Too Much To Swallow? A Case Report Of An Ingested Denture

ABSTRACT

Ingested foreign bodies can prove a significant and potentially fatal threat. A case is reviewed where a patient swallowed his upper Kennedy Class I removable partial denture, highlighting the potential problems of this prosthesis design and the management of this scenario.

Keywords

Removable Prosthodontics
Imaging
Foreign Body Impaction
Diagnosis
Removable Prosthodontics

Authors

Mr Edward L Soulsby
(BDS)

Mr Andrew Burns
(BDS, FFD, MBBS, FRCS)

Address for Correspondence

E. L Soulsby

NHS Fife, Ward 8,
Cameron Hospital,
Cameron Road,
Windygates,
Leven, Fife,
KY8 5RG

Email: e.soulsby@nhs.net

CASE REPORT

A previously fit and well 46 year old man presented to the Accident and Emergency department of Sunderland Royal Hospital having swallowed his unilateral removable partial denture 2 days previously. At presentation he was swallowing fluids but was unable to swallow any solid food. On examination he was comfortable at rest, with no signs of respiratory distress. He was apyrexic and his pulse and blood pressure were within a normal range.

Chest X-ray revealed a radiopaque foreign body at the level of his thyroid gland. *(Image 1)*. Within 4 hours of presenting he was taken to the operating theatre for oesophagoscopy and removal of foreign body. During this procedure the denture was encountered at 24 cm from the upper incisal tip lodged within the oesophagus. Due to wire clasps it proved difficult to remove and a full thickness mucosal perforation resulted. The denture was successfully retrieved *(Image 2)*.

The patient was kept nil by mouth for 2 days following the procedure and was prescribed intravenous Cefuroxime 750mg TDS and Metronidazole 500mg TDS for 48 hours at the time of surgery, as local standard practice prophylaxis against mediastinitis. He made an uneventful recovery and was discharged 3 days later with 1 week of oral Cefalexin 500mg TDS and Metronidazole 400mg TDS.

DISCUSSION

Ingestion or aspiration of foreign bodies is a common problem and is widely reported in elderly patients and those with psychiatric and mental disabilities.[1,2] Problems are confounded when patients are unaware they have swallowed a foreign body.[3] As a result a high index of suspicion, thorough history and full clinical examination is necessary for an accurate diagnosis to be made.[4]

The oesophagus has been reported as a primary location for ingested bodies- in one study 51.4% of foreign bodies were located in the oesophagus, compared to 44.6% in the stomach.[5]

doi: 10.1922/EJPRD_1331Soulsby03

A wide variety of types of foreign body have been reported in the literature including coins, toy parts, batteries, bones, and needles.[5] Dental restorations and appliances such as dentures have also been reported as a source of foreign body and on numerous occasions dental prostheses have been dislodged during general anaesthetic procedures leading to a foreign body impaction.[3]

In addition, a number of risk factors for the ingestion and impaction of dentures have been identified. These include facial trauma, intoxication and loss of consciousness.[6] Patients sleeping with dentures in situ also present a potential risk for foreign body impaction.[7] It has also been suggested that particular care should be taken by dentists with patients who are at high risk of ingestion of dentures and that alternatives to dentures should be considered.[2]

A variety of symptoms may suggest a foreign body impaction, these include retrosternal pain and dysphagia.[8] Symptoms are often vague and many patients present asymptomatically.[4]

COMPLICATIONS

There are a number of complications associated with foreign body ingestion which can ultimately prove fatal.[9] Complications range from oedema, mucosal abrasion, and laceration of the oesophagus to perforation of the oesophagus and the potential for oesophagoaortic fistula, mediastinitis, pneumothorax and pneumopericardium.[2,7] Removal of the foreign body has also been associated with complications including surgical emphysema and mediastinitis.[4]

Early diagnosis is critical to avoid significant morbidity.[6] Prolonged exposure to an impaction can also increase the risk of complications with rates reportedly rising from 3.2% after 24 hours to 23.5% after 48 hours of impaction.[10,11]

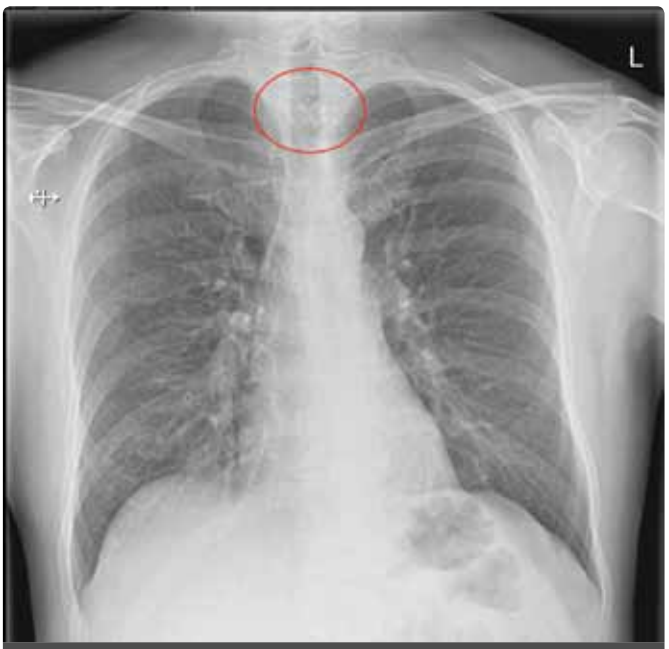

Image 1: Chest X-ray with denture location circled

In the 2009 Adult Dental Health Survey (England) one in five (19 %) of adults wore dentures. In older age groups the proportion of people with dentures increases from 45 % of those aged 65 to 74 years to 70 % in those aged 75 and over.[12]

Dentures present a well documented risk for foreign body impaction- In a study by Abdullah *et al*. in 1998, dental prostheses accounted for 11.5% of impacted tracheal or oesophageal foreign bodies.[13]

DIAGNOSIS

A number of signs and symptoms suggest the presence of a foreign body, including dysphagia, discomfort in the throat or neck and hypersalivation.[7] Swallowed or inhaled dentures provide a distinct challenge in both diagnosis and treatment.[9]

Radiography is commonly used to assess foreign body impaction.[7] Although the sensitivity of radiographs appears to be limited. In one study of 325 Paediatric patients it was reported that 64% of objects were not radiopaque.[8] A negative radiograph cannot be relied upon to exclude the presence of such pathology.[7]

Dentures provided a particularly difficult challenge for diagnosis via radiograph due to their component parts being radiolucent and it has been suggested that the use of a radioopaque material may reduce the incidence of missed or delayed diagnoses when such plates are ingested.[7]

In another study, 40% poly 2,3-dibromopropylmethacrylate was introduced into the poly methylmethacrylate to render the denture base radiopaque. However no material has since been marketed - possibly due to the carcinogenic potential of the material.[14]

Computed Tomography has also been utilised to locate swallowed dentures.[1] However, the materials comprising the denture may not be detected on a CT scan.[6] Hence, clinical examination of the aerodigestive tract is vital and techniques including laryngopharyngoscopy or oesophagoscopy may need to be performed.[4]

Image 2: Denture following retrieval

MANAGEMENT

Methods of extraction usually involve endoscopy, other techniques include the use of forceps or an overtube.[15] Nasogastric feeding may be required following removal of the foreign body.[4]

In terms of dentures, steps can be taken to avoid a foreign body risk- including a retentive and stable design.[9] Regular dental review and maintenance of dentures is also critical with attention to the clasps which provide a particular risk of patient trauma if ingested as demonstrated by this case.

Patient instruction is also important regarding denture care, with emphasis on removal at night.[9]

Alternatives to providing a denture may be indicated in some patients and include conventional or resin bonded bridgework and implant retained bridgework.[16]

CONCLUSION

In conclusion, clinicians should maintain a high index of suspicion for potential foreign body impaction. It is vital that dentures are designed acknowledging the risk they pose in terms of foreign body impaction. If available, a radiopaque marker or base would be indicated in denture design.

Radiological investigation cannot exclude the presence of a foreign body and a thorough history and examination must always be performed. When foreign body impaction does occur, prompt diagnosis and management is critical in attaining the most successful patient outcome.

REFERENCES

1. McLaughlin MG, Swayne LC, Caruana V. Computed tomographic detection of a swallowed denture Common in elderly and CT searching, *Comput Med Imaging Graph.* 1989 Mar-Apr; **13**(2): 161-3.
2. De Ruiter MH, Van Damme PA, Drenth JP. Serious complications following (removal after) ingestion of a partial denture, *Ned Tijdschr Tandheelkd* 2008; **115**: 267–70.
3. Lau G, Kulkarni V, Roberts GK, Brock-Utne J. "Where are my teeth?" A case of unnoticed ingestion of a dislodged fixed partial denture, *Anesth Analg.* 2009 Sep;**109**(3): 836-8.
4. Saleh M, Mendis D. Late presentation of an ingested partial denture, *International Journal of Case Reports and Images* 2011;**2**(7): 13-16.
5. Lin CH, Chen AC, Tsai JD, Wei SH, Hsueh KC, Lin WC Endoscopic removal of foreign bodies in children, Kaohsiung *J Med Sci.* 2007 Sep;**23**(9): 447-52.
6. Haidary A, Leiderb JS, Silbergleita R. Unsuspected Swallowing of a Partial Denture, *AmericanJournal Neuroradiology* October 2007 28: 1734-5.
7. A L Firth, J Moor, P W A Goodyear, D R Strachan. Dentures may be radiolucent. *Emerg Med J* 2003;**20**: 562–3.
8. Arana A, Hauser B, Hachimi-Idrissi S, Vandenplas Y. Management of ingested foreign bodies in childhood and review of the literature. *Eur J Pediatr.* 2001 Aug;**160**(8): 468-72.
9. Hashmi S, Walter J, Smith W and Latis S. Swallowed Partial Dentures, *JR Soc Med.* 2004 February; **97**(2): 72–5.
10. Lim CT, Quah RF, Loh LE. A prospective study of ingested foreign bodies in Singapore. *Arch Otolaryngol Head Neck Surg.* 1994;**120**: 96-102.
11. Yeoh NTL. Impacted dentures in the esophagus. *Med J Malaysia.* 1982;**37**: 344-8.
12. Adult Dental Health Survey 2009 - Summary report and thematic series [NS]. Publication date: 24/3/11 National statistics
13. Abdullah BJ, Teong LK, Mahadevan J, *et al.* Dental prosthesis ingested and impacted in the esophagus and orolaryngopharynx. *J Otolaryngol.* 1998;**27**: 190-4.
14. Davy KW, Causton BE. Radio-opaque denture base: a new acrylic co-polymer. *J Dent.* 1982 Sep;**10**(3): 254-64.
15. Brenna C, Bounds MD. Endoscopic Retrieval Devices. *Tech Gastrointest Endosc* 2006; **8**: 16-21.
16. Walmsley AD, Walsh TF, Burke FJT, Shortall ACC, Lumley PJ, Hayes-Hall R. *Restorative Dentistry.* Edinburgh: Churchill-Livingstone, 2002.