Revista Portuguesa de Cirurgia

II Série • N.° 28 • Março 2014

ISSN 1646-6918

Órgão Oficial da Sociedade Portuguesa de Cirurgia

Intra-operative cholangiography is not necessary in avoiding bile duct injury (ten years review)

Colangiografia intraoperatória não é necessária para evitar lesões da via biliar (revisão de 10 anos)

L. Hireche, A. Ali-yahia, S. Boudiaf, H. Jneid, EH Lakrouf, S. Mahfouf, A. Ouslimani*

* Professor de Cirurgia da Universidade de Argel
Departamento de Cirurgia, Hôpital Salim Zemirli, El-Harrach, Argel, Argélia

RESUMO

A discussão acerca da colangiografia peroperatória (CPO) de rotina durante a colecistectomia laparoscópica (CL) continua ainda em aberto. As lesões da via biliar principal continuam a ser a principal complicação deste procedimento. A questão é: como evitar a mais temida complicação da CL? Os autores relatam um estudo retrospectivo de 3311 CL executadas no seu departamento nos últimos dez anos. A CPO não foi feita na maior parte dos casos devido à realização pré-operatória de ecografias e colangioRMN. Obtiveram bons resultados técnicos apesar disso. Por isso, a sua experiência permite-lhes afirmar que aquele exame radiológico não é necessário durante a intervenção cirúrgica na maior parte dos doentes com cálculos biliares.

Palavras chave: *lesões da via biliar, colecistectomia laparoscópica, prevenção*

ABSTRACT

The debate about routine intra-operative cholangiography (IOC) during laparoscopic cholecystectomy (LC) is still open. Bile duct injuries remain the main complication of this procedure. The question is: how to avoid the most feared complication of LC? The authors report a retrospective study of 3311 LC underwent in their department the last ten years. IOC wasn't done in most cases due to pre operative performances of ultrasound and bili-MRI. Their own technique has given them good results despite this. Their experience allows them to declare that this x-ray exam is not necessary during the procedure in most of patients presenting gallstone disease.

Key words: *bile duct injuries, laparoscopic cholecystectomy, prevention*

INTRODUCTION

Laparoscopic cholecystectomy (LC) is daily performed for treatment of gallbladder lithiasis even when complicated of cholecyistitis.([14]). It would contribute to the increase of incidence of the main bile duct injuries (BDI). How to avoid this major complication of cholecystectomy? This previously asked question in the last century is still not resolved.

According to some authors, intra-operative cholangiography (IOC) may avoid them([3,8]). For others it only detects them([5]). So, for instance the IOC is used routinely in France and is less performed in the United Kingdom. This x-ray control of the bile ducts must be done systematically for some, selectively for others([12])… Eternal debate.

The purpose of this article is to show that laparoscopic cholecystectomy is a safe surgical procedure and that, even without IOC, bile ducts trauma can be avoided provided certain rules are complied with, in particular at the time of biliary tree dissection.

MATERIAL AND METHOD

Our practice of LC has experienced two periods: during the first period (1992-2000), the IOC advocated by Mirizzi and the Argentinean school([3]) was performed selectively, case by case, especially facing a misunderstood anatomy, suspected choledocolithiasis or difficulties in the dissection of cystic pedicle. The bile duct injury rate during this period was 0.13%. (Fig. 1)

In the second period (2000-2010), due to the reliability of the pre-operative imaging (ultra sonography, cholangio-IRM) and the availability of endoscopic sphincterotomy in case of retained stones in the main bile duct, IOC was entirely neglected. We report a retrospective study involving 3311 LC performed during the period from 2000 to 2010 in the surgical department of Salim Zmirli Hospital, where 3 LC are daily performed by 6 surgeons including 4 who have an excellent mastery of laparoscopic surgery.

All the patients, women in majority (76%), were carrying simple gallbladder stones (47,4%) or had them complicated of acute cholecystitis (49.6%), Mirizzi syndrome (2.8%) or chronic cholecystitis in 0.2% of cases. All had non dilated intra-hepatic and extra-hepatic bile ducts during investigation by ultra sounds or Bili-IRM. The patients, whose mean age was 52 years with a range of 16 to 85 years, were classified ASA I, II, and III. The patients in whom predictive signs of choledocolithiasis were found, or jaundice, as well as those presenting signs of gallstone cholangitis, were excluded from the survey. All patients were operated under general anaesthesia with systematic nasal-gastric tube. No patient of this class has benefited of intra-operative cholangiography. The used surgical technique differs little from which is described by Dubois([4])). Pneumo-peritoneum, pre-adjusted to 12mm Hg, was usually performed by the Veress needle (87%), "open laparoscopy" being reserved for thin patients and children. Introduction of four ports in the abdomen, the proclive and left decubitus are the rule. The dissection of the gallbladder tripod elements is done by the blunt strainer of the suction-irrigation system (Fig. 2). This tool is privileged because of its harmlessness and its multi-functionality. This dissection is performed by flexion-extension of the wrist, the blunt tip of the strainer will gradually force a way through cystic duct and artery and appear backwards between these two elements (Fig. 3). This instrument, which serves as a dissector, paddle, vacuum and washer, must imperatively meet resistance feeling down and inward. The feeling of contact against the straight CBD (common bile duct) must be perceived, otherwise the IOC becomes necessary to provide key information about biliary tract (Fig. 4).

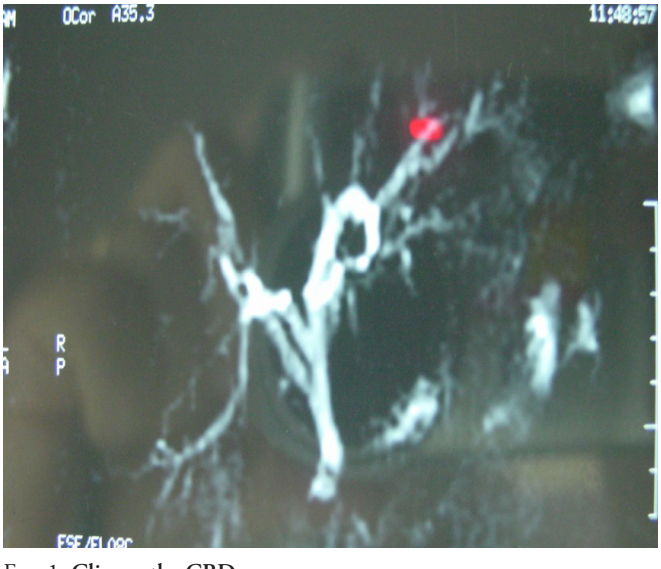

Fig. 1 **Clip on the CBD**

RESULTS

Among these 3311 laparoscopic cholecystectomies, 2 deaths were deplored. The first occurred in a 72 year-old woman, classified ASA III, who presented a fatal myocardial massive heart attack on awaking; she died despite ressucitation. In the second case, a traumatism has provoked a fatal peritonitis in a 52 year-old woman. No serious accident occurred with the ports and the Veress needle. Fourteen incisional hernias have been observed, most of them in the site of the ombilical port. Among the complications, it should be noted two serious BDI type IV of Strasberg, one of them discovered intra-operatively and successfully treated by hepatico-jejunostomy (Fig. 5). Two bilomas were operated one day after by laparoscopic way (Fig. 6), one due to a dropping of clips from the cystic duct,

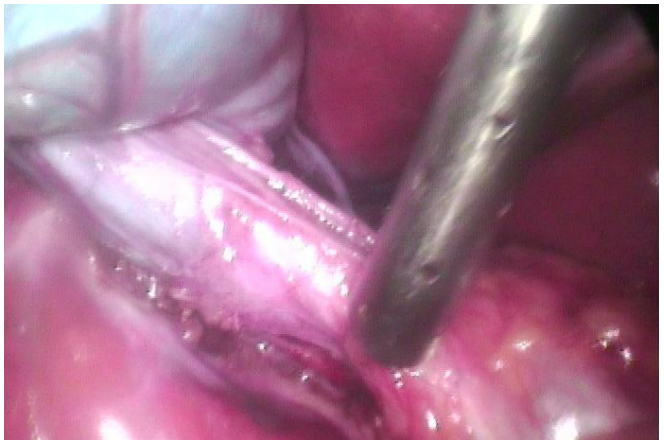

Fig. 2 **Blunt dissection with a suction-irrigation system**

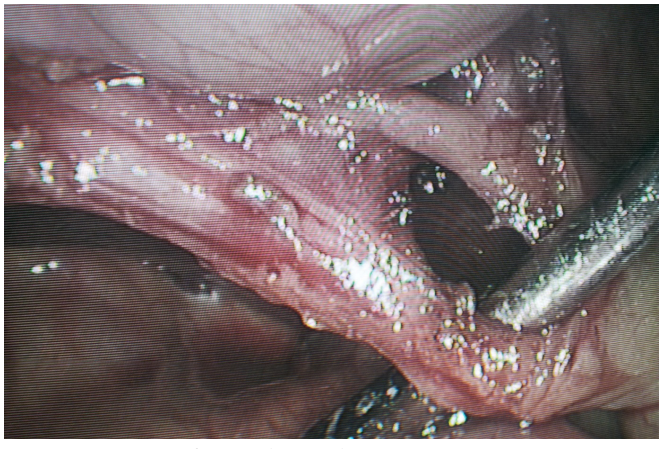

Fig. 3 **Dissection of cystic duct and artery**

Fig. 4 **Biliary tract**

the other to an aberrant biliary channel (Lushka channel) in the gallbladder bed. An external biliary fistula dried up spontaneously at D 17. The conversion rate in the series was 3.12%. The reasons for conversion were haemorrhage, adhesions, complicated anatomy or technical malfunctions of one of the elements of the vision chain. All the patients were discharged on the first post-operative day unless complications occurred and they were reviewed the first week. Follow-ups were scheduled every month after during one year. For some patients follow-up is now longer than 10 years.

DISCUSSION

LC is currently regarded as a safe intervention for simple gallbladder lithiasis and in acute cholecystitis([11]). Bile duct injuries remain the most feared and

Fig. 5 **Hepatico-jejunostomy**

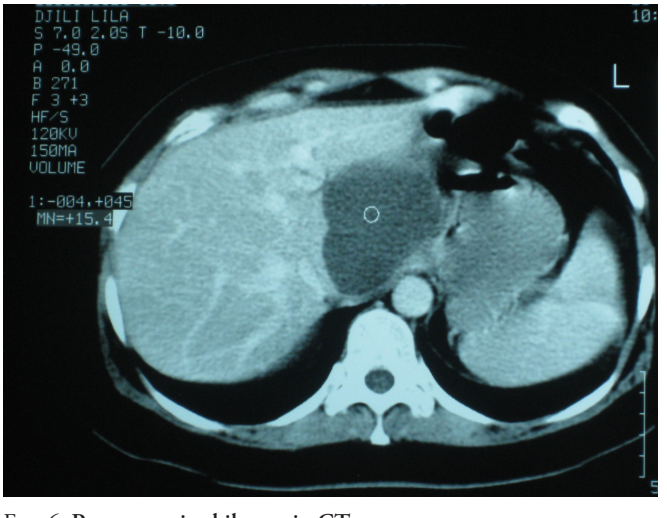

Fig. 6 **Post-operative bilomas in CT**

the main serious complication during laparoscopic cholecystectomy. The causes are known. In the majority of cases, the surgeon, regardless of his experience and his talent, confuses cystic duct and CBD. This misperception and optical illusion is found in the majority of cases refered by Lawrence([10]). It is the origin of a serious technical mistake which consists in deliberately cutting the CBD firmly believing that it is the cystic duct. Illusion becomes reality for the surgeon.

This error in the perception is human and is found in 97% of cases([10]). Systematic practice of IOC puts into evidence the lesion but does not prevent its occurrence([5]). What is needed is to follow a number of rules laid down for a long period([7]). However, a rigorous technique can avoid this operative risk. The one we use allows careful dissection and formal marking of different elements of bile tripod before any clipping or section. The four elements of the quadrilateral of dissection (gallbladder, CBD, duct and cystic artery) should be identified one by one before any clipping, ligation or section. As in classic cholecystectomy, in the case of pediculitis or Hartman's pouch juxta or retro-pedicular, gallbladder infundibulum against CBD, do not hesitate to use the anterograde way as in conventional surgery. The rate of BDI observed in our series (0.09%) is the result of a mastery of the LC, one case over 1000 being considered as reasonable rate([12]). We agree with Lepner([11]) that IOC should not be performed routinely but only if, in the course of the dissection, the surgeon does not find its landmarks. It's true that LC without IOC is safe in experimented hands.

CONCLUSION

Laparoscopic cholecystectomy for simple or complicated gallbladder lithiasis is a safe surgical procedure when it is performed by an expert. During this operation, cholangiography is not necessary. Although its usefulness is not in doubt, the IOC should only be performed on a case by case basis, in case of abnormal anatomy or doubt in the identification of one of the elements of the bile tripod.

BIBLIOGRAPHICAL REFERENCES

1. S.Cheslyn Curtis, M. Emberton, H. Ahmed, RCW Williamson, A. Habib Bile duct injury following laparoscopic cholecystectomy Br. J. Surg, 1992, vol 79, March, 231-232
2. JP Chigot Le risque opératoire dans la lithiase biliaire Ann. Chir, 1981,35,5-13
3. A. Cinelli Contribucion de la colangiografia operatoria en la prophylaxis de heridas accidentales Prensa argentina , 1967, 54,21-22.
4. B. Delaitre, P. Testas, F. Dubois Complications de la cholécystectomie laparoscopique Lyon Chir,1992,88,170-175
5. O. Detry, A. De Roover, B. Detroz, P. Honoré The role of intra-operative cholangiography on detecting and preventing bile duct injuries during laparoscopic cholecystectomy. Acta Chir Belgg, 2003,103,161-162
6. GE Shallahy, C. Slow, C. Sherp, A. Mughrabi, A.M.H Nassar Intra-operative cholangiography time in laparoscopic cholecystectomy Surg. Endosc, 2005,1370-1372
7. L. Hireche Contribution à l'étude des lésions accidentelles de la voie biliaire principale Thèse, Médecine, Alger, 1970.
8. J.G Hunter Avoidance of bile duct injury during laparoscopic cholecystectomy Am.J. Surg 1991,162,71-76
9. D.Keith Lillemoe,CJ.Yeo,Mark Talamini,Bernadette H Wang BS, Henry Pitt Thomas R,Gadacz Selective cholangiography;current role in laparoscopic cholecystectomy John Hopkins Hospital, Baltimore
10. Lawrence W,L Stewart,W.Gantert,Liu Kingsway,CM Lee, K.Whang, J.G.Hunter Causes and prevention of laparoscopic bile duct injuries Ann. Surg 2003 April 237 (4)
11. U.Lepner, V. Grünthal Intra-operative cholangiography can be safely omitted during laparoscopic cholecystectomy. Prospective study of 413 consecutive patients. Scandinavian Journal of Surgery 94, 197-200, 2005
12. JM Sackier, G.Berci,E.Phillips The role of cholangiography in laparoscopic cholecystectomy Arch.Surg 1991,126,1021-1026
13. TM Schroder, Ky .Linko Laparoscopic cholecystectomy without cholangiography Eur.J. Surg, 1995, 421-424
14. Y. Yamashita and all Surgical treatment of patients with acute cholecystitis Tokyo guidelines J.Hepatobiliary Pancreati Surg (2007) 14, 91-97

Correspondência:
L. HIRECHE
e-mail: hirachelarbi@gmail.com

Data de recepção do artigo:
31-07-2013
Data de aceitação do artigo:
27-11-2013