

# Laparoscopic partial nephrectomy

## 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 (available from [www.nice.org.uk/IPG151publicinfo](http://www.nice.org.uk/IPG151publicinfo)).
- 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 ([www.baus.org.uk/Display.aspx?item=319](http://www.baus.org.uk/Display.aspx?item=319)).

## 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

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### This guidance is written in the following context

This guidance represents the view of the Institute which was arrived at after careful consideration of the available evidence. Health professionals are expected to take it fully into account when exercising their clinical judgement. This guidance does not, however, override the individual responsibility of health professionals to make appropriate decisions in the circumstances of the individual patient, in consultation with the patient and/or guardian or carer. Interventional procedures guidance is for health professionals and people using the NHS in England, Wales and Scotland.

This guidance is endorsed by NHS QIS for implementation by NHSScotland.

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.

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Chief Executive  
January 2006

## Information for the public

NICE has produced information describing its guidance on this procedure for patients, carers and those with a wider interest in healthcare. It explains the nature of the procedure and the decision made, and has been written with patient consent in mind. This information is available from [www.nice.org.uk/IPG151publicinfo](http://www.nice.org.uk/IPG151publicinfo)

## 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.

Available from: [www.nice.org.uk/ip308overview](http://www.nice.org.uk/ip308overview)

## Ordering information

Copies of this guidance can be obtained from the NHS Response Line by telephoning 0870 1555 455 and quoting reference number N0961. *Information for the public* can be obtained by quoting reference number N0962.

The distribution list for this guidance is available at [www.nice.org.uk/IPG151distributionlist](http://www.nice.org.uk/IPG151distributionlist)

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