ACCESS TECHNIQUES

Access is the Key of Success

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Definition

- In minimal access surgery technique of entering inside the human body with telescope and instruments is called access technique

Steps of Access

- First entry is of two type
  1. Closed
     - With pneumoperitoneum by Veress needle
  2. Open
     - Direct entry by open technique

Some surgeon practices blind trocar insertion without pneumoperitoneum. The incidence of injury due to this type of Access is 2-4%.

Before Access

Palpation of Abdomen to rule out any lump

White Balancing and Focusing

Focusing at Focal Length

Pneumoperitoneum

USING VERESS NEEDLE

- Preparation:

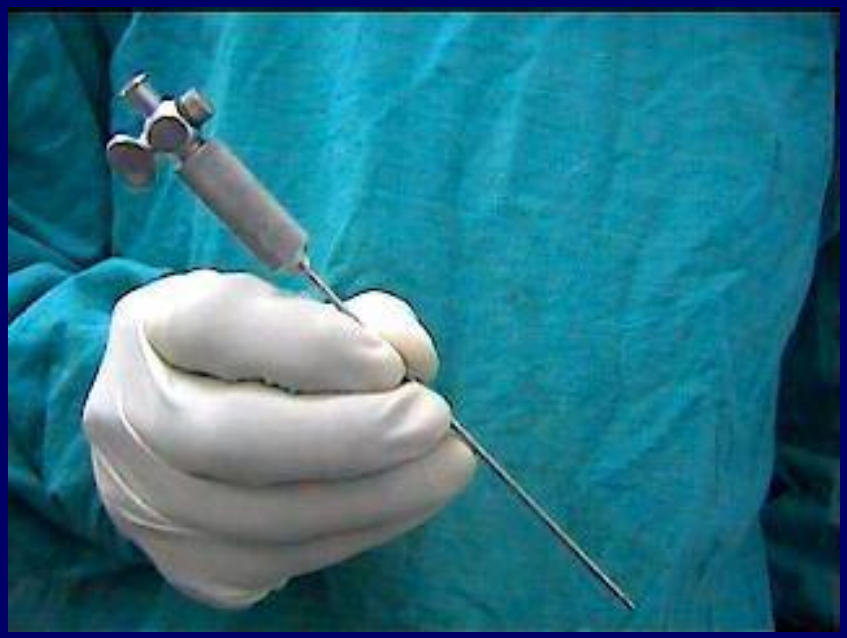
  Urinary catheter Nasogastric tube

- Patient position:

  Supine with 10-20 degrees head down

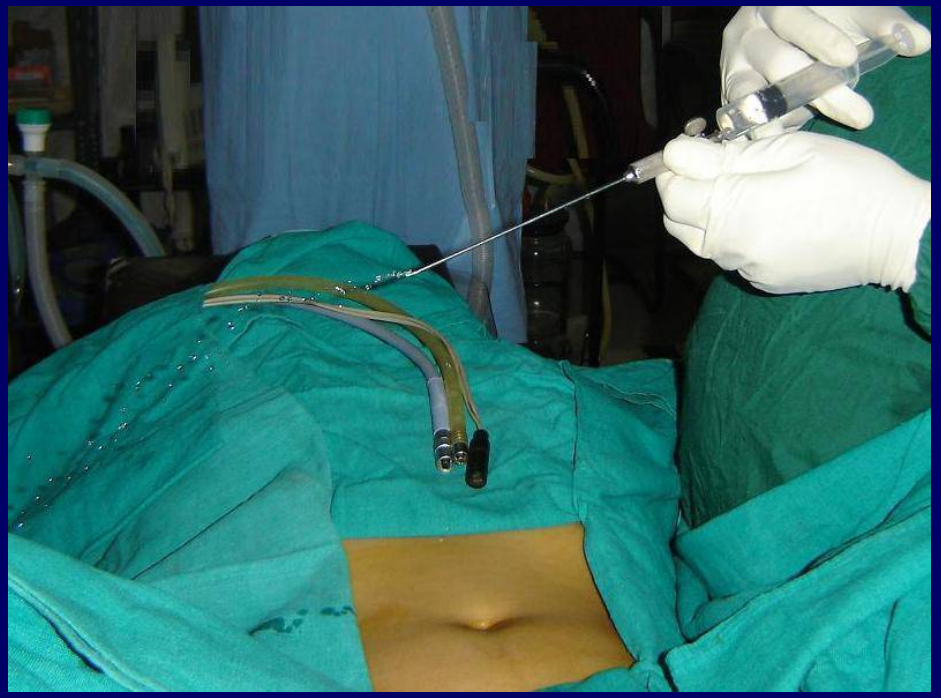
- Site:
  - Superior or Inferior border of umbilicus
  - Transumbilical in obese patients

Method of Holding Veress Needle



Hold Veress needle like dart

Veress Needle checked

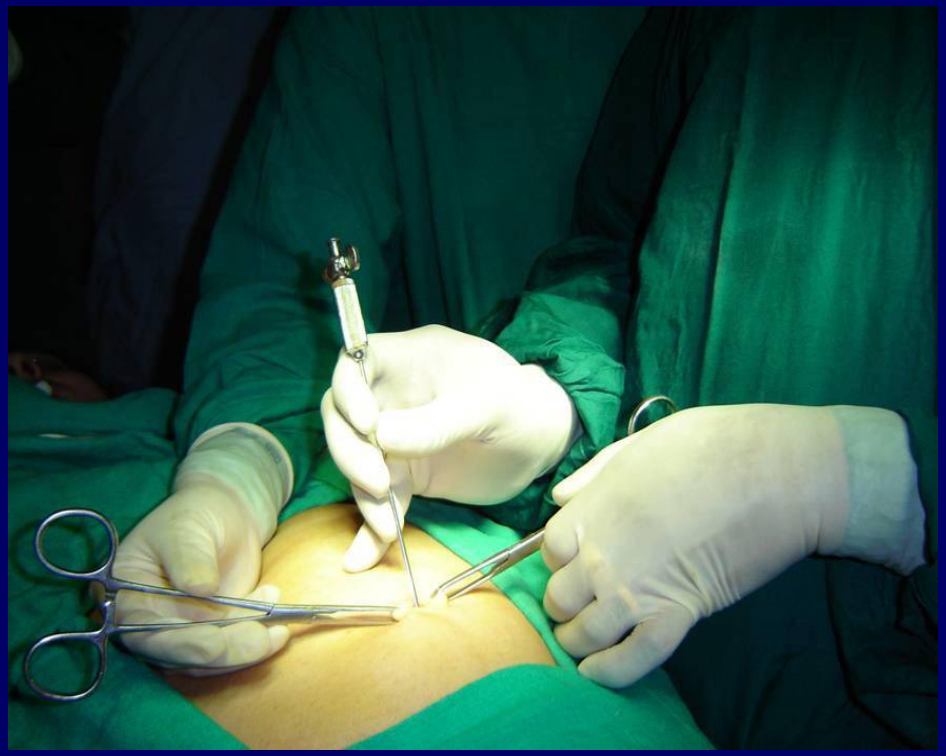


Veress Needle Should be checked for spring action and patency

Stabilize the umbilicus with two ellises and stab the crease

Small stab is given over Inferior crease of umbilicus with 11 number knife

Point the veress needle in stab wound and then lift the lower abdominal wall



Needle Perpendicular to Abdominal Wall

Introduce Veress needle With 45 degrees elevation angle But perpendicular to abdominal wall & watch for two click sound

Procedure

Video demonstrating wrong direction of veress needle entry

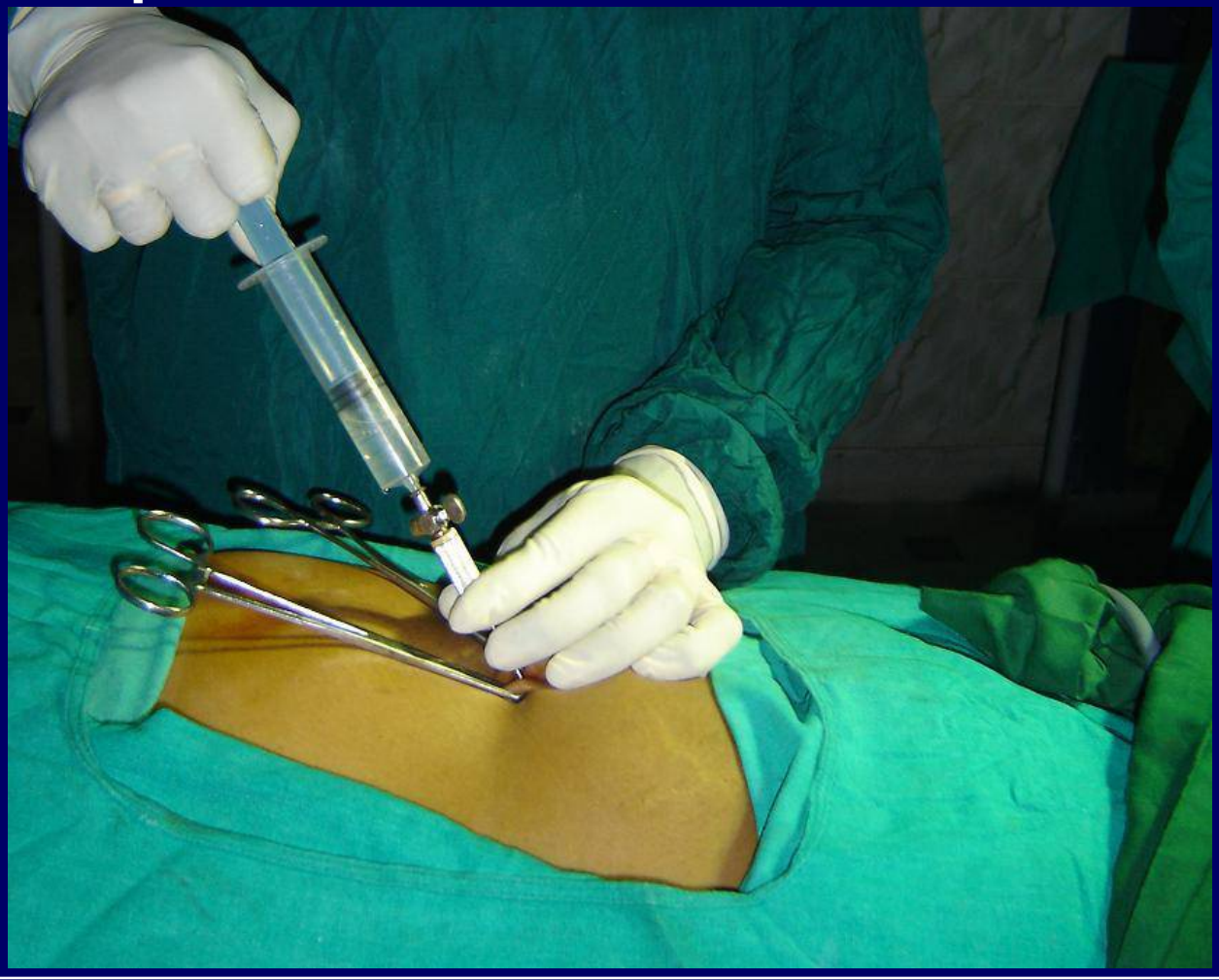
Indicators Of Veress Needle Safe Access

- Needle movement test
- Irrigation test
- Aspiration test
- Hanging drop test
- Quadro-manometric indicators

Video demonstrating perpendicular entry in Obese Patient

Irrigation Test

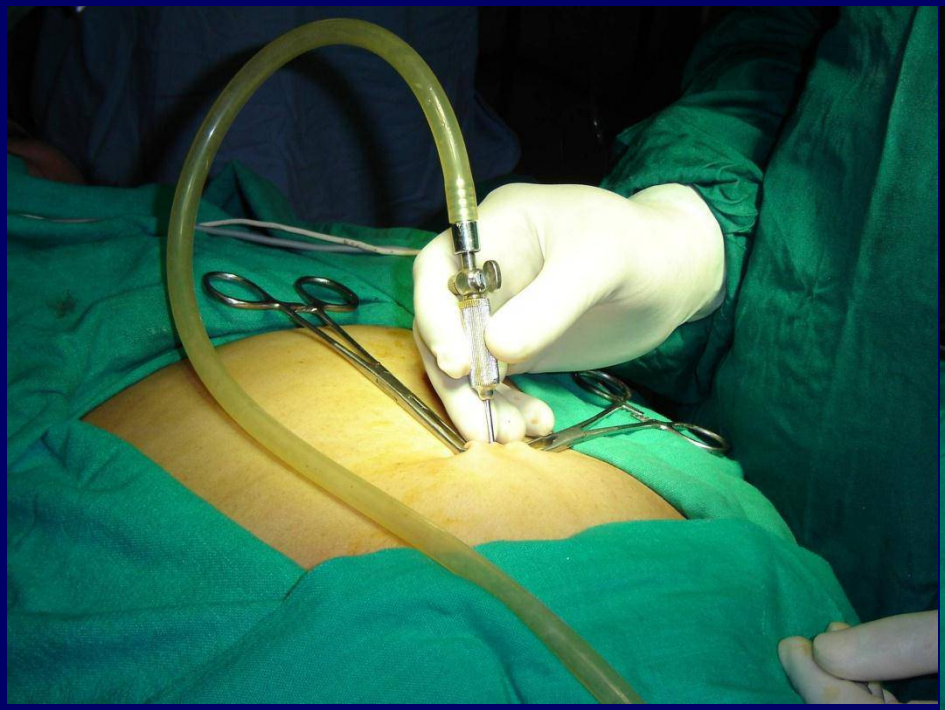
Aspiration Test



Hanging drop test should be mandatory

Slow Careful Insufflation

Slow insufflation with careful oblique hold over veress needle



Primary Trocar Insertion

- Patient position
  - supine
  - 10-20 degree head down
- Site: Umbilical
    - thinnest abdominal wall
    - cosmetically better
    - no significant blood vessels
  - inferior crease of umbilicus for gynecologic procedure
  - superior crease of umbilicus for abdominal procedure

Steps Of blind trocar Entry

- Confirm pneumoperitoneum by quadromanometric indicators
- Extend incision >/= 11mm
- Spread fatty tissues with Kelly clamp


Extend the incision and clear the subcutaneous fat

Hold the trocar on thenar muscle


Lift abdominal wall as much as possible

Angle of insertion

- 45 degrees of elevation angle & Perpendicular to abdominal wall
- Tilted to 60-70 degree angle once giving way sensation is felt

Procedure

Videos Demonstrating Disposable versus Reusable Trocar Entry

Confirmation Of Trocar Entry

- Signs of entry in the peritoneal cavity
  - audible click
  - ‘whooshing sound’
  - loss of resistance

Inspect the viscera just below the access wound

Transillumination for secondary trocars

Secondary Trocars

Transillumination is Necessary before introduction of secondary trocar

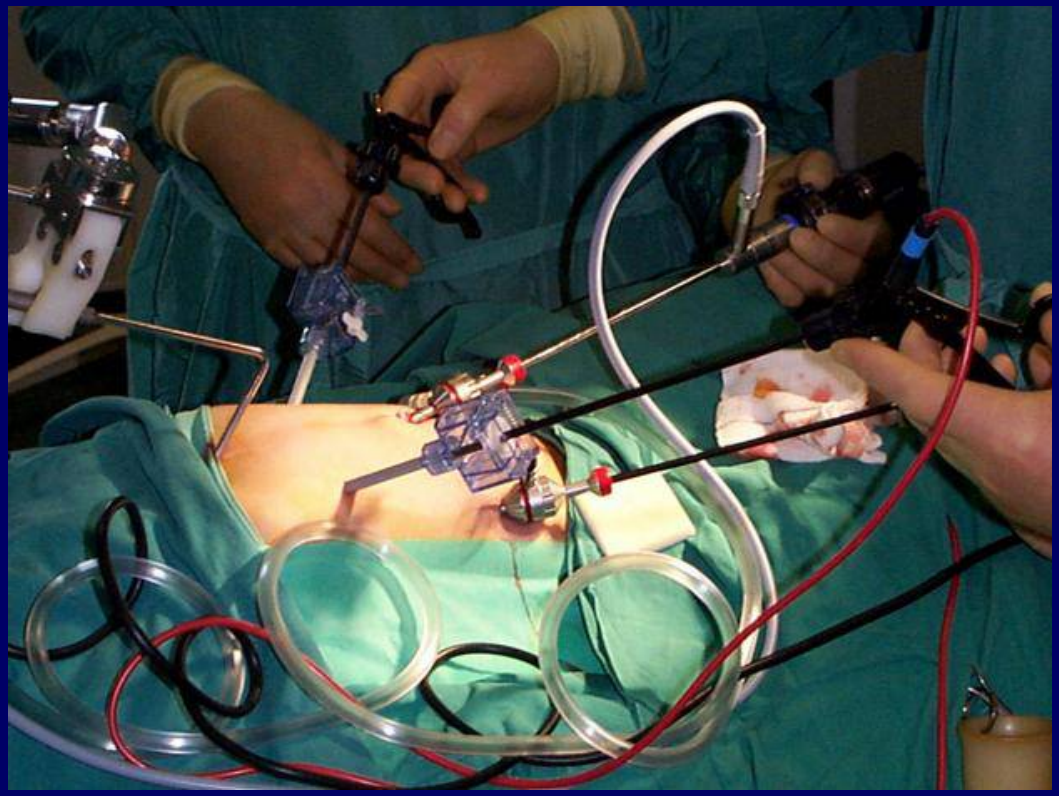
Secondary Trocars

Initial Secondary trocar entry should be perpendicular under vision of telescope. It should be turned towards free space as soon as enters into peritoneal cavity

Subsequent Trocar

Trocar on the opposite side of the body of patient is introduced by holding in suicidal knife position

All the Ports in Position



All the cables are arranged in proper position


SONY

Contraindications Of Umbilical Entry

- Previous midline incision
- Portal hypertension with recanalised umbilical artery
- Umbilical abnormalities viz. Urachal cyst, sinus, hernia

Open Technique

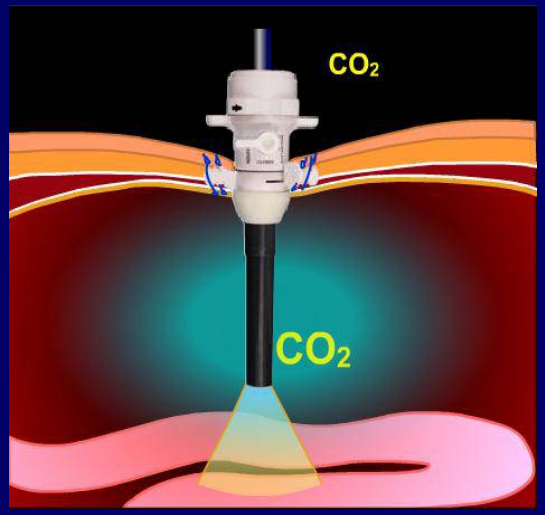
Why open technique ?

- Definite, small risk of injury with blind technique irrespective of experience
- Increasing number of surgeons performing laparoscopy without experience
- Particularly useful in previous abdominal surgery or underlying adhesions

Hasson Cannula (1974)

Three parts:

- Cone shaped sleeve
- Metal/ Plastic sheath with trumpet / flap valve
- Blind tipped trocar



Hasson Trocar

Hasson Cannula

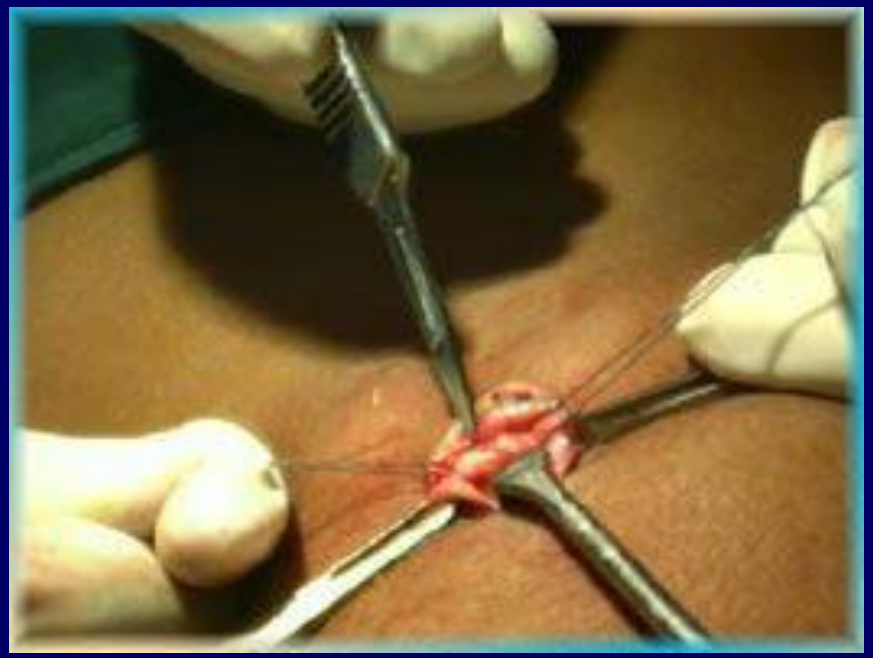
Hasson Cannula should be always secured with the help of a Purse String Suture

Steps Of Open Access Technique

- A transverse incision is made in the sub umbilical region.
- The upper skin flap is retracted with a 4 inch Allis forceps.
- The lower flap is retracted using a small right angled retractor.
- Subcutaneous tissue is dissected till the linea alba and the rectus sheath is visualized.
- Stay sutures are taken on either side of the midline.

Steps Of Open Access Technique Contd...

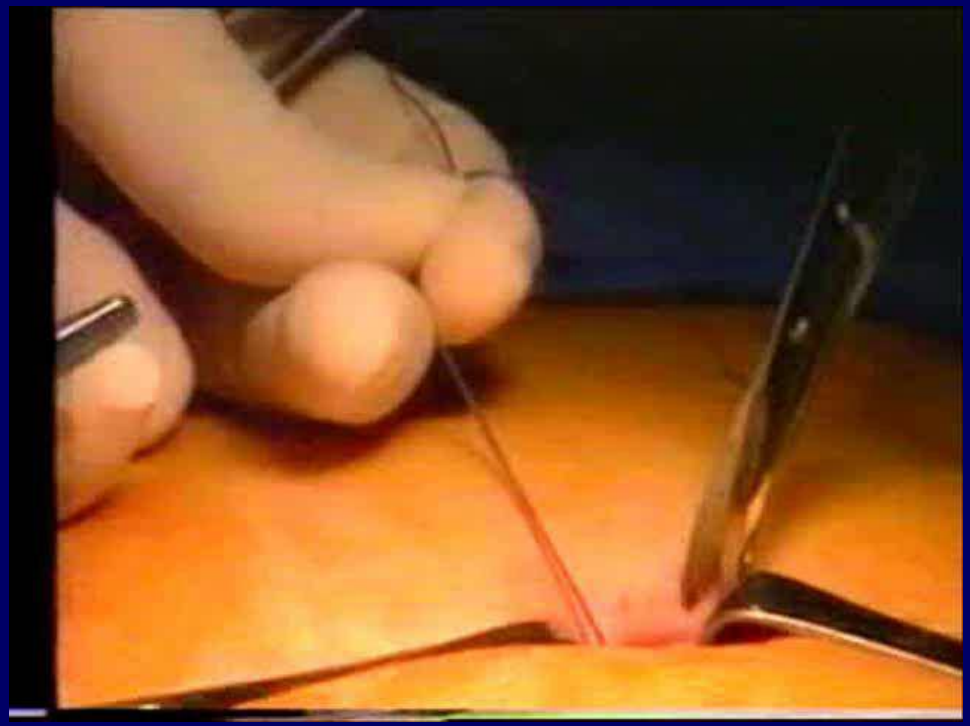
- Both the stays are pulled up.
- Rectus sheath is incised in the midline pointing upwards.
- Incision is does not penetrate the peritoneum.



Steps Of Open Access Technique Contd...

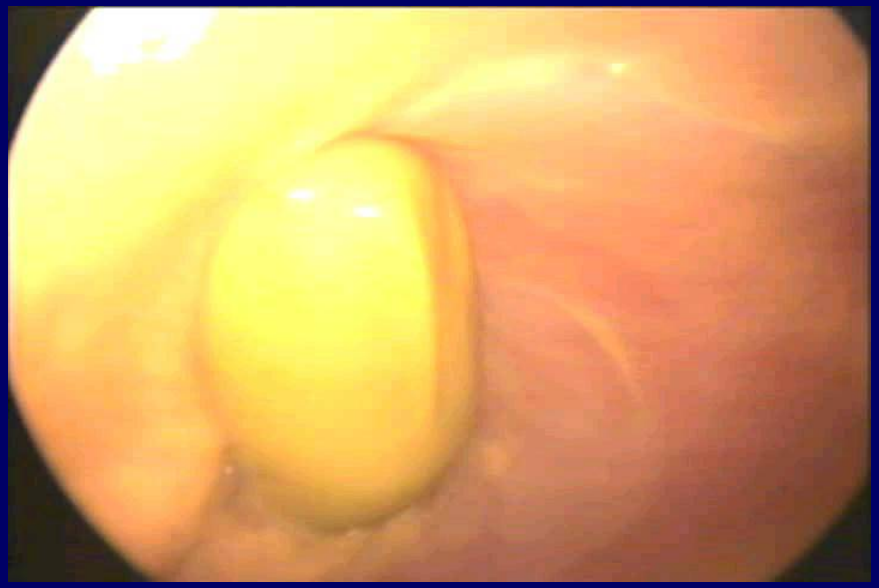
- A haemostat is dabbed into the peritoneum, holding the stays up.
- The give-way of the peritoneum can be felt and then the haemostat is opened to widen the opening.

Open Access



Video demonstrating Open Techniques

Confirm Entry By Passing A Finger In Open Technique



After open technique finger can be introduced to feel intra-abdominal adhesion

Video demostrating open technique

Steps Of Open Access Technique Contd...

- Insert blunt trocar-cannula for the first port after visualizing the intraperitoneal viscera.
- Care is taken not to make a big incision, cannula dilates the smaller incision to give an airtight fit.
- If incision is big apply purse string suture

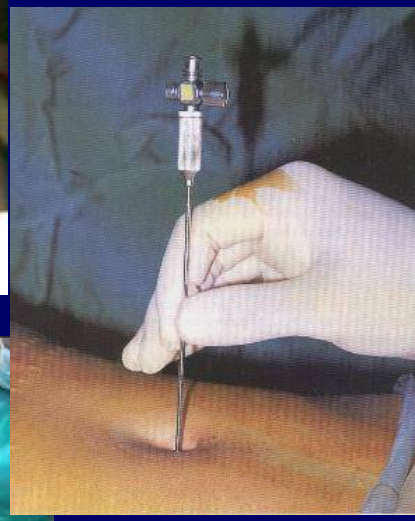
Pneumoperitoneum In Special Conditions

Diagnostic Laparoscopy may be performed under local anesthesia

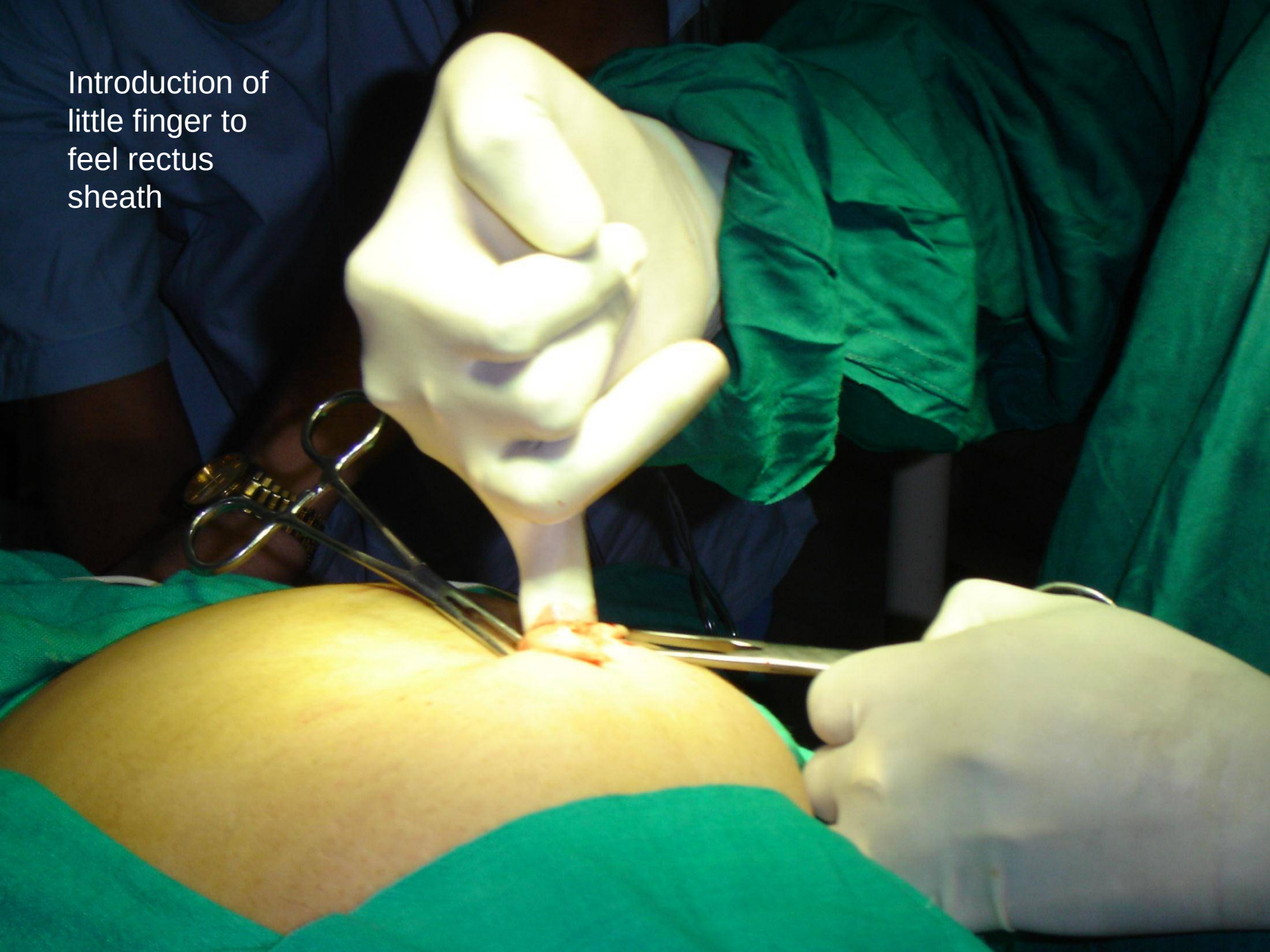
- I/V sedation
- Insert Veress needle & trocar perpendicular to skin
- Slow insufflation 0.5L/mnt
- Pressure should not exceed 8mm of Hg

Obese Patients

- Incision Site: Transumbilical
- (base of umbilicus)
- Clear the fat of up to anterior rectus
- Direction: perpendicular to abdominal wall



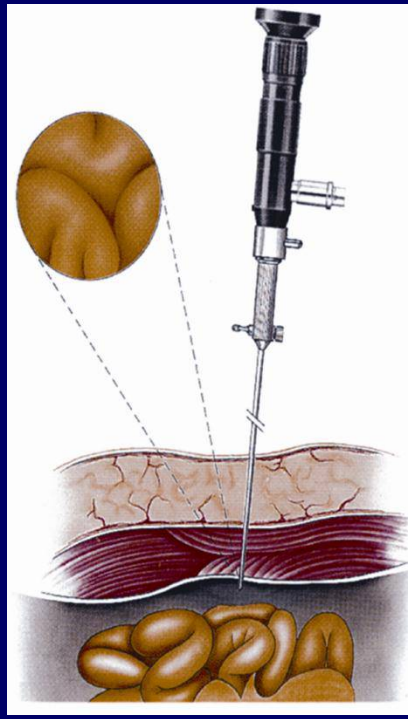

Separation of
subcutaneous fat


Introduction of
little finger to
feel rectus
sheath

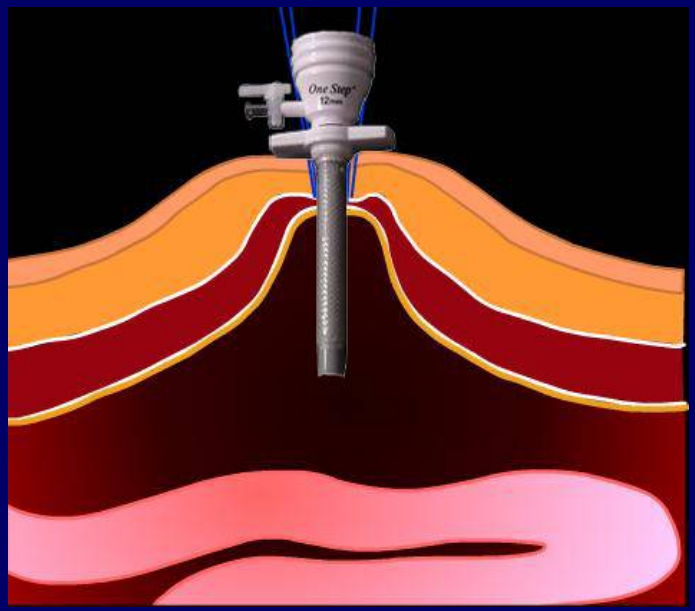
Assistant's hand in obese patients can help in introduction

Patient With Prior Abdominal Procedure

- Choose site distant to abdominal scar
- Left hypochondria, Right or left iliac fossa may be used but avoid inferior epigastric artery
- Optical needle / trocar



Visiport is one alternative



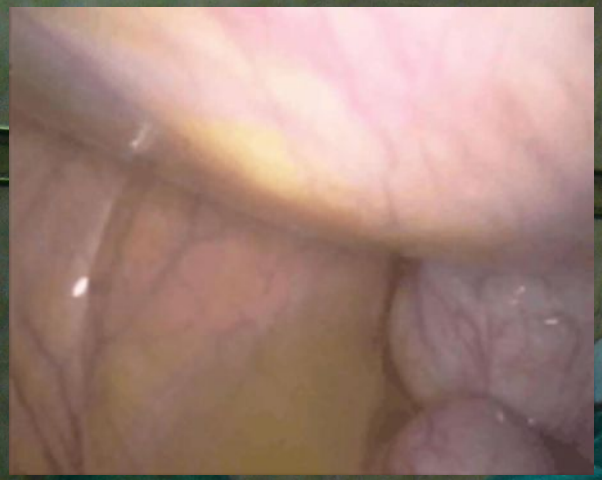
Visiport can be used if patient can afford cost of instrument

Fielding Technique & Scandinavian Technique

- Retraction of - cylindrical umbilical tube
- Umbilical tube incised from apex caudally to its junction with the linea alba
- Blunt dissection to enter peritoneum
- Port inserted without trocar

Secondary Ports

Perpendicular to abdominal wall



Perpendicular to abdominal wall

Complications Of Access Technique

Contd…

285 organs injuries were reported (Chandler et al., 2001)

Small bowel	**51.9%** (148)
Colon	**24.5%** (70)
Urinary bladder	**6.6%** (19)
Liver	**4.5%** (13)
Stomach	**3.8%** (11)
Other	**8.4%** (24)

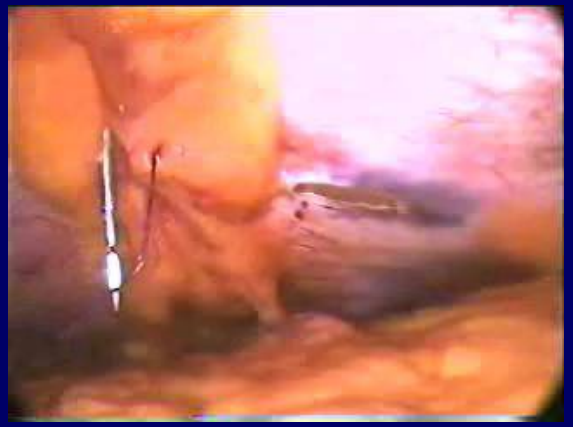
Video demonstration of intestinal perforation

Complications Of Access Technique

Contd…

309 vascular injuries were reported (Chandler et al., 2001)

Iliac artery	**32.3%** (110)
Iliac or other retroperitoneal vein	**16.8%** (52)
Mesenteric vessels	**13.9%** (43)
Aorta	**12.6%** (39)
Abdominal wall vessels	**9.3%** (29)
Inferior vena cava	**8.4%** (26)
Major visceral vessels	**3.2%** (10)



Video demonstrating Vascular Injury due to suture passer

Trocar Site Injury

Video demonstrating Trocar site injury which can be often missed

Access Injury

Wrong and uncontrolled way of access can be fatal in many situation

Complications Of Access Technique

- Gas embolism
  - 1:10 000 to 1:60 000 but lethal
- Other Complications
  - Pneumo-omentum, Surgical emphysema, Pneumo-mediastinum

Steven D. Wexner President SAGES with Dr. R.K. Mishra during International Conference on Recent Advances of Minimal Access Surgery

Thank you

Advance Course July 2005