



44.1 Background

As of 2009, 20% of 600,000 hysterectomies performed in the United States were done laparoscopically [1] and approximately 250,000 women undergo laparoscopic surgery in the UK each year. The advantages of laparoscopy over laparotomy have been well established and include less post-operative pain, shorter hospital stays and reduced blood loss [2, 3].

Laparoscopic related complications involving the bowel usually occur during initial abdominal access, trocar placement, dissection of adhesions or the use of electro-surgery. Complications are more litigious when it is associated with gynaecological laparoscopic surgery rather than by laparotomy.

A recent meta-analysis [4] indicated that there were 604 bowel injuries reported following 474,063 gynaecological laparoscopies, giving an incidence of 1:769. Bowel injury rate varied from 1:3333 for sterilisation to 1:256 for hysterectomy. The small bowel was the most frequently injured (47%). Fifty-five percent of bowel injuries occurred during Veress needle or trocar placement. Most bowel injuries were recognised intra-operatively

(no deaths) but when injury was unrecognised at the time of surgery and when the diagnosis was delayed (41% of cases), this resulted in a mortality rate of 1 in 31. Eighty percent of bowel injuries were managed by laparotomy.

Bowel injury can also occur from other gynaecological procedures such as dilatation and curettage (D&C), open abdominal hysterectomy and hysteroscopic procedures. The incidence of bowel injuries is 1:333 in hysterectomy [5]. Usually the sigmoid colon and rectum is at risk in women with a history of endometriosis, malignancy, pelvic inflammatory disease or diverticulitis.

For the purposes of this chapter we shall discuss pertinent issues between gynaecological laparoscopy and bowel injury and also cover methods to identify the mechanism of injury depending on the timescales of presentation in the post-operative period.

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44.2 Minimal Standards and Clinical Governance Issues

44.2.1 Open Laparotomy

See chapter on laparotomy.

44.2.2 Safe Laparoscopic Entry

In gynaecological practice, the closed method for port entry is commonly used, using a Veress

needle. Initially blind trocar insertion of the primary port through the umbilicus is followed by direct vision insertion of lateral trocars. The direct trocar entry has also been used in gynaecological practice. There is evidence to suggest that this technique is associated with a lower risk of vascular injury and failed entry compared to closed entry techniques [6].

Alternative entry techniques should be used such as Palmer's Point or open Hasson for patients with previous abdominal surgery, obesity, extremely thin patients and those with known abdominal adhesions.

The open Hasson technique may be considered an alternative to the closed technique. Although it is associated with a reduced rate of failed abdominal injury, there is no significant difference in the risk of vascular or visceral injury rates [6].

44.3 Reasons for Litigation

- Failure to adequately select patients.
- Failure to adhere to the principles of safe laparoscopic entry as recommended by National Bodies (see below).
- Failure to detect bowel injury at the time of surgery.
- Failure to detect bowel injury in the early postoperative period.
- Failure to convert to a laparotomy when bowel injury suspected.
- Failure to call a bowel surgeon when bowel injury suspected/occurs.
- Attempting repair of bowel injury in the absence of adequate case load as a gynaecologist.

44.4 Avoidance of Litigation

44.4.1 Open Laparotomy

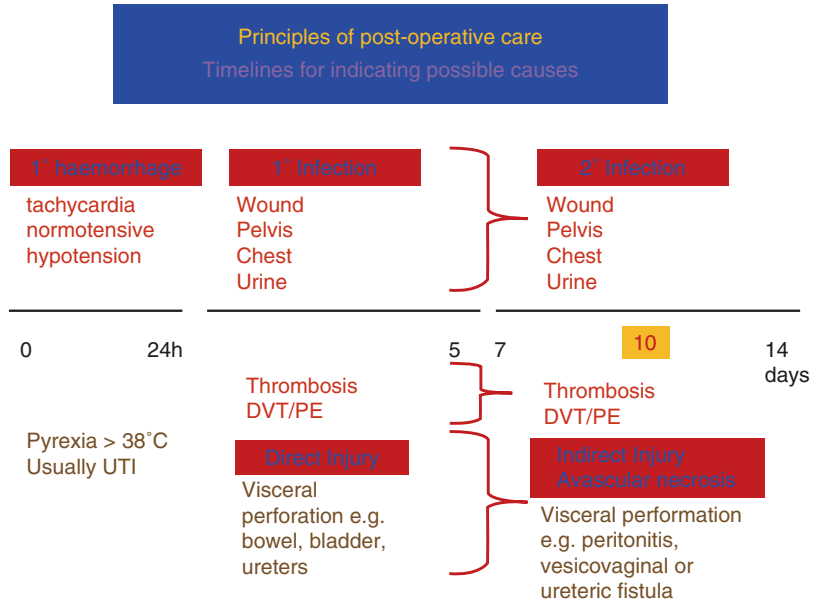
See chapter on laparotomy.

44.4.2 Laparoscopic Surgery

There are several national and international specialist Society guidelines that can be summarised as specific steps for safe laparoscopic entry [6–9].

1. Patient should be lying flat with an empty bladder.
2. Veress needle should be checked for spring and gas patency. This should be indicated on the insufflator as 0 mm Hg pressure and a flow rate of between 1.7 and 2.3 L/min, depending upon the calibre of the Veress needle. This can only be checked after allowing the insufflator to run for at least 20 s.
3. A 10 mm vertical intra-umbilical incision starting in the umbilical pit, extending caudally.
4. Insertion of Veress needle at the level of the deep umbilical pit 90° to the skin in a controlled manner and not inserting the needle more than 20 mm. The Veress needle should not be excessively moved after insertion to avoid any injury to be extended to become a large complex tear.
5. Initial intra-abdominal pressure should be negative. During insufflation a pressure of <8 mm Hg pressure with a high flow rate indicates correct Veress placement.
6. The insufflator should be set to 25 mm Hg pressure which allows maximum safe distance between abdominal wall and underlying abdominal contents. This abdominal pressure also achieves a tympanic splinting effect of the abdominal wall and does not compromise inferior vena caval compression.
7. Insertion of trocars should not be uncontrolled. Primary trocar insertion should be in a controlled two-handed screwing manner, vertically at 90° to the skin. Further advancement should not be beyond the tip of the trocar through the abdominal wall.
8. Initial 360° laparoscopic check for intra-abdominal visceral or vascular injury should be performed.

Fig. 44.1 Timeline for post-operative complications



9. Insertion of secondary trocars under direct vision should be in a two-handed controlled manner at 90° to the skin, avoiding inferior epigastric vessels. Following the insertion of trocars, the intra-abdominal pressure should be reduced to a working pressure of between 12 and 15 mmHg pressure.

Concise, clear and comprehensive documentation of the surgical technique is important following the principles for safe laparoscopic entry. Recognition of intra-abdominal injury and resorting to laparotomy reduces the risks of litigation. Laparoscopic repair should not be performed without first seeking help and involving trained surgeons. In the systematic review only 8% of injuries were managed laparoscopically [4]. It is believed that Veress needles injuries can be observed expectantly but only six cases in 46 years of literature have followed this approach [4]. Patients returning with atypical symptoms should be investigated thoroughly for intra-abdominal injury to avoid a delay in diagnosis, which is a common reason for morbidity, mortality and litigation. Principles for post-operative

care should be followed [10], which can indicate a mechanism of injury, and are summarised in Fig. 44.1.

44.5 Case Study

A 32-year-old woman with a BMI of 24 was requesting laparoscopic sterilisation procedure after completing her family with three normal vaginal deliveries. She had no previous abdominal surgery. A 3-L carbon dioxide insufflation was carried out through a two port procedure and a Filshie clip sterilisation of the fallopian tubes was carried out. Three days later she was admitted with pain and abdominal distension. Laparotomy confirmed rectal injury requiring a Hartman’s procedure.

In an uncomplicated case, if there had been good surgical techniques, the likelihood of laparoscopically related bowel injury is highly unlikely. If there are no alternative plausible non negligent explanations for a complication, then the defendant is likely to be liable and follows the principles of *res ipsa loquitur* (“the thing

speaks for itself”) [11]. Although the defendant’s view point is that a bowel injury is a recognised complication of laparoscopy, the occurrence is therefore not proof of negligence *per se*. However, if there are no risk factors and the surgeon follows safe laparoscopic entry techniques, as detailed above, then the risk of injury is highly improbable.

Key Points: Bowel Injury

- The overall incidence of bowel injury in gynaecological laparoscopies is 1:769 but increases with surgical complexity.
- Laparoscopic hysterectomy bowel injury rate is 1:256.
- Delayed diagnosis is associated with mortality rate of 1:31.
- Following ten surgical steps can aid safe laparoscopic entry.
- Alternative methods for entry include open Hasson and direct trocar entry.

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