SAGES
Laparoscopy Troubleshooting Guide

Society of American Gastrointestinal Endoscopic Surgeons

Developed and Distributed by the SAGES Continuing Education Committee

To minimize equipment malfunction, scheduled routine maintenance should be in place for all components of laparoscopy. Manufacturers' recommendations for routine replacement of some parts (e.g. bulbs) should be taken into consideration.

PREOPERATIVE PRECAUTIONS

Circulator Duties or Tasks

1. Assure table tilt mechanism is functional. Table & joints level, kidney rest down.
2. Consider using foot board and extra safety strap.
3. Position patient properly on O.R. table for cholangiography.
4. Assure notification of radiology technologist with time estimate.
5. Assure proper mixing and dilution of cholangiogram contrast solution for adequate image. For surgeons utilizing fluoroscopy for cholangiography, the patient should be placed on a table capable of supporting this task and appropriate shielding should be available.
6. Assure availability of Foley catheter and N/G tube.
7. Assure all power sources are connected and appropriate units are switched "on" (Don't use multi-socket single source or the circuit will overload).
8. Assure adequate volume of compressed gas (at insufflator and pressure irrigator). Backup full tank must be available. Ensure wrench and gasket are availaible.
9. Assure insufflator alarm is set appropriately. Assure tight connection between insufflator tubing and Luer-lock adapter.
10. Assure full volume in irrigation fluid container ... (recheck during case).
11. Check the electrosurgical unit; make sure auditory alarm of machine is functioning properly and the grounding pad is appropriate for the patient.
12. Check Veress needle for proper plunger/spring action and assure easy flushing through stopcock and/or needle channel.
13. Assure closed stopcocks on all ports.
14. If utilizing the gasless technique, assure that the operating room table has side arms capable of supporting the abdominal lift unit and that appropriate blades for the unit are available.

Scrub Tech/ RN Duties

15. Check sealing caps for cracked rubber, stretched openings.
16. Check to assure instrument cleaning channel screwcaps are in place.
17. Assure free movement of instrument handles and jaws.
18. If Hasson cannula to be used, assure availability of stay sutures and retractors. Check valves, plunger, spring, and seals on reusable Hasson cannulae.
19. Assure adequate printer film and video tape if documentation is desired.
20. Periodically send scissors and reusable trocars for sharpening.

PROBLEM	CAUSE	SOLUTION
1. Poor Insufflation/loss of pneumoperitoneum	CO2 tank empty	Change tank
	Accessory port stopcock(s) not properly adjusted	Inspect all accessory ports. Open or close stopcock(s) as needed
	Leak in sealing cap or stopcock	Change cap or cannula
	Excessive suctioning	Allow time to reinsufflate
	Loose connection of insufflator tubing at source or at port	Tighten connections
	Hasson stay sutures loose	Replace or secure sutures
	Tubing disconnection from insufflator	Connect tubing
	Flow rate set too low	Adjust flow rate
2. Excessive pressure required for insufflation (initial or subsequent)	Veress needle or cannula tip not in free peritoneal cavity	Reinsert needle or cannula
	Occlusion of tubing (kinking, table joints, etc.)	Inspect full length of tubing. Replace with proper size as necessary
	Port stopcock turned off	Fully open stopcock
	Patient is "light"	Give more muscle relaxant
	Cannula tip not in peritoneal space	Advance cannula under visual control
3. Inadequate lighting (partial/complete loss)	Loose connection at source or scope	Adjust connector
	Light is on "manual-minimum"	Go to "automatic"
	Bulb is burned out	Replace bulb
	Fiber optics are damaged	Replace light cable
	Automatic iris adjusting to bright reflection from instrument	Re-position instruments, or switch to "manual"
	Monitor brightness turned down	Readjust setting
	Room brightness floods monitors	Dim room lights

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PROBLEM	CAUSE	SOLUTION
4. Lighting too bright	Light is on “manual-maximum”	Go to “automatic”
	“Boost“ on light source is activated	Deactivate “boost”
	Monitor brightness turned up	Readjust setting
5. No picture on monitor(s)	Camera control or other components (V.C.R., printer, light source, monitor) not “on”	Make sure all power sources are plugged in and turned on
	Cable connector between camera control unit and/or monitors not attached properly	Cable should run from “video out” on camera control unit to “video in” on primary monitor. Use compatible cables for camera unit and light source.
	Cable between monitors not connected	Cable should run from “video out” on primary monitor to “video in” on secondary monitor
	Input select button on monitor doesn’t match “video in” choice	Assure matching selections
6. Poor quality picture **a. fogging/haze**	Condensation on lens from cold scope entering warm abdomen	Gently wipe lens on viscera; use anti-fog solution, or warm water
	Condensation on scope eyepiece, camera lens, coupler lens	Detach camera from scope (or camera from coupler), inspect and clean lens as needed
b. flickering, electrical interference	Moisture in camera cable connecting plug	Use suction or compressed air to dry out moisture (don’t use cotton tip applicators on multi-pronged plug)
	Poor cable shielding	Replace cables as necessary
		Move electrosurgical unit to different circuit or away from video equipment
	Insecure connection of video cable between monitors	Reattach video cable at each monitor
c. blurring, distortion	Incorrect focus	Adjust camera focus ring
	Cracked lens, internal moisture	Inspect scope/camera, replace if needed
	Too grainy	Adjust enhancement and/or grain settings for units with this option
7. Inadequate suction/irrigation	Occlusion of tubing (kinking, blood clot, etc.)	Inspect full length of tubing. If necessary, detach from instrument and flush tubing with sterile saline
	Occlusion of valves in suction/irrigator device	Detach tubing, flush device with sterile saline
	Not attached to wall suction	Inspect and secure suction & wall source connector
	Irrigation fluid container not pressurized	Inspect compressed gas source, connector, pressure dial setting
8. Absent or “weak” cauterization	Patient not grounded properly	Assure adequate grounding pad contact
	Connection between electro-surgical unit and instrument loose	Inspect both connecting points
	Foot pedal or hand switch not connected to electrosurgical unit	Make connection
	Wrong output selected	Correct output choice
	Connected to the wrong socket on the electrosurgical unit	Check that cable is attached to endoscopic socket
	Instrument insulation failure outside of surgeon’s view	Use new instrument and inspect insulation

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