

Case Report: A rare case of inflamed appendicular tip perforating the caecum

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Abstract: Acute appendicitis is the most common acute surgical condition of the abdomen. It is precipitated by the presence of faecoliths, may be associated with diet with increased refined sugars and meat and a lack of dietary fibre. Rarely it may be associated with viral infections. Diagnosis is made with the help of clinical history and thorough physical examination, supported by blood and radiological investigations. The commonest site of the appendix is retro-caecal. It may quickly complicate by perforation or abscess or mass formation. Hence immediate diagnosis and prompt treatment may reduce the risk of complications. Appendicular tip perforation is the most common site of appendicular perforation. Sometimes perforation of the large bowel may be associated with severe acute appendicitis. The mortality rate of non-perforated appendicitis is less than 1% while that of perforated appendicitis may be as high as 5% in extremes of age. This may be attributed to delay in clinical presentation or diagnosis in the younger group and association with multiple co-morbidities in the elderly.

Key words: Acute Appendicitis, Caecal perforation, Ileostomy

I. Case Report

A 43 year old multiparous woman presented with history of right iliac fossa pain associated with burning micturition. Pain was not associated with fever, vomiting, anorexia or any bowel symptoms. She is a multiparous woman with 4 live, healthy children delivered vaginally. She was sterilized after the last child birth. There was no significant past surgical or medical history.

On physical examination, she was afebrile, pulse rate 102beats per minute, blood pressure 100/70 mmHg, respiratory rate 20 per minute. Her abdomen was not distended but tender in the right iliac fossa with guarding. Complete blood picture showed elevated WBC 12,730 cells per mm³, Hb12.2 g/dl, Platelet 2.62 lakh/mm³, urea 20 mg/dL, creatinine 1.0 mg/dL, amylase 33 IU/L.

Plain film of Abdomen and Chest X ray were not remarkable. Sonogram of the abdomen showed an aperistaltic tubular non compressible blind ended hypo echoic structure measuring 9mm in diameter seen in the right iliac fossa. Severe pericentric inflammation was noted. Features were suggestive of appendicular pathology.

Diagnosis of acute appendicitis was made and patient was planned for emergency open appendicectomy under general anaesthesia.

Operation: Intravenous antibiotics were commenced pre-operatively. Lanz incision was made. Dissection of the appendix was carried out with some difficulties and approximately 50 ml of pus found with feculent fluid in the peritoneal cavity around the appendix. Macroscopically, appendix was perforated and gangrenous. There was a large 3 × 3 cm caecum perforation was seen lateral to the base of the appendix. Perforation was repaired with an absorbable suture and the omental patch was used to cover the caecum. Loop ileostomy was made to divert the intestinal contents to promote healing of the perforation closure site. A thorough peritoneal wash with warm saline was carried out to prevent gross peritoneal contamination. Abdominal drain was placed and abdomen was closed in layers after completely securing haemostasis. Ileostomy was found to be functioning on the operation table.

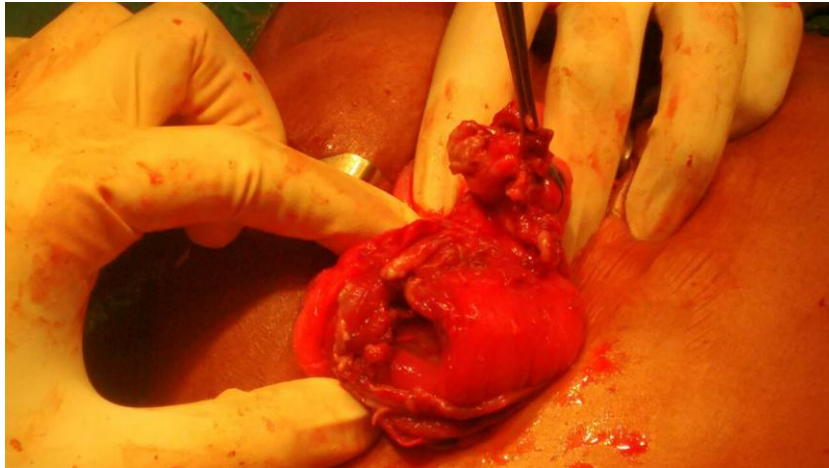
Post operatively the patient was transfused with blood and was kept on inotrope support for 2 days. Patient was started on oral liquids on the 3rd post-operative day and abdominal drain was removed on the 4th post-operative day. Semisolid diet was started for the patient since the 6th postoperative day. Rest of the patient's stay in the hospital was uneventful.

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Histopathology of the appendix showed features of acute appendicitis with periappendicitis. Caecal tissue and omentum showed fibro fatty tissue with acute inflammatory exudates



Patient was planned for an ileostomy closure 4 weeks from the 1st surgery. The surgery and the post-operative period were uneventful. Patient was discharged on 10th post-operative day. The patient was followed up over the coming months and was found to be healthy and had recovered well from the surgery.

II. Discussion:

Appendicular perforations, commonly occur at the tip of the appendix and are associated with the presence of a faecolith on CT scan [1]. The clinical picture usually encountered is that of a young adult with symptoms and findings simulating acute appendicitis or small bowel obstruction. The frequent involvement of the ileocecal valve by the inflammatory process is usually responsible for perforations and the obstructive symptoms. Perforation of the cecum is frequently not suspected until it is discovered at the time of the operation. [14]

Perforation of caecum is uncommon for a case of acute appendicitis. Other possible causes of caecum perforation include perforated right diverticulitis [2, 3], caecal tumour, and rarely associated with foreign body [4, 5], in burns patient [6], tuberculosis infection [7] and following caesarean section [8, 9] or iatrogenic endoscopic procedure have been reported.

Caecal perforations are commonly encountered as a part and parcel of various associated disease processes, in accordance with Laplace's law. Laplace's law dictates that the intraluminal pressure needed to stretch the wall of a hollow tube is inversely proportional to its radius. The cecum has the largest diameter of the colon, and as such, requires the least amount of pressure to distend [10-12]. The diameter of the cecum in which perforation is imminent has been estimated to be between 9 cm and 16 cm [13]. Stasis of the fecal content may produce mucosal abrasions resulting in phlegmonous inflammation. This, in turn, causes regional thrombosis of the vessels, with subsequent gangrene and perforation. [14] The part played by the ileocecal valve in caecal perforation is uncertain. Some authors (Saeltzer & Rhoads, 1935; Wangenstein, 1955) believe that a competent of the Ileocecal valve is an important factor. [15, 16]

The caecum usually remains distended even after perforation (Rack, 1952, and present cases) probably because the tear becomes sealed off. Measurement of the size of the caecum is therefore helpful in anticipating and diagnosing caecal perforation. [17]

Various surgical procedures are utilized in the treatment of these patients including primary closure of the perforation, exteriorization of the cecum, ileo-transverse colostomy, ileostomy, and right colectomy.

The most frequent operation for perforated caecum is right hemicolectomy although some surgeons might advocate over sewing the perforation is equally adequate in repairing the defect. The advantages of the latter are associated with shorter length of hospital stay, less blood loss, easier haemostasis control, and lower risk of anastomosis breakdown.

The two major problems encountered in surgical management of inflammatory process are perforation or small bowel obstruction. If there is no obstruction and if peritoneal contamination is minimal, closure of the perforation without exteriorization of the cecum is sufficient. If inflammatory obstruction is present, closure of the perforation must be combined with a side-tracking procedure. [14]

III. Conclusion

Acute appendicitis is the most common surgical emergency of the abdomen. Diagnosis is made with the help of clinical history and thorough physical examination. It may quickly complicate by perforation or abscess or mass formation. Perforation of caecum is uncommon for a case of acute appendicitis and may not be suspected until it is discovered at the time of surgery. Hence a thorough on table examination must be done to identify and treat any associated complications.

References:

- [1]. Herscu G, Kong A, Russell D, Tran CL, Varela JE, Cohen A, Stamos MJ: Retrocecal appendix location and perforation at presentation. *Am Surg* 2006, 72(10):890-3.
- [2]. Papapolychroniadis C, Kaimakis D, Fotiadis P, Karamanlis E, Stefopoulou M, Kouskouras K, Dimitriadis A, Harlaftis N: Perforated diverticulum of the caecum. A difficult preoperative diagnosis. Report of 2 cases and review of the literature. *Neumann U, Tech Coloproctol* 2004, 8(Suppl 1):s116-8.
- [3]. Mauvais F, Benoist S, Panis Y, Chafai N, Valleur P: Three cases of diverticular perforation of the caecum and ascending colon. *Ann Chir* 1999, 53(1):89-91.
- [4]. Fielitz J, Ehlert HG: Perforation of the cecum by a toothpick—a rare differential acute appendicitis diagnosis. Case report and review of the literature. *Chirurg* 2000, 71(11):1405-8.
- [5]. Renner K, Holzer B, Hochwarter G, Weihsbeck E, Schiessel R: Dig Surg. Needle perforation of the appendix 2000, 17(4):413-4.
- [6]. Ghoneim IE, Bang RL: Caecal perforation in a burn patient. *Burns* 1995, 21(8):619-21.
- [7]. Jain DK, Aggarwal G, Lubana PS, Moses S, Joshi N: Primary tubercular caecal perforation: a rare clinical entity. *BMC Surg* 2010, 10:12.
- [8]. Wesch G, Ehrlich G, Storz LW, Wiest W: Two cases of perforation of the cecum following caesarean section. *Geburtshilfe Frauenheilkd* 1980, 40(2):116-20.
- [9]. Durai R, Linsell J: Caecal perforation following a caesarean section. *Br J Hosp Med (Lond)* 2011, 72(5):290-1.

- [10]. Saegesser F, Chapuis G, Rausis C, Tabrizian M, Sandblom P: Intestinal distention and colonic ischemia: occlusive complications and perforations of colo-rectal cancers. A clinical application of Laplace's Law. *Chirurgie* 1974, 100:502-516.
- [11]. Vanek VW, Al-Salti M: Acute pseudo-obstruction of the colon (Ogilvie's syndrome): an analysis of 400 cases. *Dis Colon Rectum* 1986, 29:203-210.
- [12]. Giersen ED, Storm FK, Shaw W, Coyne SK: Caecal rupture due to colonic ileus. *Br J Surg* 1975, 62:383-386.
- [13]. Acea-Nebriil B, Parajo-Calva A, Taboada-Filguira L, et al: Surgical indications in acute pseudo-obstruction of colon (Ogilvie syndrome). *Rev Esp Enferum Dig* 1993, 84:197-9.
- [14]. Albers, Smith and Carter; *Annals of Surgery*, February 1956, Pg 254
- [15]. SAELTZER, D.V. & RHOADS, G.K. (1935) Diastasic perforation of the normal cecum resulting from obstruction of the colon. *Ann. Surg.* 101, 1257.
- [16]. WANGENSTEEN, O.H. (1955) *Intestinal Obstructions*, 3rd edn, p. 39. Charles C. Thomas, Springfield.
- [17]. RACK, F.J. (1952) Obstructive perforation of the cecum; Report of eight cases. *Amer. J. Surg.* 84, 527.