

common. Occasionally features of intestinal obstruction may be present. Carcinoma with pericolic abscess may present as tender firm smooth mass in the right iliac fossa. Fever, tachycardia are also the features. Barium enema X-ray/colonoscopy/carcinoembryonic antigen (CEA)/US abdomen are the investigations.

Ileocaecal Tuberculosis

Mass in the right iliac fossa which is smooth, hard, resonant and nontender; does not move with respiration and has restricted mobility; Caecum may be *pulled up* to lumbar region due to fibrosis. It is often clinically difficult to differentiate from carcinoma and ileocaecal tuberculosis. Bowel symptoms, anaemia with loss of appetite and weight is common. Barium studies, colonoscopy, CT abdomen are the investigations needed. Obstruction may be the presenting feature. Usually hyperplastic type of ileocaecal tuberculosis present as mass in right iliac fossa.

Amoeboma

History of dysentery with pain in the right iliac fossa may be present. Well defined palpable mass in the right iliac fossa which is smooth, hard, not mobile, may or may not be tender. It slowly increases in size and after certain period it stops progression. Initially features of amoebic typhlitis may be present. *Amoebic typhlitis* is inflammation of caecum due to *Entamoeba histolytica* infection. Tenderness over both iliac regions with thickening of colon is common. Amoebic typhlitis is usually associated with sigmoid amoebic colitis. Perforation, bleeding, stricture, paracolic abscess formation, ischiorectal abscess and fistula formation are the complications.

Crohn's Disease or Regional Ileitis

It is a *granulomatous, noncaseating inflammatory condition of the ileum commonly and of the colon often.*

Aetiology: Unknown, but a familial and infective nature is thought of. Diet, food allergy, mycobacterium paratuberculosis are thought of.

Pathology: Inflammation → Granuloma formation → Cicatrisation → Thickening of the bowel wall → Adhesions → Fistula formation. Mesentery is

thickened, oedematous, with enlarged lymph glands which will never break nor calcify. Rarely jejunum, stomach and other parts of GIT are involved. In colon, it is commonly observed in caecum and ascending colon. Anal fissure is very common association.

Clinical features: (a) *Acute presentations (5%)* of Crohn's disease mimics acute appendicitis with severe diarrhoea. Often there will be localised or diffuse peritonitis. (b) *Chronic Crohn's: First stage:* Mild diarrhoea, colicky pain, fever and tender, firm, non-mobile mass in right iliac fossa with recurrent perianal abscess. Anaemia and diarrhoea is usual. *Second stage:* is either acute or chronic intestinal obstruction due to cicatrisation with narrowing. Steatorrhoea, colitis, anaemia, fissure in ano, fistula in ano is common. *Third stage:* Fistula formation—enterocolic, enteroenteric, enterovesical, enterocutaneous, etc. Crohn's disease is independent of age, sex, social and economic status and geographic area.

It is familial. **It is precancerous condition but not as much as ulcerative colitis.**

Investigations: *Barium meal follow through* shows: Straightening of valvulae conniventes; Multiple defects (*cobblestone* appearance); Cicatrisation of ileum (*string sign of Kantor*); *Rose thorn appearance of the bowel wall.* Radiologically Crohn's disease is classified as **nonstenosing type or stenosing type.**

Actinomycosis of Right Iliac Fossa

Disease begins in caecum, inflammatory mass develops which gets adherent to abdominal wall in right iliac fossa. Mass will be nonmobile irregular hard, often tender due to secondary infection. Later induration of abdominal wall develops followed by suppuration and multiple discharging sinus formation discharging sulphur granules. Disease process is often triggered by appendectomy.

Roundworm Bolus Mass in Right Iliac Fossa

It presents as smooth, soft or firm, yielding rounded mass in the right iliac fossa which is mobile and tender due to adjacent enteritis. Features of intestinal obstruction—distension, vomiting, constipation, ill health, malnutrition are evident. It is common in children; common in developing countries.

Iliac Lymph Node Mass

Iliac nodes are located in the right iliac fossa on medial aspect above the inguinal ligament. It is deeply seated mass which is smooth/nodular, firm or hard. If it is of inflammatory origin it may be smooth and firm or soft and tender. In lymphoma it is smooth and firm; nodular and hard in secondaries.

Mesenteric Lymph Node Mass in Right Iliac Fossa
It may be due to tuberculosis, lymphoma, secondaries or composite mass.

Ilio Psoas Abscess

It is localised; smooth, soft, nonmobile mass in the right/left iliac fossa. *Psoas spasm* (flexion of the hip joint) is typical. Spine may show *gibbus, tenderness, paraspinal spasm*. Spinal movements will be restricted. Tuberculosis of sacroiliac joint also can cause cold abscess. Often psoas abscess extends below the inguinal ligament lateral to the femoral artery. Such patient develops swellings on either sides of the inguinal ligament which is cross fluctuant.

Ectopic Kidney

It is a developmental abnormality wherein kidney does not ascend to its normal position. Ectopic kidney may be in the pelvis or in the right iliac fossa. It is deeply placed firm nonmobile mass in the right iliac fossa which does not move with respiration. It is resonant on percussion. Usually when it is pathological it is palpable like hydronephrosis, pyonephrosis, polycystic kidney disease, or neoplastic disease. IVU is diagnostic. Radioisotope scan is done to see the function. CT is also needed.

Undescended Testis

Testis from lumbar region descends to scrotum along the inguinal canal. Failure of descent makes it imperfectly/undescended testis. It may be abdominal or inguinal in location. Abdominal testis may be in right iliac fossa. It is often difficult to palpate and identify as it is usually atrophied. These undescended testes are 20 times more prone for malignant transformation and when it develops, it may be clinically palpable as mass in right iliac fossa (left iliac fossa in left side) which is nodular, hard, nonmobile.

Mobile Kidney

It is usually normal kidney which attains undue mobility probably having peritoneal covering also which can be brought down far as below as to right iliac fossa in right side type. But kidney can be replaced back to normal location.

Hydrops Gallbladder

Enormously distended gallbladder can descend down and may palpable in right iliac fossa.

Pelvic Masses

Ovarian tumour/cyst; tuboovarian mass; uterine fibroid; pyosalpinx; broad ligament cyst can present as mass in iliac fossa. Lower border of such mass merges into the pelvis and so is not felt; on per vaginal examination mass is well felt. It is bimanually palpable often done under general anaesthesia. Emptying the bladder is important while examining the pelvic masses.

Urinary Bladder Diverticulum

It can be felt as a soft, tender, and mobile mass in the iliac fossa which may get emptied partially after catheterisation. Cystogram, cystoscopy and CT abdomen confirms the diagnosis.

Mass in the Left Iliac Fossa

All conditions are same as in right iliac fossa. Appendicular mass and abscess will not occur here. Sigmoid pathology—diverticulitis and carcinoma are left iliac fossa diseases.

Diverticular Disease of the Colon

They are *acquired herniations* of colonic mucosa through circular muscles at the points where blood vessels penetrate. It is commonly localised to sigmoid colon (90%) but occasionally seen in full length of the colon. It is a *false diverticulum* with only *mucosal* herniation (**Fig. 21.64**). Rectum is *not* affected. *Saint's triad* (5%) is diverticulitis; hiatus hernia; gallstones. It is rare in Asian and African countries because of the high fibre diet. It is common in Western countries. **Diverticulosis** is the initial primary stage of the disease wherein there is hypertrophy, muscular in coordination

MASS IN THE HYPOGASTRIUM

Parietal swellings Urachal cyst Abdominal wall abscess Abdominal wall tumours like in other regions	Intra-abdominal swellings From urinary bladder From uterus, Fallopian tube and ovaries—fibroid, ovarian cyst, tubo-ovarian mass Pelvic abscess Tumours of pelvic bone—chondrosarcoma Pelvic soft tissue mass
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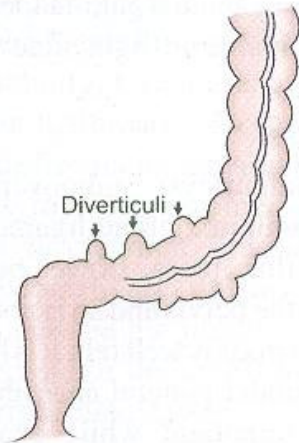


Fig. 21.64: Diverticular disease of colon.

leading to increased segmentation and increased intraluminal pressure. At this stage they are often asymptomatic, but very often get severe spasmodic pains due to colonic segmentation, fullness of abdomen, bloating and flatulent dyspepsia called as *painful diverticular disease*. **Diverticulitis** is the second stage due to inflammation of one or more diverticula with pericolicitis. It presents with persistent pain in left iliac fossa, lower abdomen distension, bleeding per anum, fever, loose stool, recurrent constipation, tenderness in right iliac fossa, palpable and thickened sigmoid colon. Mass may be palpable in the left iliac fossa which is smooth, soft, tender, nonmobile because of inflammatory adhesions. Often abdominal wall oedema with redness may be present. P/R may reveal a tender mass. It is the *commonest cause* of lower GI bleed in *Western countries*.

Complications of diverticulitis: Perforation and pericolic abscess or peritonitis; progressive stenosis and intestinal obstruction; Profuse colonic haemorrhage (17-20%); Fistula formation (5%)—colovesical (commonest type with pneumaturia occasionally passing faeces); colovaginal; coloenteric; colcutaneous.

Note: *Diverticulitis is not a pre-cancerous condition.*

Investigations: Barium enema shows 'saw-teeth' appearance/*champagne bottle sign*. Sigmoidoscopy is useful but should not be done in acute stage. Once acute stage subsides, barium enema, sigmoidoscopy, colonoscopy can be done (to rule out only *associated malignancy*). Carcinoma/amoebic proctitis/tuberculosis are differential diagnosis.

Carcinoma of Sigmoid Colon

It presents as discomfort, fullness in left iliac fossa with diarrhoea, constipation, tenesmus, bleeding per anum, colonic obstruction. Often a hard, nodular mass may be felt in the left iliac fossa, initially mobile but later becomes immobile once it is fixed. It can often be soft and tender if there is complication of pericolic abscess. In such occasion it may be adherent to anterior abdominal wall.

Bladder Mass

It is in the lower midline. Lower abdomen is distended which is more obvious on standing. It is dull on percussion. Lower border is not felt. It can be mobile in horizontal direction. Mass reduces in size after emptying the bladder. It can be felt on per-rectal examination. All causes of retention of urine cause palpable bladder. It also can be neoplastic either carcinoma bladder (common) or leiomyoma or sarcoma bladder.

Uterine Mass

It is midline mass which is smooth or hard. Lower border extends into the pelvis and is not felt. Pregnancy with history of amenorrhoea has to be elicited. History of last menstrual period is important (LMP); History of vomiting, lower abdominal discomfort is common; urine pregnancy test and 'US confirms pregnancy.

Uterine fibroid is the commonest tumour which is felt per abdomen in the midline or often extending into iliac fossae. It is slowly progressive, vertically placed, horizontally mobile, firm nodular mass, lower border is not felt as it is merging into pelvis, dull on percussion, ascites is not a feature. It is felt on pervaginal examination. Occasionally leiomyosarcoma or endometrial sarcoma may be the cause of uterine mass. They are smooth, firm often soft, rapidly progressive mass in the hypochondrium.

Ovarian Mass

It is smooth, soft, tensely cystic, mobile mass merging into the pelvis, felt per vaginally. It should be differentiated from ascites. Ascites is dull in the flank, resonant in the centre/summit of the abdomen; ovarian cyst is dull in the centre, resonant in the flanks as intestines are pushed towards periphery. *Blaxland (Athelstan Blaxland) ruler test* shows pulsation in ovarian cyst not in ascites (**Fig. 21.65**).

In all lower abdomen masses P/R and/or P/V is must. Bladder should be emptied using a catheter prior to palpation (**Fig. 21.66**).

Investigations for Mass Abdomen

Haematocrit, Liver function tests, renal function tests, stool/urine examination.

Ultrasound abdomen.

Endoscopies—Gastroscopy-Colonoscopy-ERCP-MRCP.

Barium studies—Barium meal-Barium enema- Barium meal follow through.

CT scan—contrast CT is ideal for mass abdomen as it clearly gives idea about the origin of mass, its extent and operability, vascularity, relation to major vessels. Intravenous as well as oral water soluble iodine contrast agent should be given (**Fig. 21.67**).

MRI.

Endosonography.

Ascitic tap.

Diagnostic laparoscopy.

US guided/ CT guided biopsy.

IVU/RGP/Cystoscopy/Isotope renogram.

Exploratory laparotomy.

In all regions parietal masses can occur

Benign and malignant soft tissue tumours. Commonest is lipoma.

Fatty hernia of linea alba, interstitial hernia.

Desmoid tumour.

Parietal wall abscess.



Fig. 21.65: Blaxland ruler test to feel pulsation.



Fig. 21.66: Ovarian cyst—large tumour on table finding.

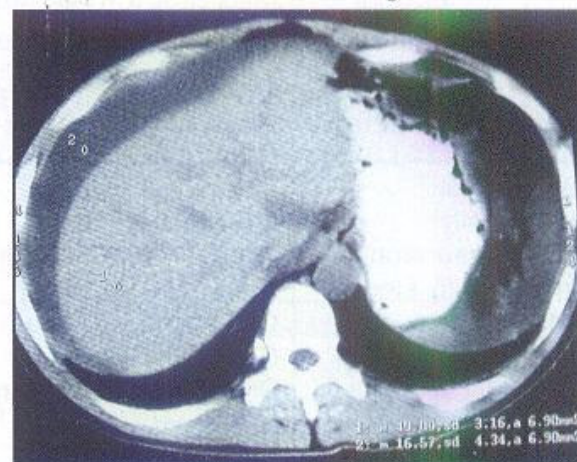


Fig. 21.67: CT scan abdomen showing ascites and secondaries in liver.