NATIONAL INSTITUTE FOR HEALTH AND CARE EXCELLENCE

Interventional procedure consultation document

Endoscopic transluminal pancreatic necrosectomy

Pancreatitis causes the pancreas to become inflamed, resulting in severe pain and illness. Sometimes the tissue of the pancreas starts to die (necrosis) and may become infected. It can be removed by open surgery or suction through a needle. In this procedure an endoscope (a thin tube with a camera on the end) is inserted through the mouth and instruments are passed through the stomach wall to wash out and remove the dead tissue.

The National Institute for Health and Care Excellence (NICE) is examining endoscopic transluminal pancreatic necrosectomy and will publish guidance on its safety and efficacy to the NHS. NICE's interventional procedures advisory committee has considered the available evidence and the views of specialist advisers, who are consultants with knowledge of the procedure. The advisory committee has made draft recommendations about endoscopic transluminal pancreatic necrosectomy.

This document summarises the procedure and sets out the draft recommendations made by the advisory committee. It has been prepared for public consultation. The advisory committee particularly welcomes:

- comments on the draft recommendations
- the identification of factual inaccuracies
- additional relevant evidence, with bibliographic references where possible.

Note that this document is not NICE's formal guidance on this procedure. The recommendations are provisional and may change after consultation.

The process that NICE will follow after the consultation period ends is as follows.

- The advisory committee will meet again to consider the original evidence and its draft recommendations in the light of the comments received during consultation.

- The advisory committee will then prepare draft guidance which will be the basis for NICE's guidance on the use of the procedure in the NHS.

For further details, see the Interventional Procedures Programme process guide, which is available from the NICE website.

Through its guidance NICE is committed to promoting race and disability equality, equality between men and women, and to eliminating all forms of discrimination. One of the ways we do this is by trying to involve as wide a range of people and interest groups as possible in the development of our interventional procedures guidance. In particular, we aim to encourage people and organisations from groups who might not normally comment on our guidance to do so.

In order to help us promote equality through our guidance, we should be grateful if you would consider the following question:

Are there any issues that require special attention in light of NICE's duties to have due regard to the need to eliminate unlawful discrimination, advance equality of opportunity, and foster good relations between people with a characteristic protected by the equalities legislation and others?

Please note that NICE reserves the right to summarise and edit comments received during consultations or not to publish them at all where in the reasonable opinion of NICE, the comments are voluminous, publication would be unlawful or publication would otherwise be inappropriate.

Closing date for comments: 20 June 2016

Target date for publication of guidance: September 2016

1 Draft recommendations

1.1 Current evidence on the safety of endoscopic transluminal pancreatic necrosectomy shows that there are serious but well-recognised complications. Evidence on efficacy is adequate to support the use of this procedure provided that standard arrangements are in place for clinical governance, consent and audit.

1.2 Patient selection should be done by a multidisciplinary team experienced in the management of the condition.

1.3 Endoscopic transluminal pancreatic necrosectomy should only be done in a specialist centre by a team experienced in the management of complex pancreatic disease.

2 Indications and current treatments

2.1 Pancreatic necrosis (also called necrotising pancreatitis) is a serious complication of pancreatitis that can occur in some patients. It can occur with or without the formation of pseudocysts and is associated with significant morbidity and high mortality, particularly if it becomes infected. Patients usually need a long stay in hospital with treatment in intensive care.

2.2 Current treatment options for pancreatic necrosis include conventional open or laparoscopic necrosectomy.

3 The procedure

3.1 Endoscopic transluminal pancreatic necrosectomy is done with the patient under sedation or general anaesthesia, using upper gastrointestinal endoscopy and endosonographic or fluoroscopic guidance or both. The stomach is distended with carbon dioxide. The area where the necrotic tissue has collected is usually identified as a bulge in the stomach wall. An opening is made in the posterior wall of the stomach. The opening is dilated with a balloon over a guide wire to allow the endoscope to pass through into the area of necrotic tissue. Any fluid that has collected is drained. Necrotic tissue is removed through the endoscope using suction, forceps and irrigation. One or more self-expanding stents or irrigation catheters may be left in place in the stomach wall to help further drainage from the retroperitoneal space into the stomach. Repeated sessions may be needed over many days until the cavity

is clean and lined with granulation tissue. The procedure aims to avoid the need for open or laparoscopic necrosectomy and its associated morbidity.

4 Efficacy

This section describes efficacy 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 interventional procedure overview.

4.1 In a systematic review of 455 patients, primary endoscopic necrosectomy was successful as definitive treatment in 81% (372/455) of patients. In a non-randomised comparative study, 24 patients were treated by endoscopic necrosectomy or a step-up approach (percutaneous catheter drainage with possible surgery). Clinical resolution (defined as resolution of primary symptoms and no abdominal pain, nausea, vomiting, fever, leucocytosis or sepsis) was reported in 92% (11/12) of patients after endoscopic necrosectomy and 25% (3/12) of patients after percutaneous catheter drainage in the step-up approach group (p=0.0028). In a case series of 81 patients, clinical success (defined as the proportion of patients surviving with complete resolution of their necrosis and concomitant resolution of their clinical symptoms without needing surgical necrosectomy) was reported in 89% (72/81) of patients. In a case series of 57 patients, successful resolution was reported in 75% (43/57) of patients.

4.2 In the systematic review of 455 patients, 16% (73/455) of patients needed additional interventions after endoscopic necrosectomy (18 percutaneous, 46 surgical, 7 percutaneous and surgical, 2 other). In the case series of 81 patients, small collections of

necrotic tissue and fluid that caused symptoms recurred in 4% (3/72) of patients. These patients needed additional endoscopic treatment, which resulted in complete resolution. In the case series of 57 patients, 5% (3/57) of patients had a recurrent cavity after 2–8 months; they were successfully treated by endoscopic or percutaneous drainage.

4.3 In a randomised controlled trial of 20 patients treated by endoscopic or surgical necrosectomy (included in the systematic review), hospital stays after randomisation were 45 and 36 days respectively (p=0.91). In a non-randomised comparative study of 32 patients treated by endoscopic or surgical necrosectomy, median length of hospital stay was 32 and 74 days respectively (p=0.006).

4.4 The specialist advisers listed the key efficacy outcomes as resolution of the necrotic cavity, reduced length of stay in a high dependency or intensive care unit, and quality of life.

5 Safety

This section describes 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 interventional procedure overview.

5.1 Overall mortality after endoscopic necrosectomy was reported as 6% (28/455; range 0–15% per study) in a systematic review of 455 patients; this included both in-hospital mortality and mortality within the follow-up period. Death was reported in 10% (1/10) of patients treated by endoscopic necrosectomy and 40% (4/10) of patients treated by surgical necrosectomy (p=0.30) in a randomised

controlled trial of 20 patients (included in the systematic review). The death rate was 0% (0/11) in patients treated by endoscopic necrosectomy compared with 14% (3/21) in patients treated by surgical necrosectomy (p=0.53) in a non-randomised comparative study of 32 patients. In-hospital mortality was 0% (0/12) for patients treated by endoscopic necrosectomy compared with 8% (1/12) for patients treated by a step-up approach in a non-randomised comparative study of 24 patients. A case series of 81 patients reported in-hospital mortality of 11% (9/81); 4 multiple organ failure because of sepsis, 2 circulatory failure because of arterial bleeding unrelated to endoscopy, 2 respiratory failure, 1 septic shock and multiple organ failure considered as an immediate complication to the endoscopic procedure. A case series of 57 patients reported mortality during the treatment period of 11% (6/57): 2 multiple organ failure secondary to sepsis, 1 air embolism, 1 splenic aneurysm rupture, 1 Mallory-Weiss tear, and 1 sudden cardiorespiratory arrest of unknown cause.

5.2 Fatal gas embolism after endoscopic transgastric necrosectomy with carbon dioxide insufflation was described in a case report. Air embolism was reported in 1% (2/207) of patients in the systematic review of 455 patients. Air embolism was also reported in 1 patient in the case series of 57 patients; the patient died (included in the deaths described previously).

5.3 Bleeding was reported in 18% (76/420) of patients in the systematic review of 455 patients. This was treated endoscopically by coagulation, epinephrine injections or clips in 93% of patients; 7% of patients needed angiography with coiling or surgery. Bleeding was reported in 8% (1/12) of patients treated by endoscopic necrosectomy and 50% (6/12) of patients treated by surgical

necrosectomy in the non-randomised comparative study of 24 patients. Bleeding from the necrosis cavity, managed by embolisation, was reported in 5% (4/81) of patients in the case series of 81 patients. Bleeding from the transmural tract, treated with epinephrine injection and transfusion, was reported in 1 patient in the same study. Bleeding from the cavity wall and bleeding from the fistula during the procedure were reported in 5% (3/57) and 9% (5/57) of patients respectively in the case series of 57 patients.

5.4 Pancreatic fistula was reported in 5% (9/187) of patients in the systematic review of 455 patients. It was also reported in 10% (1/10) of patients treated by endoscopic necrosectomy and 70% (7/10) of patients treated by surgical necrosectomy (p=0.02) in the randomised controlled trial of 20 patients. Pancreatic fistula was reported in 0% (0/11) in patients treated by endoscopic necrosectomy compared with 38% (8/21) of patients treated by surgical necrosectomy (p=0.03) in a non-randomised comparative study of 32 patients.

5.5 Spontaneous perforation of a hollow organ (apart from the stomach or duodenum because of the intervention) was reported in 4% (9/249) of patients in the systematic review of 455 patients. Bowel perforation was reported in 1 patient treated by endoscopic necrosectomy in the non-randomised comparative study of 32 patients. Perforation was reported in 5% (3/57) of patients in the case series of 57 patients.

5.6 New-onset organ failure was reported in 18% (2/11) of patients treated by endoscopic necrosectomy and 17% (5/21) of patients treated by surgical necrosectomy (p=0.99) in the non-randomised comparative study of 32 patients.

5.7 Stent complication (not further described) was reported in 9% (2/11) of patients treated by endoscopic necrosectomy in the non-randomised comparative study of 32 patients.

5.8 Pneumoperitoneum, without the need for intervention or treated by needle aspiration, was reported in 5% (4/81) of patients in the case series of 81 patients.

5.9 New-onset diabetes (assessed 6 months after hospital discharge) was reported in 22% (2/9) of patients treated by endoscopic necrosectomy and 50% (3/6) of patients treated by surgical necrosectomy (p=0.33) in the randomised controlled trial of 20 patients.

5.10 In addition to safety outcomes reported in the literature, specialist advisers are asked about anecdotal adverse events (events which they have heard about) and about theoretical adverse events (events which they think might possibly occur, even if they have never done so). For this procedure, specialist advisers listed the following anecdotal adverse events: slipping of irrigation tube, stent migration, prolonged hospital stay, and sedation-related adverse reactions. They considered that the following were theoretical adverse events: splenic vein thrombosis with portal hypertension and oesophageal varices, introduction or exacerbation of infection, and fluid overload.

6 Committee comments

6.1 The committee noted that necrotising pancreatitis is a severe condition, which has a poor prognosis if untreated.

6.2 The committee noted that patients may need the procedure repeating many times and that the procedure does not preclude the subsequent use of other treatments for this condition.

6.3 The committee noted the difficulty in doing randomised controlled trials for this procedure.

6.4 The committee noted that the techniques used in endoscopic transluminal pancreatic necrosectomy are evolving, including the use of stents, and the use of carbon dioxide instead of air for insufflation.

7 Further information

7.1 For related NICE guidance, see the NICE website.

7.2 This guidance is a review of NICE's interventional procedure guidance on endoscopic transluminal pancreatic necrosectomy.

Tom Clutton-Brock
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