Laparoscopic bipolar strip-tease appendicectomy

A new endosurgical technique

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Abstract. Since its conception, several techniques have been described for laparoscopic appendicectomy. We describe a technique which utilizes a 5-mm bipolar forceps designed to coagulate and cut tissues at the same time; 50 pediatric patients underwent laparoscopic appendicectomy for acute appendicitis using this "stripping and teasing" technique. No bleeding complications occurred. There were only two postoperative abscesses in the series. We believe that the bipolar laparoscopic striptease appendicectomy technique as developed by the senior author is safe, quick, and effective, even for severe appendicitis.

Key words: Laparoscopic appendicectomy — Bipolar "striptease" technique

Since the first laparoscopic appendicectomy for acute appendicitis was reported by Senn in 1983 [5], a number of authors have reported performing the operation worldwide [1, 3, 7, 8]. However, there is considerable variation in the technique for performing the operation, each with its own inherent advantages or disadvantages. Our technique utilizes bipolar division of the mesoappendix which only requires one 10-mm Hasson umbilical port, one 4.5-mm suprapubic port, and a 6.0-mm paracolic port. The present report describes a safe and successful laparoscopic technique for laparoscopic appendicectomy.

Patients and methods

Fifty pediatric patients admitted between January 1992 and May 1994 under the senior author with clinical signs of acute appendicitis underwent successful laparoscopic appendicectomy. Patients who had diagnostic laparoscopy alone or who were converted to open operation (five patients) are excluded from this report as no attempt was made to proceed with laparoscopic appendicectomy in these patients because of the severity of the disease. The age at operation ranged from 2 to 16 years (average 11 years), and there was an equal sex distribution. All laparoscopic appendicectomies were either performed by the senior author or with his assistance. All specimens were studied histologically and all patients were administered perioperative intravenous antibiotics.

Technique

The patient is positioned supine and placed in a Trendelenburg position and rolled toward the left. The surgeon and assistant both stand on the left side with the scrub nurse at the foot of the patient. The video monitor is placed directly in front of the surgeon on the patient’s right (Fig. 1).

A 10-mm Hasson cannula is inserted through a small transverse incision in the linea alba by making a circumumbilical skin crease incision. The Hasson port is secured by using 0 Vicryl purse string suture in the linea alba, which not only helps to secure the pneumoperitoneum but also serves to close the defect at the end of the procedure. An insufflation pressure of 12 mmHg is used and a 5-mm direct-viewing telescope is then inserted. Two other ports, a 4.5-mm suprapubic midline port and a 6.0-mm right paracolic port are introduced under direct video endoscopy to avoid injury to either the bladder or the underlying viscera (Fig. 2).

An atraumatic grasper is inserted into each of these ports and the cecum and appendix are then identified. If the appendix is normal in appearance, an exploratory laparoscopy is performed to exclude other pathology, especially tubo-ovarian pathology in the female. A conscious decision is then made to perform laparoscopic appendicectomy even in those that appeared macroscopically normal, if no other pathology is found.
A ratcheted grasper is passed through the supra-pubic port to grasp the tip of the appendix. If the appendix is retrocecal in position, it is necessary to mobilize the cecum by dividing its peritoneal attachment. The appendix can then usually be mobilized once the cecum is freed. We have yet to perform a retrograde laparoscopic appendicectomy if the cecum is mobilized sufficiently.

Traction is applied to the tip of the appendix to demonstrate the mesoappendix, which is kept taut.

A special purpose-built bipolar forceps (Tan bipolar forceps—Karl Storz) is passed through the right paracolic port and the mesoappendix is coagulated and "stripped and teased" from the appendix by using a pecking action (Fig. 3). The bipolar forceps has been specially designed to coagulate and divide tissue without the need to interchange instruments.

The striptease technique can control vessels up to 1 mm in diameter, and we have not encountered any bleeding from the mesoappendix, particularly if the appendix is skeletonized right at the meso-appendiceal border, as the vessels here are generally very fine. This is aptly demonstrated by a contrast injection of the mesoappendiceal artery in patients who have had open appendicectomy and the specimen removed en bloc for this study (Fig. 4).

By using this "striptease" action, the appendix is skeletonized down to the base of the appendix (Fig. 5), which is then ligated with two PDS-Endoloops. The appendix is then divided with the same bipolar forceps and delivered through the 10-mm Hasson cannula after interchanging the telescope through the right paracolic port. If the appendix is gangrenous, perforated, or associated with an appendiceal abscess, laparoscopic surgical debridement is performed and the peritoneal cavity is thoroughly irrigated with a copious amount of normal saline prior to completion.