



# Use of the Veress needle to obtain pneumoperitoneum prior to laparoscopy

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

A list of Women's Health Committee and 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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Consensus statement of the Royal Australian & New Zealand College of Obstetricians & Gynaecologists (RANZCOG) and the Australasian Gynaecological Endoscopy and 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 Women's Health Committee in April 1990 and most recently reviewed by the Endoscopic Surgery Committee (RANZCOG/AGES) in July 2017.

**Funding:** The development and review of this statement was funded by RANZCOG.

## Table of contents

Table of contents .....	2
1. Introduction .....	3
2. Entry Guidelines.....	3
2.1 Intraumbilical Veress Needle Entry .....	3
2.2 Preparation .....	3
2.3 Instrumentation .....	3
2.4 Incision .....	4
2.5 Insertion of Veress .....	4
2.6 Test placement .....	4
2.7 Insufflation .....	4
2.8 Insertion of trocar.....	5
2.9 Alternative Entry Sites.....	5
3. Other suggested reading .....	6
4. Links to other College statements .....	6
5. Patient information .....	6
Appendix A Women’s Health Committee .....	7
Endoscopic Surgery Advisory Committee (RANZCOG/AGES) Membership .....	7
Appendix B Overview of the development and review process for this statement.....	7
Appendix C Full Disclaimer .....	9

## 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 remained 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. 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 CO<sub>2</sub> 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 manoeuvre 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 clinician 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. An intrabdominal pressure of 20 – 25mm Hg could be considered as this will increase the distance between the anterior abdominal wall and the retroperitoneal vessels. Insufflation of gas can cause significant and rapid physiological changes. If insufflation pressure of 20 – 25mm Hg is being considered, this should be discussed with the Anaesthetist. Following primary trocar placement, with visual confirmation of positioning, the insufflation pressure should be reduced to 12 - 15mmHg or less for the diagnostic/operative

component of the procedure. Failure to do so may result in clinically significant surgical emphysema and ventilatory compromise.

### 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 Women's Health Committee

Name	Position on Committee
Professor Yee Leung	Chair
Dr Joseph Sgroi	Deputy Chair, Gynaecology
Associate Professor Janet Vaughan	Deputy Chair, Obstetrics
Associate Professor Ian Pettigrew	EAC Representative
Dr Tal Jacobson	Member
Dr Ian Page	Member
Dr John Regan	Member
Dr Craig Skidmore	Member
Dr Bernadette White	Member
Dr Scott White	Member
Associate Professor Kirsten Black	Member
Dr Greg Fox	College Medical Officer
Dr Marilyn Clarke	Chair of the ATSI WHC
Dr Martin Byrne	GPOAC Representative
Ms Catherine Whitby	Community Representative
Ms Sherryn Elworthy	Midwifery Representative
Dr Amelia Ryan	Trainee Representative

### Endoscopic Surgery Advisory Committee (RANZCOG/AGES) Membership

Name	Position on Committee
Dr Stephen Lyons	Chair, Representative AGES
Professor Michael Permezel	Deputy Chair, Representative RANZCOG
Dr Stuart Salfinger	Representative AGES
Professor Ian Symonds	Representative RANZCOG
Dr John Tait	Representative RANZCOG
Associate Professor Anusch Yazdani	Representative AGES
Associate Professor Jason Abbott	President AGES
Professor Steve Robson	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 March 2017. 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 March 2017 face-to-face 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 Guidelines.<sup>17</sup> 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

This information is intended to provide general advice to practitioners, 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 patient.

This information has been prepared having regard to general circumstances. 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 patient and the particular circumstances of each case.

This information has been prepared having regard to the information available at the time of its preparation, and each practitioner should have regard to relevant information, research or material which may have been published or become available subsequently.

Whilst the College endeavours 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.