

# Laparoscopic nephrectomy (including nephroureterectomy)

Interventional procedures guidance

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[www.nice.org.uk/guidance/ipg136](http://www.nice.org.uk/guidance/ipg136)

## 1 Guidance

- 1.1 Current evidence on the safety and efficacy of laparoscopic nephrectomy (including nephroureterectomy) 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 is important when this procedure is being considered for the treatment of malignant disease. Long-term follow-up data are lacking, and clinicians are encouraged to collect data on rates of recurrence in patients with malignant disease.

## 2 The procedure

### 2.1 Indications

- 2.1.1 Indications for nephrectomy (including nephroureterectomy) include renal cell or urethral cancer and benign conditions that lead to a poorly functioning or non-functioning kidney. These benign conditions may be due to or associated with symptomatic hydronephrosis, chronic infection, polycystic kidney disease, dysplastic kidney, hypertension and renal calculus.
- 2.1.2 The standard treatment for an irreversibly damaged kidney or localised kidney cancer is an open nephrectomy. Under general anaesthesia, the kidney is removed through an incision in the loin or the front of the abdomen.

### 2.2 Outline of the procedure

- 2.2.1 A transperitoneal or retroperitoneal approach may be used for laparoscopic nephrectomy. In the transperitoneal approach, the abdomen is insufflated with carbon dioxide through a trocar and then 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 the balloon is removed, the space is insufflated with carbon dioxide and two or three additional small incisions are made in the back for the laparoscopic instruments. The kidney is freed by laparoscopic dissection, and is then enclosed in a bag and removed through an appropriate incision or placed in an impermeable sac, morcellated and removed through one of the port sites. The ureter is sometimes removed along with the kidney (laparoscopic radical nephroureterectomy).
- 2.2.2 Hand-assisted laparoscopic nephrectomy 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 non-randomised comparative study of 100 patients with renal cell carcinoma reported that there was no statistically significant difference in the estimated 5-year disease-free survival rate for laparoscopic and open nephrectomy (95.5% versus 97.5%, respectively). A case series of 157 patients with renal cell carcinoma who had the laparoscopic procedure reported an estimated 5-year disease-free survival rate of 91%.
- 2.3.2 Two non-randomised comparative studies, including 209 patients with upper urinary tract transitional cell carcinoma, reported no difference in recurrence rates between laparoscopic and open nephroureterectomy.
- 2.3.3 Two non-randomised comparative studies found that significantly less analgesia was required after laparoscopic nephrectomy than after open surgery. In a further two non-randomised comparative studies, the mean hospital stay ranged from 5.2 days to 8.9 days for open surgery, compared with 3.4 days to 6.8 days for laparoscopic surgery ( $p < 0.001$ ). In one study, the mean convalescence period was also significantly shorter for laparoscopic surgery: 23 days compared with 57 days for open surgery ( $p < 0.001$ ). For more details, refer to the Sources of evidence.
- 2.3.4 The Specialist Advisors did not express any concerns about the efficacy of this procedure when performed by trained operators. However, they noted that there was a lack of data from randomised controlled trials.

## 2.4 Safety

- 2.4.1 Three non-randomised comparative studies reported complication rates for laparoscopic nephrectomy that were not significantly different from those for open nephrectomy. Six studies reported rates of conversion to open surgery: this occurred in 0% (0/54) to 10% (46/482) of procedures.
- 2.4.2 The complications reported in a large case series of 482 procedures (461 patients) included bleeding in 5% (22/482), re-intervention in 3% (15/482) and bowel injury in less than 1% (3/482). Other complications

reported in the studies included paralytic ileus in 3% (2/60) of patients; injury to arteries in 3% (2/60), the spleen in 2% (1/60) and the adrenal gland in 2% (1/60); and urinary tract infection in 1% (2/157). Two case series reported mortality rates of less than 1% (2/263) and 1% (2/157). For more details, refer to the Sources of evidence.

- 2.4.3 The Specialist Advisors stated that potential adverse events included major haemorrhage from renal vessels, bowel injury and the need for conversion to open surgery.

## 2.5 Other comments

- 2.5.1 It was noted that training and competence in laparoscopic techniques were important for surgeons undertaking this procedure.

## 3 Further information

- 3.1 The Institute has produced guidance on [laparoscopic live donor simple nephrectomy](#).

Andrew Dillon  
Chief Executive  
August 2005

## Sources of evidence

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

['Interventional procedure overview of laparoscopic nephrectomy \(including nephroureterectomy\)'](#), March 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.

It has been incorporated into the [NICE pathway on chronic kidney disease](#), along with other related guidance and products.

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

23 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

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# Endorsing organisation

This guidance has been endorsed by [Healthcare Improvement Scotland](#).