

**A CLINICO- ULTRASONOLOGICAL STUDY IN PREOPERATIVE EVALUATION OF RIGHT ILIAC FOSSA MASS**

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**ABSTRACT**

**Background:** Mass in the right iliac fossa is said to be temple of surprises, a common condition with clinical diagnostic puzzle and therapeutic dilemma to surgeon. Ultrasound is a quick, non invasive has bridged the gap between palpation and direct visualization. In this common clinical condition often disparity between clinical, ultrasound and final diagnosis is noticed. The role of ultrasound in preoperative evaluation is necessary as some require emergency surgical intervention and some improve with conservative management. **Methods:** Prospective study of 75 patients presenting with clinical diagnosis of RIF mass were selected. Pediatric age group, gynecological conditions and parietal wall tumors excluded. In these cases ultrasound examination by 5 and 7.5 Mh transducers were used and the clinical, ultrasound And final diagnosis were compared. **Results:** Appendicular mass constituted 51% (39cases), appendicular abscess 20% (15cases), Ileo caecal tuberculosis 18% (14 cases), Carcinoma caecum 4% (3cases), ileac lymphadenopathy and psoas abscess each of were accounted for 3% (2cases each). Appendicular abscess was common in 15-20 years, appendicular mass in 21-40years; Ileo caecal tuberculosis in 41-50years, Carcinoma caecum was in > 50 years, psoas abscess in 21-30 years, and iliac lymphadenopathy in 20-34 years of age. Ultrasound was able to diagnose 8 cases of appendicular abscess which were clinically diagnosed as appendicular mass. Ultrasound was able to find out the bowel thickening with target sign and pseudo kidney sign in Ileo-caecal tuberculosis and Carcinoma caecum with moderate specificity. Psoas abscess were confirmed with Ultrasound. One case clinically diagnosed as Ileo-caecal tuberculosis was found to be iliac lymphadenitis on Ultrasound. In the case of iliac lymphadenitis ultrasound guided FNAC was done and in one case as it was tubercular ATT started and others case it was Non Hodgkin's Lymphoma and chemotherapy was started. **Conclusion:** Appendicular pathology constituted 72% cases. It was able to detect appendicular abscess with high sensitivity and specificity. It helped in early assessment and early intervention of required, reduces the cost and morbidity. It is an adjuvant diagnostic tool in cases of ileo-caecal tuberculosis and carcinoma caecum. In elderly who can not withstand and in cases of misleading presentation of has a role and as of is relatively cost effective, non invasive procedure done in OPD setup without preparation with good results is an good first line of investigation modality in RIF mass.

**Keywords:** Anaemia, Lipid sub-fractions, hypocholesterolemia, severity.

**1.INTRODUCTION**

Mass in the right iliac fossa is said to be temple of surprises, a common condition with clinical diagnostic puzzle and therapeutic dilemma to surgeon. Ultrasound is a quick, non invasive has bridged the gap between palpation and direct visualization (Sabiston,2001). In this common clinical condition often disparity between clinical, ultrasound and final diagnosis is noticed. The role of ultrasound in preoperative evaluation is necessary as some require emergency surgical intervention and some improve with conservative management.

**2.MATERIAL AND METHODS**

**Source of data (sample):**

Seventy five patients with signs and symptoms of a right iliac fossa mass admitted in Rajah Muthiah Medical College, Annamalai university, Chidambaram, India,

**Method of collection of data:**

Prospective study of 75 patients presenting with clinical diagnosis of RIF mass were selected. Pediatric age group, gynecological conditions and parietal wall tumors excluded. In these cases ultrasound examination by 5 and 7.5 Mh transducers were used and the clinical, ultrasound And final diagnosis were compared.

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**Inclusion criteria:**

1. It includes patients of age more than 14 years.
2. It includes patient who admitted with mass in right iliac fossa.
3. Cases which were found in accidentally of examination and investigations.

**Exclusion criteria:**

1. It excludes all gynecological conditions.
2. It excludes patients of age ≤15yrs
3. It excludes the mass encroaching into right iliac fossa from other region.
4. It excludes parietal wall swellings of right iliac fossa

**Methods:**

The included cases were subjected to

1. Detailed clinical history.
2. Physical examination.
3. Investigations
  - a. Blood and Urine routine.
  - b. Stool for occult blood, ova and cyst.
  - c. Pain X-ray of chest
  - d. Ultrasonography right iliac region.
  - e. Colonoscopy

**3.RESULTS**

Total numbers of 75 cases were included in our study who were assessed and treated.

The data was collected, analysed and the following observations were made and inferences were drawn.

Incidence of various conditions			
S.No	Disease	No of Cases	%
1	Appendicular Mass	39	51
2	Appendicular Abscess	15	20
3	Ileocaecal Koch's	14	19
4	Carcinoma of caecum	3	4
5	Psoas abscess	2	3
6	Iliac lymphadenopathy	2	3
TOTAL		75	

In our study majority of the cases (51%) presented with appendicular mass, 20% appendicular abscess, 19% ileo-caecal tuberculosis, 4% carcinoma caecum, 3% Psoas abscess and ileocaecal lymphadenopathy.

Diagnosis	No of cases	Age incidence					
		15-20	21-30	31-40	41-50	51-60	>60
Appendicular mass	39	3	10	15	9	1	1
Appendicular abscess	15	7	4	2	1	0	1
Ileo-caecal koch's	14	2	2	5	4	1	0
Ca caecum	3	0	0	0	0	1	2
Psoas abscess	2	1	1	0	0	0	0
Iliac lymphadenopathy	2	1	1	0	0	0	0

In the present study, youngest patient was 15 years old, diagnosed with appendicular mass and the oldest patient was 64 years old with carcinoma caecum. Appendicular mass was seen more commonly seen in 4<sup>th</sup> decade followed by 4<sup>th</sup>, 5<sup>th</sup> and 2<sup>nd</sup> decades, appendicular abscess was more common in second decade, ileocaecal tuberculosis was more common in 4<sup>th</sup> decade, carcinoma caecum was common in 6<sup>th</sup> and 7<sup>th</sup> decades and psoas abscess and iliac lymphadenopathy was common in 3<sup>rd</sup> and 4<sup>th</sup> decades.

**Sex incidence**

Diagnosis	Sex	
	Male	Female
Appendicular mass	22 (56.41%)	17(43.59)
Appendicular abscess	10(66.67%)	5(33.33%)
Ileocaecal koch's	8(57.14%)	6(42.86%)
Carcinoma caecum	1(33.33%)	(66.6%)
Psoas abscess	1(50%)	1(50%)
Ileocaecal lymphadenitis	2(100%)	0(0%)

In the present study appendicular mass was predominantly seen in males (56.41%) and appendicular abscess in males (66.67%). Ileocaecal tuberculosis in males(57.14%),Carcinoma caecum in females(66.6%), psoas abscess equal incidence in both males and females and ileocaecal lymphadenopathy had a male preponderance.

**Symptoms of Appendicular Mass**

Sl.No	Symptoms	No of Patients	% of Patients
1	Pain abdomen	39	10
2	Fever	28	7
3	vomiting	24	6
4	Altered bowel habits	04	10
5	Impaired appetite	16	4

**Symptoms of Appendicular Abscess**

Sl.No	Symptoms	No of Patients	% of Patients
1	vomiting	6	40
2	Impaired appetite	3	20

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**Symptoms of Ileocaecal Tuberculosis**

Sl.no	Symptoms	No of Patients	% of Patients
1	vomiting	7	50
2	Loss of weight	10	71
4	Altered bowel habits	7	50
5	Past H/o TB	5	35.5

Symptoms of Carcinoma of caecum			
Sl.No	Symptoms	No of Patients	% of Patients
1	Pain abdomen	3	100
2	Loss of appetite	3	100
3	Loss of weight	3	100
4	Altered bowel habits	2	66
5	Mass abdomen	1	33.33

In the present study, in 39 cases of appendicular mass total leukocyte counts were raised (12000 to 16500/cumm) in 28 cases. USG abdomen and pelvis was done in all the cases to con-firm the diagnosis. Similarly in all the 15 cases of appendicular abscess total counts were raised(12500-16500/cumm) I 6 cases and USG abdomen and pelvis was done for confirming the diagnosis. In ileo-caecal koch's raised ESR( >60mmhg) in 6 cases and USG abdomen and pelvis, CECT abdomen/pelvis and colonoscopy were done in all the cases. Out of 4 cases of carcinoma caecum total counts were raised in two.

**COMPARISION OF CLINICAL AND ULTRASOUND DIAGNOSIS WITH THE FINAL DIAGNOSIS:**

In cases clinically diagnosed, as appendicular mass ultrasound was more helpful in differentiating the appendicular mass from appendicular abscess, as it was able to identify 8 cases of appendicular abscess in this group. Once it was diagnosed as appendicular abscess the line of management changed from conservative to surgical intervention. In cases of ileo caecal tuberculosis and carcinoma caecum it was an adjuvant to the clinical diagnosis. All though ultrasound was able to make out bowel wall thickening in all the cases the differentiation was with moderate specificity. In this group one case that was clinically diagnosed as ileo caecal tuberculosis ultrasound diagnosed it as iliac lymphadinitis. The cases of psoas abscess were confirmed with ultrasound findings.

In cases of Iliac lymphadinitis ultrasound was able to detect the iliac lymph nodes and also ultrasound guided FNAC was done. In these cases unnecessary laprotomy, need of other imaging modalities were avoided. Patients were started on medical line of management in these cases.

Over all in case of right iliac fossa mass ultrasound was helpful as

1. Sensitivity in identifying the mass – 100%
2. Accuracy in identifying the origin- 94%
3. Correct diagnosis- 89.33%
4. Where the clinical assessment was 77.33%

**Table –1**

Sl.No	Disease	Males	Females
1	Appendicular mass	39	51
2	Appendicular mass	15	20
3	Ileocaecal TB	14	19
4	Carcinoma caecum	03	04
4	Psoas abscess	03	03
5	Iliac lymphadenopathy	02	03

Appendicular mass				
Disease	Sensitivity	specificity	PPV	NPV
Clinical assessment V/S ultrasound	76.09%	96.55%	97.22%	71.7
Final diagnosis V/S ultrasound	82.05%	88.89%	88.89%	82.0

Appendicular abscess				
Disease	Sensitivity	specificity	PPV	NPV
Clinical assessment V/S ultrasound	100%	88.23%	87.5%	100
Final diagnosis V/S ultrasound	93.33%	98.33%	93.33%	98.33

Ileocaecal Tuberculosis				
Disease	Sensitivity	specificity	PPV	NPV
Clinical assessment V/S ultrasound	61.52%	93.55%	66.67%	92.0
Final diagnosis V/S ultrasound	64.29%	95.05%	75.00%	92.0 6

Carcinoma of caecum				
Disease	Sensitivity	specificity	PPV	NPV
Clinical assessment V/S ultrasound	50%	94.2%	42.86%	95.5
Final diagnosis V/S ultrasound	100%	94.44%	42.85%	10

Over all in this study of masses presenting in the right iliac fossa, the following observations are made and compared.

The ultrasound was able to identify the RIF mass either in the form of an non Compressible mass, which is predominantly; echo poor with heterogenous texture with probe tenderness in the right iliac fossa in appendicular mass.

Ultrasound showed an hypo echoic localised paracaecal fluid collection, which is irregular or ill-defined borders in the right iliac fossa in appendicular abscess.

Ultrasound showed circular hypoechoic mass with an echogenic centre with pseudo kidney sign showing thickening of the bowel wall in Ileo-caecal Tuberculosis.

Ultrasound showed irregular bowel wall thickening which results in Target sign in Carcinoma caecum.

Ultrasound demonstrated a thick walled fluid collection in the psoas muscle extending in to the pelvis in psoas abscess.

Ultrasound showed iliac hypoechoic and heterogenous lymph nodes with central sonolucency and perinodal ecogenicity along the iliac vessels in iliac lymph nodes.

In our study the sensitivity in identifying the mass, accuracy and the percentage of correct diagnosis made by the ultrasound and the correct clinical assessment made were observed. Our findings were compared to the study done by Millard et al. (1991) "Ultrasonography in investigation of right iliac fossa masses".

In the observations made it shows that

1. Ultrasound is a best first line of investigations in patients with RIF mass.
2. When compared with other study it is almost similar observation except improvement in the accuracy, improvement correct diagnosis was made possibly with expert hands.
3. It is adjuvant to many of the conditions like Carcinoma caecum and Ileo-caecal tuberculosis

#### 4.DISCUSSION

In the period from December 2014 to January 2016 totally 75 cases were studied and Comparison of the clinical aspects and sonological aspects in respect to the final diagnosis were discussed.

The distribution of the diseases presenting as mass in the right iliac fossa after the final diagnosis are as follows:

In this study group of 75 patients 39 were diagnosed as appendicular mass, 15 as appendicular abscess, 14 as ileocaecal Koch's, 3 as Carcinoma caecum, 2 cases of Psoas abscess and 2 cases of Iliac lymph nodes. Appendicular pathology alone constitute 72% of the cases presenting as mass in the right iliac fossa, followed by ileocaecal Koch's, Carcinoma caecum, Psoas abscess and Iliac lymph nodes.

This study showed that appendicular mass is the commonest mass in the right iliac region among all and is best to be treated conservatively, which showed good response without morbidity (Nitecki,1993). Appendicular abscess treated with extra peritoneal drainage showed good response. All the cases of ileo-caecal tuberculosis, which were, treated surgically showed good response. The cases of Psoas abscess treated surgically and iliac lymphadenitis treated on medical line showed good response (Sanjay Azad,1991).

Ultrasound a quick and a safe first line of diagnostic tool in case of mass abdomen showed 100% sensitivity in identifying the right iliac fossa mass, 94.6% accuracy; correct diagnosis was made in 89.3% and found to be superior to the clinical assessment 77.3%.

With the final diagnosis ultrasound is found to be 89% sensitive, 82% specific in appendicular mass and 93% sensitive, 98% specific in appendicular abscess.

It is found to be helpful in differentiating appendicular mass from appendicular abscess.

This is important pre operative evaluation as the line of management changes from conservative line to surgical line. It is an adjuvant investigating modality to the clinical diagnosis in differentiating ileo-caecal tuberculosis and Carcinoma caecum . Though the ultrasound can able to pick up the bowel wall thickening the specificity is moderate. Ultrasound has got 100% sensitivity and 100% specificity in iliac lymphadenitis where the clinical diagnosis is 50%. The diagnosis of Psoas abscess can be confirmed with ultrasound. In cases with vague presentation which are often misleading ultrasound has a role in identifying the origin of the mass, character and extension of the mass (Joshi, 1976). This is an important aid to the diagnosis and pre-operative evaluation of the mass.

In elderly patients who can not with stand procedures like colonoscopy, and patients who are not willing for radiation exposure (barium studies) and those who can not afford for CT scanning and in rural areas where CT scan is not available ultrasound has a definitive role in diagnosis of the right iliac fossa mass, in its pre-operative evaluation and management.

#### 5.CONCLUSION

Ultrasound helped in early assessment of the patient, effectiveness of treatment in terms of reducing the morbidity, early surgical intervention whenever it was necessary, reduces the hospital stay and cost of the therapy.

Ultrasound a economical, non invasive, patient friendly procedure, done in OPD set up without any preparation, without any exposure to radiation with good results is an ideal first line of investigating modality in pre operative evaluation of right iliac fossa mass.

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