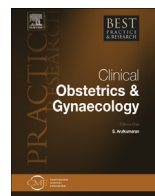




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Bowel complications in endometriosis surgery

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Endometriosis surgery by laparoscopy or laparotomy can be associated with various types of intestinal complications that may occur in the immediate postoperative period or later. They include bowel anastomotic dehiscence, rectovaginal fistula, anastomotic bleeding, intra-abdominal infections, wound infections, bowel stricture, intestinal obstruction, chronic constipation, and diarrhea. There is growing evidence that bowel injuries can be repaired by primary closure in two layers even without previous bowel preparation. Surgical treatments of deep bowel endometriosis include conservative surgery (including shaving technique or discoid resection) or a more radical approach such as bowel resection that is associated with increased complications. Good perfusion and no tension at the anastomosis site are essential when segmental resection is performed. Early recognition of bowel complications during surgery or in the immediate postoperative period is fundamental to decreased morbidity and mortality. This chapter will deal with the prevention of bowel complication in minimally invasive surgery for endometriosis.

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Introduction

The estimated incidence of bowel injuries at laparoscopic surgery is one in 769 cases [1]. This complication is often found especially during surgery for endometriosis (3–5/1000 cases) [2,3]. CO₂ laser shaving procedure for deep endometriosis is associated with an incidence of mucosal bowel injury of 1.4% [4]. When resection of deep endometriosis nodules is undertaken, bowel complications can occur in 2–3% of cases [5].

The most common site of gastrointestinal injury is the small intestine (47%), followed by the large intestine, the rectum, and the stomach. Approximately 55% of the injuries occur during laparoscopic entry. Other causative factors are electrosurgery (29%), during dissection or lysis of adhesions (11%), and injury due to grasping forceps or scissors (4%) [1]. Approximately 40% of the bowel injuries are not recognized at the time of surgery [1]. This can lead to increased morbidity and mortality associated with delayed recognition.

Avoiding intestinal injuries: endometriosis resection with no bowel involvement

In order to minimize intestinal injury, many authors have evaluated “safe” entry into the abdominal cavity. However, a Cochrane systematic review in 2012 showed that the safety of different techniques including the open technique (Hasson technique), Veress needle technique, and the direct trocar technique is comparable [6]. When periumbilical adhesions are suspected, some surgeons prefer an open technique or an alternate entry technique through the Palmer's point. As expected, surgeon experience and good knowledge of anatomy lead to decreased bowel injuries [7].

In order to minimize electrosurgical injuries, a good understanding of the surgical energies is important. This includes a good knowledge of probe coupling, inadvertent tissue contact, insulation failure, and capacitive coupling. Inadvertent tissue contact and probe coupling can occur if the active electrode is not kept in the laparoscopic field at all times. Insulation failure should be detected by inspection of the instruments before use. This is especially important when using a reusable instrument. Signs of insulation failure include electromagnetic static on the monitor, abdominal wall twitching, or a reduced effect of the electrosurgical instrument [8]. Capacitive coupling can be avoided by eliminating the use of hybrid trocars. Bipolar energy is transmitted through a device in which the active and return electrodes are in close proximity leading to a precise tissue effect, thus decreasing the spread of energy and thermal injury. By contrast, monopolar current spreads through the patient from and to the return electrode. As a result, thermal damage with monopolar cautery can extend 5 cm from the site of the injury [9]. When surgery is done at the vicinity of intestine, electrocautery should be used cautiously [10].

Other measures to reduce intestinal injuries include gentle bowel handling with atraumatic graspers, careful tissue dissection, adhesiolysis only if needed, and regular inspection of the bowel after insertion and reinsertion of secondary ports [10]. Bowel injury should be suspected in the presence of brownish fluid in the abdominal cavity and fecal odor [11]. Intraoperative sigmoidoscopy has been suggested to diagnose a sigmoid or rectal perforation [11]. Escape of air from the bowel after filing the abdominal cavity with fluid indicates the site of injury [8].

Repair of bowel laceration depends on the type of injury and the area of damage. Small injury to the large bowel with the Veress needle can be managed conservatively with observation, antibiotics, and hyperalimentation if needed [12]. However, to date, only six cases have been reported [1]. Extensive injury requires an exploratory laparotomy to properly assess and repair the injury. Consultation with a colorectal surgeon is recommended especially if the gynecologist has little or no experience in bowel repair.

Colon injury can be repaired by bowel resection and primary anastomosis [13,14]. However, most small bowel and colonic injuries can be repaired by primary closure in two layers of 3-0 or 4-0 vicryl or polydioxanone (PDS) sutures [3,10,15]. These sutures must be placed in the cross-sectional plane rather than in a vertical plane so that it does not narrow the lumen of the bowel [8]. All ischemic and damaged tissues must be excised. Primary repair is associated with fewer complications such as abdominal abscess and wound dehiscence when compared to diversion colostomy [16,17]. Nevertheless, a

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