

Gynaecological Laparoscopy – Safe Entry and Closure – S.O.P

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1. Introduction

A quarter of a million women have a laparoscopic procedure each year, with major complications occurring in approximately 0.1%.¹ The blind insertion of instruments through the abdominal wall carries the danger of visceral and vessel injury and therefore is the time of the procedure with the greatest risk. Postoperatively, the estimated prevalence of port site hernias is 0.5%, and with it the theoretical risk of bowel obstruction and accompanying clinical sequelae.²

2. Purpose and Outcomes

To highlight techniques for safe laparoscopic entry and closure to minimise the risk of procedure- related complications.

3. Abbreviations

CO ₂	-	Carbon Dioxide
PSH	-	Port Site Hernia
RCOG	-	Royal College of Obstetricians and Gynaecologists

4. Entry Procedures

4.1 Positioning

- The operating table should be horizontal at the start of the procedure (not in Trendelenburg tilt)

4.2 Closed Entry Technique

- Incision should be vertical from the base of the umbilicus
- The lower abdominal wall should be stabilised to allow the veress needle to be inserted perpendicular to the skin. The veress needle should be pushed in sufficiently to penetrate fascia and peritoneum generating two audible clicks.

- After two failed attempts at Veress entry, open Hasson or Palmer's point should be used to gain entry into the abdomen

(This recommendation is following a review by the Council of the Association of Surgeons)¹

- Following veress entry, if the Intra-abdominal pressure is less than 8mmHg and gas flowing freely it is safe to proceed. With higher intra-abdominal pressures withdraw the veress needle and re-attempt entry
- Primary trocar should be inserted through the base of the umbilicus in a controlled manner at 90 degrees to the skin, and stop immediately following entry into the abdominal cavity
- Following insertion of the laparoscope, it should be rotated through 360 degrees to visually check for any adherent bowel
- Secondary ports must be inserted under direct vision at right angles to the skin, after identifying the inferior epigastric vessels in order to avoid them

4.3 Alternative Entry Techniques

- Direct vision trocar insertion (gasless) is an appropriate technique although meta-analysis does not show a safety advantage in terms of major complications.³ This should only be performed with a blunt trocar (Visiport)
- Preferred alternative point of entry is Palmer's point - 3cm below the left costal margin in the mid clavicular line. A small incision is made, the veress needle inserted vertically and gas insufflated to 25mmHg. During palmer's point entry three clicks should be audible on inserting veress needle, with an intra-abdominal entry pressure below 8mmhg and gas flowing freely. A 5mm endoscope is then used to inspect the area under the umbilicus and the primary trocar can then be inserted under direct vision
- Open/Hasson technique⁵

Hasson first described this technique in 1974. The entry is essentially a mini-laparotomy. It allows the insertion of a blunt-ended trocar under direct vision.

Instruments required are:

- two pairs of littlewood retractors
- two small/medium Langenbeck retractors
- two pairs of curved artery forceps e.g. Fraser-Kelly.

Technique

1. A small incision is made transversely or longitudinally at the umbilicus, which is then everted with the Littlewood forceps
2. Langenbeck retractors can be used for retraction to provide a good view of the deeper layers.
3. This incision is long enough to dissect down to the fascia, incise it and enter the peritoneal cavity under direct vision
4. The cannula is inserted into the peritoneal cavity under direct vision
5. Sutures are placed on either side of the cannula in the fascia and attached to the cannula or purse – stringed around the cannula to seal the abdominal wall incision to the cone shaped sleeve
6. A specific Hasson entry trocar and cannula with flanges can be used to prevent gas leakages
7. The laparoscope is then introduced and insufflation is commenced

8. There is no evidence that using the open method will reduce the risk of inadvertent bowel injury, therefore in the presence of a lower midline laparotomy an alternative entry site should be used.

4.4 Insufflation Pressures

- Intra-abdominal pressure should reach 20-25mmHg before inserting the primary trocar

Pressures of 20-25mmHg splint the abdominal wall and this has been shown to reduce the risk of major vessel injury. It is estimated that 5.6 litres of CO₂ is required to reach these pressures⁴

- Pressure should be reduced to 12-15mmHg once insertion of the trocars is complete

4.5 Secondary Ports

- Inferior epigastric vessels should be visualised prior to ensure port is placed lateral to them
- Port should be inserted perpendicular to the skin under direct vision and angled towards the anterior pelvis once the peritoneum has been pierced
- Intra-abdominal insufflation pressure should be lowered to 12-15mmHg once port insertion complete to allow effective ventilation whilst maintaining an operative field

4.6 Exit

- Secondary ports should be removed under direct vision to ensure any haemorrhage is identified
- The primary trocar should be removed under vision using the laparoscope to ensure there has not been a through and through injury of the bowel below the umbilicus
- Any non-midline port over 7mm and any midline port greater than 10mm requires formal deep sheath closure using an absorbable suture e.g. Vicryl on a J shaped needle to reduce risk of port site hernias

Unanimous evidence is lacking on reducing the rate of port site hernias as many studies have found that that formal deep sheath/fascial closure does not completely prevent this complication. Nonetheless, the majority of PSH occur with >10mm ports hence the recommendation above, which is echoed in the RCOG guidance.^{1,2}

5. Monitoring Compliance and Effectiveness

As per agreed Business Unit Audit forward programme

6. References

1. Royal College of Obstetrics & Gynaecology (RCOG) Green-top Guideline No. 49 May 2008 Preventing entry-related Gynaecological Laparoscopic Injuries
2. Chapelle C, Bemelman et al. A Multidisciplinary evidence-based guideline for minimally invasive surgery: part 2 - laparoscopic port instruments, tracer site closure, and electrosurgical techniques. *Gynaecol Surgery* 2013;10:11-23
3. Ahmad G, Gent D, Henderson D, O'Flynn H, Phillips K, Watson A. Laparoscopic entry techniques. *Cochrane Database of Systematic Reviews* 2015, Issue 8. Art. No.: CD006583. DOI: 10.1002/14651858.CD006583.pub4
4. Phillips G, Garry R, Kumar C, Reich H. How much gas is required for initial insufflation at laparoscopy? *Gynaecol Endosc* 1999;8:369-74
5. StratOG – BeST (Blended e-learning and Simulation Training) eLearning and Teaching for Basic Laparoscopic Surgery. Accessed 19/1/18

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Key contact:	Cindy Meijer			