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Pharyngeal pouch endoscopic stapling – are post-operative barium swallow radiographs of any value?

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Abstract

Posterior pharyngeal pouch endoscopic stapling has gained increasing popularity among otolaryngologists especially in elderly patients. Post-operative barium swallow appearances can create confusion with the appearance of persistent pouches. We describe our experience in 10 patients, three of whom had external excision with cricopharyngeal myotomy and the remaining seven had endoscopic stapling approach. All three patients who had external excision showed no residual pouch whereas all seven patients who had endoscopic techniques performed showed some residual pouch. We were unsuccessful in our attempt to correlate post-operative symptoms with radiological appearance. Attempts by other radiologists at identifying pre- and post-operative barium swallow radiographs in patients who had endoscopic stapling of pharyngeal pouch were unsuccessful. We conclude that post-operative barium swallow radiography plays no role in determining the success of endoscopic stapling of pharyngeal pouch.

Key words: Zenker's diverticulum; Surgery, endoscopic; Surgery, stapling

Introduction

The posterior pharyngeal pulsion diverticulum is also known as Zenker's diverticulum. It was first described by Mr A. Ludlow, a surgeon in Bristol in 1764 (Ludlow, 1769). The first surgical intervention for this condition was performed in 1877 by incising the diverticulum and bringing it out to the skin. However, the patient died eight days after the operation from bronchopneumonia. Since then, many different types of operations have been advocated (Girard, 1896; Goldmann, 1909; Schmid, 1912; Lahey, 1954). Until recently, most surgeons advocated excision or invagination of the pouch via an external approach, both of which require cricopharyngeal myotomy (Dohlman and Mattsson, 1959; Ellis *et al.*, 1969). Endoscopic division of the partition wall was first described by Mosher in 1917 using scissors; he later abandoned this method after a fatality from haemorrhage (Mosher, 1917). It was not until 1949 before Dohlman himself repopularized this technique (Dohlman, 1949). More recently, the use of surgical staples and CO_2 lasers have been advocated in dividing the partition wall (Collard *et al.*, 1993; Bates and Koay, 1996; Koay and Bates, 1996; Koay *et al.*, 1997).

Patients and methods

Ten patients who presented with evidence of posterior pharyngeal pouch giving rise to increasing dysphagia and regurgitation of food underwent surgery between July 1995 and July 1997. The patients' ages ranged between 52 and 82, with a mean age of 73. Three patients underwent external excision of the pouch with cricopharyngeal myotomy. All three had nasogastric intubation for feeding for up to nine days (five, seven and nine days) and all of them returned to normal diet a day or so before removal of the nasogastric tube. Of the seven patients who had endoscopic stapling of the pouch, five required nasogastric intubation for 24 hours while the remaining two patients had nasogastric intubation for three days after the operation. All seven patients who had endoscopic stapling were discharged within four days with an average length of stay of 2.5 days.

We routinely carried out a post-operative barium swallow in all of these patients. They were performed within six months of their operations. We attempt to correlate post-operative symptoms with the radiological findings.

We also asked six other radiologists to identify pre- and post-operative films after the dates of the procedures on the films were obscured. They were asked to tick the box labelled 'can't tell' if they could not differentiate between the two.

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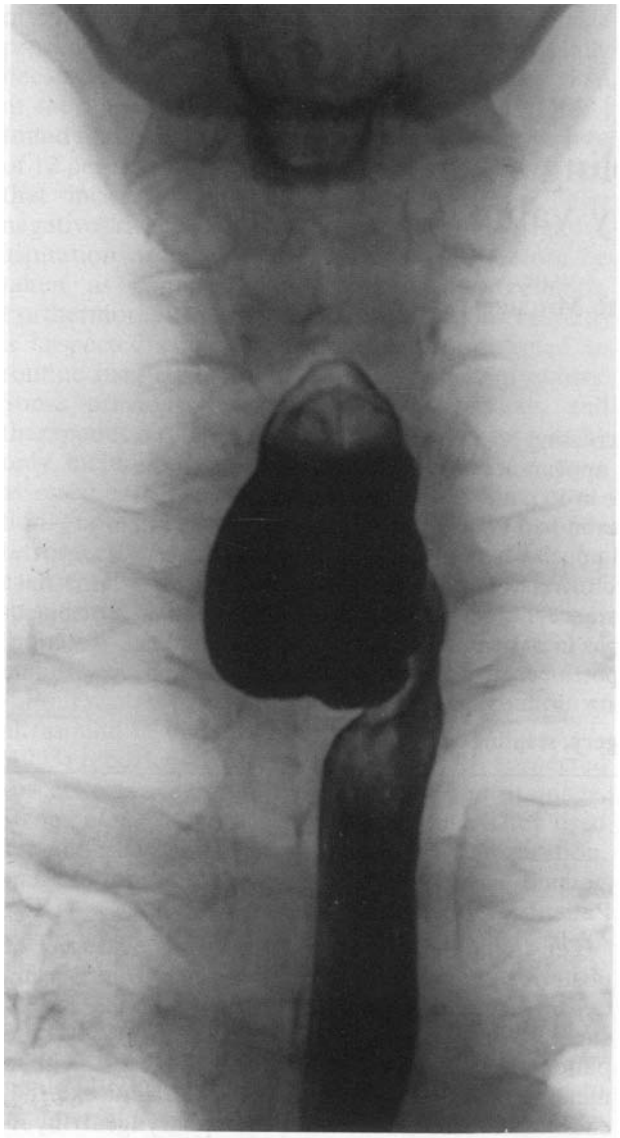

FIG. 1a
Pre-operative pharyngeal pouch.

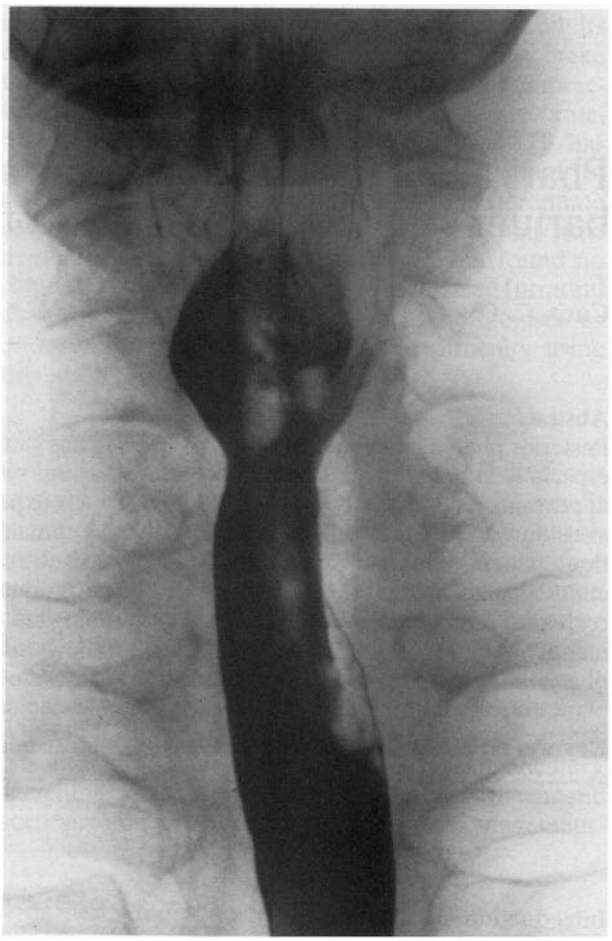

FIG. 1b
Post-external excision of pouch. Performed nine days after surgery to look for leak. Nasogastric tube still in position.

Results

The post-operative radiological appearance in all three patients who underwent external excision of the pouch showed no evidence of any residual pouch (Figure 1a, 1b). However, the post-operative barium films in all seven patients who had undergone endoscopic stapling showed evidence of some form of residual pouch. When these were compared with the pre-operative films, several subtle differences were noted. The most obvious was reduction in the height of the partition wall. This did not appear to be reliable in large pouches as often the barium in the pouch obscured the partition wall, even with optimum positioning. Although there was some retention of barium in the residual pouch, this was noted to be less than that shown on the pre-operative films. Again, these subtle differences can only be seen reliably with small pouches (Figures 2 and 3).

Of the six radiologists who volunteered to participate in our study, three were specialist registrars and three were consultant radiologists. All of them had no difficulty in identifying pre-operative from post-operative films in the three patients who had the external excision approach. However, they were successful in identifying pre- and post-operative films in only three out of the seven patients who had the endoscopic stapling approach. It is interesting to note that these patients presented with small pouches. Of the remaining four patients, twelve 'can't tells' were ticked while four incorrect and eight correct answers were given.

Discussion

All of our patients were happy with the outcome of their operations with improvements in their symptoms although two of our post-endoscopic stapling patients complained of mild, occasional dysphagia. No post-operative complications were noted in any of them. Our results do not correlate with the findings of Hadley *et al.* (1997). Our experience and experiment show that the subtle differences of reduced height of the partition wall and height of barium supported in the substance of

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FIG. 2a
Pre-operative small pharyngeal pouch.

FIG. 2b
Post-operative pouch following stapling. Demonstrated reduction in partition wall height from one to half a vertebral body height.

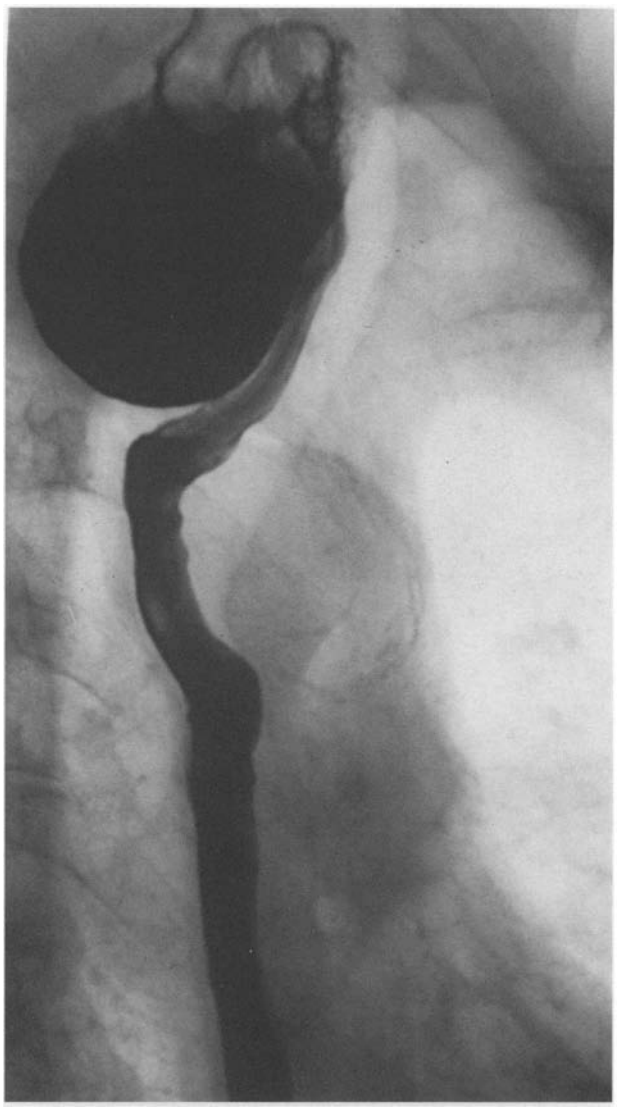

FIG. 3a
Pre-operative pharyngeal pouch.

residual pouch mentioned are only visible in patients who presented with small pouches. The barium in large pouches obscured these subtle findings and rendered the films indistinguishable.

In most cases following endoscopic stapling, the patient will have minimal or no symptoms. Post-operative investigations are therefore unnecessary. It has also been shown recently that repeat endoscopy and re-stapling are highly successful in patients with residual symptoms (Koay *et al.*, 1998). In these patients, there is no need for barium radiography prior to re-endoscopy.

It is obvious that after stapling, barium radiography will show what appears to be a residual pouch due to the presence of the lax residual pouch wall which has not been removed (unlike the situation when the pouch is excised).

In view of these findings, we do not recommend the use of barium examinations following endoscopic stapling of pharyngeal pouch.

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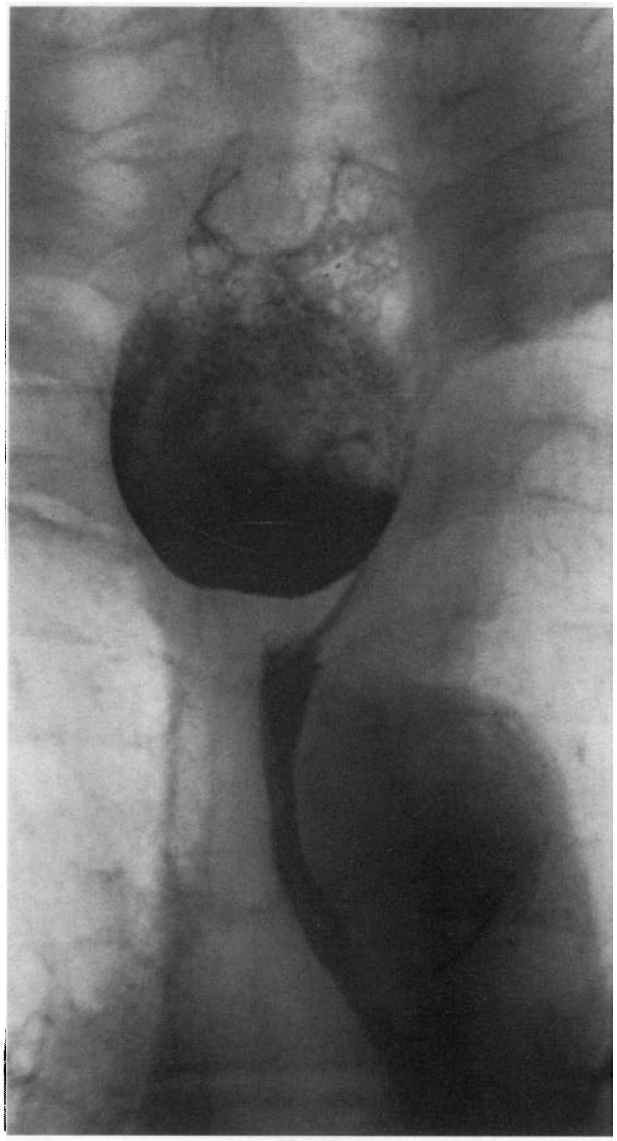

FIG. 3b

Post-operative pouch after stapling. The partition wall is masked by the size of the pouch. There is less barium compared with the pre-operative film but this depends on the length of time after swallowing the bolus that the image is taken.

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