



NATIONAL INSTITUTE FOR CLINICAL EXCELLENCE

**INTERVENTIONAL PROCEDURES
ADVISORY COMMITTEE**

**Interventional procedure overview of
Percutaneous endoscopic sigmoid colostomy**

Introduction

This overview has been prepared to assist members of IPAC advise on the safety and efficacy of an interventional procedure previously reviewed by SERNIP. It is based on a rapid survey of published literature, review of the procedure by one or more specialist advisor(s) and review of the content of the SERNIP file. It should not be regarded as a definitive assessment of the procedure.

Procedure name

Percutaneous endoscopic sigmoid colostomy

SERNIP procedure number

74

Specialty society

Association of Coloproctology of Great Britain and Ireland

Executive Summary

Percutaneous endoscopic sigmoid colostomy (PEC) is a technique evolving from the percutaneous endoscopic gastrostomy (PEG) technique for sigmoid colon disfunctions such as volvulus, pseudo-obstruction, evacuation disorders and medication delivery methods. The literature reports patients with varying indications and little safety data. However, safety data of PEG can be applied to this new technique (refer to Summary of Procedure, page 3). PEC is a minimally invasive approach to treatment especially in patients for where conventional surgery is deemed unsafe or inappropriate.

Indication(s)

Percutaneous endoscopic sigmoid colostomy (PEC) is a variation of the percutaneous endoscopic gastrostomy technique which has been well established for parenteral gastric feeding since 1980.¹

Indications for PEC:²

- recurrent sigmoid volvulus
- acute colonic pseudo-obstruction
- faecal constipation
- faecal incontinence
- used for the delivery of anti-inflammatory agents for patients with colitis

Sigmoid volvulus is common in frail elderly patients. It can be life threatening and diagnosis must be prompt to avoid sigmoid colon ischaemia and associated morbidity or possible mortality.³

Evacuation disorders are common in children and adults⁴ and interrupt social functioning.

Persistent colonic pseudo-obstruction is a rare problem but if left untreated, can lead to impending perforation.⁵

Summary of procedure

PEC is an endoscopic approach to the bowel, offering minimal invasiveness in treating sigmoid colon dysfunctions to avoid open resection. The minor invasiveness comes from a small incision in the abdomen and colon wall where a tube is inserted for access into the colon. This tube can be *in situ* for the long term or short term, depending on indications for use.

PEC offers an alternative treatment for patients who have tried conventional treatment options without success. Various surgical techniques as an alternative to PEC include sigmoidopexy, sigmoidoplasty, trephine stoma to resection with primary anastomosis.⁶ Traditional treatment options for sigmoid volvulus comprise endoscopic decompression and/or open resection. However, these treatment options have varying success with endoscopic decompression having a recurrence rate of approximately 40% and open resection may be contraindicated for frail, elderly patients or the severely immunocompromised.³

Prior to the procedure, patients require a bowel preparation to clean the bowel and intravenously administered antibiotics as a preventative measure. Intravenous sedation and local anaesthetic ensures patient comfort during the procedure.³

A colonoscope is inserted into the left colon per rectum until transillumination is seen through the skin surface and finger pressure indents the colon. The

PEG tube kit is passed through the scope with the snare. Under local anaesthesia, a small incision is made in the skin and a hollow needle is passed through the abdominal wall into the bowel. The snare passes over the visualised needle to grasp it and is then withdrawn with the wire and colonoscope through the anal canal.⁵

A 20F catheter system is securely tied with wire and pulled retrogradely through the bowel and abdominal wall and is then secured against the abdominal wall. To check the final position of the catheter, the colonoscope is reinserted. The catheter is then attached to a drainage bag, flushed twice a day and antibiotics are administered for five days postoperatively.⁵

Proposed advantages for PEC over alternative treatment options include a minimally invasive approach using outpatient basis.² It is said to be a safe and effective alternative to surgery especially for very unwell patients.³ It can be

assumed that because of outpatient facility usage, hospitalisation costs maybe reduced.

As PEC is a variation of the PEG technique, complications are thought to be similar. Recognised complications of PEG include colonic and gastric perforation, colo-cutaneous fistula, gastric outlet blockage, gastric bleeding.¹ Other reported minor complications include cellulitis, ileus, tube extrusion, blocked catheter and stomal leakage.⁷

Literature review

A systematic search of MEDLINE, PREMEDLINE, EMBASE, Current Contents, PubMed, Cochrane Library and Science Citation Index using Boolean search terms was conducted, from the inception of the databases until October 2002. The York Centre for Reviews and Dissemination, Clinicaltrials.gov, National Research Register, SIGLE, Grey Literature Reports, relevant online journals and the Internet were also searched in October 2002. Searches were conducted without language restriction.

Articles were obtained on the basis of the abstract containing safety and efficacy data on percutaneous endoscopic sigmoid colostomy in the form of randomised controlled trials (RCTs), other controlled or comparative studies, case series and case reports. If there were more than five RCTs only these were reported. Conference abstracts and manufacturer's information were included if they contained relevant safety and efficacy data. Foreign language papers were included if they contained safety and efficacy data and were considered to add substantively to the English language evidence base. In the case of duplicate publications, we included the latest, most complete study.

Four articles specifically reported the percutaneous endoscopic sigmoid colostomy technique in one case series and three case reports. Included studies are highlighted in bold in the reference list. Reasons for exclusion of additional articles were variations of the technique and use in other indications. There were no RCTs or non-randomised comparative studies for analysis.

List of studies found

Total number of studies:	4
Case series	1
Case reports	3

Summary of key efficacy and safety findings

See following tables.

Abbreviations

AF	Atrial fibrillation
AVR	Atrial valve replacement
CABG	Coronary artery bypass graft
COPD	Chronic obstructive pulmonary disease
IHD	Ischaemic heart disease
PMHx	Previous medical history
POD	Post-operative day

Authors, date, location, number of patients, length of follow-up, selection criteria	Key efficacy findings	Key safety findings	Appraisal/Comments
<i>Case series</i>			
<p>Daniels <i>et al.</i>³ 2000 UK</p> <p>14 patients, follow-up 7 to 21 months (mean 12.6)</p> <p><i>Treatment:</i> PEC after reduction of acute volvulus endoscopically; local anaesthetic and sedation.</p> <p><i>Selection criteria:</i> Recurrent sigmoid volvulus, conventional surgery considered unsafe or inappropriate.</p>	<p><u>Tube removal:</u></p> <ul style="list-style-type: none"> ❑ First 8 patients had removal of tubes at 6 weeks. ❑ 3/8 (37.5%) had recurrent volvulus. ❑ 5/8 (62.5%) tubes changed for flat Mic-Key tubes and left <i>in situ</i> indefinitely with no recurrence of volvulus in follow-up period. Mic-Key tubes- easily changed when necessary. 	<p><u>Mortality:</u> 0/14. 3/14 (21%) patients died from other causes at 6 to 24 months.</p> <p><u>Complications:</u> 1/14 (7%) with learning difficulties pulled out the tube at 24 hours. Underwent sigmoid resection- outcome not described.</p>	<p><i>Potential for bias:</i> Small sample size of 14 patients</p> <p><i>Outcome measures and their validity:</i> Outcome measures not defined. It appears that the outcome is whether this procedure has decompressed presenting volvulus and prevented further recurrent volvulus.</p> <p><i>Author's comments:</i> Safe and effective treatment option for recurrent sigmoid volvulus where conventional surgery is inappropriate or unsafe.</p>

Authors, date, location, number of patients, length of follow-up, selection criteria	Key efficacy findings	Key safety findings	Appraisal/Comments
<i>Case reports</i>			
<p>Heriot et al.² 2002 UK</p> <p>Case report:</p> <p>52 year old woman presenting with a 17 year history of severe difficulty of bowel evacuation. Investigations normal except for mild sigmoid diverticulitis. Symptoms failed to improve with conventional treatments. Treatment- Insertion under illuminated colonoscopy of a gastrostomy tube using standard PEG technique for bowel irrigation. Plan for 1-2 litres of water twice a day for irrigation.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Patient able to evacuate within 10 minutes <input type="checkbox"/> Abdominal pain ceased <input type="checkbox"/> All analgesia ceased <input type="checkbox"/> Developed small amount of faecal ooze around PEC tube which was replaced at 6 weeks with a flat Mic-Key tube; all leakage stopped <input type="checkbox"/> No skin problems around site <input type="checkbox"/> Asymptomatic at 6 months <input type="checkbox"/> Improved quality of life 	<p>No safety data have been reported</p>	<p><i>Author's comments:</i></p> <p><u>PEC-</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> Simple technique, <input type="checkbox"/> outpatient basis, <input type="checkbox"/> endoscopic technique allows access for antegrade colonic irrigation <input type="checkbox"/> avoids general anaesthetic, laparotomy, and laparoscopy <p><u>This case-</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> easily reversed when no longer required <input type="checkbox"/> discreet tube <input type="checkbox"/> enables continence <p><u>Potential complications not reported here-</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> intraperitoneal leakage around tube <input type="checkbox"/> sepsis from pressure necrosis of the tube

Authors, date, location, number of patients, length of follow-up, selection criteria	Key efficacy findings	Key safety findings	Appraisal/Comments
<p><i>Case reports</i></p> <p>Gomez et al.⁸ 2001 Spain</p> <p>Case report:</p> <p>57 year old man presented with gastric signet ring cell carcinoma. Palliative care treatment for bowel obstruction involved insertion of a colonic stent using percutaneous colostomy of the transverse colon.</p>	<p>Tube removed at POD 6 without complications</p> <p>No peritonitis</p> <p>Able to defecate</p> <p>Stent remained functional until time of death</p>	<p>Patient died POD 14 due to the advanced underlying disease, not related to the insertion of the tube.</p>	<p><i>Author's comments:</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> importance in achieving adequate decompression of the descending colon through the stent <input type="checkbox"/> catheter can be removed without risk of peritonitis or formation of fistulas.

Authors, date, location, number of patients, length of follow-up, selection criteria	Key efficacy findings	Key safety findings	Appraisal/Comments
<i>Case reports</i>			
<p>Brown <i>et al.</i>⁵ 1999 UK</p> <p>2 case reports:</p> <p>Case 1) <u>Presentation</u>- 71 year old presented with persistent colonic pseudo-obstruction on 9th visit. <u>PMHx</u>- COPD, home oxygen. <u>Treatment</u>- Conservative management for first 5 presentations then colonic decompression for presentations 6-8. Percutaneous endoscopic gastrostomy tube insertion technique for colonic decompression.</p> <p>Case 2) <u>Presentation</u>- 73 year old developed a colonic pseudo-obstruction and persistent AF after surgery for AVR and CABG. <u>PMHx</u>- IHD. <u>Treatment</u>- Colonoscopic decompression performed but recurred 7 days later. Percutaneous endoscopic gastrostomy tube insertion technique performed.</p>	<p><u>Case 1)-</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> colon decompressed rapidly <input type="checkbox"/> discharged POD5 <input type="checkbox"/> tube remains <i>in situ</i>; intermittently flushed once a week; remains clamped unless symptomatic <input type="checkbox"/> patient has remained symptom free and has avoided readmission in over 12 months <p><u>Case 2)-</u></p> <ul style="list-style-type: none"> <input type="checkbox"/> patient improved rapidly and was discharged 10 days later <input type="checkbox"/> tube was removed 28 days later <input type="checkbox"/> patient was well 3 months later 	<p>No safety data have been reported</p>	<p><i>Author's comments:</i></p> <ul style="list-style-type: none"> <input type="checkbox"/> simple procedure <input type="checkbox"/> minimally stressful <input type="checkbox"/> effective treatment

Specialist advisor's opinion / advisors' opinions

Percutaneous endoscopic sigmoid colostomy (PEC) is performed by surgeons or physicians with an interest in coloproctology or gastroenterology. It is a variation on the established practice of percutaneous endoscopic gastrostomy (PEG) and therefore is not a new procedure. There no special training required as it is the same as for PEG.

Less than 10 percent of doctors are thought to perform the procedure in district general hospitals. The potential impact on the NHS is thought to be moderate; inpatient episodes in patients with recurrent sigmoid volvulus will reduce as will the need for open surgery and colostomies in selected patients.

In terms of safety, local port infection, colonic leakage and mortality are potential adverse effects. The efficacy of use in recurrent sigmoid volvulus is established but for constipation and incontinence, further assessment is required. Mr J Simson, of St Richard's Hospital, Chichester, has a major trial or registry in progress and is the most experienced with this technique in the UK.^{2,3} At present, only case reports have been reported and no case series have been published.

Issues for consideration by IPAC

PEC is a recent variation of the PEG technique used for different and varying indications. For each indication, there are advantages, disadvantages and potential complications; for example, with evacuation disorders,

- Advantages of placing a catheter in the colon above the site of malfunction and irrigating the bowel via the catheter include the convenience of performing irrigation in a sitting position and evacuating the bowel soon after, and the irrigation fluid volume required is less this way, as it does not need to flow through the whole colon, stimulating the colon and producing contractions to aid in more rapid evacuation.⁴
- Possible disadvantages include absence of a readily accessible catheterisable conduit, a narrower lumen, movement of the tube when strong peristaltic contractions arise, and possibility of a larger concentration of bacteria than that of the right colon. For success, colonic contractility must be sufficient to shift contents as far distally as the left colon.⁴

From the case reports, this technique is almost experimental in nature, using an established technique on different indications, where success has not yet been established.

References

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