Water jet systems for surgical dissection and resection

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Authors' objectives
To summarize the available information on the use of water jet systems in the resection of organs such as the liver, gallbladder, kidneys, and brain.

Authors' conclusions
There is little evidence on the use of some commercially available water jet systems in surgical resection, and there are no published studies that compare the performance of different systems. Many of the earliest published studies used first-generation or prototype devices. It is difficult to determine from more recent studies whether or not initial problems have been resolved. The evidence indicates that the use of water jet dissection can reduce blood loss and transfusion requirements. In some procedures, resection time and the period of normothermic ischemia can be reduced. The learning curve for this technology seems to be relatively short. More studies are needed to determine whether water jet resection in cancer patients poses a risk of tumour reseeding. Evidence supports the use of water jet resection in reducing blood loss and surgical trauma in liver surgery; benefits appear to be similar in regard to kidney surgery. A recent randomized trial by Shekarriz et al. indicates that water jet dissection may offer advantages over conventional laparoscopic cholecystectomy, as it may significantly reduce associated complications and blood loss.

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