A 35-year old lady presented with vague abdominal pain and fullness in right iliac fossa for two weeks, which was not associated with nausea, vomiting, constipation, and diarrhoea. Physical examination revealed tenderness in the right lower quadrant of the abdomen. Routine blood investigation findings and erect X-ray abdomen were normal.

**Imaging Findings:**

Ultrasonography of right iliac fossa showed a well-defined hypoechoic cystic tubular lesion measuring 10 x 5 centimetres, with hyperechoic internal debris and no evidence of septations, solid components or surrounding inflammatory changes (Figure 1). There was no evidence of ascites and lymphadenopathy. Uterus and ovaries were normal.

Plain and contrast enhanced Computed-Tomography (CT) showed a well defined smooth walled, peripherally enhancing, tubular, hypodense lesion (18 to 20 HU), measuring 10 x 5 centimetres, with curvilinear mural calcification in right iliac fossa, adjacent to cecum, at the expected site of appendix (Figure 2, 3 and 4). There was no desmoplastic reaction, lymphadenopathy, inflammatory changes or ascites.

The case was diagnosed as mucocele of the appendix.

At surgery, the appendix was grossly distended with concealed focal cecal wall perforation (Figure 5). Dissection revealed thick yellow coloured mucous like material (Figure 6). Histopathology of the specimen confirmed the diagnosis of mucinous cystadenoma.

**Discussion:**

Mucocele of the appendix is a rare disease accounting for 0.2%-0.3% of appendectomy specimens and 8% of appendiceal tumours [1]. Mucocele is a grossly distended appendix with mucinous content. It is seen in middle-aged patients with four-fold female predilection [1, 2 and 3].

Mucocele may present as a palpable mass in the right lower abdominal quadrant, pain, or may be asymptomatic. If
infected, mucocele cannot be clinically distinguished from acute-appendicitis [4].

Causes are - Increased production of mucus as seen in in mucosal hyperplasia (25%), mucinous cystadenoma (60%), mucinous cystadenocarcinoma (10%) and luminal obstruction or extra-luminal compression.

Malignant mucocele shows high correlation with colorectal adenocarcinoma (six times greater risk than the general population) and mucin producing ovarian & kidney tumours [1, 2, 5].

Myxoglobulosis is a variant of mucocele showing multiple sub centimetric globules within the lumen, which may calcify [6].

Abdominal X-ray may show a soft tissue mass in the right lower quadrant with or without calcification. A barium enema may demonstrate, non-filling or partial-filling of the appendix, mass effect in the form of indentation or displacement of the cecum and classical “vortical fold” appearance or concentric ring pattern of cecal mucosal folds converging towards the obstructed appendiceal orifice.

Ultrasound demonstrates cystic lesion with excellent through transmission and posterior acoustic enhancement. Variable internal echoes within the cyst give a sonographic layering known as "onion skin appearance" - a highly suggestive feature. The proliferation of mucosa may cause intraluminal polypoidal ex crescence.

CT shows a smooth, lobulated mass of low attenuation (0 – 40 HU) at the base of the cecum. Wall calcification is best demonstrated with CT. Curvilinear calcification suggests mucinous cystadenoma, where as amorphous calcification suggests malignancy [1, 2]. Air-fluid level indicates superinfection. The wall irregularity, soft-tissue thickening, lymphadenopathy, ascites, cecal wall perforation & infiltration of adjacent organs suggest malignancy[7].

The most lethal complication is rupture of mucocele causing pseudo-myxoma peritonei, in which CT shows low attenuation ascites (5 to 20 HU), scalloping of intraperitoneal solid organs and bowel loops. Malignant mucocele has increased risk of pseudo-myxoma peritonei and worst prognosis compared to benign mucocele [8]. Other complications are intussusception and torsion causing gangrene, haemorrhage and perforation.

Treatment approach - Simple appendectomy is indicated in non-neoplastic mucocele, appendectomy and cecectomy in mucinous cystadenoma and hiencectomy in mucinous cystadenocarcinoma.

Thus it is crucial for the radiologists to diagnose mucocele characteristics as benign or malignant, which changes the treatment options; to be familiar with complications and associations.

**Differential Diagnosis List:** Mucinous cystadenoma of appendix, Ovarian cysts, Duplication cysts, Mesenteric and omental cysts, Intra-abdominal abscess, Renal or pancreatic pseudocysts, Hydatid cyst

**Final Diagnosis:** Mucinous cystadenoma of appendix

**References:**


Description: Axial contrast enhanced Computed Tomography image of abdomen shows a hypodense lesion with peripheral wall enhancement adjacent to cecum. Origin: Department of Radiology, MMCRI, Mysore, Karnataka, India
Figure 2

Description: Axial non-enhanced Computed Tomography image of abdomen shows a well defined hypodense lesion of 18 to 20 HU with curvilinear wall calcification seen adjacent to cecum. Origin: Department of Radiology, MMCRI, Mysore, Karnataka, India
Figure 3

**a**

Description: High resolution ultrasonography of right iliac fossa in longitudinal view shows a well defined cystic lesion with hyperechoic internal debries and mucosal excrescences in the form of onion skin appearance. **Origin:** Department of Radiology, MMCRI, Mysore, Karnataka, India.

**b**

Description: High resolution ultrasonography transverse view of right iliac fossa shows a well defined cystic lesion with hyperechoic internal debries and mucosal excrescences in the form of onion skin appearance. **Origin:** Department of Radiology, MMCRI, Mysore, Karnataka, India.
Figure 4

Description: Coronal reformatted contrast enhanced Computed Tomography image shows a well defined hypodense lesion with peripheral curvilinear mural calcification which is closely abutting the adjacent cecal wall. Origin: Department of Radiology, MMCRI, Mysore, Karnataka, India

Description: Sagittal reformatted contrast enhanced Computed Tomography image shows the lesion with curvilinear mural calcification which is closely abutting the adjacent cecal wall. Origin: Department of Radiology, MMCRI, Mysore, Karnataka, India
Figure 5

Description: Photograph of surgical specimen showing well-defined smooth grossly distended appendix. Origin: department of surgery, MMCRI, Mysore, Karnataka, India
Description: Gross specimen on dissection showing yellowish thick mucus like material within. Origin: Department of surgery, MMCRI, Mysore, Karnataka, India