ABSTRACT

Objective: High recurrence rates have been documented after primary repair of incisional hernias. Laparoscopic ventral and incisional hernia repairs have been performed with very low rates of recurrence. We have modified the standard technique of laparoscopic repair in patients with small incisional and ventral hernias. The purpose of this study was to document the technique utilizing only two 5-mm ports and demonstrate that it is safe, effective, and feasible.

Methods: Three patients with small incisional or ventral hernias were examined. The standard laparoscopic ventral hernia repair technique was modified as follows: two 5-mm ports were inserted on opposite sides of the defect. The defects ranged from 2.5 cm to 4 cm in size. Expanded polytetrafluoroethylene mesh (DualMesh, WL Gore, Flagstaff, AZ) was used to cover the hernia defect, overlapping the defect margins circumferentially by 3 cm. The mesh diameter ranged from 8.5 cm to 10 cm. The mesh was inserted through a 5-mm skin incision site and affixed into position with transfascial sutures and spiral tacks.

Results: The operative time ranged from 53 minutes to 57 minutes. All patients were discharged home the day of surgery and reported minimal postoperative pain. Follow-up ranged from 6 months to 1 year; all patients were doing well without recurrence.

Conclusion: Laparoscopic repair of ventral or incisional hernias can be performed using only two 5-mm ports. This technique can be done on an outpatient basis in a safe, timely fashion.

Key Words: Laparoscopy, Ventral hernia.

INTRODUCTION

Ventral hernias are the second most common type of abdominal wall hernias, after inguinal hernias. The majority of ventral hernias are incisional, occurring in 3% to 13% of laparotomy incisions, necessitating approximately 90,000 ventral hernia operations per year.1 The recurrence rate after primary open ventral hernia repair ranges from 25% to 52%.2–4 The use of prosthetic material, such as polypropylene mesh, polytetrafluoroethylene, and Marlex mesh has decreased rates of recurrence.5–7 However, wound complications with the use of mesh in open ventral hernia repair are significant.8–10

Since 1992, the laparoscopic technique has been applied to the repair of ventral hernias because of its many advantages including the absence of large subcutaneous flaps, a lower incidence of wound infection, and a reduction in postoperative pain and hospital stay. Numerous studies using the laparoscopic approach have reported a recurrence rate of <10%.11–13 The lower recurrence rates are most likely due to the tension-free and intraperitoneal placement of the mesh. Laparoscopy offers a clear view of the entire fascial defect, which is not always possible with the open technique, especially if a “Swiss-cheese ” hernia is present.14 Thus, the entire defect is completely circumscribed with the laparoscopic technique.

The surgical technique described for laparoscopic ventral hernia repair varies by surgeon. However, all techniques reported use at least 3 port sites, with one or more being 10 mm. Using this technique, either the primary surgeon or the first assistant is working in mirror-image. We successfully repaired small ventral hernias in 3 patients using only two 5-mm ports.

METHODS

Between July 2002 and January of 2003, 3 patients underwent laparoscopic ventral hernia repair with mesh in which only two 5-mm ports were used for small incisional or ventral hernias. The same surgeon did all 3 repairs. Hernia size varied between 2.5 cm to 4 cm. Follow-up surveillance for complications and hernia recurrence was performed in the immediate postoperative period, 1 week to 2 weeks after surgery. Additional follow-up was ob-
tained by telephone interview 6 months to 12 months postoperatively.

**Operative Technique**

The procedure was performed with the patients under general anesthesia. Patients were given a first-generation cephalosporin for antibiotic prophylaxis. After the abdomen was prepped, an iodine impregnated adhesive drape dressing was placed on the patients’ abdomen. Access to the abdomen was obtained in an area lateral to the hernia by using a Veress needle. A 5-mm trocar was placed. A 30-degree angled 5-mm laparoscope was used. After exploration of the abdomen, a second 5-mm trocar was introduced under direct visualization on the opposite side of the fascial defect. Adhesiolysis was performed to free the anterior abdominal wall, and the margins of the hernia defect were circumferentially cleared to a distance of at least 4 cm. The hernia sac contents were reduced.

A dual, expanded polytetrafluoroethylene (ePTFE) mesh (DualMesh, WL Gore, Flagstaff, AZ) was used, ranging in size from 8.5 cm to 10 cm. The mesh was tailored to overlap all hernia margins by 3 cm. Nonabsorbable ePTFE sutures were placed on the mesh at 3-cm intervals. The mesh was introduced through one of the 5-mm trocar sites. Once the mesh was place intracorporeally, the sutures were retrieved through the abdominal wall by using a laparoscopic suture passer. The sutures were tied extracorporeally, and the knots were buried in the subcutaneous tissues. The circumference of the mesh was then affixed, by using a 5-mm spiral tacking device, to the posterior abdominal wall at intervals of approximately 1 cm. No drains were inserted in the subcutaneous tissues.

**RESULTS**

Operative times ranged from 53 minutes to 57 minutes. The size of the mesh used varied, based on the size of the original defect. All 3 patients did very well postoperatively. They experienced minimal pain and were discharged on the same day of surgery. No complications (no small bowel injuries or wound infections) occurred. Additionally, no recurrences were noted after a mean follow-up of 9 months (range, 6 to 12).

**DISCUSSION**

Laparoscopic ventral hernia repair is a procedure that has gained acceptance among surgeons and patients over the last 5 years to 10 years. The documented advantages of laparoscopic surgery in general include faster recovery and return to normal activity, less postoperative pain, fewer wound-related complications, and a better cosmetic result. These advantages are valid for laparoscopic ventral hernia repair as well. In addition, the intraperitoneal repair performed laparoscopically poses a significant mechanical advantage and is associated with less recurrence.11–15

**CONCLUSION**

We present 3 patients who underwent laparoscopic repair of a ventral hernia in which two 5-mm ports were used. These are the first reported cases of such a technique in the English literature. These patients had no surgical complications, and the mean operating room times were acceptable. This technique offers all the advantages inherent to laparoscopic surgery, with the added benefit of the use of only two 5-mm ports. Laparoscopic repair of ventral or incisional hernias can be performed using only two 5-mm ports. This technique can be done on an outpatient basis in a safe, timely fashion.

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