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SURGICAL TECHNIQUE

Laparoscopic treatment of choledocholithiasis

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Introduction

Recent years have seen a major change in the management of common duct stones. Twenty years ago, the accepted standard was a two-stage approach consisting of initial laparoscopic cholecystectomy followed by endoscopic cholangiopacreatography (ERCP) with sphincterotomy and stone extraction. At the present time, some surgical units perform echo-endoscopy with sphincterotomy preoperatively when choledocholithiasis is suspected, while others combine surgical stone extraction with laparoscopic cholecystectomy in a single surgical gesture. A recent review of the literature [1] shows that the one-stage surgical approach leads to no increase in morbidity and mortality compared with the two-stage approach; the patient benefits from avoiding a second general anesthetic and two hospitalizations, at a lower cost [2].

For the one-stage laparoscopic surgical strategy, the surgeon must fully master the techniques of a well-standardized procedure that has been enhanced by the support of recent technical innovations.

First of all, the surgeon must have a thorough ability to interpret inter-operative cholangiography (IOC), which determines the need for common duct exploration. IOC is performed routinely for two reasons: to verify the presence of cholodocholithiasis and to identify abnormalities of ductal anatomy or bile duct injury.

If IOC reveals the presence of common duct stone(s), the surgeon must inform the operating room personnel so that they may anticipate equipment needs and guarantee a smooth accomplishment of the different stages of the intervention (need for an extra assistant, for an additional monitor, preparation of a flexible choledochoscope, anticipation of a more prolonged procedure).

There are several pitfalls that the surgeon must avoid; to do so, he (she) must:

- dissect the cystic duct very carefully to its junction with the common duct, taking care to avoid ductal injury by laceration or electrocoagulation;
- confirm that the common duct is free of stones after exploration by two techniques: choledochoscopy and cholangiography [3];
- confirm the integrity of the common duct by cholangiography after completion of the procedure;
- drain the common duct if necessary;
- drain the operative site.

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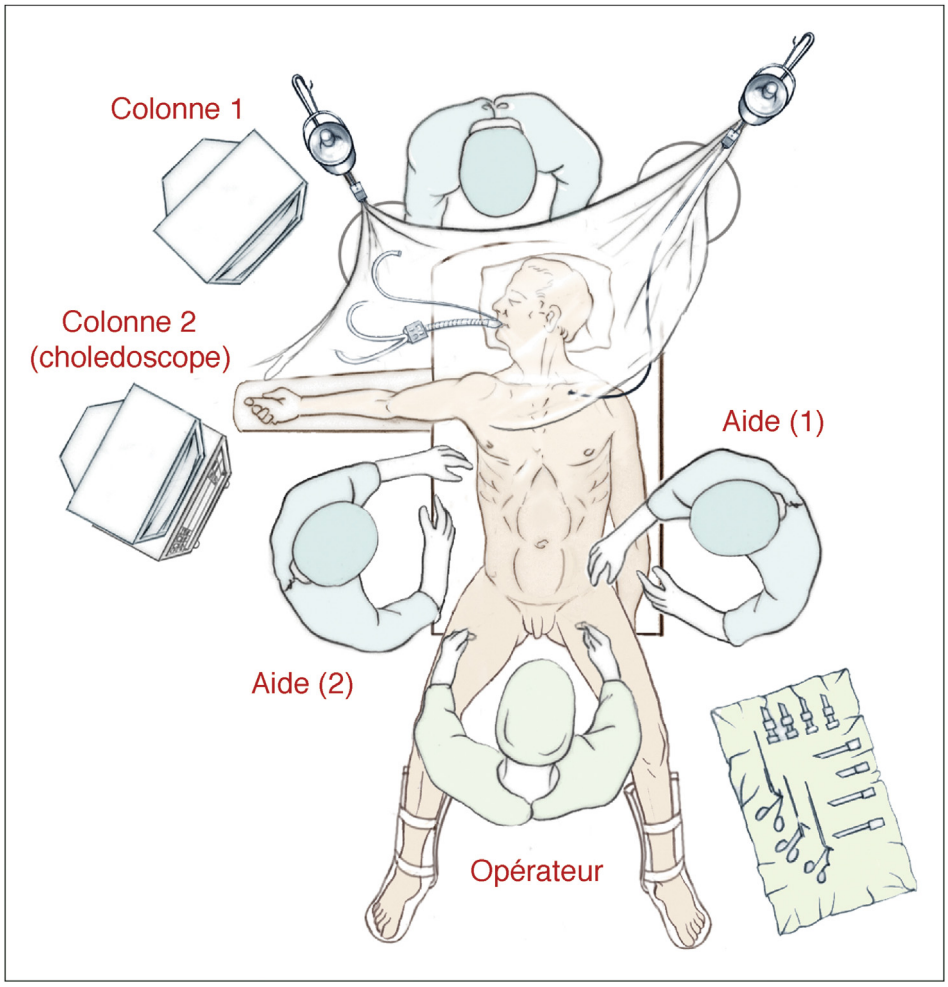
If the dissection is difficult of if injury to bile duct, artery, or intestine is detected, the laparoscopic procedure should be immediately converted to an open laparotomy. A right subcostal approach is the preferred incision, extended across the midline if necessary.

Bile duct drainage is preferentially accomplished by insertion of a T-tube, but some surgical teams prefer insertion of a Pedinielli or Escat tube through the cystic duct. There are three specific indications for ductal drainage: infected bile where a large bore T-tube is indicated, ductal inflammation raising concern about leakage from the choledochotomy suture line, or concern about possible retained common duct stones that might require postoperative cholangiography.

In this article, we present our technique for laparoscopic common duct exploration and choledocholithotomy.



1 Patient positioning

The patient is positioned supine with legs spread, the left arm beside the body, with a bolster placed beneath the lower ribs. The surgeon stands between the legs with the first assistant to the patient's left and a second assistant on the right.

The monitor is placed above the patient's right shoulder while a second monitor for cholangiography is placed on the right side along the patient's right flank.