, continuous (P4)	Four to eight (N4)	Back to work, full duty (A5)
Severe (P5)	More than eight (N5)	No restrictions (A6)

pain and narcotic use, patients undergoing virgin hernia repair and recurrent hernia repair reported similar levels of activity ($p > 0.05$). Patients undergoing virgin hernia repair returned to work at 6.35 +/- 3.44 days, while patients undergoing recurrent hernia repair returned to work at 6.40 +/- 2.67 days ($p > 0.05$).

DISCUSSION

Since first described, laparoscopic hernia repair techniques have been compared to the traditional open repairs of McVay, Bassini, Shouldice and Lichtenstein. Authors have compared postoperative hernia recurrence,^{4,7} pain^{5,7-8} and complications.⁹⁻¹⁰ This body of literature compares open and laparoscopic techniques and, for the most part, focuses on transabdominal approaches.^{6,11,12}

In order to evaluate the postoperative course of patients undergoing groin herniorrhaphy, a survey was designed. This survey assesses patient recovery based on a qualitative measure of pain, a quantitative record of narcotic use, and a record of day-to-day activity. It also records the time to return to work or "normal" activity.

The present study compares the recovery following endoscopic preperitoneal herniorrhaphy for patients with unilateral virgin and recurrent hernias. Although differences existed for perception of pain and/or narcotic use for the first three days postoperatively, level of activity throughout the period studied and return to work/normal activity were the same.

A possible explanation for the difference in pain perception and narcotic use is the lack of any prior inguinal surgical pain to serve as a benchmark for comparison. Patients undergoing any type of surgery for the first time have no frame of reference on which to compare their level of pain. In contrast, patients undergoing endoscopic hernia surgery after prior open hernia surgery can compare their present pain levels to that of their prior operation. In that narcotic intake is related to subjective pain experience, it is not surprising that narcotic use was also increased during this time period. The lack of difference for level of activity or return to work/normal activity during the study period also supports the notion that the differences were in perception only.

CONCLUSION

Despite differences in perceived pain level and/or narcotic use during the first three postoperative days, level of activity and return to work/normal activity suggest that overall patient recovery following endoscopic preperitoneal hernia repair is the same for patients undergoing virgin and recurrent hernia repairs.

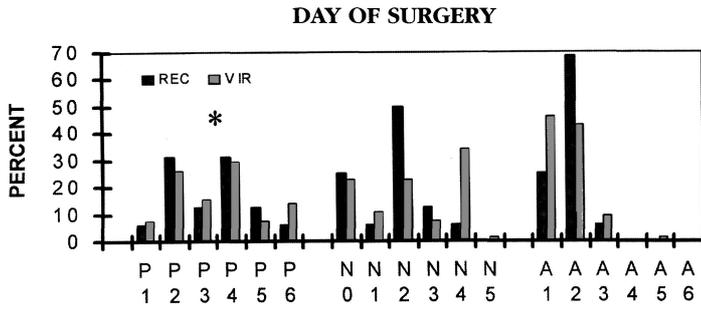
Table 3.
Intraoperative data.

	Virgin Hernia Repair	Recurrent Hernia Repair
Operative Time	58 minutes*	59 minutes*
IV fluids	1290 cc*	1292 cc*
Blood loss	minimal*	minimal*

* $p > 0.05$

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* = p < 0.05

Figure 1. Postoperative data for endoscopic herniorrhaphy on day of surgery. (Note: legend for figure is in Table 1.)

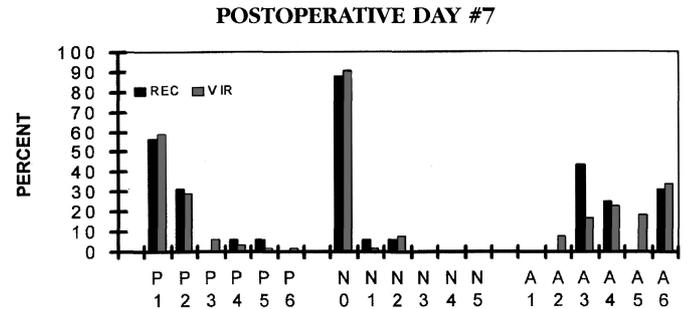
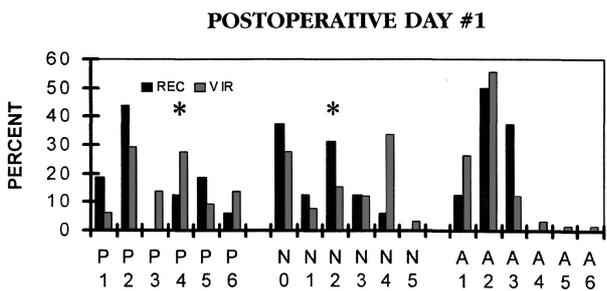


Figure 5. Postoperative data for endoscopic herniorrhaphy on postoperative day # 7. (Note: legend for figure is in Table 1.)



* = p < 0.05

Figure 2. Postoperative data for endoscopic herniorrhaphy on postoperative day # 1. (Note: legend for figure is in Table 1.)

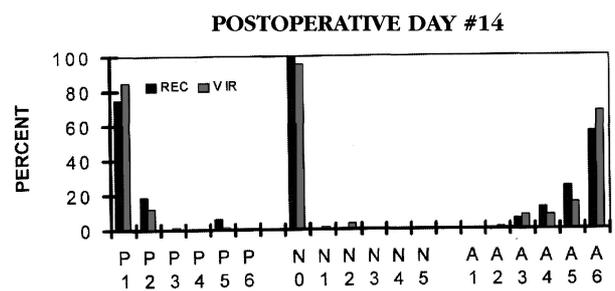
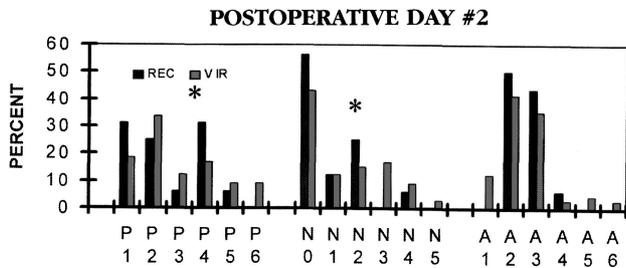


Figure 6. Postoperative data for endoscopic herniorrhaphy on postoperative day # 14. (Note: legend for figure is in Table 1.)



* = p < 0.05

Figure 3. Postoperative data for endoscopic herniorrhaphy on postoperative day # 2. (Note: legend for figure is in Table 1.)

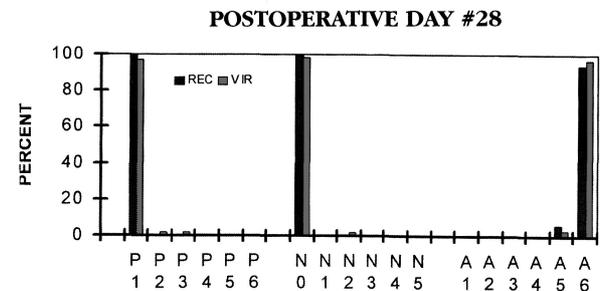
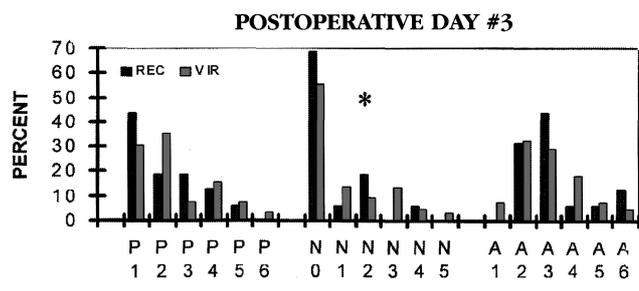


Figure 7. Postoperative data for endoscopic herniorrhaphy on postoperative day # 28. (Note: legend for figure is in Table 1.)



* = p < 0.05

Figure 4. Postoperative data for endoscopic herniorrhaphy on postoperative day # 3. (Note: legend for figure is in Table 1.)