


Case Report

Fatal sepsis from appendicitis caused by an impacted tooth

Xavier Field , Thomas Burton and Grant Christey

Department of General Surgery, Waikato Hospital, Hamilton, New Zealand

*Correspondence address. Department of General Surgery, Waikato Hospital, Hamilton, New Zealand. E-mail: xaviergfield@gmail.com

Abstract

Acute appendicitis is one of the most common causes of acute abdominal pain globally. The pathophysiology of acute appendicitis is due to occlusion of the appendiceal lumen commonly from a faecolith. Obstruction of the appendiceal lumen by ingested foreign bodies is possible albeit rare. Here, we present an extremely rare case of acute appendicitis caused by impaction of the patients tooth within the lumen of the appendix. There have been only seven reported cases of impacted teeth causing appendicitis in the literature. There are no evidence-based guidelines for the management of appendicitis caused by tooth impaction. The authors suggest operative management with appendicectomy should be considered in the first instance.

INTRODUCTION

Acute appendicitis is one of the most common causes of the acute abdomen in adults. The lifetime risk of appendicitis is 8.6% for males and 6.7% for females [1]. Generally, the pathophysiology of appendicitis is thought to be due to luminal obstruction, most commonly from an impacted faecolith. The resulting production of mucus by mucosal goblet cells and gas by luminal bacteria results in distension of the distal appendix causing pain and inflammation. Impaired venous return can progress to ischaemia and perforation [2]. We present an extremely rare case of septic shock from acute appendicitis caused by an impacted molar tooth.

CASE PRESENTATION

A 52-year-old gentleman who presented to the Emergency Department in septic shock with right sided abdominal pain. He suffered a witnessed cardiac arrest prompting immediate cardiopulmonary resuscitation (CPR) with return of spontaneous circulation (ROSC) after 10 minutes. Physiologic resuscitation was commenced, and he was started on broad spectrum intravenous antibiotics with cefuroxime and metronidazole, as per local guidelines. Following intubation and ventilation, he underwent a computer tomography (CT) scan of the abdomen which revealed moderate volume of free fluid with locules of gas within the pelvis suggesting a hollow viscus perforation. A calcified structure was identified within the appendix raising the possibility of a foreign body causing perforated appendicitis. On reconstructed slices, the appearance was that of a tooth (Figs 1 and 2).

The patient proceeded immediately for a laparotomy. Intra-operative findings were of perforated appendicitis with four-quadrant purulent peritonitis. The caecum was healthy and an

appendicectomy was performed. On examination of the appendix specimen, there was a perforation in the mid-point and a firm foreign body causing luminal obstruction at the base. On opening the specimen, the foreign body was identified as a decaying tooth containing a metallic filling (Fig. 3).

Following washout with copious irrigation, the patient's abdomen was closed and transferred to the intensive care unit (ICU). Unfortunately, over the next 36 hours, he passed away secondary to significant multi-organ failure related to sepsis.

DISCUSSION

The pathophysiology of appendicitis is thought to be due to obstruction of the appendiceal lumen and the cause of luminal obstruction of the appendix is most commonly a faecolith. The prevalence of faecolith at appendicectomy has been reported widely to be between 1.5 and 65.1% [3–5]. Obstruction of the appendix lumen due to an exogenous foreign body is extremely rare in the adult population. In particular, there have been only seven cases of ingested teeth and dental prostheses causing appendicitis in the literature [6–11].

Antibiotic therapy as an alternative to appendicectomy has long been an area of interest in literature. Some recent high-powered studies have added weight to this treatment choice. However, these studies show that participants with faecolith had significantly higher rates of appendicectomy compared to those without faecolith and had higher rates of complication, 20.2 vs 3.6 per 100 [12]. Similarly, appendicitis caused by a foreign body is not likely to resolve with conservative treatment with antibiotics alone due to the continued mechanical obstruction of the appendix lumen. In particular, foreign bodies causing appendicitis often cause perforation [13] and complicated

Received: November 2, 2022. Accepted: November 19, 2022

Published by Oxford University Press and JSCR Publishing Ltd. All rights reserved. © The Author(s) 2022.

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits non-commercial re-use, distribution, and reproduction in any medium, provided the original work is properly cited. For commercial re-use, please contact journals.permissions@oup.com

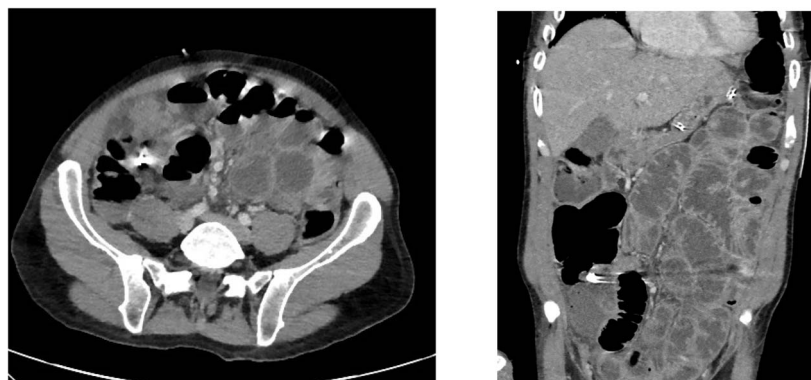


Figure 1. Axial and coronal CT slices showing radiopaque object in the right lower abdominal quadrant.

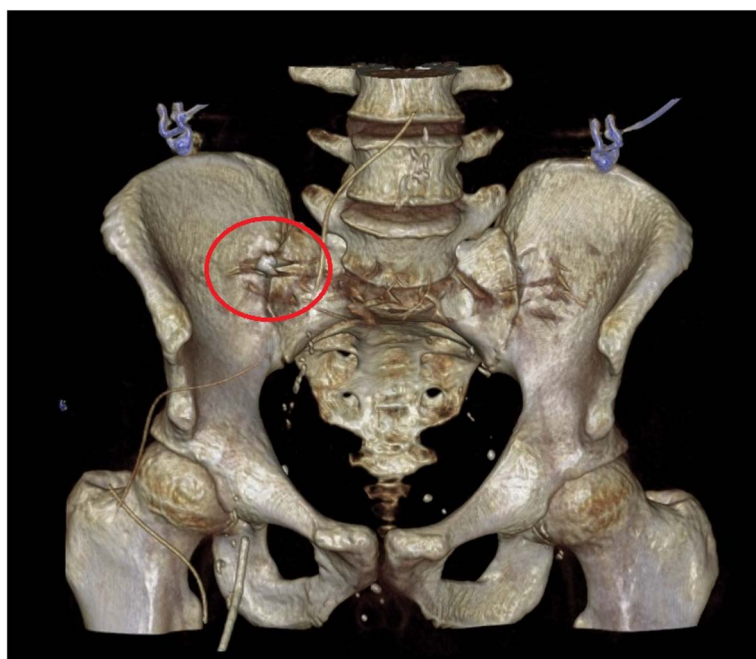


Figure 2. CT reconstruction showing a tooth near the pelvic brim.

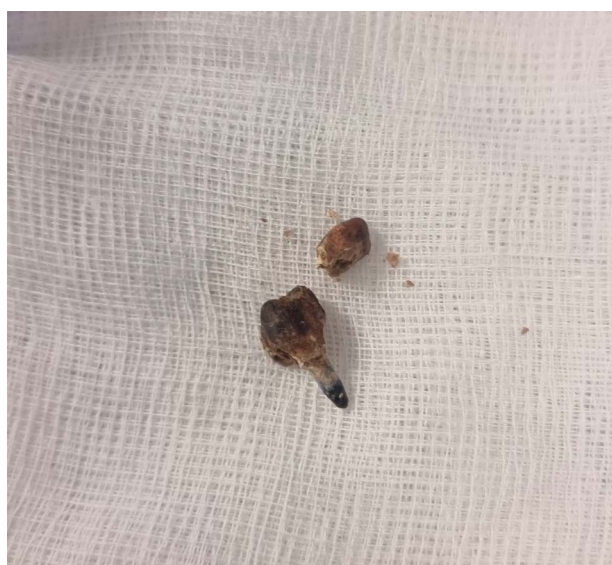


Figure 3. Specimen photograph of the retrieved tooth containing a metallic filling.

appendicitis is not amenable to conservative treatment with antibiotics alone.

This case highlights the risk of significant morbidity and mortality due to appendicitis due to foreign bodies and dental prostheses. There are no evidence-based recommendations that determine the best approach to both diagnosis or treatment of appendicitis caused by tooth impaction; however, the authors suggest it is reasonable to treat them in the same way as faecoliths or other foreign bodies with appendectomy in the first instance.

CONFLICT OF INTEREST STATEMENT

None declared.

FUNDING

None.

REFERENCES

1. Di Saverio S, Birindelli A, Kelly MD, Catena F, Weber DG, Sartelli M, et al. WSES Jerusalem guidelines for diagnosis and treatment of acute appendicitis. *World J Emerg Surg* 2016;**11**:34.

2. Townsend CM (ed). *Sabiston Textbook of Surgery: the Biological Basis of Modern Surgical Practice*, 21st edn. St. Louis, Missouri: Elsevier, 2022, 2147.
3. Makaju R, Mohammad A, Shakya A. Acute appendicitis: analysis of 518 histopathologically diagnosed cases at the Kathmandu University Hospital, Nepal. *Kathmandu Univ Med J* 1970;**8**: 227–30.
4. Ramdass MJ, Sing QY, Milne D, Mooteeram J, Barrow S. Association between the appendix and the fecalith in adults. *Can J Surg* 2015;**58**:10–4.
5. Tran N, Emuakhagbon VS, Baker BT, Huerta S. Re-assessing the role of the fecalith in acute appendicitis in adults: case report, case series and literature review. *J Surg Case Rep* 2021; **2021**:rjaa543.
6. Glen P, Ihedioha U, Mackenzie I. An unusual extraction; retrieval of a swallowed crown by appendectomy. *Br Dent J* 2007;**202**: 141–2.
7. Asad S, Bae K, Jeon KN, Cho JM, Shin TB, Joo YT, et al. Appendicitis caused by a foreign body of dental origin: diagnosis with ultrasonography. *J Ultrasound Med* 2007;**26**: 967–70.
8. Qassim S, Lairy A, Asfar S. Foreign body ingestion followed by appendiceal perforation. Bergeron E, editor. *Case Rep Surg* 2021;**2021**:1–3.
9. Basu NN, Doddi S, Turner L, Sinha PS. Tooth crown foreign body appendicitis. *Dig Surg* 2009;**26**:22–3.
10. Rodríguez Lucas JM, Fernández López AJ, González Valverde FM, Tamayo Rodríguez ME, Albarracín M-BA. Uncommon causes of acute appendicitis: foreign bodies in the cecal appendix. *Rev Esp Enfermedades Dig* 2022;**114**:361–2.
11. Simkovic D, Hladík P, Lochman P. Unusual cause of the acute appendicitis. *Rozhl Chir* 2004;**83**:365–7.
12. The CODA Collaborative. A randomized trial comparing antibiotics with appendectomy for appendicitis. *N Engl J Med* 2020;**383**: 1907–19.
13. Klingler P, Seelig M, DeVault K, Wetscher G, Floch N, Branton S, et al. Ingested foreign bodies within the appendix: a 100-year review of the literature. *Dig Dis* 1998;**16**:308–14.