



CHIRURGIE THORACIQUE/THORACIC SURGERY

CERVICAL OESOPHAGEAL DIVERTICULUM DUE TO A SWALLOWED IMPACTED DENTURE: A CASE REPORT

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ABSTRACT

We present the case of a 45 year old man who complained of a three year history of dysphagia to solids. Barium swallow revealed a distal cervical oesophageal diverticulum. Diverticulectomy was done. Post operatively he developed an oesophago-cutaneous fistula. He underwent exploration of the fistula. A swallowed impacted denture was found firmly stuck in the oesophageal wall distal to the diverticulectomy site. The denture had been missing for 3½ years. It was removed, leaving a destroyed proximal oesophagus. A colon interposition was carried out. He made a gradual recovery and was finally discharged home taking normal diet after 7 weeks on admission. When reviews were done at 2 weeks and then 2 months after discharge he was doing well and had no dysphagia.

Keywords: Oesophageal diverticulum, Impacted denture, Diverticulectomy, Colon bypass

INTRODUCTION

Dentures have been worn by patients for generations. The plastic material from which present-day dentures are made is radiolucent. This makes radiological diagnosis very difficult, especially when patients cannot give an accurate history or has even forgotten about the missing denture. This leaves some missing dentures to be diagnosed after they have developed complications. Several complications from impacted dentures have been published but the literature is sparse on impacted dentures causing an oesophageal diverticulum. We present a case of an impacted denture causing a distal cervical oesophageal diverticulum.

CASE REPORT

We present a 45 year old man who complained of a 3 year history of progressive dysphagia to solids. There was no dyspepsia and he had not ingested any corrosive substance. Regurgitation was occasional. There was no cough and he had not lost weight.

Physical examination was unrewarding. Barium swallow revealed a distal cervical oesophageal diverticulum. Oesophagoscopy was not done because of the risk of perforation.

He was scheduled for diverticulectomy. At surgery there was a 5 x 4 cm thin-walled diverticulum with extensive peridiverticular adhesions. Diverticulectomy was done and the oesophageal wall was closed with vicryl 3/0 interrupted single layer. A distal myotomy was not done because the diverticulum was located deep into the thoracic inlet.

On the 2nd post operative day he developed an oesophago-cutaneous fistula at the diverticulectomy site. On the 12th post operative day he had exploration of the wound to find out the cause of the persistent fistula. A denture was found firmly stuck in the oesophagus distal to the diverticulectomy site. It was a single-toothed partial denture. Removal of the denture left a destroyed proximal oesophagus. The oesophagus was divided at the level of the impaction and closed distally. A colon bypass was carried

out with an end-to-end anastomosis to the cervical oesophagus.

On further questioning few days after the surgery he admitted that he had worn a denture for over 25 years but discovered it missing one morning when he woke up. He subsequently obtained a replacement. The dysphagia began 6 months after the denture was reported missing.

Post operatively the colo-oesophageal anastomosis leaked through the cervical wound from the 6th to 21st day. He was supported nutritionally by total parenteral nutrition (TPN) and later through a feeding gastrostomy. He made a gradual recovery and was eventually discharged home (taking normal diet) after 7 weeks on admission. When he was reviewed at 2 weeks and then 2 months after discharge he was fine and doing well. There was no dysphagia.



Fig. 1 : Barium swallow showing the diverticulum (arrow)



Fig. 2 : The denture

DISCUSSION

An oesophageal diverticulum is an epithelial-lined blind pouch arising from the oesophagus¹. It is often an acquired condition occurring in the middle aged and elderly. It is classified either by the mechanism

of formation (true or false) or by the anatomic location (pharyngo-oesophageal, mid-oesophageal, and epiphrenic)¹. A false diverticulum (pulsion diverticulum, pseudo-diverticulum) involves only the mucosa and submucosa whereas a true (traction) diverticulum involves all the layers of the oesophageal wall. The pharyngo-oesophageal (Zenker's) and epiphrenic diverticulae are false diverticulae¹. The mid-oesophageal diverticulum is a true diverticulum. It is usually due to enlarged tuberculous hilar or mediastinal lymph nodes that are adherent to the oesophageal wall and creating an outward pull on it².

Zenker's diverticulum is the most common oesophageal diverticulum¹. It is due to a weakness in a triangular area in the posterior midline between the oblique fibres of the inferior pharyngeal constrictor and the transverse fibres of the cricopharyngeous. There may also be some distal obstructive role of the cricopharyngeous muscle due to incoordination, probably from a motility disorder. The distal obstruction leads to an increase in the intra luminal pressure which contributes to the pouching out of the mucosa and submucosa through the anatomic point of weakness.

The epiphrenic diverticulum usually occurs in the distal 10cm of the oesophagus. It also has a component of distal obstruction to swallowing (probably from a motility disorder) leading to an increase in luminal pressure which can encourage diverticular formation. It may also be associated with a hiatus hernia.

In this patient the mechanism of formation of the diverticulum is atypical. The site of the diverticulum is also unusual, being located at the distal part of the cervical oesophagus. There was distal obstruction by the denture which was impacted for 3½ years, gradual perforation and destruction of the oesophageal wall, inflammatory response, and healing with stricture formation. The resultant increase in intra luminal pressure consequently led to the out-pouching of the mucosa and submucosa. The muscle layers were not involved. Therefore it was a pulsion diverticulum.

The usual symptoms of oesophageal diverticulae are dysphagia, regurgitation and halitosis. This patient's main complain was dysphagia to solids. Regurgitation of food was only occasional.

Physical examination may not reveal much. The main investigations are barium swallow, oesophagoscopy, and manometry. Oesophagoscopy has the risk of perforating the diverticulum.

The treatment of choice for diverticulae is diverticulectomy and oesophagomyotomy. Diverticulopexy may be done instead of diverticulectomy. An antireflux

procedure may be added for epiphrenic diverticulae with hiatal hernia^{1,2}. Endoscopic approaches have been reported¹

Our patient had diverticulectomy, but myotomy was not done because the diverticulum was situated almost at the thoracic inlet and it was difficult to get space for a distal myotomy. The presence of the denture distally (which was then unseen) caused the obstruction. As a result the oesophageal repair after the diverticulectomy broke down and the patient developed the oesophago-cutaneous fistula. At a second operation to determine the cause of the persistent fistula, the denture was discovered and a colon interposition was eventually carried out.

Present day dentures are made of acrylic material called polymethylmethacrylate³. The material is radiolucent, making radiological diagnosis of impacted dentures very difficult. The design, size and configuration of the denture also encourages impaction and hence the various complications that ensue either due to the impaction or the removal of the impacted denture.

Most of the impacted dentures in the published literature are rather swallowed than inhaled³. It is also often encountered in the elderly⁴. Mentally challenged individuals and psychiatric patients are another group at risk³. The same applies to alcoholics.

Various complications have been published in the literature but there is not much on an impacted swallowed denture causing an oesophageal diverticulum. Some of the complications are haematemesis³, tracheoesophageal fistula⁵, and the removal process of the denture rather leading to oesophageal laceration with consequent mediastinitis and pneumothorax⁶.

One publication mentions a cervical oesophageal diverticulum associated with an impacted denture in which the denture was found lying in the diverticulum at surgery in a 19 year old man who had swallowed his denture for 2 years⁷. A fatal case is also reported in which the impacted denture was found at post mortem in the mid oesophagus causing laceration and severe haemorrhage⁸.

Recommendations

Denture design must incorporate radio-opaque components to facilitate early diagnosis so as to prevent the complications associated with prolonged impaction. Patients wearing dentures must also be properly educated on the dangers of missing dentures.

Physicians must also not forget about dentures when taking history in patients with dysphagia.

CONCLUSION

Dentures serve useful purposes to patients but it is obvious from the above discussion that complications from impacted dentures are very serious and may even be fatal.

REFERENCES

1. **Thomas W. Shields.** *General Thoracic Surgery.* 2005 ; 148 : 2239 – 2250
2. **E.A Badoe, E.Q. Archampong, J.T. da Rocha-Afodu.** Principles and practice of Surgery, including pathology in the tropics. 2000 ; 24 : 355 – 356
3. **Syed Hashmi, FRCS, John Walter, DDS FDSRCS(Edin), Wendy Smith, MRCS, and Sergios Latis, MRCS .** Swallowed partial dentures. *J R Soc Med.* 2004 February; 97(2): 72–75
4. **Brunello DL, Mandikos MN.** A denture swallowed. Case report. *Aust Dent J.* 1995 Dec;40(6):349-51.
5. **I.Samarasam, S.Chandran, V.Shukla, G.Mathew.** A missing denture's misadventure! *Diseases of the Esophagus.* Volume 19 Issue 1 Page 53-55, February 2006
6. **de Ruiter MH, van Damme PA, Drenth JP.** Serious complications following removal of an ingested partial denture. *Ned Tijdschr Geneesk.* 2007 Jan 20;151(3):194-7.
7. **Olak J, Jeyasingham K.** Cervical esophageal diverticulum associated with an impacted denture: a case report. *Can J Surg.* 1991 Dec;34(6):614-7.
8. **Ekanem VJ, Obuekwe ON, Unuigbo A.** Death from ingestion of removable partial denture: a case report. *Niger Postgrad Med J.* 2005 Mar;12(1):65-6.