

A Dissertation on
Analytical Study of

**RIGHT ILIAC FOSSA MASSES
CLINICAL FEATURES AND MANAGEMENT**

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CERTIFICATE

This is to certify that the dissertation on “ **ANALYTICAL STUDY OF RIGHT ILIAC FOSSA MASSES CLINICAL FEATURES AND MANAGEMENT**” is a bonafide work, carried out in the Chengalpattu Medical College, Chengalpattu, during 2004 – 2007 by **Dr.K.M. ELUMALAI**, under my supervision and guidance in partial fulfillment of the regulation laid down by the Tamil Nadu Dr.M.G.R.Medical University, for the M.S., General Surgery, Branch – I Degree Examination to be held in March 2007.

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CHAPTER 1

INTRODUCTION

Right Iliac Fossa Mass is quite common in our part of country. The mass has varied origin and requires versatility in its management. This is because the mass may range from benign to most aggressively malignant lesion and touch upon various specialities of surgery, like genitourinary surgery, vascular surgery, gynecological surgery, and colorectal surgery.

Hence a detailed study of the various causes of Right Iliac Fossa Mass will help in analyzing the different types of presentation and the management. Right Iliac Fossa Mass has 8 anatomical entities, and six other organs in the neighbourhood whose pathology may extend into this region.

Right Iliac Fossa region has Appendix, Cecum, Terminal Ileum, Lymph nodes, Iliac artery and vein, Retroperitoneal connective tissues, Iliopsoas muscle, and Iliac bone.

Neighbouring organs and their pathologies which might extend into this region are Kidney, Gallbladder, Uterus, Urinary Bladder, Testis, and Pelvic abscess.

Hence, this study has been initiated with a view to analyse

- 1.Incidence of different types of Right iliac fossa masses.
- 2.Variable clinical presentstion and investications most helpful for each case.

CHAPTER 2

AIMS OF STUDY

1.To evaluate

- The incidence of various causes of Right iliac fossa masses and the commonest causes.
- Various modes of presentations of Right iliac fossa masses
- Most helpful investigations for aiding in diagnosis of Right iliac fossa masses

2.To determine the management of right fossa masses whether by emergency surgery or by conservative measures.

CHAPTER 3

MATERIALS AND METHODS

Over a period of time from 2004 to 2006 all the patients admitted in the surgical wards were examined and patients who had a lump in the right iliac fossa were grouped for the study. In this study total of fifty patients were taken up for study over the previous two and half years duration. Pediatric cases were not included in this study group.

Routine thorough history was elicited, and detailed clinical examination was performed. Routine hematological and biochemical investigations were done. Radiological examinations, X-rays chest PA view was taken to all patients, along with X-ray abdomen plain view for correlation and contribution to the diagnosis.

Specific investigations were also performed, considering the merits of the individual case. USG – abdomen was performed for all cases. Depending on the requirement of individual case presentation Barium meal series or Barium Enema evaluation was performed. Colonoscopy was not done as this facility was not available at this centre. CT Scan abdomen contrast study also done.

As the treatment part, as well as part of the diagnosis, laparotomy procedure was also performed,as

- 1.Elective cases,where presentation was ambiguous.
- 2.Emergency cases,where presentstion was acute.

PROFORMA

Name	Age/Sex	IP number
Unit	Ward	Date fadmission/discharge

- A. Detailed history : duration of symptoms,pain,gastrointestinal,genitourinary, systemic symptoms,previous illness and treatment ,recurrence of symptoms. History of pulmonary tuberculosis,diabetes,hypertension,ischemic heart disease, Were also elicited.
- B. Clinical examinations
- C. Investications
- D. Treatment planned and given.

CHAPTER 4

ANATOMY

Abdomen is divided into nine regions margined by lines on the anterior abdominal wall. Right iliac fossa is a gentle cavity in the ala of the Ilium, in front of Sacroiliac joint and its ligaments.

Peritoneum lines right iliac fossa, anteriorly, posteriorly, laterally, covering Appendix, Cecum, Proximal Ascending Colon, and Terminal Ileum. External Iliac vessels of right side, lymph nodes, femoral plexes of nerves are behind the peritoneum.

CECUM AND APPENDIX

This blind pouch of large intestine projects downwards from the commencement of the ascending colon, below the iliocolic junction. It is completely covered by peritoneum. The serosa coat behind it is reflected downwards to the floor of the right iliac fossa and the retrocecal peritoneal space may be shallow or deep, according to the distance of the retrocecal fold from the lower end of the ileum and cecum. Often there are two peritoneal folds from either side of the posterior wall of cecum, forming between them the retrocecal recess in which the appendix may be lying. As in the rest of the colon, the longitudinal cecum is concentrated into three Taenia Coli, within which is the circular sacculated wall. The Taenia lie one anterior, one posterolateral, one postero-medial, all converge on base of Appendix to which they are useful guide.

Internally the Iliocecal junction is guarded by the iliocecal valve, where almost transverse lips may help to prevent some reflux into the ileum, but any possible sphincteric action is poor.

The cecum lies on the peritoneal floor of right iliac fossa, over the iliacus and psoas fascia and femoral and lateral taneous femoral nerves. Its lower end lies at the pelvic brim.

When distended its anterior surface touches parietal peritoneum of the anterior abdominal wall and when collapsed coils of ileum lie between the two.

Blood supply is by branches of anterior and posterior cecal arteries (branch of iliocolic artery) and their corresponding veins.Lymphatic drainage is to the nodes associated with the iliocolic artery.

VERMIFORM APPENDIX

It is a blind end tube,varying in length between 6 and 9 cms, opens into the posteromedial wall of the cecum,2cm below the ileocecal valve.On the abdominal surface it is marked by Mcburney's point.While the position of the base is constant in relation to the cecum,the apex may lie in variable position.

1.	Retrocecal	74%
2.	Pelvic	17%
3.	Subcecal	1.5%
4.	Paracecal	2%
5.	Pre ileal	1%
6.	Post ileal	5%

The three Taenia of the cecum merge into a complete longitudinal muscle layer of the Appendix.The submucosa contains many lymphoid masses and the lumen is thereby irregularly narrowed.This lumen is wider in the young child and may be obliterated in the old age.

Appendix has short mesentery called Mesoappendix, which is a triangular fold of peritoneum from the left inferior layer of the mesentery of the terminal ileum.

Blood Supply: Is by appendicular artery, a branch of inferior division of ilioocolic artery, which runs behind the terminal ileum to enter the mesoappendix. As it does so it gives off a recurrent branch which anastomosis with branch of posterior cecal artery.

Lymphatic drainage is to the nodes associated with ilioocolic artery. Nerve supply to the cecum and appendix is parasympathetic by vagus and sympathetic is from T 10 - T 12 levels. The pain fibres that accompanying these vasoconstrictor nerve fibres gives rise to periumbilical pain.

CHAPTER 5**CLINICAL FEATURES**

The symptoms of pain, duration of swelling, evolution of mass, etiologic factors, effects. Of previous treatment are vital clues. Specific symptoms of gastrointestinal tract diseases like Vomiting, melena, constipation, abdominal distention help in localizing the pathology.

Parietal swellings are without gastrointestinal tract symptoms. The retroperitoneal Swellings are initially free of GI symptoms and probably give symptoms after an interval.

INSPECTION - Site, Size, Shape, Situation, VIP, Pulsation

PALPATION - Warmth, tenderness, size, consistency, mobility, parietal/intra abdominal origin.

PERCUSSION - Help to locate origin of masses of bowel or retroperitoneum.

AUSCULTATION - Bowel sounds, Bruit.

PER VAGINAL EXAM - Ovary swellings, pelvic abscess.

PER RECTAL EXAM - Tenderness, boggy, melena

CHAPTER 6

INVESTIGATIONS

- 1. BLOOD**
- | | | |
|-------|---|-----------------------------------|
| Hb% | - | Assess Anemia. |
| TC,DC | - | Infective Causes. |
| ESR | - | Aised in Tuberculosis,malignancy. |

- 2. MOTION**
- | | | |
|--------------|---|----------------------------------|
| Ova,Cyst | - | Helminths, Protozoal Infections. |
| Occult Blood | - | Malignancy. |

3. RADIOLOGY

- A. X-ray chest,abdomen plain-soft tissue shadows,calcifications,bony swellings.
- B. Barium Enema for cecal and ascending colon pathology,more useful in malignancy.
- C. Barium meal study for terminal ileum - more useful for iliocecal tuberculosis.

4. USG - ABDOMEN

To study the masses and associated pathologies.

5. LAPAROSCOPE

To see peritoneal aspects of mass and taking biopsy.

6. COLONOSCOPE

- a. Visual Diagnosis
- b. Biopsy
- c. Theurapeutic
- d. Follow Up.

7. Others

- a. CT Scan Abdomen
- b. IV Urogram
- c. Serum CEA

CHAPTER 7

CLASSIFICATION OF RIGHT ILIAC FOSSA MASSES

1. PARIETAL: Tumors of skin,subcutaneous tissues,muscle.

2. INTRA – ABDOMINAL

1.APPENDIX

a. Inflammation - Appendicular mass,Appendicular Abscess.

b. Neoplastic

Benign - Adenomatous Polyp,

Leiomyoma

Fibroma

Malignant - carcinoid,

Adenocarcinoma.

2.ILEOCECAL REGION

a. Infection/inflammation

Ileocecal tuberculosis, Amebiasis

Crohn's disease, Actinomycosis

Roundworm bolus Impact

b. Malignancy

Ca.Cecum, Ca. Ascending colon

c. Others

Ileocecal intussusception

3. LYMPH NODES

a. Inflammation

Tuberculosis.

Filariasis.

Nonspecific.

b. Malignancy

Secondaries

Lymphoma

4. ILIAC ARTERY ANEURYSM

5. RETRO PERITONEAL

a. Cyst

b. Lymphoma

c. Sarcoma

6. ILIOPSOAS

a. Pyogenic

b. Cold abscess

7. ILIAC BONE

a. Trauma

Sub periosteal hematoma,
Callus from fracture bone

b. Inflammation

Acute Osteomyelitis
Chronic Osteomyelitis
Tuberculus Osteomyelitis

c. Developmental - Multiple Exostosis

d. Cyst – solitary - Osteitis fibrosa cystica, Hydatid
cyst.

e. Tumors -Benign - Chondroma

Malignant

Sarcoma

Secondaries

Multiple Myeloma

STRUCTURES NORMALLY NOT PRESENT BUT EXTEND PATHOLOGICALLY

1. Kidney- Undescended.,Dropped.
2. Gall bladder -Hydrops of the Gallbladder.
3. Uterus and its appendages
 - Tubo ovarian mass,Pyosalpinx.
 - Cyst,Abscess of Broad ligament.
 - Ovarian cyst and tumours.
4. Testis - Undescended testis and its pathology.
5. Pelvic abscess.
6. Huge diverticulum of urinary bladder.

COMMON RIGHT ILIAC FOSSA MASSES ARE

1. Appendicular mass/abscess.
2. Ileocecal tuberculosis
3. Ca.Cecum
4. Ovarian tumours/masses
5. Intussusception
6. Psoas abscess
7. Worm bolus obstruction

APPENDICULAR MASS AND ABSCESS

Diagnosis of appendicitis is primarily clinical, but can be difficult even to the most experienced surgeon. History and Physical findings of acute appendicitis:

Patient generally present with initial symptoms of pain, which is diffuse, epigastric or periumbilical in distribution and gnawing in character. Shortly after initial pain, nausea vomiting may develop. Anorexia is most common symptom. Vomiting occurring before the onset of pain makes the diagnosis of appendicitis questionable.

Less common symptoms includes diarrhea may be due to visceral pain, limited to one or two episodes or due to irritation of rectum due to pelvic position of inflamed appendix. Patient may give a history of one or two previous similar episodes. Tenderness is the sine qua non of appendicitis.

However tenderness may be absent early in the course of illness or unelicitable in obese individuals. More common difficulty in eliciting this sign arises from its retrocecal position.

classically the area of maximal tenderness will be at the point one third of the distance from the anterior superior iliac spine to the umbilicus. but the area of maximal tenderness may vary depending on the position of appendix. Many surgeons rely on local muscular rigidity to diagnose appendicitis, but this sign takes longer time to develop than the local tenderness.

Other signs useful on diagnosing appendicitis are rebound tenderness shake test, Rovsing's sign, cope's psoas test, obturator sign etc. Fever is a late physical finding. Body temperature is not more than 39 - 39.8 ' C.

Labaratory Investications

1. Leucocytosis - 11,000 - 16,000 cells/cc

more than 20,000cells/cc suggests perforation.

2. X-ray abdomen plain -following may be found

- a. Calcified appendicoliths.
- b. Cecal ileus.
- c. Psoas shadow obliteration.
- d. Distortion of right flank stripe.
- e. Pneumoperitoneum.

3.USG Abdomen

a. To diagnose appendicitis, non-compressible appendix, surrounded by a hypoechoic thickened wall more than 2mm in diameter upto 6mm.

b. To rule out other causes.

NATURAL COURSE OF ACUTE APPENDICITIS

When untreated, the appendix becomes walled off by omentum and adjacent coils of small bowel. The mass thus felt is clinically composed of confused mixture of these structures and is known as appendicular mass.

Provided that the appendicular inflammation does not progress to general peritonitis, the mass comes to contain pus first in small quantities but soon forms a definite abscess.

This pathological sequence poses problems for the surgeon. When the patient is seen beyond 48 hours, to operate to remove a gangrenous appendix from inside mass of adhesions and highly vascular tissue is dangerous and hazardous to the patient and as well to the surgeon. So wait till the formation of abscess that can be easily drained.

NATURAL COURSE OF DISEASE

Acute appendicitis

1. Till second day -> surgery.
2. Mass formation -> Abscess -> Drain
 - >Resolution ->Interval appendicectomy
 - >Generalised peritonitis ->Laparotomy.
3. Resolution
4. Perforation

MANAGEMENT OF APPENDICULAR MASS

If appendicular mass is present and general condition is satisfactory then the standard modern treatment is conservative that is OCHSNER -SHERREN Regime. This decision is based on the fact that nature has already localised the lesion and it is dangerous to disturb these barriers. Inadvertent surgery at this time is difficult, dangerous, impossible to find appendix and fecal fistula forms. For these reasons it is wise to observe a non operative programme, but be prepared to operate at any time, should nature fail to control the infection. Conservative management is not merely a postponement of operation nor is a substitute for operation, but it is an elective non operative treatment, to be undertaken ideally in a hospital. Appendectomy is carried out at a later date.

The following are strictly observed and monitored.

1. I/O chart
2. 1/2 hour PTR chart
3. Nil per oral
4. Antibiotics
5. Antiamebics
6. Nasogastric aspiration
7. Intravenous fluids
8. H2 blockers.

CRITERIA FOR STOPPING CONSERVATIVE TREATMENT

1. Rising pulse rate
2. Vomiting
3. Rising pain
4. Abscess size increase

A rising pulse rate in the early stages is the most reliable single sign that it is dangerous to proceed with conservative treatment. Vomiting after first few hours should always be regarded seriously and this itself may be a suggestive indication to operate.

A patient undergoing conservative treatment should not complain of unduly pain as opposed to tenderness after first 6 hours of such treatment. If patient does there is usually something severe and missing and there is a strong indication for surgery.

CONTRA INDICATIONS TO THE CONSERVATIVE TREATMENT

1. When there is a difficulty in diagnosing between acute appendicitis and some other intra abdominal catastrophe which warrants urgent operation.

2. Physical signs indicating that inflammation is still localized to the appendix.

3. When patient is under 10 years of age.(poor development of greater omentum and early perforation of appendix)

4. When patient is more than 65 years of age, there is a basis towards immediate operation because of increased frequency of peritonitis with minimal clinical signs of this age group.

5. In pregnant women.

90% of the cases, resolve without surgery. they can be the candidate for interval appendectomy, so that further attacks can be avoided. Appendectomy is usually done after an interval of 3 months.

Delayed appendectomy is carried by paramedian incision.

MANAGEMENT OF APPENDICULAR ABSCESS

Failure of resolution of appendicular mass usually indicates that there is pus within the mass. Indications for opening an appendicular abscess are

1. When the swelling is not diminishing in size, after the fifth day of treatment.
2. When the temperature is swinging above 37.8°C on several successive days.
3. A pelvic abscess rarely resolves. repeated rectal exams are required to determine when it is ready for opening into the rectum or vagina. USG will confirm the diagnosis.

OPENING OF AN APPENDICULAR ABSCESS

The swelling is palpated under anesthesia. A retrocecal appendicular abscess should be opened extraperitoneally. An incision from 2.5cm to 5cm long depending on the thickness of the abdominal wall is made over the center of the swelling rather nearer the lateral aspect than the medial aspect.

The external oblique is incised and the fibres of the deeper muscles are divided instead of being separated, so as to give free exit to the contents of the abscess.

When the peritoneum is reached the extraperitoneal tissues are separated in an outward and backward directions until the abscess cavity is entered.

In case where the abscess cavity lies some distance from the incision more direct drainage is effected by counter incision in the flank in which case the original incision is closed.

A subcecal abscess can be opened in the same manner, the incision being placed near the anterior superior iliac spine. A post ileal abscess can be reached only through the peritoneal cavity. When the peritoneum is opened gauze packing is inserted so as to isolate the region from the general peritoneal cavity, before opening an abscess.

A pelvic abscess is operated into the rectum when it is necessary to drain an appendicular abscess, no prolonged attempt is made to perform appendectomy, unless the appendix is lying free in the abscess cavity.

Usually the appendix is incorporated within the walls of abscess.

Percutaneous drainage of appendicular abscess under fluoroscopic or USG guided control, a skilled interventional radiologist can offer effectively, draining the abscess without invoking either an anesthetist or surgeon.

INTERVAL APPENDECTOMY

Following successful drainage of appendicular abscess, arrangements should be made for the patient to return for appendectomy, 3 months after the wound has healed. It is highly important to explain to the patient that drainage of appendicular abscess is no safeguard against further attacks of appendicitis. Sometimes Ca. cecum may co-exist. In this carcinoma age group all patients should have Barium studies or colonoscopy to exclude this.

HISTORY

First appendicectomy was performed by Claudias Amyand in 1736, when he operated on a ten year old boy suffering from right inguinal hernia. The first surgeon to perform a deliberate appendectomy for appendicitis was Lawson Tait in 1880. The patient was suffering from gangrenous appendicitis. Fitz in 1886 was the first person to name the term appendectomy. In 1887, Morton removed an appendix lying in an abscess cavity. Two years later McBurney pioneered early diagnosis and operations and devised the muscle splitting incision.

Early intervention was advocated by McBurney. Along the years, modification of surgery and techniques were introduced, regarding the choice of incision, handling of stumps and use of drainage tubes. The latest advancement is laparoscopic technique of performing appendectomy.

ILEOCECAL TUBERCULOSIS

Abdominal TB may involve the G I Tract,peritoneum,and mesenteric lymphnode.The commonest site is ileocecal region.

ETIOPATHOGENESIS

Mycobacterium tuberculosis is the causative agent. The pathogenesis of G I tract tuberculosis is incompletely understood.

1.Primary:- Enterogenic-by direct ingestion of bacilli.

2.Secondary

1.Blood spread

2.Contiguous spread

By ingestion of bacilli in the stomach,the bacilli is protected by its fatty capsule. The terminal ileum,ileocolic region are the sites most commonly affected by tuberculosis in the abdomen.

The site of predilection is directed by

1.Abandance of lymphoid tissue.

2.Rate of absorption of intestinal contents.

3.Prolonged stasis.

4.Providing longer time of contact with the mucosa.

5.Reduced digestive activity.

PATHOLOGY

1. Ulcerative
2. Hyperplastic
3. Sclerotic

1. Ulcerative type - Intestinal ulcers are usually deep and transeversely placed in the direction of lymphatics. Multiple ulcers are commonly seen in the ileum with the normal areas in between. The slow progression of ulcer is associated with inflammatory mass around the bowel. The infected part of the bowel is thickened and closed, surfaces studded with tubercles.

There is a marked increase in the mesenteric fat, with fat wrapping around the bowel. The regional lymph node may get enlarged and caseate leading to mesenteric abscess formation. Perforation is very rare. When it occurs it is often contained by the peritoneal inflammatory mass.

2. Hyperplastic type : - In the hyperplastic type, a fibroplastic reaction occurs in the submucosa and subserosa resulting in thickening of the bowel. Along with the adjacent mesentery, lymph nodes, and omentum, this forms a mass. The hyperplastic lesion may result due to a decreased virulence of organism or increased host resistance.

3. Sclerotic type : - The sclerotic variety is associated with strictures of intestine, (napkin ring strictures) which may be multiple or single. When multiple they occur either in a short segment or over the entire small intestine. Enterocoliths can form proximal to the strictures. A combination of all these forms can also occur.

ILEOCECAL TUBERCULOSIS -- CLINICAL FEATURES

Clinical features are vague and nonspecific, commonly found in patients between the ages of 30 and 50 years. Symptoms are insidious in onset. They are fever, night sweats, malaise, weakness, anorexia, loss of weight. Abdominal pain is dull and vague when colicky it suggests intestinal obstruction. The pain is most often felt in the right lower quadrant of the abdomen and it is aggravated by eating. Diarrhea and occasionally vomiting tend to relieve the discomforts, which recurs later.

The stool is often watery and foul smelling. Other symptoms include flatulence, nausea, altered bowel habits and barbotage.

Abdominal distension when present, it is due to ascites or intestinal obstruction. GI hemorrhage may be rarely severe. Patients with chronic symptoms are often malnourished, anemic and chronically ill. The abdomen usually feels normal or distended. Tenderness is often noted in the right iliac fossa.

An ileocecal mass may be palpable high in the right iliac fossa. Hepatomegaly noted in severe patients. Ascites may be present.

ILEOCECAL TUBERCULOSIS INVESTICATIONS

1. Mantoux Test : - A negative Mantoux test does not exclude tuberculosis

2. Radiology : -

a. Ba Meal series

b. Ba Enema

1. The earliest sign may be delay in transit time

2. Rapid transit and lack of Barium retention in an inflamed segment of bowel -- Shierlin sign

3. A thin linear barium streak - sign of small bowel stenosis - known as String sign.

4. Obtuse ileocecal angle.

5. pulled up cecum

6. Persistent irregular filling defects.

3. Endoscopy : -

a. To visualise the type of lesion.

b. To obtain biopsy.

Biopsy is sent for histopathological examinations and AFB culture.

4.Peritoneoscopy

Very useful to visualise the peritoneal TB and obtaining biopsy.

IC TB - CRITERIA FOR DIAGNOSIS

Atleast one of these criteria should be satisfied.

- 1.Biopsy of the lesion.
- 2.Biopsy culture
- 3.Animal innoculation test.
- 4.A positive TB lesion responding to ATT.

ILEOCECAL TB -- COMPLICATIONS

- 1.obstruction -- 10% to 60%
- 2.Fistula formation -- 1% to 30%
- 3.Perforation with abscess
- 4.Malnutrition
- 5.Massive hemmarrage
- 6.Enterocolitis
- 7.Traction diverticulosis

ILEOCECAL TB – TREATMENT

Intestinal TB is treated medically. Surgery is required for specific complications.

Limited ileocecal resection (Right Quarter colectomy) advocated by Dutta Gupta 1958

&

Sharma & Mehta. 1964 for early ileocecal TB. The procedure includes mobilization

of ileocecal region and limited resection extending 5cm on either side of lesion

with

End to end ileocolic anastomosis.

CA.CECUM AND ASCENDING COLON

Accounts for 13 - 18% of all colonic cancers.

ETIOLOGY

The following have the causative role as cancer promoters in colorectal malignancies.

- 1.Genetic - Familial Adenomatous Polyp
Peutz - jegher syndrome
Juvenile polyposis
- 2.Diet - Fat,Bile acids,Fibre lacking diet.
- 3.Bacteria - Nuclease dehydrogenase producing bacteria.
- 4.Operations - Cholecystectomy,Gastric surgery, ureterosigmoidostomy.
- 5.Irradiation
- 6.Diseases - Ulcerative colitis,Crohn's disease.
- 7.immunosuppression - Lymphoma

PATHOLOGY

Microscopically the tumour is a columnar cell adenocarcinoma, originating from colonic epithelium. Macroscopically the tumour may take one of the four forms.

1. Annular 2. Tubular 3. Ulcerative 4. Cauliflower like

type 4 is least malignant.

The tumour may spread

1. Locally, across the bowel wall, may
 - a. Fistulate internally, externally
 - b. Penetrate, form local abscess.
 - c. Invade neighbouring structures.
2. Lymphatic spread : - may involve all 3 groups of Nodes paracolic, intermediate and apical.
3. Blood stream spread : - tumour by blood stream metastasize to distant places.

CLINICAL FEATURES

Usually occurs in old age groups, more than 50 years of age. A careful family history must be taken.

Usual Symptoms:-

1. Anemia
2. R I F mass and pain
3. Pyrexia of unknown origin
4. .loss of weight
5. .loss of appetite

Right sided colon tumors are remarkably silent.The blood loss is usually occult.Rarely severe bleeding may occur in the patients taking oral anticoagulants.

The feces entering the cecum are liquid and obstruction is relatively late.As the lumen progressively narrows colicky pain is felt in the RIF region.Pain is followed by intermittent diarrhea due to stasis of feces and fermentation by bacteria.Typical distal ileal obstruction occurs when

1. the tumor obstructs the ileocecal valve or
5. the ileocecal valve becomes incompetent.

Visible peristalsis, feculent vomiting, and dehydration are late manifestations. Patient may present with asymptomatic mass. Acute appendicitis, Pyrexia of unknown origin distant metastasis. Ca Cecum rarely may be the apex of an ileocolic intussusception.

INVESTIGATIONS

1. Motion for occult blood

positive in 90% of cases.

2. Colonoscopy

- a. To detect synchronous lesions
- b. In known polyposis patients.
- c. In doubtful radiology.
- d. Where bleeding is main symptom
- e. For taking biopsy.

3. Radiology

- a. Barium Enema

Lesion seen as constant filling defect.

Investigation of choice in patients with predominant change in bowel habits as the presenting symptoms.

4.USG Abdomen

5.C T Abdomen

TREATMENT

Surgery is the treatment of choice.

Pre operative preparations done.

Abdomen opened.

Operability assessed.

Even with secondaries elsewhere, resection of primary is the best palliation.

Ca.Cecum and Ascending colon is treated by right hemi lectomy. There is some evidence that early division of major blood vessels supplying the involved colon (No touch technique - TURNBALL) can slightly improve the number of curative operations.

INTESTINAL ASCARIASIS

Most ascariasis infections are unnoticed by the host until an adult worm is passed in the feces or through the mouth. However, a patient infested with many worms may complain of vague central abdominal pain, anorexia, intermittent loose stools, and occasional vomiting. The pain in adults may be epigastric, resembling chronic peptic ulcer pain.

CLINICAL FEATURES

Intestinal worm infestations may result in partial obstruction of intestine, may cause colicky pain, nausea, vomiting, fever. At times a mobile mass may be palpable due to a tangled mass of worms, complete obstruction may also be produced when the tangled mass obstructs the distal ileum. Administration of antihelminths may disturb the worms, precipitating the partial obstruction into complete obstruction. Patient will have severe colicky abdominal pain with vomiting, obstipation. Distension of abdomen with hyperdynamic bowel sounds with visible peristalsis and tenderness are evidenced. The affected segment may act as a fixed point on which the rest of the bowel twists causing a volvulus. The closed loop loaded with the worms is then prone for strangulation and bowel rupture unless prompt laparotomy is performed.

Alternatively intense spasm of bowel around obstructing ball of worms may be advanced as the lead point of an ileocecal intussusception, which may also progress to bowel ischemia if not relieved. Sometimes the worm obstructs the appendix causing acute appendicitis. The worm may also perforate through the appendix into the peritoneal cavity.

In an endemic area, ascariasis is always considered in differential diagnosis of intestinal obstruction. The suspicion is strong in patient with recent history of passing a worm before developing features of intestinal obstruction. Such patients are admitted to hospital for evaluation

INVESTIGATIONS

1. X-ray Abdomen-plain :- may show worm along with fluid level and dilated bowel loops.
2. USG - may show echogenic mass.
3. Barium Enema and Barium meal series : - outlines the worms which also ingests the barium.

MANAGEMENT

Patient is put on nil per oral, IV Fluids started, Nasogastric aspiration initiated. Antispasmodics given in order to relax bowel and disentangle the worms, move worms into colon for expulsion.

Anthelmintics are given once patient is asymptomatic, so that precipitation of obstruction is avoided. Majority of patients expel worms when treated with piperazine citrate. Worm may be evacuated by digital disimpaction also. Gastrografin (Diatrizoate Meglumine) also helps in expulsion of worms when given through nasogastric tube, by causing osmotic diarrhea.

Prompt laparotomy is indicated when complications are witnessed like volvulus, intussusception, after restoring hydration and electrolyte imbalance.

OVARIAN CYST

This occurs in women of all ages. Majority are benign, either functional cyst or benign teratomas of ovary. In older women benign cysts often secrete serous or mucinous fluid and has no hormonal activity. The incidence of malignancy is maximal in the fifth to seventh decade of life, but is present in all ages. An ovarian cyst may present to the emergency surgeon as pelvic/abdominal mass. May be discovered as an incidental finding during routine pelvic examinations.

PRESENTATIONS

May present as a pelvic mass. Patient may complain of increasing abdominal growth, associated with nonspecific abdominal discomforts. Cyst rarely causes pain unless it twists. Ovarian malignancy is of insidious onset

Patient may complain of occasional bouts of indigestion, in the early stages of development and later may notice that her abdomen increases in size, but her weight decreases as a result of generalised wasting.

When the tumour breaches the capsule of cyst, the ascites forms. Abdominal girth may be increasing, primary may be too small to detect and ascites may be the only presenting feature. Occasionally there is history of altered bowel habit, and in advanced cases presentation may be of upper abdominal pain secondary to liver involvement.

Cyst detected on bimanual examination, when mass is palpable to one side of and separate from uterus, the uterus may be displaced to opposite side of the pelvis. A larger cyst will often raise out of pelvis completely and be palpable only in the abdominal cavity where it often lies in the midline.

Benign cysts are usually mobile, uniform in consistency, though multilocular cyst may not have a smooth outline. The presence of clinical ascites, a mass which does not move freely and irregular in consistency supports the diagnosis of ovarian malignancy. There may be a further irregular mass palpable in the abdomen, if the omentum contains secondary tumor deposits. Both benign and malignant ovarian cyst may be bilateral.

INVESTIGATIONS

- 1.USG
 - Abdomen
 - Nature of cyst seen,
 - solid or cystic scanned,
 - ascites assessed.

2.X-ray Abdomen plain - In benign cystic teratoma, will show teeth, calcified areas.

- 3.Tapping ascitic fluid and examining for cytology to assist in diagnosis.

CHOICE OF OPERATION

Premenopausal women requiring their ovaries both for fertility and hormone production. Wherever possible their ovaries should be protected. Cyst which appear benign are removed by ovarian cystectomy and remaining ovarian tissue reconstruct. The ovary has excellent power of recovery and however ragged the ovarian remnants appear at operation it will heal well and continue to function afterwards.

If the cyst is clearly malignant, physiological considerations are of secondary importance. The operation of choice is Hysterectomy with Bilateral salping oophorectomy.

If the surgeon discovers unilateral disease and is uncertain of its nature the affected ovary should be completely removed, and healthy ovary left in situ.

Histological examinations of frozen sections of tissues are notoriously unreliable in ovarian disease and the patient should be given the benefit of doubt until formal histological reporting is available. If malignant disease is confirmed, expert advice on future malignancy should be sought.

In post menopausal women, the choice of treatment is simple. Ovary has no physiological role and both ovaries can be removed, without detriment to the patient. If the ovarian disease is malignant, Uterus, Fallopian tube should be removed with ovaries.

ILIAC LYMPHADENITIS

Acute inflammation of deep iliac lymph nodes is ill recognized clinical entity usually occurring in children and confused with appendicular mass. There may be a focus of infection in the shape of scratch or a sore in the relevant areas drained by the deep lymph nodes. Psoas spasm is a leading clinical feature. Curiously superficial nodes are not commonly involved.

INVESTIGATIONS

1. USG Abdomen - detects solid masses. May show signs of suppuration.

MANAGEMENT

There is no need for operation and the patient can be treated with antibiotics for 2 - 3 weeks conservatively. If swelling does not subside or signs of suppuration appears, open, extraperitoneal drainage is needed.

PSOAS ABSCESS

Infection from the lumbar spine or lower part of the retroperitoneum may track along the psoas sheaths and present as a swelling above or below the inguinal ligament.

The abscess can be

1. Tuberculous, arising from the spine disease.
2. Pyogenic, arising from the osteomyelitis of spine.

INVESTIGATIONS

1. USG
2. X - ray Chest and Abdomen plain
3. C T Scan Spine.

TREATMENT

1. Medical treatment
2. Surgical drainage.

INTUSSUSCEPTION

Adult intussusception is a rare condition accounting for 1% of mechanical intestinal obstruction in adult.

CLINICAL FEATURES

Common in males,(3:1),common in the third and fourth decades.common presenting symptom is abdominal pain.Abdominal mass is common clinical finding. Visible intestinal peristalsis may also be present.

The clinical triad of abdominal pain,passage of blood and mucus per rectum ,and abdominal mass is usually not found in adults.

INVESTIGATIONS

1. X-ray abdomen plain - reveal small or large bowel obstruction or absence of cecal gas shadow
2. Barium Enema - is diagnostic. Claw sign may be found in most cases.
3. USG - Abdomen - shows characteristic dough nut mass or a tube in tube appearance.

TREATMENT

Laparotomy is almost,always needed, with either manual duction,evaluation for the existing cause,later on resection of gangrenous portion and anastomosis of bowel are considered.

CHAPTER 8

OBSERVATION AND DISCUSSION

Incidence

1. Appendicular mass/abscess	46%
2. Ileocecal tuberculosis	18%
3. Ca,Cecum	8%
4. Ovarian mass	10%
5. Others	18%

MALES

1. Appendicular mass	13
2. Ileocecal tuberculosis	7
3. Ca.Cecum	2
4. Intussuception	1
5. Ileal perforation	1
6. Iliac adenitis	1
7. Cecal Polyp	1
Total	26

FEMALES

1. Appendicular mass		7
2. Appendicular abscess	3	
3. Ovarian Mass		5
4. Worm bolus		2
5. Adhesions/bands		1
6. Psoas abscess		1
7. Ileocecal tuberculosis	2	
8. Pelvic abscess		1
9. Ca.Cecum		2
Total		24

Almost similar results were obtained by Mohamed Khalid et al in a similar small study of right iliac fossa masses.

Age	Appendicular mass		IC TB	CA.Cecum	Ovary mass
11 - 20 years	4	2	0	0	
21 - 30 years	8	2	0	4	
31 - 40 years	5	1	0	0	
41 - 50 years	1		3	0	0
51 - 60 years	2		0	4	0

Appendicular mass in our study is commonly found between 20 and 40 year of age. Appendicular abscess occurs in a slightly higher age group. Ileocecal TB is observed to have a higher incidence between 30 and 50 years than the previous study by Pritam Das et al. Ca.Cecum found to occur after fifty years of age. Benign Ovarian Diseases are observed to be confined to younger age group, of second and third decade.

PRESENTING FEATURES

1. Recent pain (less than 10 days duration) and tender mass were observed in almost all cases of appendicular mass. Most of the cases of appendicular masses were treated conservatively. Out of 20 cases, 4 cases required emergency surgery ultimately, due to persisting symptoms or increase in pulse rate or guarding. This observation is consistent with the emergency intervention as observed in most of the standard textbooks.

2. Chronic pain , fever, weight loss,or a previous history of pulmonary tuberculosis was found to be common in most of the cases of ileocecal tuberculosis.4 out of 9 cases of ileocecal TB presented with acute pain and guarding and needed emergency surgery.The diagnosis was confirmed per operatively and histopathologically later. Acute presentation of cases of ileocecal TB is almost equal to the chronic cases in the study.Similar observation was also made by Banali and Desai and Pritam Das et al.

3. 4 out of 5 ovarian mass presented with acute abdominal pain, due to the twist.

4.In worm bolus mass cases, history of antihelminthics intake or passage of long worms were elicited.

5.other cases which presented acutely and needed emergency surgery were ileal perforation,adhesion band over terminal ileal loop,causing distension of the loop.one case of worm bolus mass also needed surgery.

CLINICAL FINDINGS

1. Appendicular mass - Tender,firm mass was found in all cases.
2. Ileocecal TB - Firm,tender mass found in 6 cases.fixed mass found in 2 cases.
3. Ca.Cecum - firm to hard mass ,tender swelling was fixed in 3 out of 4 cases.
4. Ovarian Cyst - vaginal examinations revealed firm and tender mass in 2 out of 5 cases and irregular menstrual history was elicitable in 2 cases.

INVESTICATIONS

- 1.ESR - was found to be elevated in 5 out of 9 cases.
- 2.Mantoux Test - was positive in 2 cases of IC TB.
- 3.Hb% - was low in Ca.cecum cases.
- 4.Motion for occult blood - was positive in three out of four cases of Ca.Cecum.

Motion occult blood was also found to be positive in patients where there was no malignancy.

5. Increased total count was consistently observed in appendicular mass.

6. USG Abdomen - helped

1. To differentiate abscess, cyst, from solid masses

2. In identifying solid masses with bowel loops.

3. To know fully about solid masses

4. To delineate other associated pathologies.

TABLE OF COMPARISON

Features	App.Mass	Iliocecal TB	Ca.Cecum
1. Pain	100%	6/9 cases	3/4 cases
2. fever	90%	low grade	-
3. vomiting	early 90%	late, insidious	late
4. melena	-	-	3/4 cases
5. mass	100%, firm, tender guarding +	firm, tender 6/9 fixed 7/9	irregular, hard, fixed
6. TC	raised	-	-
7. DC	neutrophils ^	Lymphocyte ^	-
8. Hb%	-	low	low
9. ESR	normal 90%	raised 5/9	raised 1/4
10. Motion occult blood	-	^3/9 cases	^3/4 cases
11. Ba.Enema	-	irregular filling defects pulled up cecum terminal stricture.	irregular filling defects

RIGHT ILIAC FOSSA MASS --SYMPTOMATOLOGY SUMMARY

Disease symptoms duration Pain G I Tract - G U Tract - Gynec.symptoms.

1. App.Mass	+	short term	+	+	-	-	
2. I C TB		+	long term	+	+	-	-
3. Intussusception	+	short term	+	+	-	-	
4. Psoas abscess		+	short term	+	+		- -
5. Ca.cecum	+	long term	+	+	-	-	
6. Ovary disease		+	long term	+	+		- -

CHAPTER 9

SUMMARY

The common causes of right iliac fossa masses are appendicular mass, appendicular abscess, ileocecal tuberculosis, in that order of frequency. In females, ovarian mass is the third most common cause. Appendicular mass is the most common in all forming about 46% and it is the commonest right iliac fossa mass in both sex.

APPENDICULAR MASS

More than 75% of patients with appendicular mass presents with abdominal pain, of less than 10 days duration. A firm, tender, fixed mass present in all the patients. The 70% of cases were young individual between 20 and 40 years.

APPENDICULAR ABSCESS

Is the next stage in the natural course of the acute appendicitis, is relatively rarer. This complication was found in older and female patients. USG though helped to confirm the diagnosis in some cases, it was mainly useful to rule out other pathology. 16 out of 20 cases were managed conservatively. In the

remaining 4 cases, the conservative treatment was abandoned due to worsening of symptoms and raising pulse rate and guarding.

ILEOCECAL TB

In our small study of 9 cases of IC TB, 4 cases, presented with acute abdominal

pain,needed emergency surgery,others presented with chronic symptoms,most were between 30 and 50 years.Characteristic firm,tender,fixed mass seen in 75% of cases.ATT treatment was started only after confirming by the histopathological reporting.In our study we have not given the trial empirical ATT.f

CA.CECUM

Usually presented after 50 years of age with a firm, non tender fixed mass.In all cases a pre operative definitive diagnosis was made by the biopsy.

OVARIAN MASS

Most ovarian swelling presented to our general surgery emergency department with acute abdominal pain and all underwent surgery and some form of complication such as torsion was found.

Worm bolus mass,ileal perforation,dilated bowel loop due to adhesions were the other unusual cases which needed emergency surgery. Overall 14 (28%) out of 50 cases needed emergency surgery.

CHAPTER 10

CONCLUSION

1. Appendicular mass is the commonest of all right iliac fossa masses,46%, followed by ileocecal TB,Ca.cecum,ovarian cyst.The frequency of unusual cases is difficult to assess in a small study like this.

2. In younger age group,inflammatory masses like appendicular mass,ileocecal TB predominate and ovary mass in young females is an important cause of right iliac fossa mass.Ca.cecum and appendicular abscess are more common in the older age group.

3. USG abdomen as a preliminary investigation in the right iliac fossa masses has been found to be useful in deciding further investigations and planning management.

4. Appendicular mass presents with short duration of pain. In about 20% of patients conservative treatment has to be abandoned in favour of surgical intervention.

5. Ileocecal TB is more common in males in this small study. Barium enema is the investigation of choice for patients with chronic symptoms. About 45% of cases of ileocecal TB presented acutely and needed emergency laparotomy for diagnosis and treatment.

6. Ca. Cecum fecal occult blood loss and weight loss are almost and always present.

7. A complicated ovarian cyst should be always thought of in young females, with acute abdominal pain and right iliac fossa mass.

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