



INTERMEDIATE LAPAROSCOPIC SKILLS

Laparoscopic Cholecystectomy

I. OBJECTIVES

By the end of this laboratory session, participants should be able to-

1. Understand proper spatial orientation within the abdomen.
2. Use their non-dominant hand.
3. Demonstrate how to safely enter the peritoneal cavity with various instruments.
4. Understand essential anatomic relationships necessary to perform a laparoscopic cholecystectomy.
5. Recognize “tactile sense” of laparoscopic instruments.

II. ASSUMPTIONS

Prerequisites to this session-

1. Review Grant’s Atlas or any Anatomy Atlas. Learn anatomic variations of the cystic duct, common bile duct, cystic artery, and hepatic artery.
2. Understand the concept of the alignment of the optical axis of the system.
 - A. Always face the area of interest with the monitor behind the area of interest.
 - B. Use working left- and right-hand ports between 30° to 90° to the axis of the alignment in A, above.
 - C. Do not concentrate all energy on the dominant port. Remember traction and countertraction techniques.
 - D. Identify where your instrument tips are at all times. If unsure, disregard the monitor and look at the abdomen.

III. SUGGESTED READINGS

Grant’s Atlas or Anatomy Atlas of your choice. Review of the various anatomic relationships of the gallbladder, with the triangle of Calot, is essential. It is noted that there are innumerable variations of the cystic duct and the cystic artery anatomy.

IV. ANATOMIC CONSIDERATIONS

Review Atlas.

V. DESCRIPTION OF LABORATORY MODULE

After a brief overview, the residents will perform a cholecystectomy on an *ex-vivo* porcine liver in the laparoscopic video training box.

VI. DESCRIPTION OF THE TECHNIQUE/PROCEDURE

Laparoscopic cholecystectomy requires four abdominal wall port sites. The camera is inserted through the umbilicus, with the monitor placed near the patient's right shoulder. A second port site is placed in the epigastric region just below the level of the liver edge. The third and fourth sites are placed laterally in the right upper quadrant. It is important that the table be tilted in reverse Trendelenberg to allow the viscera to fall away from the gallbladder and the liver for better visualization. The dominant port site is the subcostal epigastric port site. The two lateral port sites include the two sites for grasping the gallbladder for retraction, using the nondominant hands. The gallbladder should be grasped at its neck, and the cystic duct should next be exposed near its juncture with the neck of the gallbladder. Dissection along the cystic duct should then be performed close to the gallbladder around the junction with Hartmann's pouch, staying away from the common duct until the cystic duct is circumferentially dissected.

Once the presumed cystic duct has been identified, dissection should then be performed through the triangle of Calot to identify the cystic artery. The remainder of the dissection should then be taken up on the gallbladder bed. Once the cystic artery and cystic duct have been positively identified, with the cystic duct exiting from the neck of the gallbladder bed, these may be clipped, then divided. The gallbladder is then taken down from the gallbladder bed, either in an antegrade or retrograde fashion, depending upon the anatomic considerations at the time. The left-handed trocars in the right upper quadrant of the patient are essential to provide good exposure for the dominant right-handed dissection or cautery.

ORIENTATION

Should one "lose" orientation, it is important to look away from the monitor and look directly at the abdomen and realize the relationship of your instruments relative to the right upper quadrant of the abdomen. This is a simple technique for helping to "find" yourself.

VII. EQUIPMENT NEEDED

- Laparoscopic box trainer containing *ex-vivo* porcine liver with intact gall bladder
- Electrosurgical cautery or ultrasonic Harmonic Scalpel units
- 5 mm graspers

- 5 mm laparoscopic scissors
- Maryland dissector
- Endoclip appliers, Endopouch device
- Laparoscope, camera, monitor & light source

VIII. REFERENCES

Grant's Atlas
Surgical Skills manual
The Sages Manual, pp128 to 142