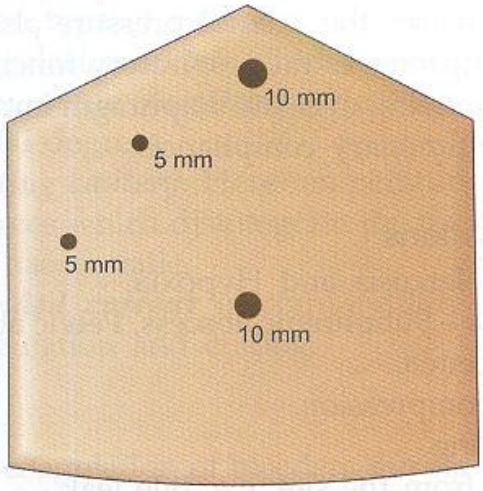


Fig. 7.28: Ports for laparoscopic cholecystectomy

Indications

Gallstones—symptomatic.
Cholecystitis.
Biliary colic.

Relative Contraindications

- End-stage cirrhosis, ascites or portal hypertension.
- *Cholangitis:* Cholecystectomy should be done after control of cholangitis.
- *CBD stones:* Here initially ERCP and stone extraction is done from CBD then laparoscopic cholecystectomy is done.

Technique

After pneumoperitoneum, patient is placed in head up and slight left tilt position so as to make bowels to fall below and towards the left side. one 10 mm trocar is placed at umbilicus and through this umbilical port, laparoscope is passed. One 10 mm port in the epigastric region and two 5 mm ports in the right subcostal line are placed for grasping the gallbladder and for dissection. Initially, through the working channel gall bladder is held and Calot's triangle is dissected. Cystic duct and cystic artery are clipped.

An intraoperative cholangiogram, done with C-Arm, will help. Through the epigastric port, clips or ligatures are applied to the cystic duct and cystic artery, close to the gall bladder. Care should be taken to avoid bleeding and not to injure or clip the CBD or hepatic ducts. Gall bladder is separated from its bed using cautery and spatula and removed through the epigastric port. Abdomen may be drained. Patient is discharged after 48-72 hours.

Complications

- CBD injury.
- Bile leak.
- Haemorrhage.
- Postoperative jaundice.
- Subphrenic and other intraabdominal abscess.
- Septicaemia.
- *When problem arises one should be ready to convert into open cholecystectomy. Conversion rate to open cholecystectomy is 2-10%.* It is indicated when there is uncontrolled bleeding, dense adhesions, suspect CBD injury, when anatomy is indistinct.
- When required one should not be hesitant to do conversion.

LAPAROSCOPIC APPENDICECTOMY

Indications

Acute appendicitis. Here main advantage is confirmation of the diagnosis. Other parts of the abdomen are also visualized.

Relative Contraindications

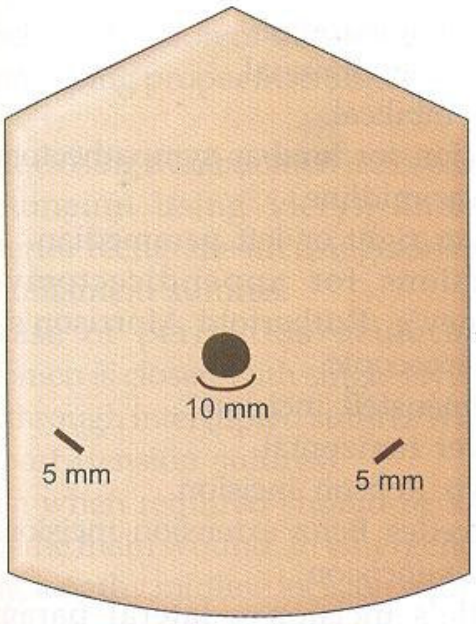
Appendicular mass and abscess.

Technique

Laparoscope is passed through the umbilical port. Two additional ports are placed one in lower midline (5 mm), another at right lumbar region. Mesoappendix is clipped or cauterized using bipolar cautery. Appendix base is clipped or ligated using Roeder knot and ligature.

Complications

- Appendicular stump leak.
- Pelvic abscess.
- Bleeding.
- Injury to caecum, ileum.



g. 7.29: Ports for laparoscopic appendicectomy

DVANCED LAPAROSCOPIC URGERIES

Presently most of the abdominal surgeries can be done through laparoscopy.

It requires advanced technology, skill. Surgeon should be expert in doing intracorporeal and extracorporeal knotting.

Procedures done are:

- Laparoscopic hernia repair.
- Laparoscopic splenectomy.
- Laparoscopic fundoplication.
- Laparoscopic vagotomy and gastrojejunostomy.
- Laparoscopic Nissen's fundoplication.
- Laparoscopic colectomy.
- Laparoscopic hysterectomy. It is becoming very popular.
- Laparoscopic urologic surgeries.
- Laparoscopic paediatric surgeries.

IAGNOSTIC LAPAROSCOPY

dications

Acute pelvic conditions.

Tubal pregnancy.

- Ovarian diseases.
- Infertility.
- Staging of the malignancy.
- Biopsy from the tumours.
- Chronic pain abdomen where U/S, endoscopies, barium studies are negative then diagnostic laparoscopy is useful.

Advantages

- Laparotomy is avoided.
- Once diagnosis is made, therapeutic procedure can be carried out also in the same sitting.

RETROPERITONEOSCOPY

It is becoming popular in urology to assess kidney, ureter, adrenals for various urologic procedures.

Through a small loin approach, retroperitoneum is expanded by inflating balloon in the space. Once space is created different ports are placed to do dissections.

Procedures

Procedures done through retroperitoneoscopy are:

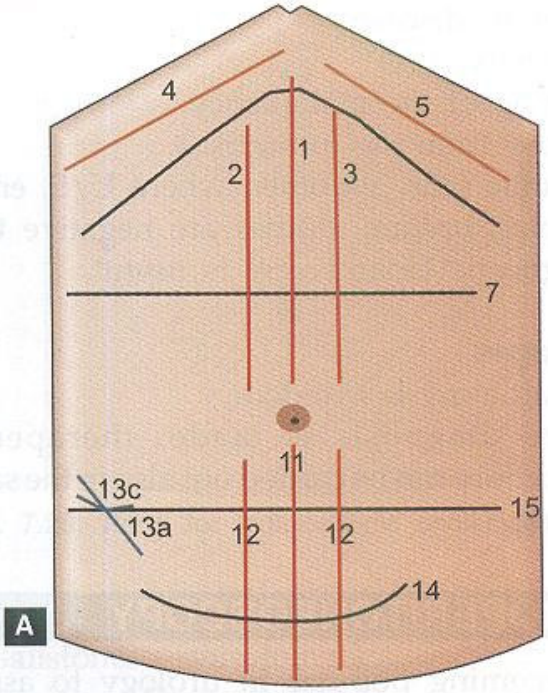
- Nephrectomy.
- Pyeloplasty.
- Adrenalectomy.
- Pyelolithotomy.
- Uretero-lithotomy.
- Retroperitoneal lymph node dissection. (RPLND).

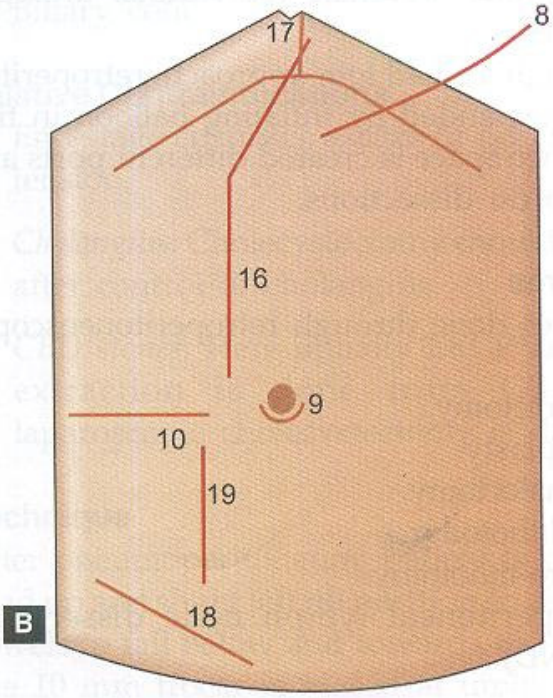
Complications

- Injury to vessels.
- Paralytic ileus.
- Bowel (colon) injury.

Advantage

Complications of pneumoperitoneum is not present and so respiratory reserve is well maintained.





Figs 7.30A and B: Different incisions in the abdomen.

ABDOMINAL INCISIONS

Different Abdominal Incisions

1. Upper midline.
2. Upper right paramedian.
3. Upper left paramedian.
4. Kocher's incision (right subcostal).
5. Left subcostal.
6. Bucket handle—Roof top.
7. Upper horizontal.
8. Thoracoabdominal.
9. Subumbilical.
10. Incision for lumbar sympathectomy.
11. Lower midline.
12. Lower right or left paramedian.
13. Incisions for appendicectomy—Mac burney's, Rutherfold Morrison's, Lanz, Laparoscopic.
14. Pfannensteil incision.
15. Lower horizontal.
16. Mayo Robson incision.
17. Mercedes Benz extension incision.
18. Groin incision.
19. Battle's incision – lateral paramedian incision – not used now – causes rectus muscle denervation.

Factors Affecting the Incisions

- Type of surgery—emergency or elective.
- Sepsis.
- General condition of the patient.
- Age of the patient.
- Nutrition.
- Type of closure.
- Suture materials used.
- Postoperative management.
- Chronic diseases like cough, vomiting.

Upper incisions are always better. Horizontal incisions are better.

- Abdominal incisions should be of adequate length to expose and perform the surgery effectively. Skin, subcutaneous tissue, two layers of superficial fascia, anterior rectus sheath, posterior rectus sheath and peritoneum should be opened in the line of incision. While opening the peritoneum, care must be taken not to injure the bowel content and so it should be lifted properly using artery forceps and felt for any content and then opened. Rectus muscle in vertical paramedian incisions is separated from its medial aspect to reach the posterior rectus sheath.
- Lateral side of rectus muscle if approached is called as Battle's incision which should not be practiced as it denervates the rectus

muscle. Retraction of the abdominal wound is done using proper instruments of different types.

While closing the abdomen it closed in layers– peritoneum using vicryl; anterior and posterior rectus sheath using nonabsorbable monofilament sutures.

In case of peritonitis/acute abdomen, abdomen is closed with single layer through and through interrupted sutures with tension support (tension sutures).

Drain when required should be kept away from the main wound. In emergency laparotomy, lengthy midline incision with left sided curve adjacent to umbilicus.

In trauma and ruptured aneurysms, incision should be made from xiphisternum to pubic symphysis to expose widely for rapid intervervention.

mplications of Abdominal Incisions

Wound infection.

Haematoma in the wound.

Burst abdomen – serosanguinous discharge with feeling of given way is typical.

Fistula through main wound

Incisional hernia

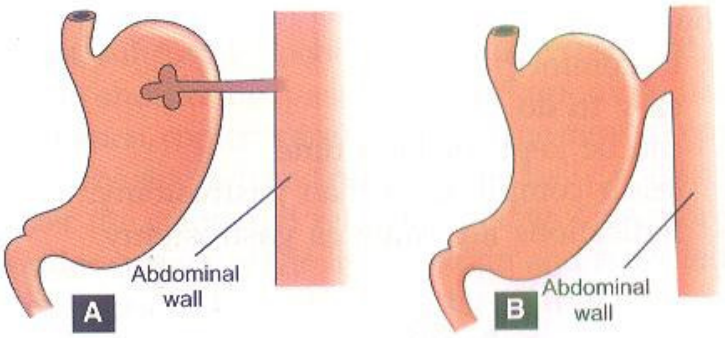
Fig. 7.31: Tension sutures placed to prevent burst abdomen.

GASTROSTOMY

It is done if feeding is required more than *one month.*

Indications

- Severe mal nutrition
- Major surgeries
- Severe sepsis
- Trauma
- Head and neck surgeries



Figs 7.32A and B: Types of gastrostomy: (A) Temporary gastrostomy (B) Permanent gastrostomy.

Types

Based on duration of use:

Temporary
Permanent.

Based on lining:

Mucus lined (permanent).
Serosal lined (Temporary).

Based on technique:

1. ***Stamm's Temporary Gastrostomy*** done after opening the abdomen, anterior wall of the stomach is opened . Feeding tube (Malecot's catheter) is placed in position. Two layers of purse string sutures are put around the tube. Wound is closed.
2. Kader-senn temporary gastrostomy.
3. Percutaneous endoscopic gastrostomy.
4. Janeway's mucus lined permanent gastrostomy **by *creating tunnel in stomach wall.***