NICE National Institute for Health and Care Excellence

NICE guidance

Laparoscopic liver resection

HealthTech guidance
Published: 27 July 2005

www.nice.org.uk/guidance/htg83

Your responsibility

This guidance represents the view of NICE, arrived at after careful consideration of the evidence available. When exercising their judgement, healthcare professionals are expected to take this guidance fully into account, and specifically any special arrangements relating to the introduction of new interventional procedures. The guidance does not override the individual responsibility of healthcare professionals to make decisions appropriate to the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

All problems (adverse events) related to a medicine or medical device used for treatment or in a procedure should be reported to the Medicines and Healthcare products Regulatory Agency using the Yellow Card Scheme.

Commissioners and/or providers have a responsibility to implement the guidance, in their local context, in light of their duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations. Nothing in this guidance should be interpreted in a way that would be inconsistent with compliance with those duties. Providers should ensure that governance structures are in place to review, authorise and monitor the introduction of new devices and procedures.

Commissioners and providers have a responsibility to promote an environmentally sustainable health and care system and should assess and reduce the environmental impact of implementing NICE recommendations wherever possible.

Contents

This guidance replaces IPG135.

1 Recommendations

1.1 Current evidence on the safety and efficacy of laparoscopic liver resection appears adequate to support the use of this procedure, provided that the normal arrangements are in place for consent, audit and clinical governance.

1.2 Patient selection for laparoscopic liver resection should be carried out by a multidisciplinary team. Surgeons undertaking laparoscopic liver resection should have specialist training and expertise both in laparoscopic techniques and in the specific issues relating to liver surgery.

2 The procedure

2.1 Indications

2.1.1 A common indication for laparoscopic liver resection is a solitary liver metastasis from colorectal cancer, but it may also be used for hepatocellular carcinoma (HCC) and for benign liver tumours or cysts.

2.1.2 The early stages of primary and secondary liver cancer are often asymptomatic. As the tumour grows, symptoms may include jaundice, loss of appetite, loss of weight, nausea and tiredness. Benign liver tumours are usually small and asymptomatic, but if they become large they may cause symptoms such as pain, nausea and vomiting.

2.1.3 Open surgical resection is the standard treatment for patients with localised colorectal metastases of the liver or HCC. A number of alternative therapies have also been developed, including hepatic artery infusion chemotherapy, percutaneous ethanol injection, cryoablation, microwave coagulation therapy, laser-induced thermotherapy and radiofrequency ablation. Benign liver tumours are usually treated only if they are causing symptoms; the standard treatment is open surgical resection.

2.2 Outline of the procedure

2.2.1 Laparoscopic liver resection is performed under general anaesthesia. The abdomen is insufflated with carbon dioxide and a number of small incisions are made to provide access for the laparoscope and surgical instruments. Diathermy is used to mark the line of transection on the liver surface. The hepatic parenchyma is then transected and the main blood vessels and bile ducts are divided and closed with clips or staples. The resected liver is enclosed in a bag and removed through a small incision in the umbilical area. Haemostasis of the transection line may be obtained by several techniques including cautery, haemostatic swabs and fibrin glue.

2.2.2 Hand-assisted laparoscopic liver resection allows the surgeon to place one hand in the abdomen while maintaining the pneumoperitoneum required for laparoscopy. An additional small incision is made which is just large enough for the surgeon's hand, and an airtight 'sleeve' device is used to form a seal around the incision.

2.3 Efficacy

2.3.1 One study of 55 patients reported that there was no difference in the overall patient survival rate or disease-free survival rate between laparoscopic liver resection and open resection. In five studies (n = 217) that compared laparoscopic liver resection with open resection in patients with malignant tumours, there were no statistically significant differences in the extent of the resection margins.

2.3.2 Four of six non-randomised comparative studies reported that the postoperative hospital stay was significantly shorter after laparoscopic liver resection (mean stay ranged from 4 to 15 days) than after open liver resection (mean stay ranged from 8 to 22 days). For more details, refer to the overview.

2.3.3 The Specialist Advisors noted that there were concerns that resection margins may be compromised which may put the patient at risk of increased local tumour recurrence.

2.4 Safety

2.4.1 All of the studies reported the rate of conversion to laparotomy, which ranged from 0% (0/30) to 15% (2/13). Five of seven studies reported that blood transfusion was necessary during laparoscopic surgery in 0% (0/18) to 13% (4/30) of patients. Complications included chest infection in 15% (2/13), liver failure in 8% (1/13), ascites in 8% (1/13), atelectasis of the left lower pulmonary lobe in 8% (1/13) and biliary leak in 5% (1/21) of patients. For more details, refer to the overview.

2.4.2 The Specialist Advisors stated that potential adverse effects included death due to uncontrollable haemorrhage, bile leakage, gas embolism, deep vein thrombosis and infection.

3 Further information

Sources of evidence

The evidence considered by the committee is in the overview.

Information for patients

NICE has produced information on this procedure for patients and carers. It explains the nature of the procedure and the guidance issued by NICE, and has been written with patient consent in mind.

Update information

Minor changes since publication

January 2026: Interventional procedures guidance 135 has been migrated to HealthTech guidance 83. The recommendations and accompanying content remain unchanged.

ISBN: 978-1-4731-9078-8

Endorsing organisation

This guidance has been endorsed by Healthcare Improvement Scotland.