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Letter to the Editor

Comments on 'Safe laparoscopic cholecystectomy: A systematic review of bile duct injury prevention' (Int. J. Surg. 2018;60:164-72): Is there a place for MRCP?

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Dear Editor,

We read with great interest the article by van de Graaf et al. [1], published in International Journal of Surgery,2018;60:164-72 on the prevention of bile duct injury (BDI) during laparoscopic cholecystectomy (LC). First of all, we would like to praise the authors for the relevance of the subject and for the quality of their work.

In this systematic review, van de Graaf et al. [1] analyzed the results of 90 studies that enrolled 203,368 patients. The authors started with specific surgical approaches: They reviewed the Critical View of Safety technique, the fundus first and the laparoscopic subtotal cholecystectomy approaches. For each technique, the total number of patients encompassed in the studies, the rate of BDI and the conversion rates were reported.

The second theme of the preventive measures discussed by the authors was imaging techniques. The results of intraoperative cholangiography (IOC) were reported. Conflicting conclusions of the literature data were exposed. Indeed, Ding et al. [2] in their randomized controlled trial assigned 371 patients to either routine IOC or LC without IOC. No differences in BDI, bile leakage and conversion rates were found and the authors concluded that routine IOC had no impact on the reduction of BDI rate. Whereas, in the large retrospective study by Flum et al. [3], IOC reduced significantly the rate of BDI. Also, the authors reviewed several other studies comparing routine versus selective use of IOC and no clear conclusions could be drawn.

The results of intraoperative Ultrasonography (IOUS) and fluorescence cholangiography were also reported. In both techniques, with 3360 and 863 patients respectively and a median success rate of 88.8% (78.5–94) and 87.3% (83–98.5) for detection of common bile duct, the rate of BDI was nil.

In this systematic review, the authors did not consider the results of preoperative magnetic resonance cholangiopancreatography (MRCP). This imaging technique has been investigated mainly for the detection of associated common bile duct stones. Several published studies focused on its use to reduce the incidence of BDI(Table 1): Nebiker et al. [4]reported the results of 454 LC with routine preoperative MRCP. Thus, the authors found accessory bile ducts in 2.4% of patients, aberrant hepatic ducts in 0.4%, and an atypical entry to the CBD in 0.9%. No BDI occurred. MRCP was considered highly contributive in 22% of the procedures even by experienced surgeons and the authors suggested that preoperative understanding of biliary anatomy was helpful to prevent BDI.

Also, a retrospective Chinese study [5]compared the outcomes of 600 LC with and without preoperative MRCP reported one BTI in the MRCP group versus 5 in the control group. The study concluded that preoperative MRCP should be considered as a valuable imaging technique to prevent BDI.

Zang et al. in their retrospective study [6]analyzed the results of IOC and MRCP in 213 and 257 patients respectively who underwent LC. The BDI rate was 0.2% in the IOC group versus 0.13% in the MRCP group and the difference was not significant ($p = 0.32$). The authors concluded that “LC resorting to preoperative MRCP” could be performed safely without routine IOC.

Recently, IRCAD [7]published their recommendations on safe LC. The expert panel concluded that MRCP can be a preventive measure to avoid BDI, despite the lack of strong evidence in the literature to recommend its routine use.

In our department, preoperative MRCP was performed in 402 patients. MRCP showed 129 (32%) biliary anatomical variations. MRCP before LC allowed us to identify preoperatively perihilar or posterior joining of acystic duct into the common bile duct (CBD) in 12 (3%) and 10 (2.5%) patients respectively, insertion of a right sectoral/segmental hepatic duct directly into the CBD in 14 patients (3.5%) and hepatocystic ducts (0.75%) in another 3 patients. All patients underwent LC without routine IOC. One major BDI (0.25%) occurred. The patient underwent delayed LC after acute cholecystitis. The BDI was classified as a Strasberg type E. The BDI was diagnosed intraoperatively and immediately repaired with hepaticojejunostomy. This patient had a normal biliary anatomy. Conversely, in all the other patients with biliary anatomical variations, no BDI occurred.

MRCP might provide surgeons with a thorough description of the biliary anatomy in patients who have a higher risk of BDI due to anatomical variations. Data from the published literature suggested that MRCP might be considered as a preventive measure against BDI. Its exact role in routine surgical practice is still not clear. Further clinical trials have to be carried out to evaluate its real value and cost-effectiveness in LC.

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Table 1
Literature data about magnetic resonance cholangiopancreatography and bile duct injury.

	Number of studies	Number of cases	Rate of BDI
MRCP	3 [4–6]	1011	8 (0.79)
	our experience	402	1 (0.25)

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Author contribution

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Rami Rhaiem: Investigation, Writing - original draft. **Tullio Piardi:** Conceptualization, Writing - review & editing. **Reza Kianmanesh:** Validation, Resources, Supervision.

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