

# Laparoscopic insertion of peritoneal dialysis catheter

## 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 (available from [www.nice.org.uk/IPG208publicinfo](http://www.nice.org.uk/IPG208publicinfo)).
- 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

## Interventional procedure guidance 208

### 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. 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.

Interventional procedures guidance is for healthcare professionals and people using the NHS in England, Wales, Scotland and Northern Ireland.

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

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

## 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. This information is available from [www.nice.org.uk/IPG208publicinfo](http://www.nice.org.uk/IPG208publicinfo)

## 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.

Available from: [www.nice.org.uk/IP369overview](http://www.nice.org.uk/IP369overview)

## Ordering information

Copies of this guidance can be obtained from the NHS Response Line by telephoning 0870 1555 455 and quoting reference number N1205. 'Understanding NICE guidance' can be obtained by quoting reference number N1206.

The distribution list for this guidance is available at [www.nice.org.uk/IPG208distributionlist](http://www.nice.org.uk/IPG208distributionlist)

Published by the National Institute for Health and Clinical Excellence, February 2007; ISBN 1-84629-369-3

Interventional procedures guidance makes recommendations on the safety and efficacy of a procedure. The guidance does not cover whether or not the NHS should fund a procedure. Decisions about funding are taken by local NHS bodies (primary care trusts and hospital trusts) after considering the clinical effectiveness of the procedure and whether it represents value for money for the NHS.

© National Institute for Health and Clinical Excellence, February 2007. All rights reserved. This material may be freely reproduced for educational and not-for-profit purposes. No reproduction by or for commercial organisations, or for commercial purposes, is allowed without the express written permission of the Institute.