



Audit

Current management in pharyngeal pouch surgery by UK otorhinolaryngologists

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Introduction: Many surgical techniques have been described for the treatment of pharyngeal pouches but there is no single treatment of choice. The aim of this study was to determine current practice in pharyngeal pouch surgery by UK otorhinolaryngologists.

Methods: A postal questionnaire was sent to all UK-based consultant members of the British Association of Otorhinolaryngologists – Head and Neck Surgeons (BAO–HNS).

Results: Endoscopic stapling diverticulotomy is the most commonly performed procedure, performed by 89% of surgeons, followed by excision. Of those consultants that considered there to be a treatment of choice, 83% stated endoscopic stapling as their preference. Practices differ regarding the insertion of nasogastric tubes after endoscopic procedures and the need for postoperative barium studies. The length of in-patient stay tends to be short with 80% of surgeons discharging patients by day 2.

Conclusions: Endoscopic stapling diverticulotomy is now the most commonly performed procedure for the management of pharyngeal pouches by UK otorhinolaryngologists and is now considered by many to be the treatment of choice.

Key words: Zenker's diverticulum – Surgical procedures – Endoscopic – Surgical stapling

The first pharyngeal pouch was described by Ludlow in 1769.¹ Various operative procedures to treat pharyngeal pouches have since been described and these can be categorised as either external approach or endoscopic procedures. External approach procedures include diverticulectomy,² inversion,³ cricopharyngeal myotomy,⁴ and suspension.⁵ The endoscopic technique was popularised by Dohlman using a diathermy knife to divide the common septum.⁶ This method has since been further modified to include the use of an operating microscope,⁷ CO₂ laser,^{7,8} KTP laser⁹ and, more recently, an endoscopic stapling device.¹⁰

Our aim was to establish current trends in the management of pharyngeal pouches by UK otorhinolaryngologists.

Methods

A single-sided A4 postal questionnaire (Appendix 1) was sent to all consultant otorhinolaryngologists who were members of the BAO–HNS in 2001. Of the 542 questionnaires sent, 302 replies (56%) were received. Of these, 227 (75%) stated that they operated on pharyngeal pouches with the remainder opting to refer such cases to a colleague.

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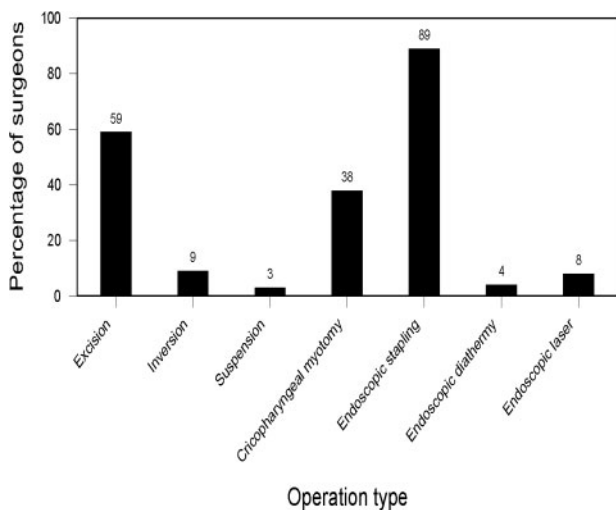


Figure 1 Procedures performed by consultants.

Results

To establish the current methods employed in surgery, each respondent was asked to state which procedures they performed. They were asked to tick boxes corresponding to all procedures they currently practised. The most commonly performed procedure was endoscopic stapling diverticulotomy, performed by 202/227 (89%) surgeons. This was followed by excision performed by 133/227 (59%) surgeons (Fig. 1). Seventy-five (33%) otolaryngologists stated that they treated all pouches with endoscopic stapling diverticulotomy.

Of the 166 respondents (73%) who considered there to be a treatment of choice, 83% indicated that it was endoscopic stapling diverticulotomy (Fig. 2). Amongst those otolaryngologists who did not consider there to be a treatment of

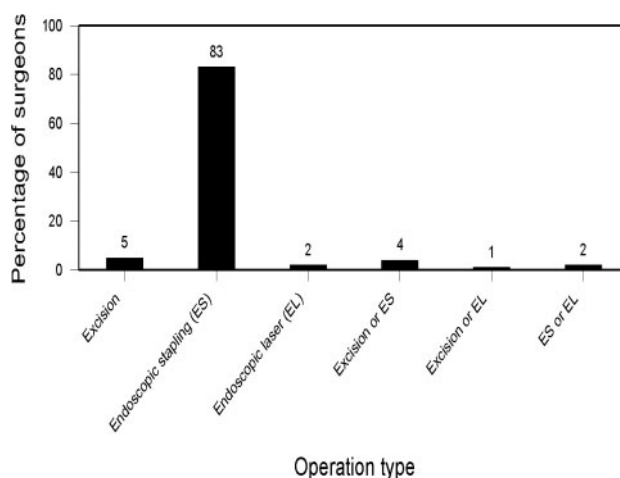


Figure 2 Treatment of choice.

choice, endoscopic stapling was still found to be the most frequently performed procedure (56%). Only 3 (1%) otolaryngologists operated on over 20 cases per year (Fig. 3), but 148 (65%) consultants performed 5 or fewer procedures per year.

Interestingly, 48 surgeons stated that they had encountered a carcinoma or carcinoma *in situ* in a pharyngeal pouch. Indeed, 9 surgeons had encountered more than one such case accounting for a total of 63 cases. In 48 (76%) of these cases, the diagnosis had been suspected at initial endoscopic examination of the pouch; however, in the remaining 15 cases (24%), the carcinoma was only later diagnosed on histological analysis.

Regarding postoperative management, 68 surgeons (30%) who perform endoscopic procedures used nasogastric tubes postoperatively and 36 surgeons (15%)

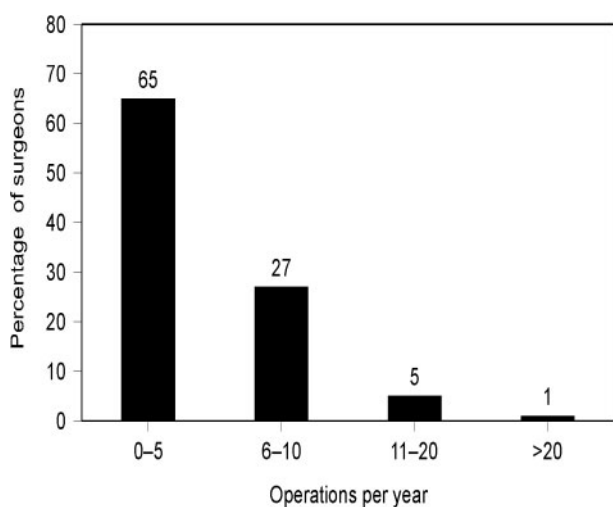


Figure 3 Number of procedures performed per year.

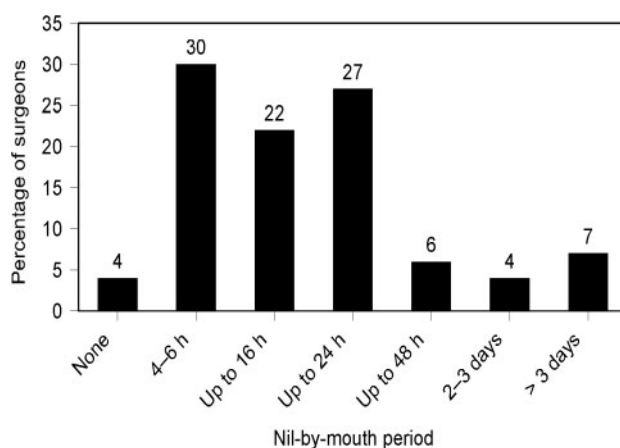


Figure 4 Period for which patients are kept nil-by-mouth postoperatively.

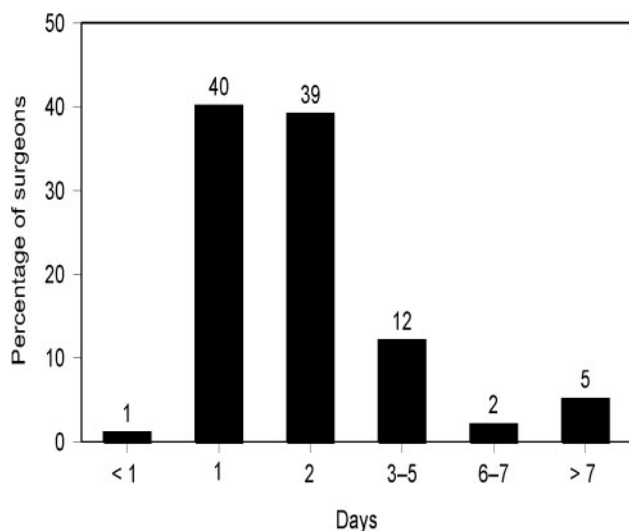


Figure 5 In-patient stay.

stated that they would routinely perform a postoperative barium swallow.

Over 80% (186) of surgeons would keep their patients nil-by-mouth for 24 h or less postoperatively (Fig. 4). Hence, the in-patient stay is short, with 180 (80%) otolaryngologists discharging patients by day 2 and only 15 (7%) keeping patients in hospital for greater than 5 days (Fig. 5). The short in-patient stay and early resumption of oral intake now favoured by most surgeons probably reflects the increasing use of endoscopic stapling.

Out-patient review varied with 171 (75%) otolaryngologists following up patients for less than 6 months and only 11 (5%) following up patients for over one year.

Discussion

The treatment for an established pharyngeal pouch is surgical and the approach may be external or endoscopic. Many surgical treatments have been developed for the treatment of this condition but there is, as yet, no consensus as to the best option. In comparing the treatment modalities, most series show that the endoscopic and external approaches are equally effective treatments.¹¹⁻¹⁴ However, there is no doubt that the external approach has a higher complication rate, including vocal cord paralysis, mediastinitis, fistula formation, glottic oedema and stricture formation.^{11,15,16} However, these studies were retrospective, lacked criteria for selecting patients, and the procedures were performed by a large number of surgeons from several specialities. It is thus difficult to draw firm conclusions as to which is the better method of treatment, although in centres

performing endoscopic diverticulotomy as a first line treatment for pharyngeal pouches, the results seem to be consistently good.^{12,17,18} Endoscopic stapling devices were first described in 1993 by Hirsh and Newbegin.¹⁰ The advantages of using a stapling device over laser or diathermy are a reduced risk of perforation and subsequent mediastinitis as the divided edges of the septum are sealed by the staples, better haemostasis and avoidance of thermal damage to the recurrent laryngeal nerve.¹⁷ In addition, endoscopic stapling has the advantages of a short anaesthetic time (which is particularly important in this group of patients who are often elderly or medically unfit), early resumption of oral intake, short in-patient stay and minimal postoperative pain. In addition, revision surgery by endoscopic stapling is more straightforward than open surgery¹⁷⁻¹⁹ as scar tissue can make identification of the diverticulum difficult.

However, endoscopic diverticulotomy is not without potential complications, including perforation, mediastinitis and recurrence of symptoms due to inadequate division.^{20,21} From our survey, it is clear that as endoscopic stapling diverticulotomy is performed by 89% of surgeons, it is the commonest procedure for the treatment of pharyngeal pouches. This is followed by excision, which was performed by 59% of otolaryngologists.

In a similar questionnaire study in 1997, Koay *et al.*²² found that the procedures most frequently performed by otolaryngologists were excision or Dohlmans (31%). Overall, excision seemed to be the preferred procedure. Endoscopic stapling, however, was not included as an option in that study. Therefore, since the Koay *et al.* study, it appears that endoscopic stapling diverticulotomy has been adopted by most surgeons as the treatment of choice for pharyngeal pouches. Indeed, in our study, 33% stated that endoscopic stapling was the only procedure they used to treat pharyngeal pouches. Only 1% of surgeons performed more than 20 procedures per year with 65% performing 5 or less procedures per year. It may be argued that those doing few procedures are not maintaining their expertise in the procedure. Indeed it was argued by Koay *et al.*²² that subspecialisation within a unit or even a region should be encouraged in order to achieve the best results. It seems from our results that subspecialisation is not commonly taking place in the treatment of pharyngeal pouches.

Occurrence of carcinoma or carcinoma *in situ* in a pharyngeal pouch is rare. The main predisposing factor is thought to be chronic inflammation of the pouch lining over many years, secondary to food retention.²³ The reported incidence varies widely but larger series have reported an incidence of 0.3-1.1%.^{2,24-26} To date, 45 cases of carcinoma have been reported in the English language literature,^{23,27-30} although our study shows that 63 cases

have been encountered by UK otolaryngologists with one surgeon reporting 5 cases.

The diagnosis is often made at surgery, when cleaning of the pouch and careful examination with an oesophagoscope or Hopkins rod should be performed prior to any definitive surgical procedure. However, cases of carcinoma *in situ* or small carcinomas may not be detected radiologically or by endoscopic examination. In a recent review by Bradley *et al.*²³ two cases of carcinoma *in situ* were reported. Both of these had not been suspected clinically or found on endoscopy and the diagnosis was established by histopathological examination. Indeed, in our survey, of the 63 cases of carcinoma, 15 were not suspected clinically on endoscopic examination but were only later diagnosed on histological examination of the pouch. Thus such lesions may be potentially left in pouches treated endoscopically. A further potential problem in patients treated by endoscopic surgery is that if the pouch persists despite a lack of symptoms, will the pouch remnant continue to be irritated by food bolus and, therefore, will the risk of developing a carcinoma remain? To date, there have been no reported cases of carcinoma or carcinoma *in situ* arising in a pouch previously treated by endoscopic stapling in the English language literature. However, despite the lack of firm evidence, it would be reasonable to argue that patients should be informed of the potential risk of carcinoma development in a pouch years later (albeit a very small risk) if it is not excised at the first presentation. It is for this reason that Bradley *et al.*²³ proposed that patients less than 65 years of age should undergo excision of the pouch with a long cricopharyngeal myotomy and pathological examination of the pouch. Long-term follow-up should be considered in these cases and endoscopic examination of the whole oesophagus should be undertaken if symptoms persist or recur.²³

Assessment of treatment outcome can be made clinically. There is no role for postoperative contrast studies as they bear little correlation to symptoms; lax mucosa that remains following endoscopic stapling, for example, may appear to be a residual pouch in an asymptomatic patient.^{31,32} Therefore, the need for further treatment should be guided clinically by patient symptoms. However, 15% of surgeons stated that they routinely performed a barium swallow postoperatively,

The majority of surgeons discharge their patients from routine follow-up after 6 months. This seems to reflect an increasing confidence in the apparent long-term success of endoscopic stapling, without the need for follow-up. There are, as yet, no comparable long-term studies for endoscopic stapling as for some external procedures, although this is being addressed. In a recent study of a group of 31 patients who underwent endoscopic stapling diverticulotomy, good results are reported over a 5-year

follow-up period with 94% of patients maintaining improvement in their swallowing. However, in order to achieve this result, 19% of patients required a second procedure and one patient required a third procedure.³³

Conclusions

Endoscopic stapling diverticulotomy is now the most commonly performed procedure for the management of pharyngeal pouches. In our survey, 83% of those who consider there now to be a treatment of choice for pharyngeal pouches, state endoscopic stapling as their choice. Even amongst those who do not consider there to be a treatment of choice, over 50% stated that endoscopic stapling was the procedure they use most frequently.

Carcinoma and carcinoma *in situ* within a pharyngeal pouch remain an area of concern. It is clear from our study that there have been cases of pouches containing carcinoma, which were not evident endoscopically and only diagnosed on subsequent histological examination. Although there are no reported cases of carcinoma developing in a pouch after endoscopic stapling, we would recommend that surgeons bear this possibility in mind when discussing therapeutic options with the patient. Hopefully, further long-term studies on treatment of pharyngeal pouches by endoscopic stapling diverticulotomy will help clarify if there is indeed a risk of carcinoma developing in pouches treated by this method.

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Appendix 1

Pharyngeal pouch questionnaire

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Appendix 1

PHARYNGEAL POUCH QUESTIONNAIRE

1. Do you operate on pharyngeal pouches or refer them to a colleague?

- Operate
Refer

2. Which surgical treatment do you use for the treatment of a pharyngeal pouch? (you may tick more than one box)

- (a) Excision
(b) Inversion
(c) Suspension
(d) External cricopharyngeal myotomy
(e) Endoscopic stapling
(f) Endoscopic diathermy
(g) Endoscopic laser

3. Do you consider there to be a treatment of choice?

Yes / No

If so, please specify (a-g) _____

4. If you do not consider there to be a treatment of choice, which procedure do you use most frequently? (a-g) _____

5. How many pharyngeal pouch operations do you carry out per year?

- | | | | |
|------|--------------------------|-------|--------------------------|
| 0-5 | <input type="checkbox"/> | 11-20 | <input type="checkbox"/> |
| 6-10 | <input type="checkbox"/> | > 20 | <input type="checkbox"/> |

6. Have you encountered a carcinoma in a pouch?

Yes / No

If so, how many?

Was this diagnosed on endoscopy or histologically?

Endoscopy/histologically

7. Do you routinely use nasogastric tubes postoperatively if you perform endoscopic surgery?

Yes / No

8. How long do you keep the patient nil-by-mouth postoperatively?

9. Do you routinely perform a barium swallow postoperatively?

Yes / No

10. How long do you keep patients in hospital for postoperatively?

11. How long do you keep patients under review in out-patients?