Conservative approach in the treatment of the biliary tract's iatrogenic lesions

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Abstract. – Iatrogenic lesions of the biliary tract have always represented a problem of real actuality in the abdominal surgery. The incidence of post-cholecystectomy complications is from 0.1% to 0.25% and it’s increased to 0.3-0.6% for laparoscopic surgery. Potential predisposing factors to iatrogenic biliary lesions are anatomic anomalies, acute and chronic phlogosis and technical mistakes. Anatomic anomalies are present in 6-25% of all cases according to different statistics; an incomplete knowledge of the biliary tract can predispose to a mistake legating or dissecting a wrong branch.

This paper present a caseload of 27 patients admitted to our Service of Digestive Endoscopy owing to post laparoscopic cholecystectomy complications. Patients have been recruited in a period from two days to six months to the intervention. Detected complications have been divided in “major”, which comprehended biliary lesions (7 cases) and biliary stenosis (8 cases), and in “minor” which included biliary leakages (12 cases). CPRE, PTC, Ultrasound, CT and cholangio-MR were used to diagnose the biliary damage.

Conservative approach has been resolutive in all patients with minor biliary lesions and in three cases of major lesions; in seven cases of biliary stenosis endoscopic-radiologic combined treatment has been successfully performed, in the other patients surgical operation was obliged choice.

Comparing our results with literature we can affirm that conservative treatment represents the first choice in case of minor lesions (100% of successes), whereas in case of major biliary lesions it constitutes a valid alternative to the reparative surgery; when surgical option results impossible to defer, it can help the surgeon identifying the damage and draining the biliary tract.

Key Words:
Iatrogenic lesions, Biliary tract, Laparoscopic surgery.

Introduction

Iatrogenic lesions of the biliary tract have always represented a problem of real actuality in the abdominal surgery.

The incidence of post-cholecystectomy complications is comprised between 0.1% and 0.25% and it’s increased to 0.3-0.6% for laparoscopic surgery.

The fast development of the laparoscopic technique has certainly changed the risk factors for biliary lesions which are actually represented by surgeon experience and training, acute and chronic phlogosis, thermic injuries by electric scalpel or laser and anatomical varaints.

Causes responsible of the iatrogenic damage are currently divided in two groups: wrong identification of the cystic duct and technical causes as bed use of metal clips or excessive traction on the Calot’s triangle.

Casistic

In this study we have included 27 patients admitted to the Special Service of Digestive Endoscopy of 11° Surgical Clinic owing to post laparoscopic cholecystectomy complications.

The sample group was composed by 17 male and 10 female patients from 29 to 85 years old. Patients have been recruited in a period comprised between two days and six months to the intervention. Detected complications have been divided in “major”, which comprehended biliary lesions (7 cases) and biliary stenosis (8 cases), and in “minor” which included biliary leakages (12 cas-
Patients with biliary fistula referred manifestations attributable to choleperitoneum; patients with biliary stenosis presented symptoms of cholestatic jaundice more or less intense. CPRE, PTC, US, TC and cholangio RMN were used to diagnose the biliary damage.

**Results**

Conservative approach has been resolutive in all patients with minor biliary lesions: all leakages from cystic duct were resolved by endoscopic sphincterectomy and by positioning an endoscopic drainage; follow up of these patients in one year has demonstrated the complete solution of the case. Endoscopic-radiologic combined treatment has been used in seven cases of biliary stenosis; in one case of biliary costriction we have resorted to surgical intervention to remove a wrong positioned endoloop. Four of these cases have been definitely resolved, the other ones are still continuing the treatment by periodical substitutions of the stents. In major lesions endoscopic treatment of the damage has been performed only in three cases; in the other ones surgical operation was obliged choice. A anastomotic stenosis occurred in one patient submitted to surgery who required pneumatic dilatations by percutaneous transhepatic access. Follow up of these cases from three months to three years have demonstrated the full welfare of six patients. Our results show that 22 of 27 patients have been treated with a non-invasive method; in patients with tight stenosis and biliary lesions of III° and IV° type according to Bismuth (four cases in total) the prolonged treatment raises perplexities about the opportunity either of a continuation of the conservative therapy or of an adequate surgical correction.

**Discussion**

Surgical complications secondary to laparoscopic cholecystectomy represent a topic of real interest because of the rapid development of this method which about in ten years has almost replaced the traditional surgery. Incidence of specific complications is about 0.5-5% according to different statistics, two or three times more than the “open surgery”, and represents concretely a problem not easy to solve.

Potential predisposing factors to iatrogenic biliary lesions are anatomic anomalies, acute and chronic phlogosis, technical mistakes due to improper use of laparoscopic instruments, thermic or mechanic injuries, insufficient exposition of the Calots’ triangles structures. Anatomic anomalies are present in 6-25% of all cases according to different statistics; an incomplete knowledge of the biliary tract can predispose to a mistake ligating or dissecting a wrong branch. Therefore when the laparoscopic technique results difficult to perform because of phlogosis or adherences or when a lesion is suspected, an intraoperative cholangiography should be executed to value the biliary anatomy, to define the type and the location of possible lesions and to start an immediate therapy. Treatment results of tardive discovered lesions are worse than those of cases submitted to an immediate treatment. In spite of controversial advices it’s clear that an intraoperative cholangiography well performed can show the presence of residual biliary stones or anatomic anomalies and can reveal damages which could be repaired immediately. All patients included in our study were submitted to CPRE associated to PTC in case of serried stenosis with incomplete images of the biliary tract. Bile walled off in abdomen (10 patients) were drained by percutaneous puncture. In ten patients with leakage from cystic duct and in one patient with patency of the Lushkas’ duct endoscopic sphincterotomy and positioning of a trans papillar drainage have resolved the damage. In the patient with biliary overflow from an anomalous right duct we resorted to a combined treatment endoscopic-radiologic to have an exact definition of the hepatic parenchyma drained by the duct and of the lesions’ location. All patient with biliary stenosis were submitted to CPRE, in two cases of stenosis of the heptics’ confluence (Bismuth III and IV) a PTC was necessary to define the stenosis grade and the number of included ductal stenosis; more-
over combined treatment permitted the positioning two internal external drainages after pneumatic dilatations of the stenosis. One patient with stenosis due to endoloop was submitted to a CPRE and successfully to surgical operation to remove the loop. Two patients of those with biliary lesions and overflow (4 patients) were treated successfully using CPRE; the other two ones were operated after unlucky combined attempts to resolve the fistula. Therefore we assume that mini-invasive treatment should be the first approach to biliary complications because also in case of total transection of the common bile duct it can bring the patient to surgical intervene in optimal conditions draining and decompressing the biliary tract; in this case the surgical treatment can be managed in a steryl aphilic field with minor consequent complications. The same mini-invasive approach appear less standardizable when a lesion or a stenosis of the common bile duct is present.

In conclusions, laparoscopic cholecystectomy is certainly the best treatment in terms of comfort and social costs; higher elevate incidence of complications represent the only blind point of a real valid intervention. Its routine use associated to an instrumentarium improvement and a standardization of this technique will probably obtain a decrease of complications in few years. The exact exposition of the Calots’ triangles’ structures (common bile duct, cystic duct, cystic artery), an anatomic dissection of the gallbladder bed and finally an adequate use of the electrocoagulation and of the metal clips seem to be primary assumptions for a correct laparoscopic cholecystectomy. All this must be supported by a perfect knowledge of the biliary anatomy; therefore the intraoperative cholangiography become a point of extreme importance to recognize prospective anatomic anomalies and especially to spot the location of a prospective biliary lesion. Comparing our results with literature we can assert that conservative treatment represents the first choice in case of minor lesions (100% of success), whereas in case of major biliary lesions it constitutes a valid alternative to the reparative surgery; when surgical operation results impossible to refer it can help the surgeon identifying the damage and draining the biliary tract.

References