ACCESS TECHNIQUES

Access is the Key of Success

R.K. Mishra
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 $\geq 11\text{mm}$
- 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
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 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

- 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

- 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 demonstrating open technique
• 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
### Complications Of Access Technique

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<table>
<thead>
<tr>
<th>Organ</th>
<th>Frequency</th>
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</thead>
<tbody>
<tr>
<td>Small bowel</td>
<td>51.9% (148)</td>
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<tr>
<td>Colon</td>
<td>24.5% (70)</td>
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<tr>
<td>Urinary bladder</td>
<td>6.6% (19)</td>
</tr>
<tr>
<td>Liver</td>
<td>4.5% (13)</td>
</tr>
<tr>
<td>Stomach</td>
<td>3.8% (11)</td>
</tr>
<tr>
<td>Other</td>
<td>8.4% (24)</td>
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285 organs injuries were reported (Chandler et al., 2001)

Video demonstration of intestinal perforation
### Complications Of Access Technique

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

<table>
<thead>
<tr>
<th>Vascular Injury</th>
<th>Percentage (Number)</th>
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<tbody>
<tr>
<td>Iliac artery</td>
<td>32.3% (110)</td>
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<tr>
<td>Iliac or other retroperitoneal vein</td>
<td>16.8% (52)</td>
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<tr>
<td>Mesenteric vessels</td>
<td>13.9% (43)</td>
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<tr>
<td>Aorta</td>
<td>12.6% (39)</td>
</tr>
<tr>
<td>Abdominal wall vessels</td>
<td>9.3% (29)</td>
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<tr>
<td>Inferior vena cava</td>
<td>8.4% (26)</td>
</tr>
<tr>
<td>Major visceral vessels</td>
<td>3.2% (10)</td>
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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 situations.
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

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