

# Endopyelotomy for pelviureteric junction obstruction

Interventional procedures guidance

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[www.nice.org.uk/guidance/ipg325](http://www.nice.org.uk/guidance/ipg325)

## 1 Guidance

- 1.1 Current evidence shows that endopyelotomy for pelviureteric junction (PUJ) obstruction is efficacious in the short and medium term although there is a risk of obstruction recurrence in the long term. The evidence on safety raises no major concerns. Therefore this procedure may be used provided that normal arrangements are in place for clinical governance, consent and audit.
- 1.2 This procedure should be carried out only in units with specific expertise in endopyelotomy for PUJ obstruction, by specialist teams who can offer a range of procedures including laparoscopic pyeloplasty.

## 2 The procedure

### 2.1 Indications and current treatments

- 2.1.1 Pelviureteric junction obstruction is a congenital or acquired stenosis of the junction between the renal pelvis and the ureter, which inhibits normal urine flow. It can cause chronic or recurrent flank pain as well as urinary tract infections.
- 2.1.2 Conservative treatment may include long-term use of low-dose antibiotics. Current surgical options to reconstruct and normalise the anatomy of the PUJ include open or laparoscopic pyeloplasty (with or without robotic assistance) and electrocautery cutting balloon treatment.

### 2.2 Outline of the procedure

- 2.2.1 The aim of the procedure is to widen the abnormally narrowed part of the PUJ. With the patient under general anaesthesia, a cutting device (which may be a laser or a diathermy probe, or an endoscopic knife) is inserted into the PUJ area endoscopically via the ureter, or via a percutaneous approach in the flank. Under endoscopic visualisation a full-thickness incision is made, through the wall of the ureter, into the periureteric fat. A stent is inserted across the PUJ, with the aim of maintaining patency, and is removed after several weeks.

Sections 2.3 and 2.4 describe efficacy and safety outcomes from the published literature that the Committee considered as part of the evidence about this procedure. For more detailed information on the evidence, see the [overview](#).

### 2.3 Efficacy

- 2.3.1 A randomised controlled trial (RCT) of 40 patients treated by laser endopyelotomy versus electrocautery cutting balloon reported a successful outcome (defined as subjective relief or symptom improvement, plus objective relief of obstruction and improvement in

glomerular filtration rate) in 85% (17/20) and 65% (13/20) of patients respectively at a mean follow-up of 30 months ( $p = 0.14$ ). There was no significant difference between the treatment groups in the success rates for patients with primary or secondary PUJ obstruction ( $p = 0.38$  and  $p = 0.26$  respectively).

- 2.3.2 A non-randomised controlled trial of 436 patients reported that success (defined as complete symptomatic relief plus resolution or improvement in obstruction on imaging) was achieved in 61% (111/182) of endopyelotomy-treated patients and 82% (144/175) of pyeloplasty-treated patients at a mean follow-up of 3.5 years (significance not stated).
- 2.3.3 A non-randomised controlled trial of 273 patients reported that success (defined as symptom resolution plus improvement or stability of radiographic parameters) was achieved in 60% of patients in the endopyelotomy group, 89% of the laparoscopic pyeloplasty group, and 100% of the robotically assisted pyeloplasty group at a mean follow-up of 20 months (absolute numbers and significance not stated). Multivariate analysis (excluding the robotically assisted group) showed that endopyelotomy (compared with laparoscopic pyeloplasty) was an independent predictor of treatment failure (hazard ratio 3.16; 95% confidence interval 1.70 to 5.86,  $p < 0.001$ ).
- 2.3.4 In the non-randomised controlled trial of 436 patients, the 10-year estimated recurrence-free survival was 41% ( $n = 8$ ) in the endopyelotomy group and 75% ( $n = 21$ ) in the pyeloplasty group (absolute figures not stated).
- 2.3.5 The Specialist Advisers listed key efficacy outcomes as short-term pain relief, resolution of symptoms and normalisation of renographic obstruction, preservation of renal function and no obstruction recurrence in the long term.

## 2.4 Safety

- 2.4.1 The RCT of 40 patients treated by laser endopyelotomy versus electrocautery cutting balloon reported no significant difference in the

rate of overall complications (not otherwise defined) between treatment groups (10% [2/20] and 25% [5/20] respectively;  $p = 0.20$ ) (mean follow-up 30-months). The non-randomised controlled trial of 436 patients reported that the rate of overall complications was not significantly different between the endopyelotomy (11% [25/225]) and the pyeloplasty groups (8% [17/211]) ( $p = 0.33$ ) at a mean follow-up of 3.5 years.

- 2.4.2 Bleeding requiring transfusion occurred in 1% (3/225) of patients in the endopyelotomy group and 1% (2/211) of patients in the pyeloplasty group in the non-randomised controlled trial of 436 patients (significance not stated). Haemorrhage requiring electrocoagulation occurred in 1% (4/320) and haemorrhage requiring transfusion in 1% (2/212) of patients (1 patient required further intervention [not otherwise stated]) in case series of 320 and 212 patients, respectively.
- 2.4.3 Ureteral avulsion requiring an open procedure was reported in 1 of 212 patients in a case series.
- 2.4.4 One case report described a patient who developed renal atrophy, renal hypertension, perinephric fibrosis and calcification, vena caval stenosis and renal vein obstruction after endopyelotomy: the patient needed a nephrectomy 8 years later. The primary event was thought to have been development of a subcapsular haematoma after endopyelotomy. A second case report described ureteral intussusception following endopyelotomy at 3-month follow-up, treated by pyeloplasty reconstruction (not otherwise described).
- 2.4.5 Reoperation (repeat endopyelotomy, open pyeloplasty or nephrectomy) was required in 10% (33/320) of patients in the case series of 320 patients. In the case series of 212 patients, repeat endopyelotomy was required in less than 1% (1/212), secondary intervention by pyeloplasty in 8% (18/212), ureterocalicostomy in 2% (4/212), and ileal interposition in 1 patient.
- 2.4.6 The Specialist Advisers listed adverse events as haemorrhage, stent-related problems and aorto-ureteral fistula. They considered theoretical adverse events to include failure/obstruction recurrence, infection, perforation and fibrosis.

## 2.5 Other comments

- 2.5.1 The Committee was advised that endopyelotomy for PUJ obstruction is used less frequently than in the past because of the increased use of laparoscopic pyeloplasty, but that it may have a particular role in the management of obstruction recurrence.

## 3 Further information

- 3.1 For related NICE guidance see our [website](#).

## Information for patients

NICE has produced [information on this procedure for patients and carers](#) ('Understanding NICE guidance'). 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

5 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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## Contact NICE

National Institute for Health and Clinical Excellence  
Level 1A, City Tower, Piccadilly Plaza, Manchester M1 4BT

[www.nice.org.uk](http://www.nice.org.uk)  
[nice@nice.org.uk](mailto:nice@nice.org.uk)  
0845 033 7780

# Endorsing organisation

This guidance has been endorsed by Healthcare Improvement Scotland.

## Accreditation

