

## ORIGINAL RESEARCH

# Retrospective Study on the incidence and management of Mucocele of Appendix

<sup>1</sup>Dr. Mohammad Faheem Inamdar, <sup>2</sup>Dr. V N Roopa, <sup>3</sup>Dr. Sunil Telkar, <sup>4</sup>Dr. Vigneshwar

<sup>1,3</sup>Associate Professor, <sup>2,4</sup>PG Student, Department of General Surgery GIMS, Gadag, Karnataka, India

**Corresponding author**

Dr. Roopa VN

PG Student, Department of General Surgery GIMS, Gadag, Karnataka, India

Received: 28 October, 2023

Accepted: 24 November, 2023

**ABSTRACT**

Appendix mucocele is a rare disease and it is usually diagnosed histopathologically in appendec to my specimens. When a cystic mass in appendix is seen during operation, appendiceal mucocele should be kept in mind to avoid iatrogenic perforation causing pseudomyxomaperitonei and possible concomitant malignancies should be searched. We reported 6 cases with the demographic, clinical, radiologic, preoperative and postoperative characteristics and outcomes on patients of appendix mucocele that presented with or operated for acute appendicitis or acute abdomen.

**Key words :** Mucocele, appendix, laparoscopy, appendectomy, minimal invasive.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution- Non Commercial- Share Alike 4.0 License, which allows others to remix, tweak, and build upon the work non- commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

**INTRODUCTION:**

Mucocele of the appendix is an uncommon tumor. Appendiceal mucocele is a condition where luminal distention occurs due to mucin accumulation within the appendiceal lumen. The incidence of appendiceal mucocele ranges from 0.2% to 0.3% of all appendectomies. It is more frequent in male patients. The histopathologic classification of the appendiceal mucocele includes the following groups: focal or diffuse mucosal hyperplasia, mucinous cystadenoma, and mucinous cystadenocarcinoma. Mucocele of the appendix can be benign and malignant in addition to the risk of rupture that may cause pseudomyxomaperitonei. The ideal way for resection is either appendectomy or partial colectomy of the appendix. Mucocele of the appendix or even ends with right hemicolectomy. Mucocele of the appendix is a rare entity in children. Conservative management is rare in case of mucocele of the appendix. In our institutional study 6 cases of mucocele of the appendix were diagnosed among 456 cases of acute appendicitis which is explained as following case series.

**AIM**

To study different clinical presentations, age and sex distribution of mucocele of appendix cases and management.

**MATERIALS AND METHODS**

The present study is a retrospective study compiling information of patients with acute appendicitis with mucocele formation presented from January 2018 to

March 2023, diagnosed by radiological.

Management surgical and conservative.

Statistical tests employed are test of proportion and chi square test.

**INCLUSION CRITERIA**

- Clinically presented cases of acute appendicitis with mucocele
- All the age groups
- Both male and female

**EXCLUSION CRITERIA**

Complicated appendicitis with mass formation, perforated appendicitis and appendicular abscess

**CASE 1**

12-year-old girl presented to the clinic with lower abdominal pain and right flank pain for 3 days. Physical examination was significant. Only for right iliac fossa abdominal tenderness without peritoneal signs. Laboratory tests including complete blood count, and biochemical analysis of the urinary systems were normal. As the abnormal liver function test was found with raised prothrombin time and INR. Abdominal plain CT-scan showed: distended fluid containing appendix with 18mm size with inflammatory changes and few small local nodes with a high possibility of mucocele of the appendix. We discussed with the patient's attendant for correction of blood parameters and proceeding to surgical management. On the second day, patient's conditions improved clinically with repeated ultrasound report

showed decreased appendix size to 9mm and repeated decrease in leucocyte counts Hence the case been conservatively managed .

#### **CASE 2**

10years-old boy presented to the clinic with lower abdominal pain and right flank pain for one day, fever since one day physical examination was significant only for right iliac fossa abdominal tenderness without peritoneal signs. Laboratory tests including complete blood count, and biochemical analysis of the urinary systems and liver function test was normal, electrocardiogram found to have right bundle branch block ultrasound test of abdomen and pelvis showed distended fluid containing appendix with 14 mm size with inflammatory changes and few small local nodes with a highly possibility of mucocele appendix we discussed with the patients attender for high risk surgery on second day patients conditions improved clinically with repeated ultrasound report showed decreased appendix size to 6mm and repeated investigations showed decrease in leucocyte counts hence the case been conservatively managed.

#### **CASE 3**

A37-years-old Male presented to ED nausea and vomiting for one day. Abdominal CT scan was done and showed dilated appendix that is reaching 1.6 cm in maximal diameter and contained multiple calcifications with mild surrounding fatty stranding. Impression of acute non-complicated appendicitis with Intra-operative approach and findings: Intraoperative findings showed no evidence of intra peritonealmucin deposition. The Laparoscopic approach allowed the meticulous dissection of the Appendix and clear identification of the base of the appendix without manipulating the appendiceal mucocele itself; also, the appendix was secured at the base. The specimen was intact with no spillage of mucin during the operation. The patient has discharged two days post-operation in a good condition without active complaint. Histopathological evaluation of the Appendiceal mucocele was reported as no anaplasia.

#### **CASE 4**

A41-years-old female known to have Iron deficiency anemia, presented to the Emergency department with recurrent lower abdominal pain. Physical examination was significant only for right lower quadrant tenderness without peritoneal signs. Laboratory tests including complete blood count and urinary system were all within normal ranges. Abdominal CT scan with IV contrast revealed a large elongated fluid-filled tubular structure in the right iliacfossa measuring about 7 cm and arising from the inferior-medial aspect of the cecum with focal calcification, the appearance was highly suggestive of appendiceal mucocele no other masses were seen. After a discussion with the patient, we took her for a diagnostic laparoscopy and according to the intraperitoneal findings, we did an

appendectomy. Intra-operative approach and findings: A 12-mm trocar was placed through the supra-umbilical incision to approach the intraperitoneal cavity using the open Hasson technique. Pneumoperitoneum was made by the insufflations of carbondioxide. The table was kept in the Trendelenburg position with a 15° left tilt.A30° telescope was introduced through the umbilical port for diagnostic laparoscopy, and a complete abdominal examination was done. Diagnostic laparoscopy revealed approximately 8 cm large appendiceal mucocele. Two 5-mm ports were placed in the suprapubic and left lower quadrant areas. The appendicealmucocele was isolated after separating the mesoappendix by Bovie, following this, the base of the appendix was ligated at its base by vicryl and divided by monopolar .Mucocele of the appendix was retrieved through the umbilical port after careful minimal handling, hemostasis was obtained and the umbilical port site wound was closed. The patient tolerated the procedure very well, she started oral feeding 24 hours post-operation. She was discharged on the second postoperative day without any active complaint. Pathology showed inflammation.

#### **CASE 5**

A41-years-old female known to have Iron deficiency anemia, presented to the Emergency department with recurrent lower abdominal pain. Physical examination since 1 month was significant only for right lower quadrant tenderness without peritoneal signs. Laboratory tests including complete blood count and urinary system were all within normal ranges. Abdominal CT scan with IV contrast revealed a large elongated fluid-filled tubular structure the right iliac fossa measuring about 7 cm and arising from the inferior-medial aspect of the cecum with focal calcification, the appearance was highly suggestive of appendiceal mucocele no other masses were seen. After a discussion with the patient, we took her for a diagnostic laparoscopy and according to the intraperitoneal findings, we did an appendectomy instead of ileocecal resection. A10-mm trocar was placed through the supra-umbilical incision to approach the intraperitoneal cavity using the open has son technique. Apneumoperitoneum was made by the insufflation of carbon dioxide.The table was kept in the trendelenburg position with a 15° left tilt.A30° telescope was introduced through the umbilical port for diagnostic laparoscopy, and a complete abdominal examination was done. Diagnostic laparoscopy revealed approximately 5 cm large appendiceal mucocele. Two 5-mm ports were placed in the suprapubic and left lower quadrant areas. The appendiceal mucocele was isolated after separating the meso appendix by bovie, following this, the base of the appendix was ligated at the base and divided by using an monopolar. Mucocele of the appendix was retrieved through the umbilical port after careful minimal handling, haemostasis was obtained and the

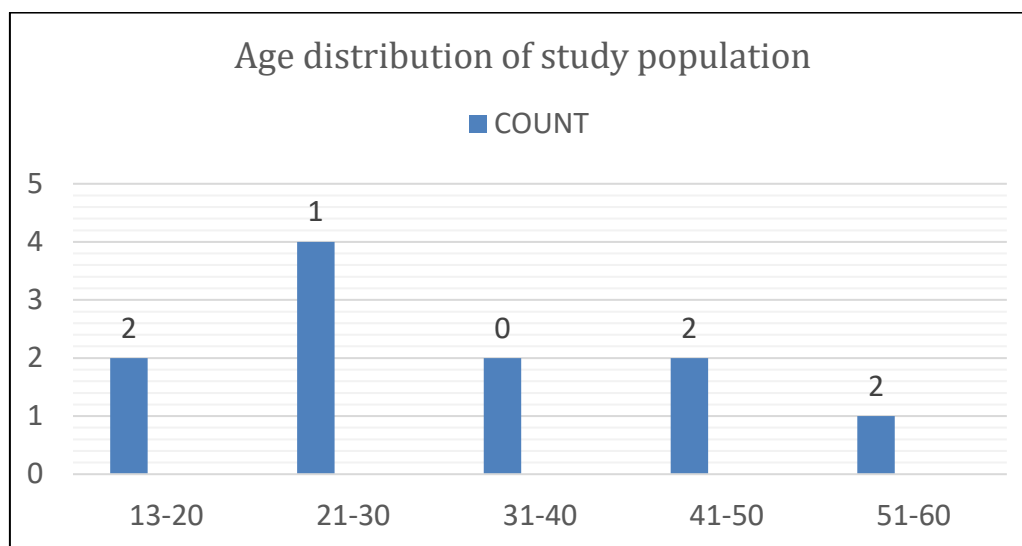
umbilical port site wound was closed. The patient tolerated the procedure very well, she started oral feeding 24hours post-operation. She was discharged on the second postoperative day without any active complaint. Pathology of appendiceal specimen showed inflammation.

## RESULTS

In present study total 6 patients have been reported. Mean age of 35 years has been found in this study.

**Table 1:Age distribution**

AGE	NO. OF CASES
5- 20	2
21- 30	1
31- 40	0
41- 50	0
51- 60	2
61- 70	4



**Graph 1: Age distribution of study population**

**Table2: Age distribution of study population**

MALE	FEMALE
6	4

## DISCUSSION

Mucocele of the appendix is a descriptive term for an appendix distended by mucus, secondary to mucinouscystadenoma (63%), mucosal hyperplasia (25%), mucinous cystadenocarcinoma (11%) and retention cyst. Mucocele can also occur due to occlusion of the lumen by endometriosis or carcinoid tumour. Mucocele of the appendix is rarely found only 0.2%–0.3% of appendectomies.<sup>1-4</sup> In this study, 2 of the 5 patients were younger than 15 years managed conservatively were the patients were not fit for surgery. Tumors of the appendix can cause acute appendicitis, particularly in elderly patients. Appendiceal mucocele belongs to a heterogeneous histopathological group and can also cause acute appendicitis.<sup>2</sup> The most common symptom of appendiceal mucocele is pain in the right lower quadrant of the abdomen (64% of the cases), although in 25% of patients very large lesions can be asymptomatic.<sup>3</sup> During physical examination, palpated

mass can be present in the same location. In this study, three of the patients had localized abdominal pain, and the other two were asymptomatic for the mucocele. The clinical presentation of a mucocele is varied and usually nonspecific. Only 50% of the patients are asymptomatic and in the rest it is an incidental finding at the time of surgery. In the patients who are asymptomatic, abdominal pain is the most common symptom followed by abdominal mass, weight loss, nausea and vomiting in decreasing order of frequency. Rupture of a neoplastic appendiceal mucocele may present as appendicitis.<sup>5,6</sup> Mucoceles represent a variety of histopathology, both neoplastic and non-neoplastic can result in appendicular dilatation filled mucoceles.

Treatment is surgical, but a laparoscopic approach is not advised because of the risk of rupture. The type of surgical treatment is related to the dimensions and histology of the mucocele. Appendectomy is used for simple mucocele or for cystoadenoma when the

appendiceal base is intact. Even though the appendiceal base is intact, in suspected cases frozen section examination should be done to differentiate between cystadenoma and cystadenocarcinoma. Caecum resection is performed for cystoadenoma with a large base, and a right hemicolectomy is recommended for cystadenocarcinoma. An accurate exploration of the abdomen during laparotomy is advised, because of the association between the appendiceal mucocele and other tumours, particularly carcinoma of the colon (19-21%). Generalised pseudomyxomateritonei is treated by aggressive surgical debulking of all apparent mucinous tissue.<sup>7,8</sup>

## CONCLUSION

In conclusion, mucocele is a common presentation of the appendicitis. The most common symptom is abdominal pain. This would make the preoperative diagnosis very important in accurately planning treatment. In our institution there are cases where mucocele appendix was not associated with any anaplasia of cells.

## REFERENCES

1. Minni F, Petrella M, Morganti A, Santini D, Marrano D (2001) Giant mucocele of the appendix: Report of a case. *Dis Colon Rectum* 44:1034-1036.
2. Soreide K, Gudlaugsson E, Kjellefjord KH (2005) Appendiceal mucinous cystadenoma. *Tidsskr Nor Laegeforen*. 125: 289-291
3. Rymer B, Forsythe RO, Husada G (2015) Mucocele and mucinous tumours of the appendix: A review of the literature. *Int J Surg* 18: 132-135
4. Sturniolo G, Barbuscia M, Taranto F, Tonante A, Paparo D, et al. (2011) Mucocele of the appendix. Two case reports. *Gchir* 32:487-490
5. Lien WC, Huang SP, Chi CL, Liu KL, Lin MT, et al. (2006) Appendiceal outer diameter as an indicator for differentiating appendiceal mucocele from appendicitis. *Am J Emerg Med* 24:801-805
6. Sasaki K, Ishida H, Komatsuda T, Suzuki T, Konno K, et al (2003) Appendiceal mucocele: sonographic findings. *Abdom imaging* 28: 15-18.
7. Fujiwara T, Hizuta A, Iwagaki H, Matsuno T, Hamada M, Tanaka N. Appendiceal mucocele with concomitant colonic cancer. *Dis Colon Rectum* 1996;39(2):232-6.
8. Iswariah H, Metcalfe M, Lituri D, Maddern GJ. Mucinous cystadenoma of the appendix. *ANZ J Surg* 2004;74(10):918-9.