

Original article**A STUDY ON DIFFERENT MODALITIES OF DIAGNOSIS AND TREATMENT OF RIGHT ILIAC FOSSA MASS****Author**

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ABSTRACT

Background: Patients with mass in the right iliac fossa may consent the surgeon, paediatrician or gynaecologist. Thus, proper Knowledge of anatomy and pathological process that occur within the abdomen are essential for a Clinical diagnosis and management. The objective of this study was to interpret etiopathology, clinical presentation, differential diagnosis and management of mass in the right iliac fossa.

Methodology: 50 cases with mass in the right iliac fossa (RIF) were included in the study. Investigations such as Ultrasonography, colonoscopy and CT scan were done.

Results: During this study period, a total number of 10 cases of appendicular abscess and 22 cases of appendicular mass were taken. 11 cases of ileocecal Koch's were encountered. Patients had constitutional symptoms like pain, fever, weight loss etc. Specimens was observed after Right hemicolectomy, interval appendicectomy, ileoascending resection anastomosis microscopically and histopathological diagnosis. 2 cases of carcinoma ascending colon and 2 cases of carcinoma caecum were seen. Filling defect and mucosal irregularities was seen in Contrast enema.

Conclusions: This study conclude that appendicular mass is the commonest pathology in right iliac fossa amongst all and conservative treatment followed by interval appendicectomy is the best way of treatment. Ileocecal tuberculosis is second and Carcinoma of the colon is third common causes for mass in the right iliac fossa. These cases having a good prognosis, if properly treated and diagnosed. The other rare causes of mass in the right iliac fossa are intussusception, psoas abscess.

Keywords: Carcinoma of the colon, Intussusception, Psoas abscess, Ileocecal tuberculosis

INTRODUCTION

Mass in the right iliac fossa is commonly entity in the surgical wards, whether identified clinically or as an Ultrasonography finding. Appendix more commonly in the right iliac fossa, there are many other structures giving rise to a mass in the right iliac fossa.¹ Thus preoperative diagnosis remains a challenge and a reminder of art of surgical diagnosis. Patients with mass in the right iliac fossa may consent the surgeon, paediatrician or gynaecologist. Thus, proper Knowledge of anatomy and pathological process that occur within the abdomen are essential for a Clinical diagnosis and management. Some patients will improve with conservative treatment whereas others will require immediate surgical intervention.

Mass in the right iliac fossa is a differential diagnosis, though some investigations are common, but some may differ from individual cause and the treatment is according to the cause.²

The purpose of this study is to interpret etiopathology, clinical presentation, differential diagnosis and management of mass in the right iliac fossa, the relative incidences of various pathological entities in our hospital, complications that may arise, and morbidity and mortality. Relevant literature has been reviewed.

The objective of this study was to study the etiopathology, clinical presentations of the various pathological entities of mass in the right iliac fossa along with its differential diagnosis and management.

Methodology:

50 cases with mass in the right iliac fossa (RIF) were included in this observational study. This study was done in VS Hospital, Ahmedabad, during the time period of June 2018 to sept 2019

Inclusion criteria

1. Cases having a mass in the RIF
2. Patients of both Gender
3. Patients found with mass in the RIF incidentally on investigations and examination are included in the study.

Exclusion criteria

1. Due to gynaecological conditions, Patients having a mass in the right iliac fossa are excluded.

Method of collection of data

50 cases were selected on a purposive sampling basis subjected to

- Detailed clinical history
- Physical examination
- Investigations

- a. Blood and urine routine, urea and electrolytes
 - b. Stool for Ova, occult blood and cyst
 - c. Plain X-ray of abdomen and chest
 - d. Contrast X-ray-Barium meal follow through and Barium Enema
 - e. Right iliac region Ultrasonography
 - f. Colonoscopy
 - g. CT Scan
 - h. Diagnostic laparoscopy.
- Surgical intervention in the form of
 - a. Incision and drainage
 - b. Interval appendicectomy
 - c. Limited resection
 - d. Right hemicolectomy

These interventions are done as per requirement in each case. Due to gynaecological conditions having a mass in the right iliac fossa were excluded. All the findings of the cases were recorded in the proforma case sheets and were considered for the study. Analysis was done by using the arithmetic mean, the standard deviation, standard error, t-test and proportion test or chi-square test of significance. The p-value was 5% or 0.05 level of significance.

During the study period, a total 22 cases of appendicular mass and 10 cases of appendicular abscess were taken. Pain in abdomen, fever, vomiting and reduced appetite were the common presenting features in all the patients. All the symptoms were present more than 3-4 days. On Examination, the mass was palpable in the right iliac region and clinical diagnosis was made on basis of symptoms and signs. The patients were hospitalized for further treatment.

22 patients were treated conservatively with bed rest, antibiotics and intra venous fluids. These patients were continually monitored for rise in temperature, Pulse, change in size of mass. The patient needs to stay in hospital until the mass was reduced to a small non-tender lump. As a rule, interval appendicectomy was contemplated six weeks after the end of primary hospitalization. 10 cases of appendicular abscess in this study were encountered and treated by extraperitoneal drainage.

11 cases of ileocecal Koch's were encountered. Patients with constitutional symptoms like pain, fever, weight loss etc. Specimens was observed after Right hemicolectomy microscopically and histopathological diagnosis was made followed by ATT.

2 cases of carcinoma ascending colon and 2 cases of carcinoma caecum were seen. Pain in abdomen, loss of appetite and weight, Abdomen mass were the presenting features. Filling defect and mucosal irregularities were seen by Contrast enema. Other investigations like colonoscopy and CT scan were done. All the cases underwent right hemicolectomy followed by chemotherapy.

Other cases like psoas abscess, Meckels diverticulum and intussusception were seen whose treatment was individualised. After specific interval or during the recurrence of the symptoms, Patients were advised to come for regular follow up.

All the cases were treated in the hospital included conservative treatment and surgical treatment and preanaesthetic examination was done in all Surgical cases. Post operatively patients were managed by giving Intra venous fluids, IV antibiotics, Ryles tube aspiration and analgesics. BP, Input / output, TPR charts were maintained. Most of the patients shows improvement in the postoperative period and during the follow up.

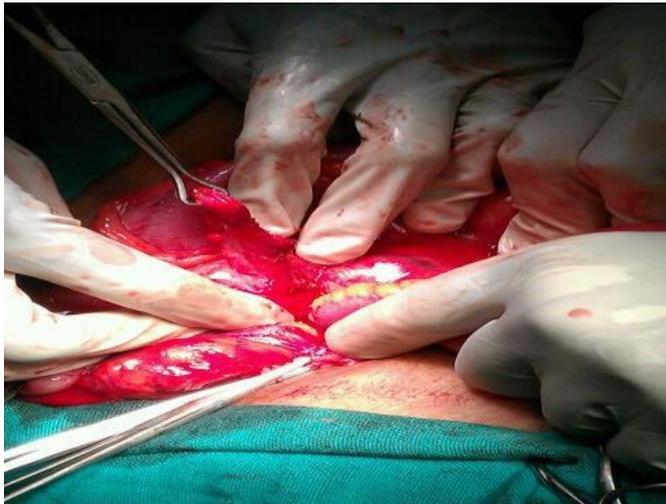


Figure:1 Appendicectomy.



Figure 2: Specimen of Right hemicolectomy showing growth in the colon.



Figure 3: Resected specimen of Rt. hemicolectomy.

RESULTS

From below table, it can be observed that appendicular pathology constituted 64% including 44% appendicular mass and 10% appendicular abscess.

TABLE 1: INCIDENCE OF AGE AND SEX DISTRIBUTION

AGE	MALE	%	FEMALE	%
10-19	4	12.90323	3	15.78947
20-29	11	35.48387	5	26.31579
30-39	4	12.90323	2	21.05263
40-49	3	9.677419	4	21.05263
50-59	3	9.677419	1	5.263158
60-69	4	12.90323	3	15.78947
70+	2	6.451613	1	5.263158
TOTAL	31	100	19	100

TABLE 2: DIFFERENT TYPES OF MASS IN RIF

DIAGNOSIS	MALE	FEMALE	TOTAL NO.OF CASES
APPENDICULAR MASS	15	7	22
APPENDICULAR ABSCESS	6	4	10
ILEOCECAL TUBERCULOSIS	7	4	11
CARCINOMA CECUM	1	1	2
CARCINOMA ASCENDING COLON	1	1	2
PSOAS ABSCESS	0	1	1
INTUSSUSCEPTION	1	1	2
TOTAL	31	19	50

Above table shows male: female ratio was 31:19 (1.6:1). Maximum incidence of males (35.48%) and females (26.31%) was seen in the age group between 20-29 years. The below

table shows that 100% of patients presented with pain abdomen, associated fever (46%), vomiting (40%), weight loss (8%), mass abdomen (8%) and with bowel disturbances (14%).

TABLE 3: CLINICAL PRESENTATION

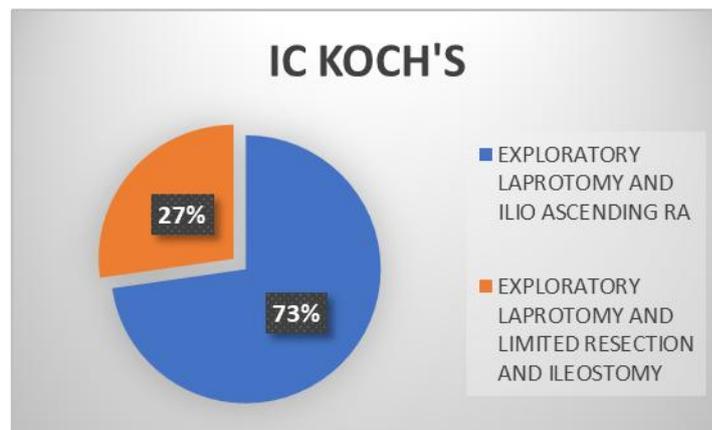
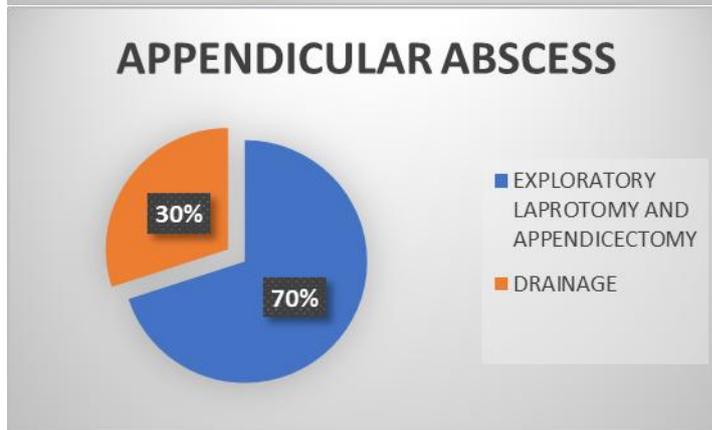
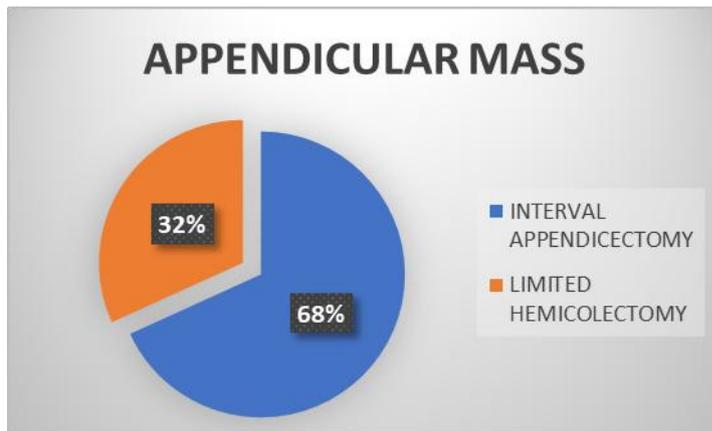
DIAGNOSIS	PAIN	FEVER	VOMITING	WEIGHT LOSS	MASS	BOWEL DISTURBANCE
AM	22	5	5	0	2	4
AA	10	10	10	0	0	1
IT	11	3	3	2	0	0
CC	2	1	0	1	1	1
CA	2	1	1	1	1	1
PA	1	1	0	0	0	0
IN	2	1	1	0	0	0
TOTAL	50(100%)	23(46%)	20(40%)	4(8%)	4(8%)	7(14%)

AM - Appendicular Mass, CA - Carcinoma Ascending colon, AA - Appendicular Abscess, PA - Psoas abscess, IT - Ileocaecal Tuberculosis, CC - Carcinoma caecum , IN- Intussusception

TABLE4: INVESTIGATION

DIAGNOSIS	ULTRASOUND	COLONOSCOPY	BA. ENEMA	CT SCAN	DIAGNOSTIC LAPAROSCOPY
AM	22	0	0	2	0
AA	10	0	0	1	0
IT	11	1	1	3	2
CC	2	2	2	2	0
CA	2	2	2	2	0
PA	1	0	0	1	0
IN	2	0	0	0	0
TOTAL	50(100%)	4(8%)	5(10%)	11(22%)	2(4%)

Ultrasound was done in all the cases i.e., 100% (50 cases) followed by CT scan (22%), barium studies (10%), colonoscopy (8%) and diagnostic laparoscopy (4



All ca rectum treated by hemicolectomy and chemotherapy. Psoas abscess treated by external drainage. All cases of intususception case treated by exploratory laparotomy and resection anastomosis.

DISCUSSION

Appendicular mass

44 % Appendicular mass of cases in the present study. Male: Female ratio of appendicular mass is 1.1:1. The maximum age incidence was in 3rd decade i.e. 33.3%, 12 cases followed by 2nd decade i.e. 22.2%, 8 cases. The age of appendicular mass ranged from 11 to 72 year. *Jordan JS et al.*, found that the ration of appendicular mass for male to female ratio is 2:1

and patients ranged in age group between 6 to 60 years with most patients in the 11 - 30 year age group.³ In another study of appendicular mass the male to female ratio is 2:1. The patients ranged in age from 12 to 65 years with most patients in the 12 - 30 year age group.⁴ According to *Thomas et al.*, age ranged from 14 to 77 years, but the maximum incidence fell in the fifth decade.⁵

Appendicular mass-comparison with other studies

All the patients came to the hospital for abdomen Pain. 5 cases were associated with fever and vomiting and 11 cases pain was of colicky type, initially it was around the umbilicus and later shifted to right iliac fossa. In the remaining cases, the pain was vague in nature and present at right iliac fossa. In the present study, 10% (5 Cases) of patients were febrile at presentation. Only 3% (2 cases) of patients presented with abdomen mass to the hospital. Commonly, all the patients have tenderness in right iliac fossa on clinical examination. According to *Jordan et al* study, 15 patients (33%) were febrile when they were admitted to the hospital. 5.6% of patients had abdominal mass at the time of admission.³ According to *Ali et al* study was found in 57 (95%) of the patients were having gastrointestinal upset in different forms. 60% (36) patients gave history of fever at the time of admission.⁴ In the present study hospital Stay duration for appendicular masses ranges of 1-10 days, 18 cases (50%) and 11-20 days, 17 cases (47.2%). The average stay for appendicular mass was 10.8 days.⁵ In another study the average hospital stay was of 10 days.⁶ According to *Ali et al* found that out of 60 patients, 24 patient has stayed less than 3 days, 15 between 4 and 6 days while 21 patients stayed more than a week.⁴ In the present study, 22 cases (44%) were diagnosed clinically and on ultrasound abdomen findings. All these patients were treated conservatively i.e., Nil orally, IV fluids, IV antibiotics and RTA. 75% of patients underwent interval appendicectomy (Figure 1). 25% of cases did not come for follow up. All the cases have done well in the follow up. The management of appendicular mass was conservative with no mortality rate and no morbidity rate. At subsequent elective operation the majority of appendices removed showed histological evidence of previous appendicitis. According to *Thomas et al.*, the treatment of appendicular mass was conservative, with low mortality rate and a low morbidity rate is in correlation to our study.⁵

Appendicular abscess

Appendicular mass resolution is the usual outcome, but suppuration may occur resulting in an appendicular abscess. It is in appendicular abscess that incision and drainage are effective when pus has formed. In the present study, patients with appendicular abscess formed 20% of the cases. In 3rd decades 27% cases, 7th decades 27% cases and 18% cases in 5th Decade. The appendicular abscess ratio for Male:Female is 1.5:1 with ages ranging from 4 to 83 years (mean 40.7 ± 2.7 years). Symptoms had been present for an average of 9.2 ± 0.8 days prior to admission to the hospital.⁷

In this study all the patients with appendicular abscesses were present with abdomen Pain. All the patients were associated fever and had history of vomiting at the time of presentation. On clinical examination Tenderness and mass were present in right iliac fossa. 7 cases (70%) cases underwent laparotomy for surgical drainage of abscess with a 20%

complication rates such as wound infection which were treated by antibiotics and daily dressings. 30% of patients underwent interval appendicectomy. There was no recurrence after surgical drainage. According to a study 61 of 68 patients underwent surgical drainage of abscess with a 28% complication rates. Interval appendicectomy was performed in 42 cases with a 19% complication rate.⁷ In this study, 2 patients developed wound infection after extra peritoneal drainage. The complications developed in 6% of patients are wound infection and faecal fistula in 6% of cases. Wound infection followed interval appendicectomy in 9% of cases.⁷

Appendicular abscess-comparison

According to *Hurme et al*, if abscess is operated on in the acute phase, there are chances of more complications.⁸

Ileocecal tuberculosis

Tuberculosis is an important cause of morbidity and mortality in developing countries and intestinal tuberculosis is very common in India. In this study, 22% (11 cases) ileocecal tuberculosis taken up for study has palpable mass in the right iliac fossa. In present Study, 50% of cases of ileocecal tuberculosis had associated pulmonary tuberculosis. In this study 50% of cases are in age of 20-29 years (3rd decade) 25% of cases seen in 4th decade and 25% cases are in 5th decade. Males are predominantly affected then female. Male: Female ratio is 1.7:1. All the patients complained of pain in the right iliac fossa. 27.7% of patients had fever and presented with history of vomiting. All patients are associated with fever of mild degree and evening rise of temperature is present. In all these cases, there was a mass in the right iliac fossa. Patients had not given history of mass but on examination they were found to have mass in the right iliac fossa. The mean age of presentation was 32 years (range 13-65 years) and ratio male: female is 3:4.⁹ The patients presented with abdominal pain, loose motions. Other symptoms like low grade fever, weight loss and anorexia were present in 71% of patients. Abdominal pain is one of the commonest presentations and is found in around 70-90% of cases.¹⁰

Tuberculosis of gut is commonest in the ileocecal region (55.85% of cases) and the prevalence is almost equal in males and females. The most common symptom is abdominal pain, weight loss, fever, nausea and borborygmi.¹⁰

Ileocaecal tuberculosis-comparison with other studies

In the present study, 11 cases of Ileocaecal tuberculosis are diagnosed based on history, clinical examination, ultrasound examination. Barium studies done in 1 case showed pulled up caecum with multiple nodular areas with similar nodules in terminal ileum. Colonoscopic findings showed nodulo ulcerative lesions with thickened oedematous ileocaecal valve. Barium enema in ileocaecal tuberculosis shows a pulled-up caecum with multiple nodular areas with similar nodular areas in terminal ileum.¹¹ The colonoscopy findings are nodular,

nodulo ulcerative or ulcerative lesions with erythematous surrounding mucosa, thickened edematous ileocaecal valve are suggestive of tuberculosis.⁹

In the present study, 100% of cases underwent right hemicolectomy and followed by ATT. These patients responded well and had clinical improvement. The clinical subjective improvement after surgery occurred after 2-6 months of ATT which may be because of surgical removal of basic tuberculous lesion. In all the cases, the specimens are sent for histopathological examination and the reports were correlated with the clinical diagnosis.

Carcinoma caecum and ascending colon

Carcinoma caecum formed 4% (2 cases) and carcinoma ascending colon formed 4% (2 cases) in the present study. 83% cases are seen in the age group above 50 years of age and 50% of cases are seen in 7th decade and the oldest patient was 75 years aged. The Male : Female ratio of carcinoma caecum was 1:1 and carcinoma ascending colon was 1:1. The sex distribution of colorectal carcinoma is approximately equal. The ratio of Male: Female is 1:1 for colonic carcinoma.¹² The incidence of carcinomas in the right colon (caecum and ascending colon) is 25-31%. 50-69% of all colon growths are in the sigmoid.^{13,14} In the present study all the colonic carcinomas presented with dull aching pain but two out of 4 cases (50%) presented with mass abdomen, loss of weight, fever and bowel disturbance. The duration of symptoms of presentation ranged from 1 month to 7 months. 1 patient (25%) gave history of vomiting. The mass was felt in the right iliac fossa in all cases and it was hard in consistency. Only one patient had mesenteric lymph node metastases. In majority of cases of carcinoma caecum is constant but not very severe abdominal pain was experienced in right iliac fossa or subcostal or epigastrium often associated with local tenderness. Abdominal mass was felt in only few cases usually in the right iliac fossa.¹³ In the present study, contrast barium enema was done in two cases showed persistent irregular filling defect in caecum. The barium enema examination revealed a bulky tumor that projects into the lumen of caecum or ascending colon, producing a filling defect with an irregular edge thus correlating with the findings of our study (Table 4).¹³ In the present study, 40% of the cases are diagnosed based on ultrasound, and ultrasound findings correlated with colonoscopic findings and barium enema findings (Table 4). The sensitivity, specificity and accuracy of abdominal ultrasound in colonic tumours considered being consistent with colonic carcinoma was 96, 67 and 97% respectively.¹⁵ In the present study, all the patients are subjected to right hemicolectomy with ileo-transverse anastomosis. All of the patients have done well post operatively and followed by chemotherapy with each cycle using 5 flouro-uracil 600mg/m² i.v. bolus over 1 hour, Leucovorin 500mg/m² in 2 hours i.v. infusion in saline, each cycle is repeated every week for 6 weeks. The histopathological diagnosis is correlated with the clinical diagnosis. According to *Golighers* experience, he prefers to practice the more extensive right hemicolectomy for the growths of caecum and ascending colon.¹³ Histopathological examination of the resected specimens revealed submucous lipoma in one of the cases. Patient was uneventful post-operatively and in follow-up.

Psoas abscess

A 64-year-old immunocompetent female presented with right lower abdominal pain and fever of 2 days duration. On examination, there was a palpable lump over the right iliac fossa. On further investigations, primary tubercular psoas abscess was revealed. Early diagnosis and prompt treatment with extraperitoneal drainage along with anti-tuberculous drugs, led to a satisfactory outcome. Typical patient presentation included fever with complaints of pain in the flank, hip or abdomen.¹⁷ In a study of 11 cases of psoas abscess, 8 cases had fever as the presenting symptom.¹⁸

Intussusception

A 15-year-old female presented with the complaints of abdominal pain of 12 hours duration. She had no significant past medical history or previous abdominal surgery. There was no family history of any hereditary illnesses. On admission, she had normal vital signs. Investigation findings were consistent with a bowel obstruction secondary to an enteric intussusception. A midline laparotomy was carried out. The intraoperative finding was intussusception of ileus due to an inverted Meckel's diverticulum located 20 cm from the ileocecal valve. The bowel was examined for signs of ischemia. No ischemic loop was identified. Diverticulectomy was performed. Histopathology revealed Meckel's diverticulum without any ectopic mucosa or malignancy. The postoperative period was uneventful and after 6 days the patient was discharged. A 61-year-old male presented with ten-day history of colicky central abdominal and right iliac fossa pain. It was more at the right iliac fossa and has gradually worsened. There was an associated anorexia, nausea but no vomiting. On examination, he was afebrile. The abdomen was slightly distended, diffusely tender but more at the right iliac fossa, with guarding and a palpable tender mass. A provisional diagnosis of appendicular mass was made. He underwent a laparotomy, which revealed some turgid peritoneal fluid, minimal ileal dilatation and an intussusception of the caecum into the ascending colon. A limited right hemicolectomy was done with primary ileo-colic anastomosis (Figure 2 and 3). The post-operative recovery was uneventful and he was discharged home after 5 days. The histology confirmed an intussuscepting caecal polypoidal tumour of adipose tissue, in favour of a submucous lipoma, covered with partly ulcerated mucosa and atrophic appendix. A retrospective study about adult intussusceptions concluded that the most common symptom was acute abdominal pain (64.3%) and that enteric intussusception (52.4%) was the common most type.¹⁹ A study concluded that most patients with adult intussusception in their series were men, and most intussusceptions were benign and of enteric origin. Operative reduction is recommended for enteric intussusceptions. The prognosis of adult intussusception after surgery is good except for malignant intussusception.²⁰

CONCLUSION

A total of 22 patients were diagnosed as appendicular mass, 10 patients as appendicular abscess, 2 patients as carcinoma caecum, 2 patients as carcinoma ascending colon, 11 cases of ileocaecal tuberculosis and the remaining included other cases like Psoas abscess and Intussusception. This study showed that appendicular mass is the commonest pathology in

right iliac fossa amongst all and conservative treatment followed by interval appendicectomy is the best mode of treatment. This is followed by Ileocaecal tuberculosis. Carcinoma of the colon and ascending colon are the other causes for mass in the right iliac fossa. These cases also carry a good prognosis, if properly diagnosed and treated. Apart from the clinical examination in order to come to diagnosis, ultrasonography of the abdomen and, in selected patients, other investigations like colonoscopy, barium studies, CT scan and diagnostic laparoscopy are of immense help.

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Conflict of interest: None declared

Ethical approval: The study was approved by the institutional ethics committee

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Conflict of interest

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