

Laparoscopic insertion of peritoneal dialysis catheter

Interventional procedures guidance

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www.nice.org.uk/guidance/ipg208

1 Guidance

- 1.1 Current evidence on the safety and efficacy of laparoscopic insertion of peritoneal dialysis catheter 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 Clinicians should ensure that patients understand the potential risks and benefits of the procedure, and the alternatives, and should provide patients with clear written information. In addition, use of the Institute's [information for patients](#) ('Understanding NICE guidance') is recommended.
- 1.3 The evidence on the selection of patients for this technique of peritoneal dialysis catheter insertion is unclear. Publication of further relevant evidence will be useful in guiding clinical practice.

2 The procedure

2.1 Indications

- 2.1.1 Peritoneal dialysis is an alternative to haemodialysis and is used to treat patients with end-stage renal disease. It involves infusing fluid into the peritoneal cavity via a catheter and leaving it there for sufficient time to allow metabolic waste products to diffuse through the peritoneal membrane into the dialysis fluid, which is then drained away.
- 2.1.2 A peritoneal dialysis catheter is conventionally inserted through a small incision in the abdomen, under local or general anaesthesia. The catheter is directed towards the pelvis, which is the best place for the tip to lie. The catheter can also be placed using a percutaneous technique.

2.2 Outline of the procedure

- 2.2.1 Laparoscopic insertion of a peritoneal dialysis catheter is usually performed under general anaesthesia. The abdomen is insufflated and several small incisions are made. The tip of the catheter is advanced into the pelvis, and may be sutured in place. The proximal end of the catheter is then tunnelled subcutaneously to an exit-site incision in the abdomen. Use of the laparoscope allows visualisation of the catheter's location during the procedure, ensuring that it lies in the pelvis. Concomitant procedures can be performed during laparoscopy.

2.3 Efficacy

- 2.3.1 A randomised controlled trial reported that 57% (12/21) of catheters inserted laparoscopically and 54% (13/24) of those inserted via an open incision were still in use after a median follow-up of 18.5 months (p value not stated).
- 2.3.2 A non-randomised controlled trial of 42 patients reported catheter survival at 12 months to be 91% in the laparoscopic group and 71% in the open-insertion group (p = 0.019). A second non-randomised controlled

trial reported revision-free catheter survival probabilities at 1, 2 and 3 years to be significantly higher after laparoscopic insertion than after open insertion: 87%, 81% and 76%, respectively, after laparoscopic insertion (n = 150) compared with 74%, 57% and 39%, respectively, after open insertion (n = 63) (p < 0.001). A third non-randomised controlled trial of 102 patients reported catheter survival at 1, 2 and 3 years to be 79%, 53% and 37%, respectively, in the laparoscopic group, compared with 65%, 43% and 29%, respectively, in the open-insertion group (differences were not statistically significant). Another non-randomised controlled trial reported that 70% (16/23) of catheters inserted laparoscopically were still functioning at the end of the study (follow-up period not stated), compared with 40% (8/20) of catheters inserted using a single trocar peritoneoscopic technique (p value not stated). For more details, refer to the 'Sources of evidence' section.

- 2.3.3 The Specialist Advisers did not note any concerns about the efficacy of the procedure.

2.4 Safety

- 2.4.1 The randomised controlled trial reported that 29% (6/21) of patients in the laparoscopic-insertion group had peritonitis more than 6 weeks after catheter insertion, compared with 46% (11/24) of patients in the open-insertion group (p value not stated). One non-randomised controlled trial reported similar rates of peritonitis after laparoscopic and open insertion (32% [16/50] versus 25% [13/52] after mean follow-up of 26 and 19 months, respectively). Another non-randomised controlled trial reported a significantly lower rate of peritonitis after laparoscopic insertion than after open insertion more than 4 weeks after the procedure (5% [1/21] versus 14% [3/21], p < 0.05).
- 2.4.2 In the randomised controlled trial, exit-site infections more than 6 weeks after catheter insertion were reported in 29% (6/21) of patients in the laparoscopic-insertion group, compared with 17% (4/24) of patients in the open-insertion group (p value not stated). Two non-randomised controlled trials reported exit-site infections more than 4 weeks after the procedure in 5% (1/21) and 6% (3/50) of laparoscopic procedures, compared with 10% (2/21) and 10% (5/52) of open procedures (difference

not significant). One large case series reported recurrent peritonitis or exit-site infection after 18% (26/148) of laparoscopic procedures.

- 2.4.3 Two non-randomised controlled trials reported that 14% (3/21) and 12% (3/25) of patients in the laparoscopic groups needed surgical revision, compared with 38% (8/21) and 17% (4/23) of patients, respectively, in the open-surgery groups (p values not stated). Two case series of laparoscopic insertion reported surgical revision rates of 20% (25/123) and 24% (8/34).
- 2.4.4 Eight studies reported catheter leakage rates ranging from 0% (0/25) to 10% (2/21) of laparoscopic procedures. Five studies reported catheter blockage rates ranging from 0.5% (1/200) to 29% (10/34) of laparoscopic procedures.
- 2.4.5 Two non-randomised controlled trials and one case series reported peri- or postoperative haemorrhage in 0% (0/200), 2% (1/50) and 5% (7/148) of laparoscopic procedures. Another case series of 34 patients reported that one patient died of haemorrhage 6 days after surgery, having resumed oral anticoagulation treatment immediately after the procedure. For more details, refer to the 'Sources of evidence' section.
- 2.4.6 The Specialist Advisers listed potential adverse events as bowel perforation, catheter leakage, infection, catheter migration or blockage, and bleeding. Two advisers noted that potential adverse events were mainly those associated with laparoscopic surgery per se. Other adverse events may occur with laparoscopic or open procedures for catheter insertion.

2.5 Other comments

- 2.5.1 The Committee noted that no evidence on the use of a peritoneoscope for this procedure was considered.

Andrew Dillon
Chief Executive
February 2007

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 insertion of peritoneal dialysis catheter', October 2006.

Information for patients

NICE has produced information describing its guidance on this procedure for patients and their carers ('Understanding NICE guidance'). It explains the nature of the procedure and the decision made, 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

17 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

nice@nice.org.uk

0845 033 7780

Endorsing organisation

This guidance has been endorsed by Healthcare Improvement Scotland.