36. Pediatric Laparoscopy: General Considerations

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A. Indications

Many common pediatric disorders can be treated using laparoscopy (Table 36.1). Just as with laparoscopic surgery in adult patients, the degree of benefit from the laparoscopic approach varies from procedure to procedure.

Table 36.1. Partial list of pediatric laparoscopic procedures

- Appendectomy
- Cholecystectomy
- Contralateral Exploration for Inguinal Hernias
- Pyloromyotomy
- Fundoplication for Gastroesophageal Reflux
- Splenectomy
- Staging for Cancer

B. Contraindications

Absolute contraindications to laparoscopy in children are similar to those in adult patients. These include:

1. Uncorrected coagulopathy
2. Hemodynamic instability or shock
3. Diffuse, dense abdominal adhesions that preclude safe access

C. Patient Position, Room Setup, and Preparation

The surgeon usually stands facing the structure to be operated on, and the video monitor should be in the line of sight of the operating surgeon. The general principles of room setup discussed in Chapters 1 and 2 apply to pediatric laparoscopy. Patient position is discussed with individual procedures in Chapter 37.

Specific considerations for preparing the pediatric patient include:
1. Credé’s maneuver to empty the bladder for short or upper abdominal procedures.
2. Foley catheter for long procedures during which excessive blood loss is anticipated or for pelvic or lower abdominal procedures.
3. Naso- or orogastric suction to empty the stomach before beginning a laparoscopic procedure.
4. Consideration for prophylactic antibiotics to prevent trocar site infections.

D. Instruments and Choice of Laparoscope

Most pediatric procedures can be performed using 5-mm telescopes.
1. Zero-degree telescopes are suitable for many procedures.
2. Thirty-degree telescopes are useful for upper abdominal procedures and for laparoscopic suturing.
3. Smaller scopes, readily available in centers where pediatric cystoscopy or bronchoscopy are performed, are useful for some procedures, particularly in infants. These instruments vary from 1.7 to 4 mm in diameter and have viewing angles ranging from zero to 70 degrees.

Specially designed small-diameter pediatric laparoscopic instruments are available. These may be supplemented with arthroscopic knives and other specialized instruments as desired.

E. Access to the Abdomen

Infants and children have a “shallow abdominal cavity”. The first trocar (usually at the umbilicus) is best inserted under direct visualization using an open technique:
1. Cleanse the umbilicus of the infant meticulously before the routine surgical prep since it is often full of debris.
2. Make a transverse incision in the inferior rim of the umbilical ring using a number 15 surgical blade.
3. Enlarge this incision by inserting the tips of a hemostat into the wound and spreading the jaws of the instrument perpendicular to the transverse incision. Perform this maneuver slowly and deliberately to allow the skin to separate along the direction of Langer’s lines.
4. Grasp the midline fascia with two hemostats so that the wound can be opened in the midline, dividing the umbilical ring when appropriate.
5. Open the peritoneum and insert the trocar under direct vision.
6. Insert the laparoscope to assure that the trocar is in the proper position and that there is a free space in the peritoneal cavity.
7. Secure the trocar in place with sutures or other securing mechanisms to prevent its dislodgment.
8. Begin insufflation with CO₂ to 8-12 mm Hg as tolerated.