



Use of the Veress needle to obtain pneumoperitoneum prior to laparoscopy

This statement has been developed and reviewed by the Endoscopic Surgery Advisory Committee (RANZCOG/AGES) and approved by the RANZCOG Board and Council.

A list of Endoscopic Surgery Advisory Committee (RANZCOG/AGES) Members can be found in [Appendix A](#).

Disclosure statements have been received from all members of this committee.

Disclaimer This information is intended to provide general advice to practitioners. This information should not be relied on as a substitute for proper assessment with respect to the particular circumstances of each case and the needs of any patient. This document reflects emerging clinical and scientific advances as of the date issued and is subject to change. The document has been prepared having regard to general circumstances.

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Current: March 2021
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Consensus statement of the Royal Australian and New Zealand College of Obstetricians & Gynaecologists (RANZCOG) and the Australasian Gynaecological Endoscopy & Surgery Society (AGES).

Objectives: To provide advice on the use of the Veress needle to obtain pneumoperitoneum prior to laparoscopy.

Target audience: Health professionals providing gynaecological care, and patients.

Values: The evidence was reviewed by the Endoscopic Surgery Advisory Committee (RANZCOG/AGES), and applied to local factors relating to Australia and New Zealand.

Background: This statement was first developed by the RANZCOG Women's Health Committee in April 1990 and most recently reviewed by the Endoscopic Surgery Committee (RANZCOG/AGES) in February 2021.

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1. Introduction

Laparoscopy using the Veress needle was introduced by Raoul Palmer in 1947 and has been practiced worldwide as a method for obtaining access to the peritoneal cavity for diagnostic and operative laparoscopy since. Trainees and Fellows of the RANZCOG should be aware of the particular techniques required for appropriate Veress needle insertion and variants for abdominal entry to perform safer surgical procedures.

Given that 50% of injuries during gynaecological laparoscopy occur at the time of entry to the abdomen, particular care during this time is paramount. The most common life threatening complications that may occur during laparoscopic entry are vascular and bowel injury; with urinary tract injury less common but important to recognize and more minor complications including failed entry without injury to abdominal or pelvic organs and extra-peritoneal insufflation. The overall complication rate associated with gynaecological laparoscopy is 3-8/1000 women and this has remain largely unchanged over the last decade.

Any clinician performing laparoscopy should understand their preferred method of laparoscopic entry and have an alternate entry site and/or entry method that they may undertake when the clinical circumstances require this. Evidence on entry reports that no entry technique is without risk of major injury and care needs to be taken with all entry techniques. Guidelines from around the world recommend using the technique that the clinician is most familiar with and being aware of the potential for complications, how to reduce risk and identification of complications.

2. AGES Entry Guidelines

2.1 Intraumbilical Veress Needle Entry

This technique of inserting the Veress needle has been developed as a guideline by the Australasian Gynaecological Endoscopy and Surgery Society based on clinical evidence and published Guidelines from around the world.

2.2 Preparation

The woman undergoing laparoscopy is positioned flat on the operating table and the abdomen is appropriately prepared and draped. The bladder should be emptied. Clinical landmarks such as the anterior superior iliac spines, the symphysis and costal margins are fixed points. The umbilicus may have a variable position, particularly in women with an increased BMI and may not be a reliable indicator of abdominal and pelvic anatomy.

2.3 Instrumentation

The following equipment should be available:

- A scalpel with a size 11 or 15 blade preferred
- A Veress needle. This may be disposable and therefore its sharpness and spring mechanism more likely assured. For a reusable Veress needle, the sharpness and spring mechanism should be assessed prior to insertion.
- Insufflator and tubing - assess correct connections and free flow of CO₂ with the Veress needle attached including the stopcock and to determine the assessment of pressure through the insufflator
- A light lead, camera and laparoscope to assess the intraperitoneal contents
- The appropriate number and size of trocars for the procedure. These may be disposable or reusable and the particular benefits and potential risks of trocars understood by the clinician

2.4 Incision

An intra-umbilical skin incision is recommended with the blade incising from the centre of umbilicus caudally. Particular care should be taken in thin women where the distance to the great vessels in particular may be very short and the risk of injury is increased.

2.5 Insertion of Veress

- The tap should be open.
- The abdominal wall may be splinted with the non dominant hand. The skin may be elevated and it is important to note that this maneuver changes the shape of the peritoneal cavity but not the volume and does not decrease the risk of injury to intraperitoneal contents such as bowel but may decrease the risk to retroperitoneal structures such as vessels by changing the perpendicular distance.
- With the dominant hand, the Veress needle should be held a few centimetres above the needle tip rather than on the needle waist to avoid deep or uncontrolled insertion.
- Using continuous pressure the needle is inserted at the base of the umbilicus where there is the least distance to be traversed directly perpendicular.
- The surgeon may have the sensation of a single or dual loss of resistance (a 'pop') pending the tip location and its passage through the fascia.
- Only the tip of the Veress needs to be inserted to commence insufflation and assess pressure.

2.6 Test placement

Once the Veress needle tip is in the peritoneal cavity, the clinical may consider the aspiration and saline drop tests. It should be noted that these tests have moderate sensitivity and specificity for correct entry only. The test with the highest sensitivity and specificity is immediate gas pressures and 5 successive pressures of <8mm Hg have a high correlation with correct Veress needle placement.

It is important to note that the 'swinging needle' test, where the tip of the Veress is manipulated back and forth to 'feel' the freedom of the tip, should never be undertaken as it may compound any injury.

If placement of the Veress needle is considered to be incorrect following 3 attempts consider the following:

- Seek assistance from a senior colleague
- Choose an alternate site for placement such as the left upper quadrant
- Choose an alternate entry type such as open entry
- Cease the procedure completely

2.7 Insufflation

Commence insufflation at low flow rates such as 1-3L/min. Note that the diameter of the Veress needle itself will limit the maximal flow rate that may be achievable, although good clinical practice is to ensure that the insufflator is set to a low pressure. The initial pressures must be carefully monitored in the pressure insufflator and should ideally be less than or equal to 8mmHg. For women with a high BMI or for Veress needle placement at the left upper quadrant, pressures 2mm Hg higher may be encountered, with caution for pressures of 12mm Hg or greater that may indicate a preperitoneal placement.

Intra-abdominal pressure is the single most important factor in reducing risk with primary trocar placement and neither time nor volume are reliable methods for decreasing risk and should not be used for this purpose. The intra-abdominal pressures should be 20-25mmHg prior to primary trocar entry consistent with evidence that demonstrates that these pressures increase the distance to the retroperitoneal vessels. These volumes have little impact on physiological response such as ventilation pressures, heart rate or blood pressure with the woman lying flat. Following primary trocar placement, with visual confirmation of positioning, the insufflation pressure should be reduced to 15mmHg or less for the diagnostic/operative component of the procedure.

2.8 Insertion of trocar

The placement of the primary trocar requires the operating table to be at a comfortable height for the clinician to maintain control and downward pressure through the procedure. Ideally, the obturator is held in the palm of the dominant hand with the index finger extending down the shaft of the cannula to prevent deep displacement of the trocar once it is inserted into the peritoneal cavity. Clinicians with smaller hands may find this difficult and use both hands on the trocar. Initial placement of the trocar tip is perpendicular to skin using constant pressure and/or a twisting motion to have the obturator tip enter the peritoneal cavity. Having achieved this, further displacement to have the cannula within the peritoneal cavity may be performed by directing the trocar towards the centre of the pelvis. The pressure should be released once the cannula is within the peritoneal cavity. The obturator is then removed and a laparoscope inserted to ensure that the cannula is correctly placed within the peritoneal cavity and there is free flow of gas through the cannula if using this port for insufflation. At this time, a 360 degree evaluation of the peritoneal cavity is undertaken to inspect the abdomen prior to Trendelenburg positioning and check for inadvertent injury during placement.

2.9 Alternative Entry Sites

Clinicians should be aware of alternate sites for Veress needle placement including the left upper quadrant (Palmer's point); suprapubically, the right upper quadrant and transfundally through the uterus. Each of these locations has specific issues and the clinician should be familiar and comfortable with any site that they choose for Veress needle insertion.

3. *Other suggested reading*

1. A consensus document concerning laparoscopic entry techniques: Middlesbrough, March 19-20 1999.
Anonymous Gynaecological Endoscopy. 8 (6) (pp 403-406), 1999. Date of Publication: 1999
2. Coming to Terms With the Fact That the Evidence for Laparoscopic Entry Is as Good as It Gets
Cuss, Bhatti and Abbott Journal of Minimally Invasive Gynecology (2015) 22, 332–341
3. Deffieux X, Ballester M, Collinet P, et al. Risks associated with laparoscopic entry: guidelines for clinical practice from the French College of Gynaecologists and Obstetricians. Eur J Obstet Gynecol Reprod Biol. 2011;158:159–166.
4. RCOG. Preventing entry-related gynaecological laparoscopic injuries. In: Green-top Guidelines. Green-top 49. London: Royal College of Obstetricians and Gynaecologists; 2008.
5. Society of American Gastrointestinal and Endoscopic Surgeons. Guidelines for Diagnostic Laparoscopy 2014. Available at: <http://www.sages.org/publications/guidelines/guidelines-for-diagnostic-laparoscopy>.
6. Vilos GA, Ternamian A, Dempster J, et al. Laparoscopic entry: a review of techniques, technologies, and complications. J Obstet Gynaecol Can. 2007;29:433–465.

4. *Links to other College statements*

[Evidence-based Medicine, Obstetrics and Gynaecology \(C-Gen 15\)](#)

5. *Patient information*

A range of RANZCOG Patient Information Pamphlets can be ordered via:

<https://www.ranzcog.edu.au/Womens-Health/Patient-Information-Guides/Patient-Information-Pamphlets>

Appendices

Appendix A Endoscopic Surgery Advisory Committee (RANZCOG/AGES) Membership

Name	Position on Committee
Professor Jason Abbott	Chair, Representative AGES
Dr Stephen Lyons	Deputy Chair, Representative RANZCOG
Prof Yee Chit Leung	Representative RANZCOG
D Dr Martin Gerard Ritossa	Representative AGES
Professor Michael Permezel	Representative RANZCOG
Dr John Tait	Representative RANZCOG
Dr Stuart Salfinger	President AGES
Dr Vijay Roach	President RANZCOG

Appendix B Overview of the development and review process for this statement

i. Steps in developing and updating this statement

This statement was originally developed in April 1990 and was most recently reviewed in November 2020. The Endoscopic Surgery Advisory Committee (RANZCOG/AGES) carried out the following steps in reviewing this statement:

- Declarations of interest were sought from all members prior to reviewing this statement.
- Structured clinical questions were developed and agreed upon.
- An updated literature search to answer the clinical questions was undertaken.
- At the February 2021 teleconference committee meeting, the existing consensus-based recommendations were reviewed and updated (where appropriate) based on the available body of evidence and clinical expertise. Recommendations were graded as set out below in Appendix B part iii)

ii. Declaration of interest process and management

Declaring interests is essential in order to prevent any potential conflict between the private interests of members, and their duties as part of the Endoscopic Surgery Advisory Committee (RANZCOG/AGES).

A declaration of interest form specific to guidelines and statements was developed by RANZCOG and approved by the RANZCOG Board in September 2012. The Endoscopic Surgery Advisory Committee (RANZCOG/AGES) members were required to declare their relevant interests in writing on this form prior to participating in the review of this statement.

Members were required to update their information as soon as they become aware of any changes to their interests and there was also a standing agenda item at each meeting where declarations of interest were called for and recorded as part of the meeting minutes.

There were no significant real or perceived conflicts of interest that required management during the process of updating this statement.

iii. *Grading of recommendations*

Each recommendation in this College statement is given an overall grade as per the table below, based on the National Health and Medical Research Council (NHMRC) Levels of Evidence and Grades of Recommendations for Developers of Guidelinesⁱ. Where no robust evidence was available but there was sufficient consensus within the Endoscopic Surgery Advisory Committee (RANZCOG/AGES), consensus-based recommendations were developed or existing ones updated and are identifiable as such. Consensus-based recommendations were agreed to by the entire committee. Good Practice Notes are highlighted throughout and provide practical guidance to facilitate implementation. These were also developed through consensus of the entire committee.

Recommendation category		Description
Evidence-based	A	Body of evidence can be trusted to guide practice
	B	Body of evidence can be trusted to guide practice in most situations
	C	Body of evidence provides some support for recommendation(s) but care should be taken in its application
	D	The body of evidence is weak and the recommendation must be applied with caution
Consensus-based		Recommendation based on clinical opinion and expertise as insufficient evidence available
Good Practice Note		Practical advice and information based on clinical opinion and expertise

Appendix C Full Disclaimer

Purpose

This Statement has been developed to provide general advice to practitioners about use of the Veress needle to obtain pneumoperitoneum prior to laparoscopy and should not be relied on as a substitute for proper assessment with respect to the particular circumstances of each case and the needs of any person. It is the responsibility of each practitioner to have regard to the particular circumstances of each case. Clinical management should be responsive to the needs of the individual person with a monochorionic twin pregnancy and the particular circumstances of each case.

Quality of information

The information available in Use of the Veress needle to obtain pneumoperitoneum prior to laparoscopy is intended as a guide and provided for information purposes only. The information is based on the Australian/New Zealand context using the best available evidence and information at the time of preparation. While the Royal Australian and New Zealand College of Obstetricians and Gynaecologists (RANZCOG) had endeavoured to ensure that information is accurate and current at the time of preparation, it takes no responsibility for matters arising from changed circumstances or information or material that may have become subsequently available. The use of this information is entirely at your own risk and responsibility.

For the avoidance of doubt, the materials were not developed for use by patients, and patients must seek medical advice in relation to any treatment. The material includes the views or recommendations of third parties and does not necessarily reflect the views of RANZCOG or indicate a commitment to a particular course of action.

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ⁱ National Health and Medical Research Council. NHMRC additional levels of evidence and grades for recommendations for developers of guidelines. Canberra 2009.