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INTERVENTIONAL PROCEDURES PROGRAMME

Interventional procedure overview of endoscopic stapling of pharyngeal pouch

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 Specialist Advisors and review of the content of the SERNIP file. It should not be regarded as a definitive assessment of the procedure.

Procedure name
Endoscopic stapling of pharyngeal pouch

SERNIP procedure number
24

Specialty society
British Association of Otorhinolaryngologists
Society of Cardiothoracic Surgeons of Great Britain and Ireland

Indication(s)
Pharyngeal pouch, which is also known as Zenker's diverticulum, occurs when a piece of the pharyneal lining herniates through the muscles of the pharyngeal wall. It occurs mainly in older people, with an estimated overall incidence of about 1 per 100,000 per year.

A pharyngeal pouch may cause difficulty in swallowing or cough, and sometimes causes respiratory problems because of aspiration of the pouch contents into the lungs.

Summary of procedure
Endoscopic stapling of pharyngeal pouch involves stapling of the opening of the pharyngeal pouch through a specially designed endoscope, under general anaesthetic.

The traditional treatment for pharyngeal pouches is open surgery to the neck. The most radical procedure, open diverticulectomy, involves complete removal of the pouch. For small pouches, there are less radical procedures involving cutting the muscle (the cricopharyngeus) around the neck of the pouch and sometimes inverting the pouch. People who have open neck surgery usually need to have nasogastric feeding for up to a week afterwards, and are at risk of serious complications such as mediastinitis.

Endoscopic techniques are less invasive. The standard endoscopic technique, known as Dohlman's procedure, involves diathermy or lasers to divide the wall between the

pouch and the oesophagus. Endoscopic stapling was developed in the early 1990s and may give rise to fewer complications.

Literature review

Appraisal criteria

We searched for all studies on endoscopic stapling of pharyngeal pouch or Zenker's diverticulum that reported any clinical outcomes.

List of studies found

We found two retrospective comparisons of case series.[1,2]

We found twenty case series that met our inclusion criteria.

We extracted data from those including 50 people or more.[3-6] The annex provides references to the other case series identified.

Summary of key efficacy and safety findings (1)

Authors, location, date, patients	Key efficacy findings	Key safety findings	Key reliability and validity issues
Smith S[1] Retrospective comparison of case series New York, USA Date not stated (published 2002) n=16 adults • endoscopic stapling (n=8), age 67 to 86 • open diverticulectomy (n=8), age 50 to 91	Mean length of operation: • endoscopic stapling: 25 minutes • open diverticulectomy: 89 minutes p<0.001 Mean length of hospital stay: • endoscopic stapling: 1 day • open diverticulectom: 5 days p<0.001 Mean time to oral intake: • endoscopic stapling: 1 day • open diverticulectomy: 5 days p<0.001	Complications (number of patients): • endoscopic stapling: mild postoperative bleeding (1)	All patients were operated on by the same surgeon. How the decision was made to perform each type of surgery is not described. Randomisation was not used. Baseline characteristics of patients, apart from age, not described. Comparison of postoperative pain not provided
van Eeden S[2] Retrospective comparison of case series Brighton, UK Date 1990 to 1997 n=34 adults • endoscopic stapling (n=18), mean age 68 • open surgery to the neck (n=17); Dohlman's procedure (n=2), mean age 73 Established techniques:	Mean hospital stay: • endoscopic stapling: 2 days • open surgery/Dohlman's: 4 days Number returned to normal diet at 3 days: • endoscopic stapling: 7 • open surgery/Dohlman's: 2 Number 'pleased' with operation after 3 months: • endoscopic stapling: 14/17 • open surgery/Dohlman's: 10/17	Complications (number of patients): Fistula: • endoscopic stapling (1) • open surgery/Dohlman's (0) Pyrexia • endoscopic stapling (0) • open surgery/Dohlman's (2) Perforated oesophagus: • endoscopic stapling (0) • open surgery/Dohlman's (1) Revision surgery: • endoscopic stapling (1) • open surgery/Dohlman's (3)	How the decision was made to perform each type of surgery is not described. Randomisation was not used. Baseline characteristics of patients, apart from age, not described.

Summary of key efficacy and safety findings (2)

Authors, location, date, patients	Key efficacy findings	Key safety findings	Key reliability and validity issues
Narne S[3] Case series Padua, Italy 1992 to 1996 n=102 adults	Median operating time: 20 minutes Median hospital stay: 4 days Median time to oral feeding: 2 days	Complications (number of patients): • conversion to open surgery (4) • re-operation for persistent pouch (4)	Uncontrolled case series Data extracted from abstract only, full text not available
Peracchia A[4] Case series Milan, Italy Date 1992 to 1996 n=95 adults, median age 64 years	Resolution of symptoms at 23 months: all patients Median hospital stay: 3 days Time to oral feeding: 1 day in all patients	Complications (number of patients): • conversions to open surgery (3)	Uncontrolled case series
Cook RD[5] Case series Durham, USA Date 1997 to 1999 n=74 adults, median age 72 years	Mean hospital stay: 1 day Mean operating time: 35 minutes Mean days to oral feeding: 1 day Complete relief of symptoms at first follow up: 55/68 (74%)	Complications (number of patients): • conversions to open surgery (6) • repeat procedure (6) • perforation (1) • transient vocal cord paralysis (1)	Uncontrolled case series
Baldwin T[6] Case series Bristol UK 1993 to 1996 n=51 adults	Return to normal swallowing at 36 hours: 73% Return to normal swallowing at 72 hours: 93%	Complications (number of patients): • nasogastric feeding for 5 to 7 days (2)	Uncontrolled case series Data extracted from abstract only, full text not available

Validity and generalisability of the studies
The retrospective comparisons of case series do not describe how surgeons decided whether to treat the patients with endoscopic stapling or with another procedure, though it is clear that randomisation was not used.[1,2] This means that any differences in outcome may be partly due to different baseline characteristics rather than differences in the effectiveness of the procedure. While the results suggest that endoscopic stapling is likely to allow a quicker recovery than open surgery, the effectiveness of the procedure compared with other procedures remains uncertain.

One of the retrospective comparisons of case series compared endoscopic stapling with open diverticulectomy.[1] The other compared endoscopic stapling with a number of other procedures.[2] Only two of the patients in this group had Dohlman's procedure. The effects of endoscopic stapling remain uncertain compared with other endoscopic procedures.

The retrospective comparisons of case series lack power to show differences in complication rates.

The other case series were uncontrolled so they provide unreliable information on the effects of endoscopic stapling compared with other procedures. As they are small, they lack precision to show the frequency of complications reliably.

Bazian comments
It may be useful to analyse information on complications of other gastrointestinal tract stapling techniques.

Specialist advisor's opinion / advisors' opinions
Specialist advice was sought from the Society of Cardiothoracic Surgeons of Great Britain and Ireland and the British Association of Otorhinolaryngologists.

The Specialist Advisors commented that:

- The procedure is now standard.
- It is widely used, and saves hospital time.
- It should be performed by super-specialists in the procedure, not all ear, nose and throat surgeons.
- That although it has a relatively high recurrence rate the procedure could be repeated.

Issues for consideration by IPAC
None other than those discussed above

References

1. Smith SR, Genden EM, Urken ML. Endoscopic stapling technique for the treatment of Zenker diverticulum vs standard open-neck technique: a direct comparison and charge analysis. Arch Otolaryngol Head Neck Surg 2002; 128(2):141-144

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6. Baldwin DL, Toma AG. Endoscopic stapled diverticulotomy: a real advance in the treatment of hypopharyngeal diverticulum. Clin Otolaryngol All Sci 1998; 23(3):244-247

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November 2002

Annex: references for relevant studies excluded from summary table

Reference	Number of patients
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Scher RL, Richtsmeier WJ. Long-term experience with endoscopic staple-assisted esophagodiverticulostomy for Zenker's diverticulum. Laryngoscope 1998;108(2):200-205	6
Spiro SA, Berg HM. Applying the endoscopic stapler in excision of Zenker's diverticulum: a solution for two intraoperative problems. Otolaryngology - Head & Neck Surgery 1994;110(6):603-604	3