NICE guidance

Laparoscopic partial nephrectomy

Interventional procedures guidance
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www.nice.org.uk/guidance/ipg151

1 Guidance

1.1 Current evidence on laparoscopic partial nephrectomy suggests that it is safe and efficacious when undertaken by surgeons with special expertise in this technique. Surgeons undertaking laparoscopic partial nephrectomy should have specific training and regular experience in laparoscopic renal surgery.

1.2 Clinicians wishing to undertake this procedure should ensure that patients fully understand the risks, including that of serious haemorrhage. In addition, use of the Institute's information for the public is recommended.

1.3 Clinicians should audit and review their results. The British Association of Urological Surgeons runs a cancer registry, and clinicians are encouraged to enter all patients undergoing laparoscopic partial nephrectomy onto this database.

2 The procedure

2.1 Indications

2.1.1 Indications for laparoscopic partial nephrectomy include: a solid renal tumour in a patient with a solitary kidney or compromised contralateral kidney; bilateral renal tumours; and small localised renal tumours in patients with a normal contralateral kidney. Most solid renal tumours are renal cell carcinomas but a small proportion of them are benign tumours, such as oncocytomas. The standard treatment for renal tumours is open partial nephrectomy.

2.1.2 Some small tumours may not be suitable for laparoscopic partial nephrectomy because of their position (centrally located lesions are more difficult to remove than peripheral lesions).

2.2 Outline of the procedure

2.2.1 A laparoscopic partial nephrectomy is performed under general anaesthetic, using a transperitoneal or retroperitoneal approach. In the transperitoneal approach, the abdomen is insufflated with carbon dioxide and three or four small abdominal incisions are made. In the retroperitoneal approach, a small incision is made in the back and a dissecting balloon is inserted to create a retroperitoneal space. After insufflation with carbon dioxide, two or three additional small incisions are made in the back. The renal vessels are identified and either controlled using vessel loops or clamped, and the kidney is mobilised to allow exposure of the lesion. A laparoscopic ultrasound probe may be used to determine the line of incision and depth of tumour involvement. The specimen is enclosed in a bag and retrieved through an expanded port.

2.2.2 Hand-assisted laparoscopic partial nephrectomy allows the surgeon to place one hand in the abdomen while maintaining the pneumoperitoneum required for laparoscopy. An additional small incision is made that 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 non-randomised comparative study of 200 patients reported a median hospital stay of 2 days for laparoscopic partial nephrectomy compared with 5 days for open partial nephrectomy ($p < 0.001$). A second non-randomised comparative study, which involved 49 patients, reported a mean hospital stay of 3 days for the laparoscopic procedure compared with 6 days for open surgery ($p < 0.0002$). The first of these studies also reported a significantly shorter median convalescence time for laparoscopic partial nephrectomy compared with open partial nephrectomy (4 weeks versus 6 weeks, $p < 0.001$).

2.3.2 In one non-randomised comparative study, positive surgical margins (with tumour involvement) were reported after 3% (3/100) of laparoscopic partial nephrectomies compared with 0% (0/100) of open partial nephrectomies. In a second non-randomised comparative study, positive surgical margins were reported in 0% (0/27) of laparoscopic procedures and 5% (1/22) of open procedures. Two case series reported positive surgical margins in 3% (1/37 and 3/100) of cases.

2.3.3 Three studies reported tumour recurrence rates of 0% (0/100), 0% (0/79) and 4% (2/48) after mean follow-up periods of 15 months, 20 months and 38 months, respectively. For more details, refer to the Sources of evidence.

2.3.4 The Specialist Advisors noted concern about the possibility of incomplete cancer clearance.

2.4 Safety

2.4.1 Six studies reported urine leakage as a complication, affecting between 2% (2/100) and 9% (5/53) of patients. In three studies, the rate of postoperative haemorrhage was 2% (4/200, 2/100 and 1/53 of patients), and the rate of intraoperative haemorrhage ranged from 3% (3/100) to 8% (4/53). Other complications included renal failure; damage to the ureter, bowel and blood vessels; and urinary tract infection. For more details, refer to the sources of evidence.

2.4.2 The main safety concerns listed by the Specialist Advisors were intraoperative and postoperative bleeding, and urine leak.

2.5 Other comments

2.5.1 It was noted that the published evidence came from highly specialised units experienced in laparoscopic renal surgery, where clinicians have undertaken a large number of laparoscopic partial nephrectomies.

Andrew Dillon
Chief Executive
January 2006

3 Further information

Sources of evidence

The evidence considered by the Interventional Procedures Advisory Committee is described in the following document.

'Interventional procedure overview of laparoscopic partial nephrectomy', April 2005.

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.

4 About this guidance

NICE interventional procedure guidance makes recommendations on the safety and efficacy of the procedure. It does not cover whether or not the NHS should fund a procedure. Funding decisions are taken by local NHS bodies after considering the clinical effectiveness of the procedure and whether it represents value for money for the NHS. It is for healthcare professionals and people using the NHS in England, Wales, Scotland and

Northern Ireland, and is endorsed by Healthcare Improvement Scotland for implementation by NHSScotland.

This guidance was developed using the NICE interventional procedure guidance process.

We have produced a summary of this guidance for patients and carers. Information about the evidence it is based on is also available.

Changes since publication

22 January 2012: minor maintenance.

Your responsibility

This guidance represents the views of NICE and was arrived at after careful consideration of the available evidence. Healthcare professionals are expected to take it fully into account when exercising their clinical judgement. This guidance does not, however, override the individual responsibility of healthcare professionals to make appropriate decisions in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer.

Implementation of this guidance is the responsibility of local commissioners and/or providers. Commissioners and providers are reminded that it is their responsibility to implement the guidance, in their local context, in light of their duties to avoid unlawful discrimination and to have regard to promoting equality of opportunity. Nothing in this guidance should be interpreted in a way which would be inconsistent with compliance with those duties.

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Endorsing organisation

This guidance has been endorsed by Healthcare Improvement Scotland.