Improved biliary cooling technique for radiofrequency ablation of liver tumours close to central bile ducts

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BACKGROUND

Biliary cooling during radiofrequency ablation (RFA) of liver tumours close to the central bile duct (typically <2cm) reduces the risk of biliary injury.^{1,2} Biliary cooling can be performed via choledochotomy, transcystic approach, or endoscopic nasobiliary tube.²⁻⁴ Direct cannulation of bile duct via a choledochotomy is preferred especially during open surgery given that: (i) transcystic cooling may be inefficient or impossible due to cystic duct valves or obliteration if there has been a previous cholecystectomy, and (ii) an endoscopic nasobiliary tube has been noted to have a high risk of pancreatitis (up to 21%).⁵ However, in typical cases, the common bile duct (CBD) is of normal size (3-4mm) and a formal choledochotomy can risk biliary stricture or bile leak. Therefore, we developed a safe technique to achieve efficient biliary cooling using a paediatric cannula to minimise these risks.

TECHNIQUE

At laparotomy, the CBD is exposed with minimal dissection. A paediatric yellow cannula (24G, 19mm) is inserted through the anterior CBD wall. The plastic cannula is held manually to allow infusion. An infusion flow rate of 23ml/min is achieved with 2 litres of cold (4°C) normal saline using an inflatable pressure bag. A pre-RFA cooling period of 5 minutes is performed, followed by continuous cooling during the RFA procedure. The small size puncture of CBD is closed using a single figure-of-eight 6/0 PDS stitch.

DISCUSSION

This biliary cooling technique is simple, achieves efficient cooling and avoids the need for a formal choledochotomy.

References

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Figure 1 Biliary cooling during radiofrequency ablation: a) improvised biliary cooling using a paediatric cannula and cold saline infusion, b) transcystic approach, c) choledochotomy, d) endoscopic nasobiliary tube