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## MUCOCELE OF THE APPENDIX

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### Abstract

Mucocele of the appendix is dilation of the appendiceal lumen and its filling with mucin. Due to the unspecific symptoms and rare occurrence, caution in diagnosis and treatment is required because of possible intraoperative and postoperative complications. We are presenting a patient at the age of 46 with the observed mucocele of the appendix during colonoscopy, which was confirmed by ultrasound of the abdomen and CT of the abdomen. The mucocele sized 80 mm x 20 mm x 10 mm was treated operatively with right hemicolectomy. The patient has normal findings at control examinations.

**Key words:** *mucocele; appendix; mucinous neoplasms; low-grade appendiceal mucinous neoplasm.*

### Introduction

Mucocele of the appendix is rare diagnosis and is dilation of the appendix that occurs due to the intraluminal mucin accumulation. Mucinous neoplasms are classified in benign and malign [1]. 0.2%-0.7% of the appendiceal pathology belongs to mucocele. Mucocele of the appendix does not have specific symptoms; as many as 25%-50% of patients do not have symptoms and it is an accidental finding during routine examination. It can be manifested with symptoms such as abdominal pain, pain in the lower right quadrant in the abdomen, and/or palpable mass in the region of the appendix [2].

There are no specific markers for diagnosis for this condition either. They most often occur in patients at the age of >50, dominantly in women. If mucocele is ruptured during the surgery or spontaneously, effusion of the contents of the mucocele into the abdominal cavity, and even pseudomyxoma peritoneum occurs [3]. Even though mucoceles are benign, there is a

possibility for malignization and implantation on the peritoneum. Malignant mucinous neoplasms have poor prognosis.

Diagnosis is established with ultrasound of the abdomen where mucocele is shown as a cystic structure with a tubular appearance in the lower right quadrant of the abdomen, typical onion-skin – internal concentric layers of mucin, calcifications that give an acoustic shadow, even though they are not visible with all mucoceles. Computed tomography shows a tubular structure that is in continuity with the cecum, filled with homogeneous content, calcifications can also be seen, but they are not always present [4]. It is necessary to distinguish the diagnosis of mucocele from a cyst on the right ovary, cystic ovarian carcinoma, tubo-ovarian abscess or hydrosalpinx which has similar appearance as the mucocele of the appendix.

The treatment is surgical, made with appendectomy, and whenever there is suspicion of advanced histopathological finding, right hemicolectomy is performed. Then, due to an increased risk of development of colorectal cancer in patients with mucocele, regular colonoscopy examinations are made [1].

### **Case report**

A patient at the age of 46 came for control colonoscopy examination due to previous resected adenomatous polyps. He has regular stools, no loss of weight, and has normal blood count. At the previous colonoscopy made a year ago, the cecum region was normal. A year later, a large submucous formation was observed during colonoscopy, hard at palpation, suspect for mucocele [Figure 1].





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Figure 1. Endoscopy image of mucocele of the appendix

Abdominal ultrasound showed a tubular cystic anechoic structure in the lower right quadrant of the abdomen [Figure 2].



Figure 2. Mucocele seen at US of abdomen

CT of the abdomen was made and showed mucocele with appendicular enlargement, with the dimensions of 80 mm x 20 mm, the appendix being completely filled with liquid contents.

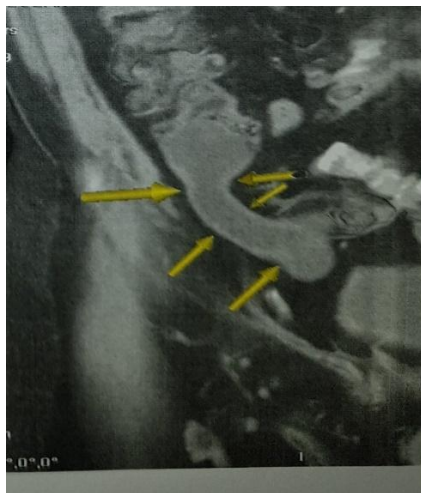


Figure 3. CT of the abdomen with mucocele of the appendix



The patient was referred for surgical treatment, right hemicolectomy was performed, with histopathological finding for low-grade appendiceal mucinous neoplasms (LAMN). Control colonoscopy has normal finding. The patient has recommendation for regular colonoscopy examination due to previous occurrence of colorectal adenomatous polyps.

### **Discussion**

Formation of mucocele of the appendix most frequently starts with epithelial proliferation, which can be benign or malignant. A less frequent reason for creation of mucocele is inflammatory genesis or obstruction caused by fecaloma.

Mucocele of the appendix was first described by pathologist Rokitansky in the 19<sup>th</sup> century when he noticed pathological accumulation of mucin in the dilated appendix [5].

Mucocele of the appendix and other mucinous neoplasms on the appendix have been subject to controversy in the nomenclature for a long while [6]. Initially, in 1940, mucocele of the appendix was classified in four types: retention cyst, mucous hyperplasia, mucinous cystadenoma and mucinous cystadenocarcinoma [7]. According to the American Cancer Federation, there are three classifications of mucocele: low-grade tumor (G1), and high-grade tumor (G2 and G3) [3]. According to the pathological classification of mucoceles of the World Health Organization updated in 2019, they are divided in low-grade appendiceal mucinous neoplasms (LAMN), high-grade appendiceal mucinous neoplasms (HAMN) and mucinous adenocarcinoma. HAMN has an appearance of high-grade cell atypia, whereas mucous adenocarcinoma has infiltrative invasion. According to this nomenclature, the term “mucous cystadenoma” from the old nomenclature, which is not in use anymore, corresponds to LAMN [4]. Lesions with high-grade atypia without infiltrative invasion are HAMN.

Every patient with symptoms of appendicitis should be carefully diagnosed, and CT of the abdomen should be made in order to confirm or exclude mucocele. Due to a possibility for malignization of these mucinous changes, a serious approach in diagnostics is required, with obligatory, careful surgical treatment while avoiding iatrogenic rupture of the mucocele and subsequent dissemination through the peritoneum. In patients with negative margins of resection



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of the base of the appendix, negative regional lymph nodes and normal histopathological finding, long-term monitoring is not required.

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