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Laparoscopic Appendectomy Versus Open Appendectomy: A Single Institution Study

David G. Anderson, MD, David S. Edelman, MD

ABSTRACT

Purpose: The purpose of this study was to compare the safety and efficacy of laparoscopic appendectomy versus open appendectomy at Baptist Hospital in Miami, Florida.

Methods: A retrospective review was performed on all appendectomies performed at Baptist Hospital from October 1, 1994 to September 30, 1995. There were a total of 244 cases; 137 open appendectomies and 107 laparoscopic appendectomies. The cases were reviewed with regard to pathology, operating time, length of hospital stay and complications.

Results: The pathologic findings at surgery were similar for the two groups. Concomitant pathology was more likely to be found laparoscopically than in open surgery. There was a greater percentage of ruptured appendices in surgery done via the open method. Operative time was slightly longer, but complications were less in the laparoscopic group. Length of stay was lower in the laparoscopic appendectomy group.

Conclusions: Although very similar, our method of appendectomy favors the laparoscopic technique.

Key Words: Laparoscopic appendectomy.

INTRODUCTION

Laparoscopic appendectomy (LA) has been a feasible alternative to open appendectomy (OA) since Kurt Semm reported the first LA in 1983.¹ Many studies have been performed since that have shown the advantages of LA, including less postoperative pain, less postoperative morbidity, a shorter hospital stay, and superior cosmetic results.²⁻⁴ One of the less frequently mentioned advantages is the ability to find concomitant pathology and diagnose other sources of abdominal pain.⁵ The disadvantages include longer operating room time and increased costs.⁶ Laparoscopic appendectomy is extremely useful in women of child-bearing age, obese patients and patients whose diagnosis is in question. It is difficult in cases of retrocecal appendicitis or appendiceal phlegmon, but this may be approached laparoscopically if the surgeon recognizes the limitations and converts to an open procedure if anatomic identification becomes difficult.

METHODS

A retrospective review was performed on all appendectomies for one complete calendar year performed at Baptist Hospital, Miami, Florida, from October 1, 1994 to September 30, 1995. There were a total of 244 cases; 137 open appendectomies (OA) and 107 laparoscopic appendectomies (LA). The cases were reviewed with regard to pathology, operating time, length of hospital stay and complications. There were 20 surgeons involved in the study. Five surgeons utilized the laparoscopic technique.

The open procedures used a standard right lower quadrant muscle splitting technique. The laparoscopic procedures used a three-puncture technique with two 11 mm cannula and one 5 mm cannula. Eleven mm cannulas were placed in the umbilical and suprapubic regions with a 5 mm cannula in the right upper or left lateral position. One surgeon substituted a 5 mm cannula for an 11 mm suprapubic cannula and used a 5 mm laparoscope during appendix resection. An angled 30 degree or 45 degree laparoscope was used for the difficult appendix that was retrocecal or if posterior identification of a structure was necessary. An ECL 35 (Ethicon, Cincinnati, OH) endoscopic stapler was used for the mesoappendix (white, vascular load) and appendix transection (blue, intestinal load). Laparoscopic specimens were placed in a sac for extraction.

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RESULTS

There were 62 females and 75 males in the OA group with a mean age of 37 years. The LA group had 55 women and men with a mean age of 34.8 years. The pathology results of surgery were similar for the two groups; acute appendicitis represented 59.9% (82/137) for the OA and 67.3% (72/107) for the LA. There was a greater percentage of ruptured appendices in procedures done via the open method, 24.8% (34/137) versus 15.9% (17/107) in those removed laparoscopically. There was a similar percentage of normal appendices found; LA being 16.8% (18/107) versus 13.8% (18/137) for OA. Concomitant pathology was found to be the cause of symptoms in 11 of 18 normal appendices done laparoscopically versus only 2 of 18 normal appendices done via the open method. The majority of pathology found laparoscopically was gynecologic in nature, including five ovarian cysts, one case of salpingitis, and two cases of endometriosis. The non-gynecologic pathology found laparoscopically was a torsion of colonic epiploic fat, a perforated cecal diverticula, and a torsion of a piece of omentum. The concomitant pathology that was noted and treated during open appendectomy was an infarcted right ovarian cyst and an endometrioma. In addition, concomitant pathology was noted in an additional 11 cases done laparoscopically, bringing the total to 22 of 107 cases. Included in this group was a case of cirrhosis found to be hepatitis C on biopsy, three cases of endometriosis, five asymptomatic ovarian cysts, a partial small bowel obstruction which was treated by adhesiolysis and a granuloma that had formed secondary to a previously spilled gallstone.

The postoperative length of stay (LOS) was lower in the LA group, with a mean LOS of two days versus three days for OA. The operating time was slightly less for OA, 35.6 minutes with a range of 12-117 minutes, versus 49.3 minutes for LA with a range of 15-167 minutes. The complications were less in the LA, being 8.4% versus 13.1% for OA. There were complications in 9 of 107 LA cases with more than one complication on some cases. In LA cases there were four with an ileus (defined as a lack of bowel function 72 hours after surgery), one hematoma that required reoperation, one medication reaction, one patient with prolonged nausea and vomiting, one wound infection and two patients with pulmonary problems. There were complications in 18 of 137 OA cases with some cases having more than one complication. There were 10 cases of postop ileus, two wound infections, four with pulmonary problems, two cases with prolonged nausea and vomiting, one medication

reaction, and seven cases of urinary retention. There were no mortalities in either group. Two LA cases were converted to open; one secondary to equipment failure and the second as a result of an extensive inflammatory reaction which obscured anatomy and made the dissection unsafe.

CONCLUSIONS

Laparoscopic appendectomy is safe and compares favorably to open appendectomy. The complication rate and length of hospital stay was less with laparoscopic appendectomy, however, the operating time was slightly longer. Laparoscopic appendectomy had the added benefit of determining concomitant pathology in a higher percentage of patients than did the open method by allowing a complete visual exploration of the peritoneal cavity. Our method of appendectomy favors the laparoscopic technique.

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