

Intraoperative monitoring of the biliary tracts as a means of preventing choledocholithiasis oversight

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The aim of the work is to assess the performance and effectiveness of intraoperative cholangiography or choledochoscopy in the prevention of choledocholithiasis oversight. The effectiveness of choledochoscopy was assessed in 50 patients during the years 2001–2002. Since 2000 intraoperative cholangiography has been performed on all patients after classic cholecystostomy in the absence of indications to choledochotomy. The effectiveness of intraoperative cholangiography was assessed in 50 patients in 2001. Both groups underwent ultrasonographic control and tests of biochemical parameters a year after surgery. The advisability of performing intraoperative cholangiography or choledochoscopy and their high degree of effectiveness in the prevention of choledocholithiasis oversight was confirmed.

Key words: biliary tracts, choledocholithiasis, intraoperative monitoring

INTRODUCTION

In spite of progress in preoperative and intraoperative diagnostics, cases of choledocholithiasis oversight still occur [1, 4]. The possibilities of endoscopic cholangiography and papillothomy and the endoscopic removal of stones from the bile ducts have reduced the seriousness of this complication, but the patient is additionally exposed to an unpleasant procedure which carries some risk [2, 8, 10, 11]. During laparoscopic cholecystostomy the presence of some deposits in the ducts may be detected. However, the removal of stones is difficult and may be impossible in the absence of appropriate experience and instruments, while leaving the deposits for a later endoscopic procedure is risky and not always possible [3, 4, 9]. The routine preoperative use of endoscopic regressive cholangiography increases the cost of

treatment, exposes patients to additional risk and suffering and, in the opinion of most of authors, is unnecessary [8, 9]. This is why, in most centres, when lithiasis is recognised before an operation, classic open revision of the bile ducts is still carried out and when recognised during laparoscopic cholecystostomy, conversion is carried out as previously. Oversight of lithiasis with all its consequences also occurs during classic cholecystostomy, particularly where there is acute inflammation of the bile blister or a sinter of inflammable hepatic-duodenal ligaments [4, 10]. Moreover, even during choledochotomy and revision of the bile ducts, a percentage of stones in the bile ducts are overlooked and this constitutes a typical complication for this procedure. These considerations inclined us to evaluate the methods hitherto used for the intraoperative imaging of the bile ducts and

to research new methods for reducing choledocholithiasis oversight to a minimum. Furthermore, proper intraoperative visualisation of the bile ducts will lead to a reduction in the percentage of iatrogenic damage, which threatens incurable disease of the liver and can be permanently crippling [4, 5, 9]. The aim of the work is to assess the advisability and effectiveness of intraoperative cholangiography or choledochoscopy in the prevention of choledocholithiasis.

MATERIAL AND METHODS

In the Department of Surgery of the Franciszek Raszeja Hospital in Poznań, intraoperative choledochoscopy during choledochotomy has been carried out routinely since 1991. Between 42 and 78 choledochoscopic examinations take place annually. Effectiveness of choledochoscopy in 50 following patients in years 2001-2002 was estimated. Since 2000 in all patients after classic cholecystomy, that lack indications for choledochotomy, interoperative cholangiography was carried out. Effectiveness of interoperative cholangiography in following 50 patients in 2001 was estimated. Both groups underwent ultrasonographic control and tests of biochemical parameters (bilirubin and alkaline phosphatase) a year after surgery.

RESULTS

During choledochoscopy stones overlooked by classic revision of the bile ducts were detected in 3 patients. In two of these cases the stones were removed by means of a small forceps, while in one a stone wedged in the distal part of the bile duct was fragmented and pushed into the duodenum. In most patients choledochoscopy continued into the duodenum, which was evidence of a good confluence of the bile with the alimentary tract. Iatrogenic damage to the bile duct was not found. During intraoperative cholangiography lithiasis was detected in 4 patients and revision of the bile ducts was carried out. In 3 patients stones were removed, while in one patient the result was falsely positive as lithiasis was not found in revision linked with choledochoscopy or in a further postoperative course. Forty-six persons from the first group and 43 persons from the second group attended follow-up examinations. No symptoms typical for lithiasis were noted within 12 months of the operation and jaundice did not occur. Ultrasonographic choledocholithiasis was not detected. A small increase in common bile duct was found in 10 persons following choledochoscopy and in one following cholangiography.

While the biochemical parameters did not indicate cholestasis, the increase in patients who had undergone choledochoscopy was probably associated with lithiasis.

In spite of the fact that the method of intraoperative imaging of the bile duct presented has been known for some years, it is not performed in many centres as a result of the high cost or the absence of choledochoscopy. In our view the results presented are incontrovertible. Even during open revision of the bile duct it is possible to overlook lithiasis and choledochoscopy carried out at the end of the revision can prevent this [6, 7]. In centres which do not possess choledochoscopy, cholangiography through a T-drain-pipe carried out before the end of the operation before intergument stitching would seem to be the proper prophylactic method for lithiasis prevention. Indeed, at present endoscopic methods only permit papillothomic and endoscopic removal of stones from the bile duct after the moment of disclosure of lithiasis, although this constitutes a complication which can lead to cholangitis inflammation of the bile duct and a life-threatening state [8, 9]. This is why we consider that, regardless of cost and possible prolongation of the operation, the aim should be to minimise lithiasis oversight. In order to achieve this, intraoperative cholangiography should also be carried out during laparoscopic cholecystostomy. The question then arises as to whether it should be carried out routinely, including during so-called "easy" laparoscopic cholecystostomy. To answer this question further investigation of this problem is called for on a greater scale and using a larger population.

CONCLUSIONS

The advisability and high degree of effectiveness of intraoperative cholangiography or choledochoscopy in preventing choledocholithiasis oversight was confirmed.

REFERENCES

1. Fletscher DR, Hobbs MS, Tan P (1999) Complications of cholecystectomy. Risk of the laparoscopic approach and protective effects of operative cholangiography. A population based study. *Ann Surg*, 4: 449-455.
2. Jackowski M, Szachta K, Jużków H (1996) Własne doświadczenia z leczenia kamicy żółciowej skojarzonym postępowaniem endoskopowo-laparoskopowym. *Acta Endosc Pol*, 6: 121-126.
3. Karcz D, Zając A, Popiela T (1995) Endoskopowa papillotomia i jej miejsce w klinice chirurgicznej. *Acta Endosc Pol*, 5: 79-84.

4. Karwowski A (2000) Chirurgia dróg żółciowych. *Pol Przegl Chir*, 72: 489–499.
5. Popiela T, Karcz D (1977) Wziernikowanie dróg żółciowych. *Pol Przegl Chir*, 49: 499–503.
6. Popiela T, Karcz D, Kulig J (1983) Różnorodność zmian patologicznych dróg żółciowych w obrazie cholangioskopowym. *Przegl Lek*, 40: 249–251.
7. Popiela T, Richter P (1997) Śródoperacyjna cholangioskopia: 21-letnie kliniczne doświadczenie w chirurgii dróg żółciowych. *Acta Endosc Pol*, 7: 51–56.
8. Rieman JF, Gierth K, Lux G (1984) Die belassene Steingallenblase — ein Riskfaktor nach endoskopischer Papillotomie. *Zeitschr Gastroenter*, 22: 188–194.
9. Rosenthal RJ, Steigerwald SD, Imig R (1994) Role of intraoperative cholangiography during endoscopic cholecystectomy. *Surg Laparosc Endosc*, 4: 171–173.
10. Safrany L, Cotton PB (1982) Endoscopic management of choledocholithiasis. *Surg Clin N Am*, 62: 825–830.
11. Solarski J, Meisnerowski P, Garstecki R, Lewandowski M (1996) Endoskopowa sfinkterotomia i laparoskopowe wycięcie pęcherzyka żółciowego, a konwencjonalna cholecystektomia z rewizją dróg żółciowych u chorych z kamicą przewodową i pęcherzykową — porównanie kosztów leczenia. *Pol Przegl Chir*, 68: 344–346.