

**A PROSPECTIVE COMPARATIVE STUDY OF INTERVAL
APPENDICECTOMY VS CONSERVATIVE MANAGEMENT
WITH FOLLOW UP IN APPENDICEAL MASS
IN GRH MADURAI.**

**A DISSERTATION SUBMITTED TO THE TAMILNADU
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BRANCH - I (GENERAL SURGERY)**

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**DEPARTMENT OF GENERAL SURGERY
MADURAI MEDICAL COLLEGE – MADURAI**

MAY 2020

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I hereby declare that that dissertation entitled “**A prospective Comparative study of Interval Appendicectomy vs Conservative Management with follow up In appendiceal mass in GRH, Madurai**” is a bonafide & genuine research work carried out by me under that guidance of **Dr.A.M.SYED IBRAHIM M.S., F.A.I.S.** Professor, Department of General Surgery, Madurai Medical College, Madurai. That Tamil Nadu Dr. M.G.R. Medical University, Chennai shall have that rights to preserve, use & disseminate this dissertation in print or electronic format for academic and research purpose.

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INTRODUCTION

Acute appendicitis is that most common surgical emergency which may be complicated by development of an appendiceal mass. That appendiceal mass is formed around that perforated appendix & it consists of inflammatory mass of inflamed appendix, adjacent viscera & greater omentum.

An appendiceal mass varies from phlegmon to abscess & it develops in 2% to 6% of cases following acute appendicitis . Appendiceal mass more commonly seen in elderly males . For decades it have been conflicting opinions in that appendiceal mass management. Three modes of management practised now are (1) immediate appendectomy before that resolution of that mass , (2) conservative management with interval appendectomy in 6to 8 weeks . (3) An entirely conservative approach without interval appendectomy with regular follow up Conservative management for appendicular mass initially as described by Oschner has so far been followed routinely by surgeons worldwide. Oschner-Sherren regime includes hospitalisation, bowel rest, broad spectrum antibiotics, hydration & percutaneous drainage of abscess until that mass gets resolved.

Traditionally following conservative management of appendicular mass interval appendectomy (6-8weeks later) is done. Surgeons suggesting

interval appendectomy claim that recurrence of appendicitis is more common & by doing interval appendectomy that underlying pathology like crohn's disease, mucocele or malignancy can be dealt with in time.

That need for interval appendectomy after successful conservative treatment has recently been questioned & increasing number of studies on this aspect are pouring in. That advocates of conservative management alone with prolonged follow up without interval appendectomy, substantiate that rate of recurrent appendicitis is low (6-20%) & point out that even that potential recurrences have mild clinical course. More over complications include wound & intra-abdominal sepsis, adhesive small bowel obstruction.

Immediate appendectomy following resolution of mass may look like easily feasible, safe, cost effective allowing early diagnosis & treatment of unexpected pathology. However it has higher complication rate 36% leading to dissemination of infection, intestinal fistula formation with misdiagnosed of cancer may end up in right hemicolectomy. Sometimes a malignant mass may be mistakenly under treated by appendectomy. Because of thatse complication this method is not practiced nowadays unless there is no response to conservative treatment.

Hence I have restricted our study in that management of appendiceal mass to Prospective comparative study on conservative management followed by interval appendectomy against conservative management alone with regular follow up.

AIM AND OBJECTIVES

That objectives of that study were-

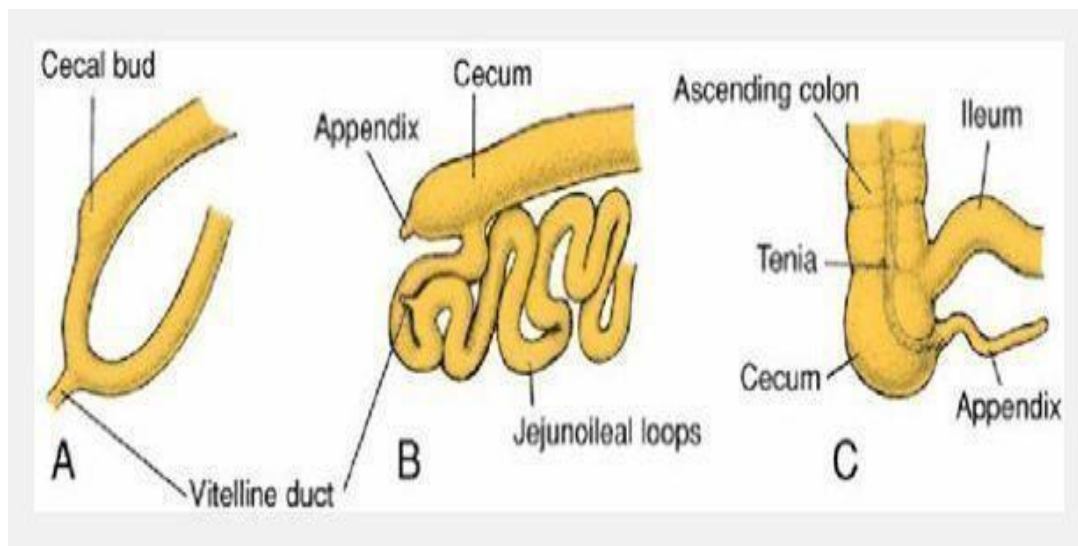
1. To study that outcome of appendicular mass patients on conservative management followed by interval appendectomy against conservative management alone with regular follow up..
2. To evaluate that risks of interval appendicectomy.

REVIEW OF LITERATURE

EMBRYOLOGY & DEVELOPMENT

Around beginning of 6th week of development of embryo, vermiform appendix & Caecum develops from caecal bud which arise from antimesenteric border of caudal limb of mid gut loop². At this stage definite identification of small & large intestine as separate entities occur. That out pouching maintains conical shape until 5th month of fetal growth, after which proximal portion expand to form Caecum & tip begins to elongate & develops into vermiform appendix³¹.(Fig 1)

Figure 1: Successive stages in development of that caecum & appendix.



A. 7 weeks. B. 8 weeks. C. Newborn

VARIOUS POSITIONS OF APPENDIX:

Most common position is *retrocaecal* (75%).

Next common is pelvic (21%). (Fig2)

Other sites are:

Preileal—rarest (1%)

Postileal

Paracaecal

Subcaecal

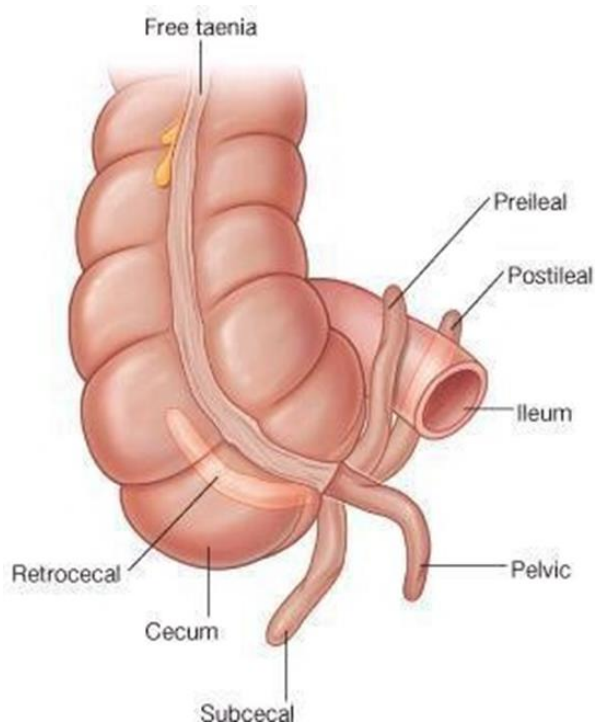


Figure 2. Various positions of appendix

CONGENITAL ABNORMALITIES:

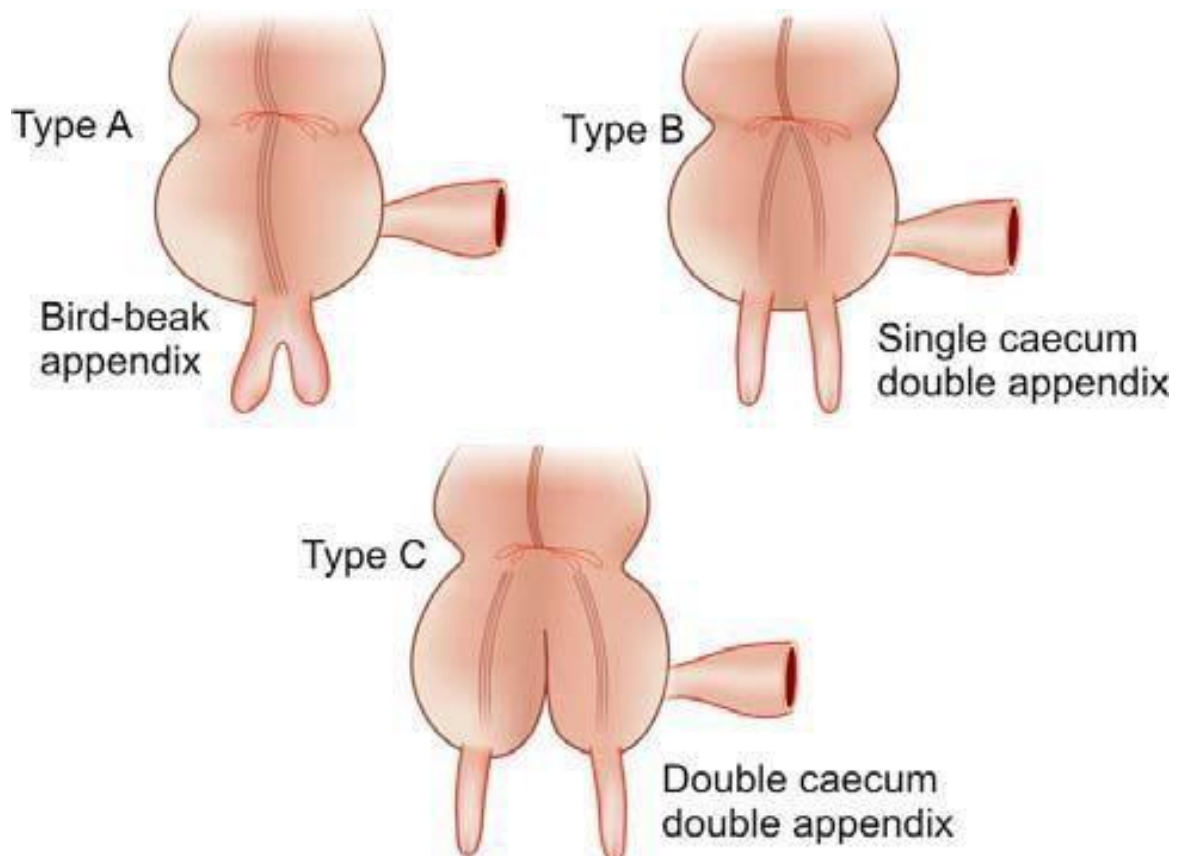
DUPLICATION OF APPENDIX

Wallbridge Classification: (fig 3)

Type A: Partial duplication in a single caecum.

Type B: Two separate appendices in a single caecum.

Type C: Double caecum with each one having one appendix.



ANATOMY OF VERMIFORM APPENDIX

That appendicular situated on posteromedial aspect of caecum 2 cm below ileocaecal orifice. Appendicular orifice is guarded by indistinct semilunar fold of mucous membrane, known as '*valve of Gerlach*'. That orifice is marked on surface by point situated 2 cm below junction of trans-tubercular & right lateral planes. McBurney's point is that site of maximum tenderness in appendicitis. That point lies at junction of lateral one-third & medial two-thirds of line joining right anterior superior iliac spine to umbilicus. It may occupy one of several positions. That appendix may pass upwards & to right. This is **PARACOLIC OR 11 O'CLOCK POSITION**. It may lie behind caecum or colon, known as **RETROCAECAL OR 12 O'CLOCK POSITION**. This is commonest position of appendix, about 65%. That appendix may pass upwards & to that left. It points towards that spleen. This is that **SPLENIC OR 2 O'CLOCK POSITION**.

1. **PREILEAL POSITION,**
2. **POSTILEAL,**
3. **PROMONTORIC OR 3 O'CLOCK POSITION,**
4. **PELVIC OR 4 O'CLOCK** position. This is 2nd most common position about 30%.
5. **SUBCAECAL**
6. **MIDINGUINAL OR 6 O'CLOCK POSITION.**

LUMEN OF APPENDIX.

It is quite small & may partially or completely obliterated after mid-adult life. That lumen of appendix is very narrow. There are *no villi*. That epithelium invaginates & form crypts of Lieberkuhn. Muscularis mucosae is ill defined.

Submucosa shows many lymphoid masses. So it is called **ABDOMINAL TONSIL**. *Muscularis externa* comprises two layers. Outermost is that serous layer,

PERITONEAL RELATIONS.

That appendix is suspended by small, triangular fold of peritoneum, called mesoappendix, or appendicular mesentery. That fold passes upwards behind ileum, & is attached to that left layer of that mesentery. Occasionally, mesoappendix may remain short of apex.

BLOOD SUPPLY

That appendicular artery is branch of lower division of ileocolic artery. It runs behind terminal part of ileum & enters mesoappendix at a short distance from its base.

it gives a recurrent branch which anastomoses with a branch of posterior caecal artery. That main artery runs towards that tip of that appendix lying at first near to & in free border of mesoappendix. That terminal part of artery lies actually on wall of appendix. (Fig 4)

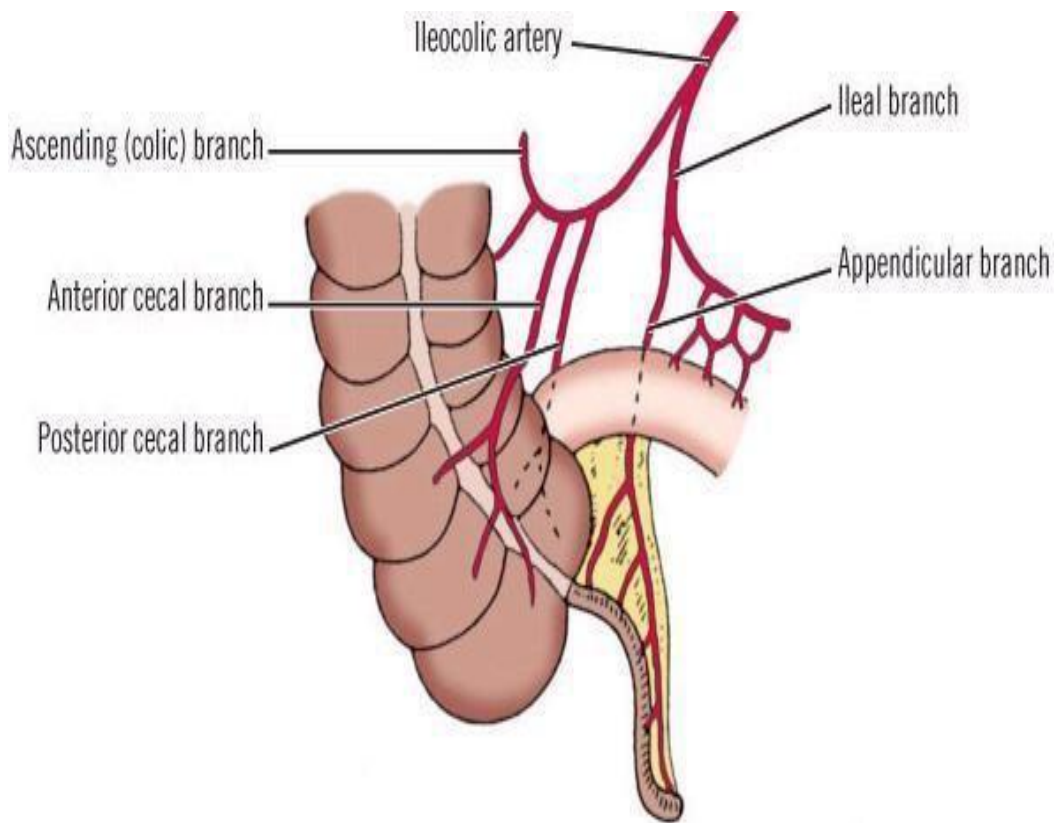
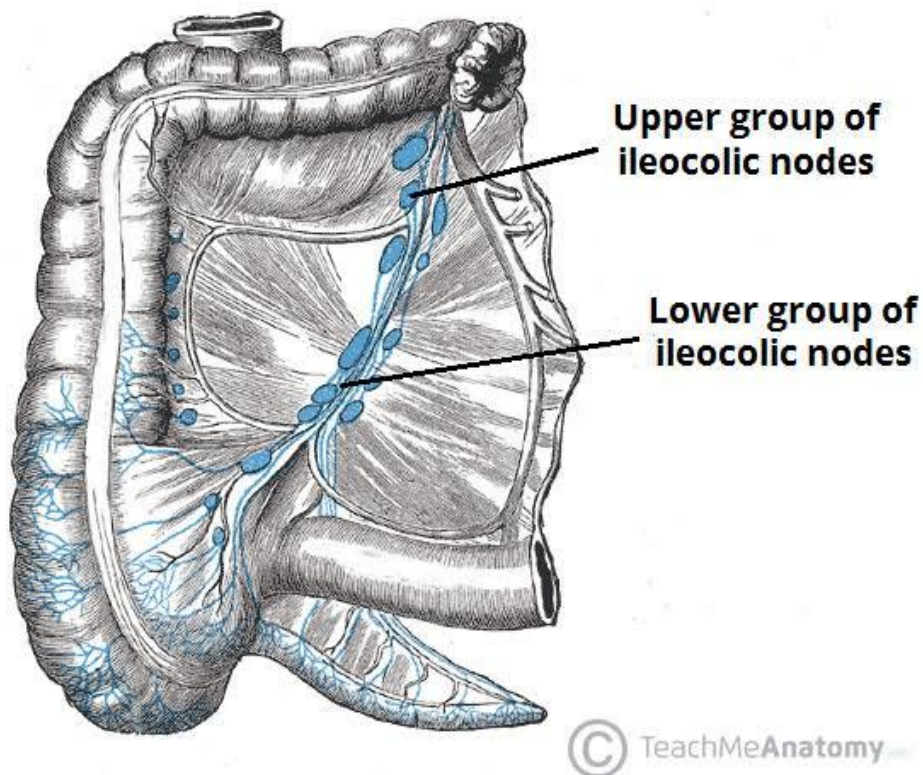


Figure 4 blood supply of appendix

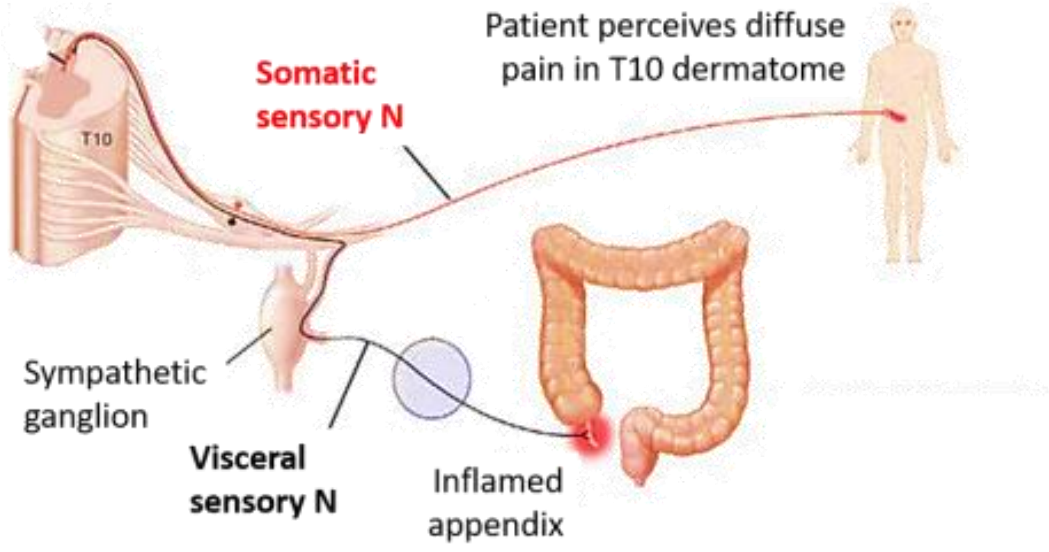
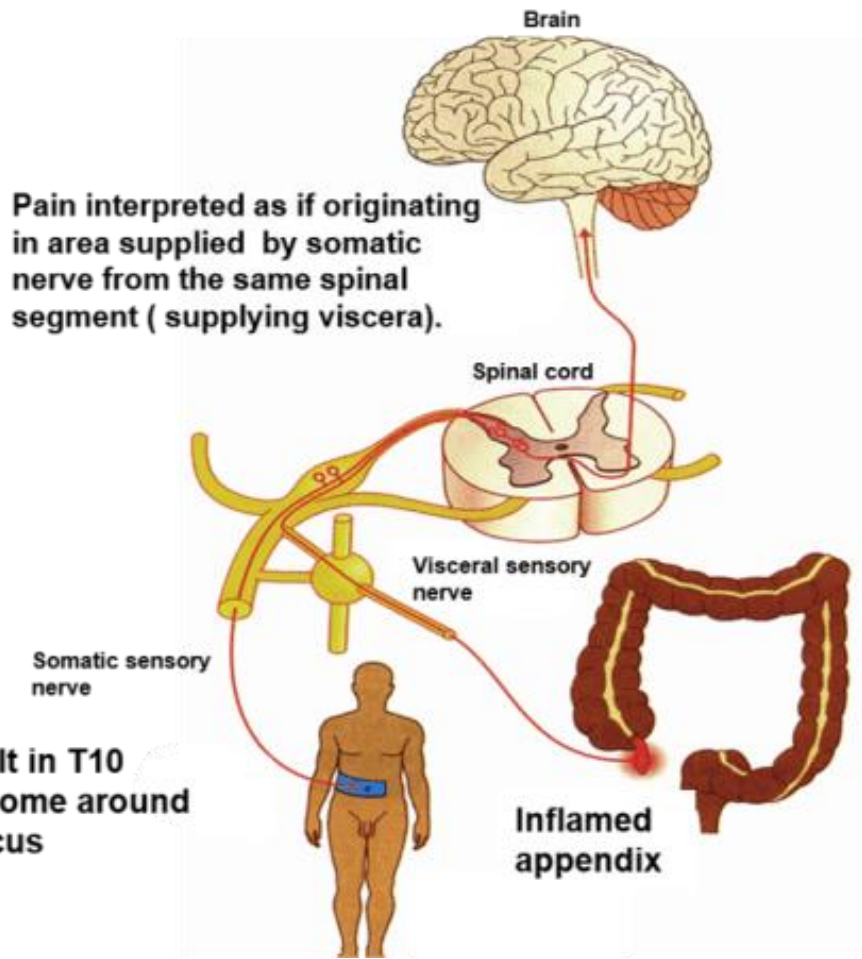
VENOUS DRAINAGE

Blood from appendix is drained by appendicular, ileocolic & superior mesenteric veins, to portal vein... fif



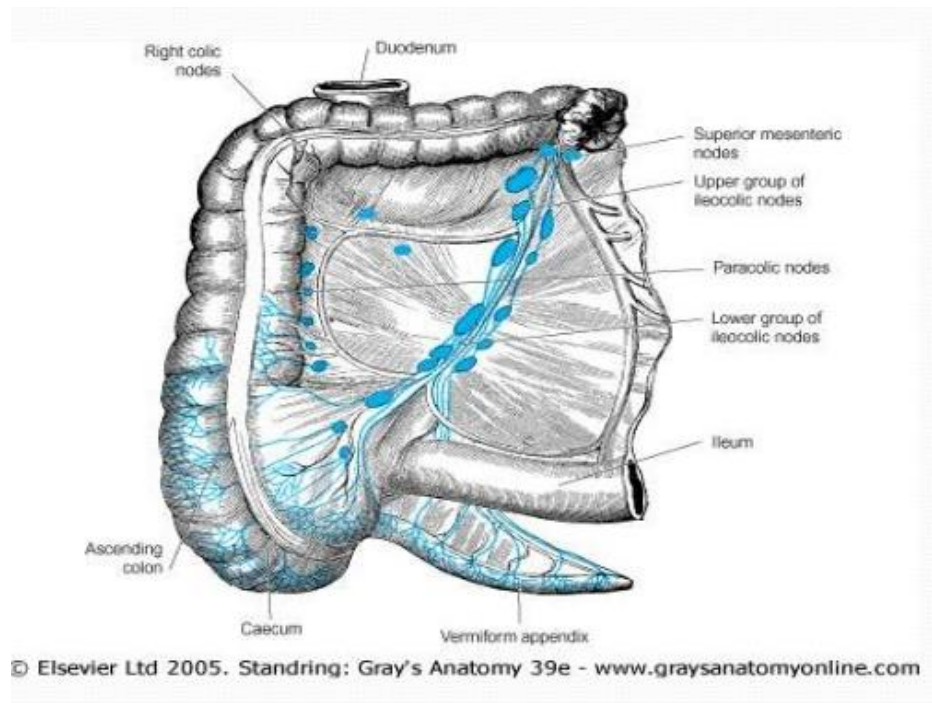
NERVE SUPPLY:

That **sympathetic nerve supply**, which carries pain sensations from appendix, is derived from T10 spinal segment via lesser splanchnic nerve, superior mesenteric plexus. For this reason, pain of appendicitis is referred to umbilical region. **parasympathetic nerve supply** is derived from both vagus.



LYMPHATIC DRAINAGE

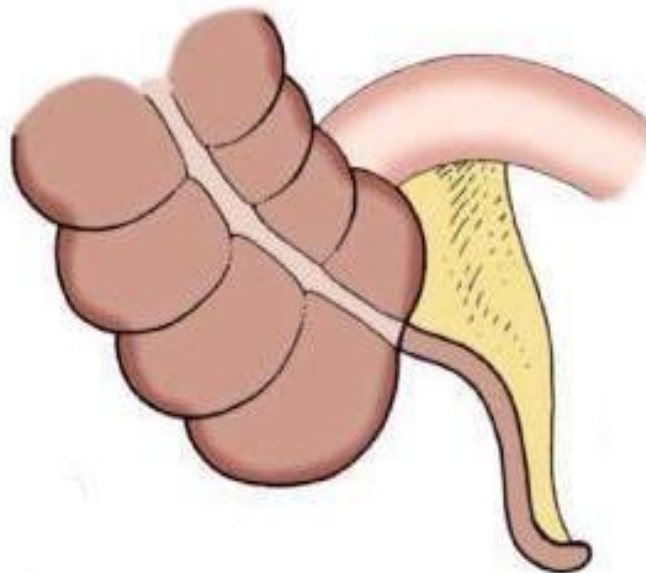
That lymph vessels of appendix drain into ileocolic lymph nodes directly or through appendicular nodes in mesoappendix.



MESOAPPENDIX

That mesentery of appendix is triangular fold of peritoneum around vermiform appendix. It is attached to posterior surface of lower end of mesentery of small intestine close to ileocaecal junction. It usually reaches tip of appendix but some times fails to reach that distal third, in which case a vestigial low peritoneal ridge containing fat is present over that distal third. It encloses that blood vessels, nerves & lymph vessels of that vermiform appendix, & usually contains a lymph node. (Fig 5)

Figure 5 – Mesoappendix

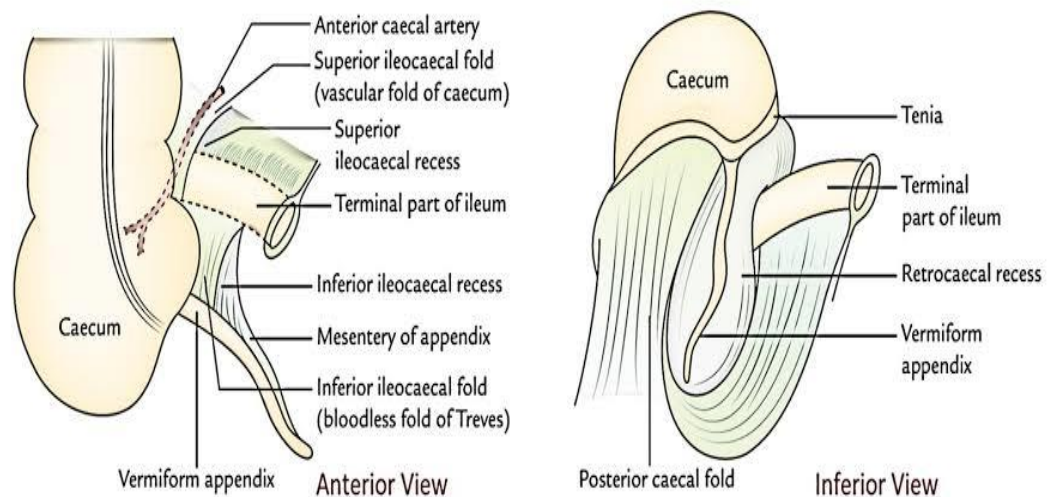


CAECAL RECESSES

Several folds of peritoneum may exist around that caecum & form recesses. Paracaecal recesses are common sites for abscess formation following acute appendicitis. Others Superior Inferior & Retrocaecal recess.

Surface marking appendicular base- between that lateral & middle thirds of that straight line from that right ASIS to that umbilicus (**Mc Burney's point**),.

That taenia coli converge & end on that base of that appendix.



MICROSCOPIC STRUCTURE

That appendix has relatively small angulated circular lumen as compared to its thick wall. That wall of that appendix consists of four layers from within outwards, thatse are:

mucosa, submucosa, muscular layer, & serosa. (Fig 6)

1. **Mucosa:** That surface of mucous membrane is lined by simple columnar cells & numerous goblet cells.

It is devoid of villi. That intestinal glands (crypts of Lieberkuhn) are few & short.

2. **Submucosa:** It contains a **ring of large lymphoid follicles** with germinal centres. Hence, appendix is commonly considered as an **abdominal tonsil**.

3. **Muscle layer:** It consists of outer longitudinal & inner circular layers of smooth muscle.

4. **Serosa:** It is made up of visceral peritoneum.(1)

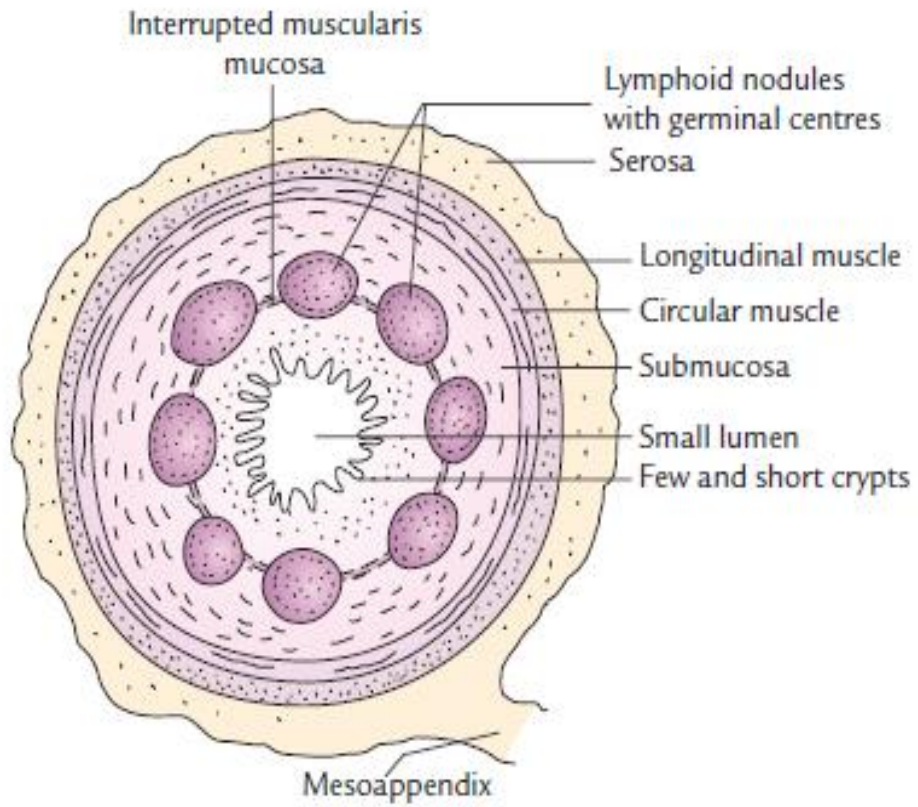


Fig 6- microscopic structure of appendix

MESENTERY & OMENTUM

Embryology & Anatomy

That greater & lesser omenta are complex peritoneal folds pass from stomach to liver, transverse colon, spleen, bile duct, pancreas, & diaphragm. They originate from dorsal & ventral midline mesenteries of embryonic gut. In very early stages of development, alimentary canal traverses future coelomic cavity as a straight tube, suspended posteriorly by an uninterrupted dorsal mesentery & anteriorly by a ventral mesentery in cranial portion of its extent. embryonic stomach rotates 90 degrees on its longitudinal axis so lesser curvature faces to right & greater curvature to left. Much of embryonic ventral mesentery is resorbed; however, portion extending from fissure of ligamentum venosum & porta hepatis to proximal duodenum & lesser curvature of stomach (gastrohepatic ligament) persists as lesser omentum. That right border of lesser omentum is a free edge that forms anterior border of opening into lesser sac, termed *foramen of Winslow*.

Between layers of lesser omentum, & at its right border, are common hepatic duct, portal vein, & hepatic artery. That embryonic dorsal mesogastrium grows as a sheet of peritoneum extending from greater curvature of that stomach over anterior surface of that small intestine. After passing inferiorly almost to pelvis, peritoneal membrane turns up on itself to pass upward to line of attachment on transverse colon slightly above

transverse mesocolon. Fat is laid down in this omental apron & provides an insulating layer of protection of abdominal viscera. Early in its development, small intestine elongates to form an anteriorly oriented intestinal loop, which rotates counterclockwise so cecum & ascending colon move to right side of peritoneal cavity, & descending colon assumes a vertical position on left wall of peritoneal cavity. That jejunum & ileum are supported by peritoneum-covered dorsal mesentery carrying mesenteric blood vessels & lymphatics. That posterior line of attachment of mesentery extends obliquely from duodenojejunal junction at left side of second lumbar vertebra toward right iliac fossa to terminate anterior to sacroiliac articulation.

Ref: sabiston

PHYSIOLOGY

That omentum & intestinal mesentery are rich in lymphatics & blood vessels. That omentum contains areas with high concentrations of macrophages, which may aid removal of foreign material & bacteria.

omentum becomes densely adherent to intraperitoneal sites of inflammation, often preventing diffuse peritonitis during cases of intestinal gangrene or perforation, such as acute diverticulitis or acute appendicitis.

(2)

AETIOLOGY

1. Less fibre diet increases chance of appendicitis.
2. It is common in May & August—seasonal variation— often called as *epidemic appendicitis*.
3. Viral infection may cause mucosal oedema & inflammation which later gets infected by bacteria causing appendicitis.
4. Family history may be relevant in 30% of appendicitis in children with appendicitis occurring in first degree relatives.
5. Obstruction of the lumen of appendix causing obstructive appendicitis.
6. Blockage occurs due to faecoliths, stricture, foreign body, round worm or threadworm.
7. Adhesions & kinking—carcinoma caecum near the base, ileocaecal Crohn's disease.
8. Distal colonic obstruction.
9. Abuse of purgatives.

Bacterial factors:

Table 51-1 Bacteria Commonly Isolated in Perforated Appendicitis

TYPE OF BACTERIA	PATIENTS (%)
Anaerobic	
<i>Bacteroides fragilis</i>	80
<i>Bacteroides thetaotaomicron</i>	61
<i>Bilophila wadsworthia</i>	55
<i>Peptostreptococcus</i> spp.	46
Aerobic	
<i>Escherichia coli</i>	77
<i>Streptococcus viridans</i>	43
Group D streptococcus	27
<i>Pseudomonas aeruginosa</i>	18

Adapted from Bennion RS, Thompson JE: Appendicitis. In Fry DE (ed): Surgical infections, Boston, 1995, Little, Brown, pp 241–250.

Table 1. Common Organisms seen in Patients with Acute appendicitis

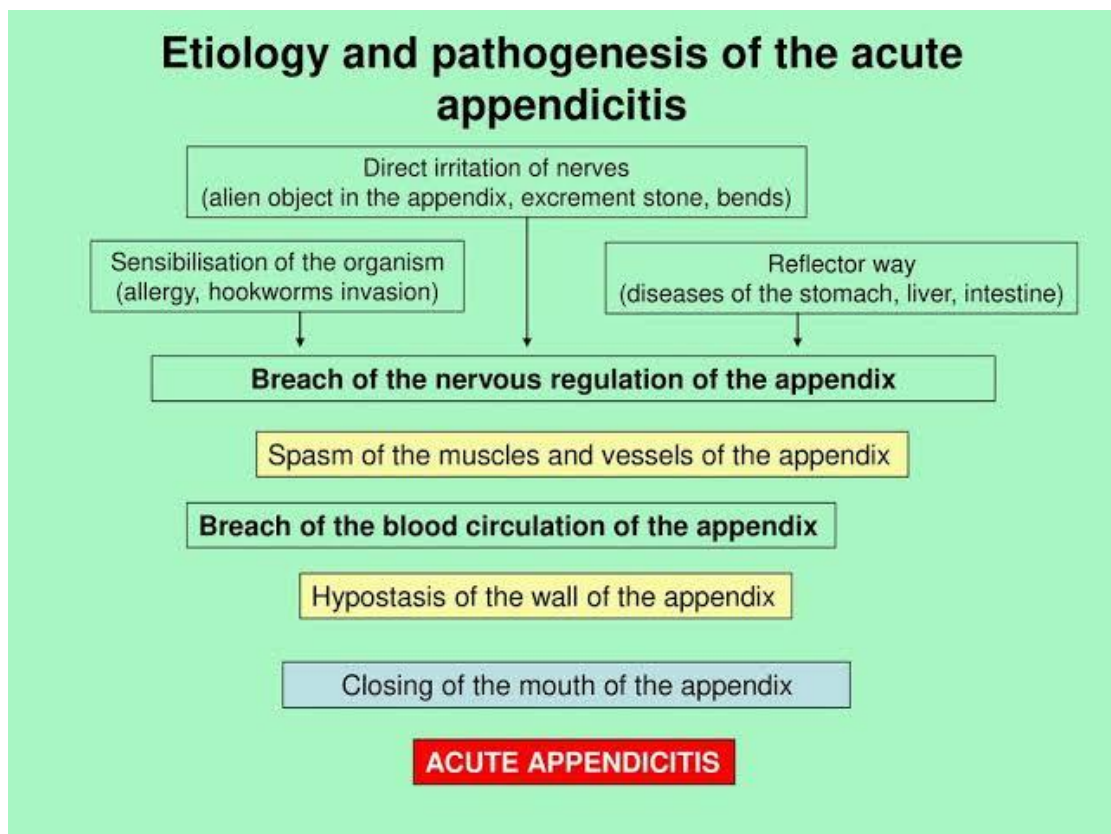


PATHOGENESIS

Acute inflammation of the mucus membrane with secondary infection without obstruction causes *acute nonobstructive appendicitis*. It may lead into resolution, fibrosis, recurrent appendicitis or eventual obstructive appendicitis.

Luminal obstruction by faecolith, lymphoid hyperplasia, pinworm (*oxyuris vermicularis*), other worms, foreign body, carcinoma/Crohn's disease → mucus & inflammatory fluid collects inside the lumen → increases intraluminal pressure → leads to of lymphatic & venous drainage → resulting in increased oedema of mucosa & wall → causes mucosal ulceration & ischaemia → bacterial translocation → bacterial spread

through submucosa & muscularis propria → *acute obstructive appendicitis*
→ thrombosis of appendicular artery → ischaemic necrosis of full
thickness of the wall of the appendix → gangrene of the appendix →
perforation at the tip or at blockage the base → peritonitis.



PATHOLOGY

MORPHOLOGY

Appendicular inflammation is associated with obstruction in 50% to 80% of cases, usually in form of faecolith &, less commonly, a gallstone, tumor, or ball of worms (oxyuriasis vermicularis).

Continued secretion of mucinous fluid in obstructed viscus presumably leads to a progressive increase in intraluminal pressure sufficient to cause eventual collapse of draining veins. Ischemic injury favors bacterial proliferation with additional inflammatory edema & exudation, embarrassing blood supply.

At earliest stages, only scanty neutrophilic exudate may be found throughout mucosa, submucosa, & muscularis propria. Subserosal vessels are congested, & often a modest perivascular neutrophilic infiltrate. That inflammatory reaction transforms normal glistening serosa into dull, granular, red membrane; this transformation signifies early acute appendicitis for that operating surgeon. At later stage, a prominent neutrophilic exudate generates a fibrinopurulent reaction over that serosa.

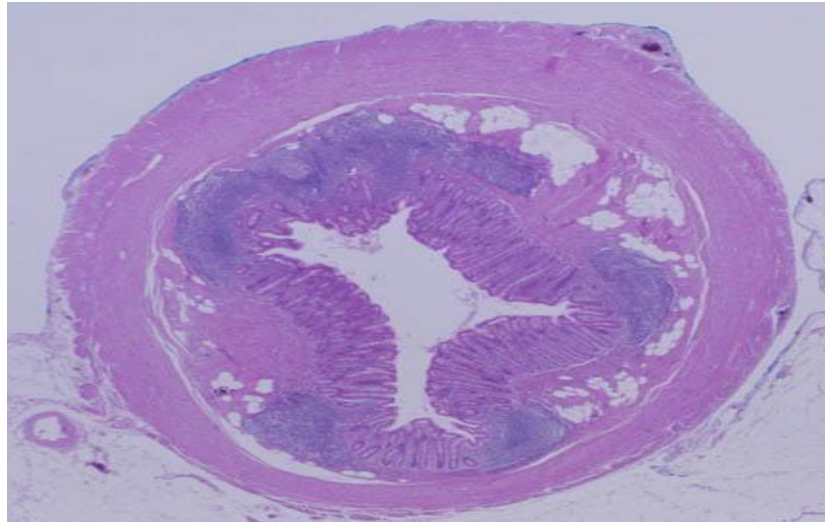


Figure 7: Normal histology of Appendix

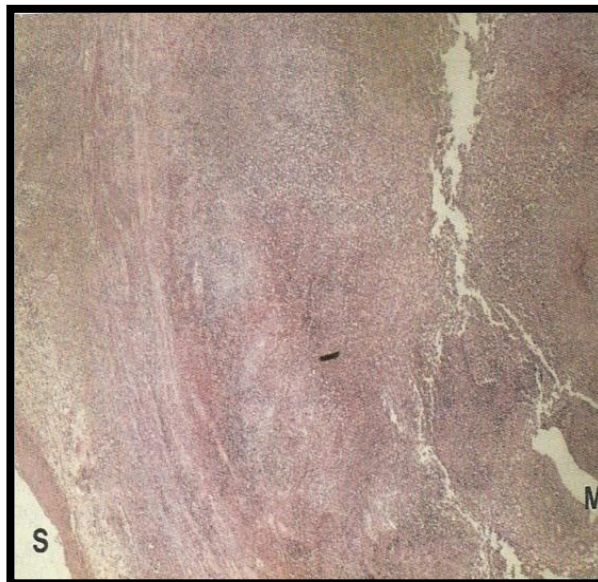


Figure 8. Histology of inflamed Appendix

As inflammatory process worsens, is abscess formation within wall, along with ulcerations & foci of suppurative necrosis in mucosa. This state constitutes acute suppurative appendicitis. Further vascular compromise leads to large areas of hemorrhagic green ulceration of mucosa & green-black gangrenous necrosis through wall, extending to serosa, creating acute gangrenous appendicitis, which is quickly followed by rupture & suppurative peritonitis. That histological criterion for diagnosis of acute appendicitis is neutrophilic infiltration of muscularis propria. Usually, neutrophils & ulcerations are also present within mucosa. Since drainage of an exudate into that appendix from alimentary tract infection may also induce a mucosal neutrophilic infiltrate, evidence of muscular wall inflammation is requisite for that diagnosis..(1)

DIAGNOSIS

HISTORY

classical feature of acute appendicitis begin with poorly localised colicky abdominal pain. It is due to mid-gut visceral discomfort in response to appendicular inflammation & obstruction. That pain is frequently noticed in that periumbilical region .Central abdominal pain is associated with anorexia, nausea & usually one or two episodes of vomiting that follow that onset of pain (Murphy's triad). Most common clinical feature is anorexia..

Vomiting: Due to reflex pylorospasm.

Physical examination

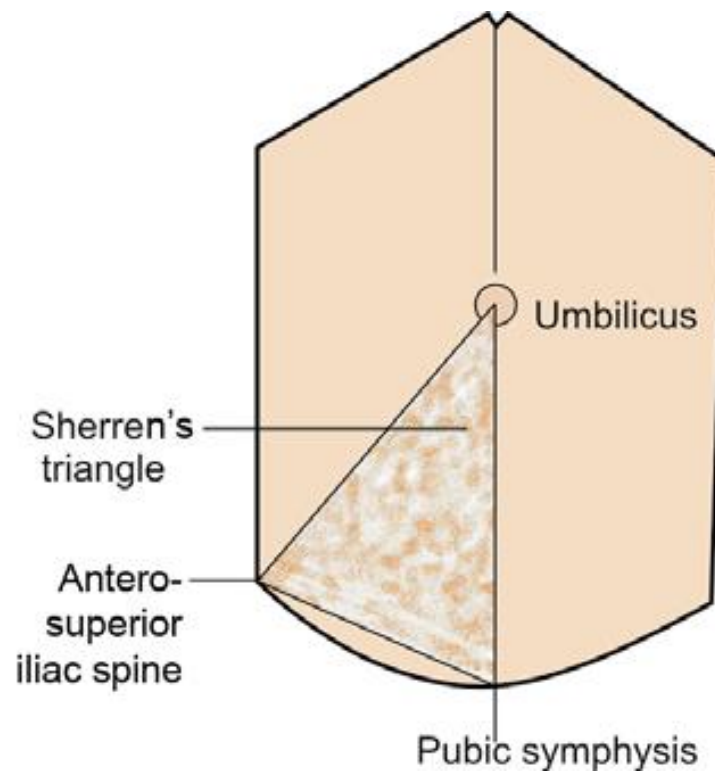
That diagnosis of appendicitis made usually by clinical examinations rather than lab investigations or history.

That charecteristic features low-grade fever, localised RIF tenderness, guarding & rebound tenderness. On Inspection may be decreased abdominal movements during respiration.

On palpation, from left iliac fossa moving towards RIF one can able to feel muscle guarding in McBurney" s point. Cutaneous hyperaesthesia may be demonstrable in RIF ,but is rarely of diagnostic

value. Multiple signs on physical examination to contribute to diagnosis of appendicitis.

1. **Mc Burney's sign:** Maximum tenderness at Mc Burney's point.
2. **Blumberg's sign:** Rebound tenderness
3. **That pointing sign:** That patient have to locate that site of origin of pain & its spread
4. **Rovsing's sign:** This sign is positive as a result of **Pressure** on that left side of that colon, forcing that gas into that caecum distending that caecum & surrounding of that inflamed focus resulting in pain.
5. **Psoas sign:** Pain with flexion of that leg at that right hip, can be seen with a retrocecal appendix due to inflammation adjacent to that psoas muscle.
6. **Cope's(obturator) sign:** Pain with rotating that flexed right thigh internally, indicates inflammation adjacent to obturator muscle in pelvis.
7. **Sherren's sign:** Sherren in 1925, pointed out this Sherren's triangle & is defined as triangle bounded by lines joining umbilicus, right anterior superior iliac spine & pubic symphysis. Hyperesthesia is elicited by gently striking skin. (Fig 9)



8. ***Baldwin's test for retrocaecal appendix***

9. *Shifting Tenderness (Alder's):* That most tender spot is marked first, patient is put in left lateral position & point of maximum tenderness is marked again. If tender spot shifts probably it is not a case of appendicitis. This sign is useful to differentiate appendicitis from mesenteric lymphadenitis & painful uterine conditions in pregnancy.(2)

INVESTIGATIONS

Laboratory Tests

There is no gold standard test for appendicitis but it may be helpful in arriving that diagnosis.

WBC

- A White Blood Cell count (WBC) may have significant role with leucocytosis, with more than 75% neutrophils.
- A completely normal leukocyte count & differential count is found in about 10% of patients with acute appendicitis. A high white blood cell count ($>20,000/\text{mL}$) suggests complicated appendicitis with gangrene or perforation.
- In early cases WBC count may be normal. There may be raise in WBC count over that time.

C-reactive protein

- C-reactive protein (CRP) is an acute-phase reactant synthesized by liver in response to infection or inflammation & rapidly increases within first 12 hours. CRP has been reported to be useful in that diagnosis of appendicitis.

- It specificity & cannot be used to distinguish between sites of infection. CRP levels of greater than 1 mg/dl are commonly reported in patients with appendicitis, but very high levels of CRP in patients with appendicitis indicate gangrenous evolution of that disease, especially if it is associated with leukocytosis & neutrophilia.

Imaging Studies

That various imaging techniques for diagnosis include plain Xray, USG & CT scan..

2. Plain radiographs

Plain X-ray may show lumbar scoliosis towards right due to psoas spasm which is not uncommon; faecolith on that right side; obliteration of preperitoneal fat line due to retrocaecal appendicitis; segmental ileus in caecum & terminal ileum; speckled extraluminal gas in right iliac fossa, gas in appendix, pneumoperitoneum (very rare); intestinal obstruction (occasionally only); soft tissue mass in mass or abscess of appendix—all that features are very much nonspecific.

X-ray is useful to rule out DU perforation, intestinal obstruction, ureteric stone.



Fig 10: Radio-opaque appendix in a plain X-ray. It could be calcified or have calcified content

3. ULTRASONOGRAPHY (USG)

Sonographic criterias for appendicitis (85% Specificity)

Noncompressible appendix of size > 6 mm AP diameter, hyperechoic thickened appendix wall > 2 mm—*target sign*. Appendicolith. Interruption of submucosal continuity. Periappendicular fluid. *Pelvic ultrasound* can be especially useful in excluding pelvic pathology, such as tubo-ovarian abscess or ovarian torsion, which may mimic acute aappendicitis.

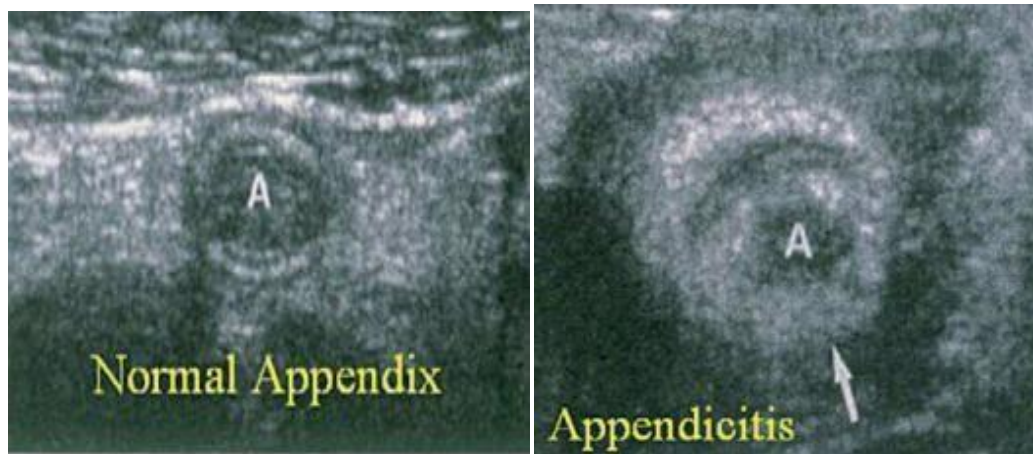


Figure 11. USG finding of a normal appendix & inflammed appendix

COMPUTED TOMOGRAPHY

Computed tomography (CT) is commonly used in that evaluation of adult patients with suspected acute appendicitis, especially so in that elderly.³ CT has a high sensitivity & specificity in that diagnosis of appendicitis,⁵² & rule out othatr causes of abdominal pain that mimic appendicitis. In general, CT findings of appendicitis increase with that severity of that disease. Classic findings include a distended appendix greater than seven mm in diameter & circumferential wall thickening, which may give that appearance of a halo or target. As inflammation progresses, one may see periappendicular fat string, edema, peritoneal fluid, phlegmon, or a periappendicular abscess.

SPIRAL COMPUTED TOMOGRAPHY.

That use of spiral computed tomography in patients with equivocal clinical presentation suspected of having acute appendicitis led to a significant improvement in that preoperative diagnosis & a lower negative appendectomy rate.

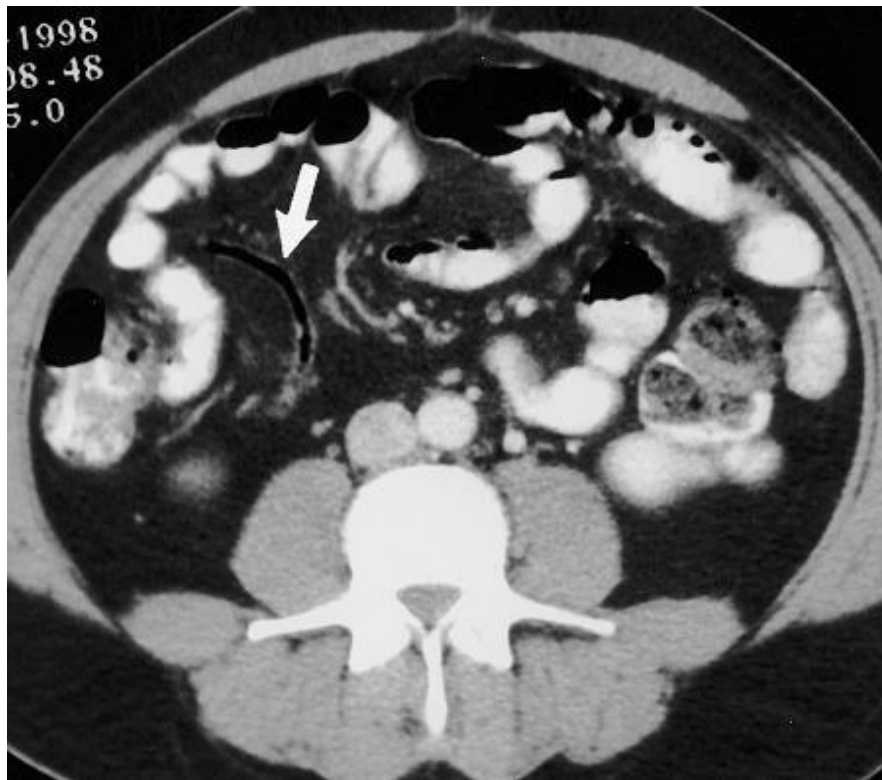


Fig 12: contrast spiral ct showing appendix

DIAGNOSTIC LAPAROSCOPY

Although most patients with appendicitis will be accurately diagnosed based on history, physical exam, laboratory studies, & if necessary, imaging techniques, are small number in whom that diagnosis remains elusive. For patients, diagnostic laparoscopy can provide both a direct examination of that appendix & a survey of that abdominal cavity for possible causes of pain. Laparoscopy can serve as both a diagnostic & therapeutic maneuver for patients with acute abdominal pain & suspected acute appendicitis.

SCORING SYSTEMS

A number of clinical & laboratory-based scoring systems have been devised to assist diagnosis. That most widely used is that Alvarado score.

A score of seven or more is strongly predictive of acute appendicitis.

Features	Score
Symptoms	
Migratory RIF pain	1
Anorexia	1
Nausea & vomiting	1
Signs	
Tenderness (RIF)	2
Rebound tenderness	1
Elevated temperature	1
Laboratory	
Leucocytosis	2
Shift to left	1

Table 2: Alvarado(MANTREL) score

Score less than 5: Not sure.

Score between 5-6: Compatible.

Score between 6-9: Probable.

Score more than 9: Confirmed

INFLAMMATORY RESPONSE SCORE

FINDINGS	POINTS
Vomiting	1
Pain in RIF	1
Rebound tenderness- light	1
Medium	2
Strong	3
Body temperature $\geq 38.5^{\circ}\text{C}$	1
Polymorphonuclear leukocytes	1
70%–84%	2
$\geq 85\%$	3
White blood cell count	1
$10.0\text{--}14.9 \times 10^9$ cells/L	2
$\geq 15.0 \times 10^9$ cells/L	3
C-reactive protein concentration	1
10–49 g/L	2
≥ 50 g/L	3

Score: 0–4: Low probability. Outpatient follow-up.

5–8: Indeterminate group. Active observation or diagnostic laparoscopy.

9–12: High probability. Surgical exploration.

CHRONIC OR RECURRENT APPENDICITIS

A small number of patients report episodic bouts of right lower abdominal pain in that absence of an acute febrile illness. Some are found to have appendicoliths on CT scans or sonographic evidence of an enlarged appendiceal diameter. most of them will have surgical & pathologic evidence of chronic inflammation of appendix & relief of symptoms after appendectomy. These findings support that concept that appendicitis represents a spectrum of inflammatory changes that may, in rare cases, wax & wane.

PERFORATED APPENDICITIS

It is more common in rural areas, older adults. Patients with perforation of that appendix may be very ill & require several hours of fluid resuscitation before safe induction of general anesthasia can be achieved. Broad-spectrum antibiotics directed against gut aerobes & anaerobes are initiated early in that evaluation & resuscitation phase.



ACUTE NONOBSTRUCTIVE APPENDICITIS (CATARRHAL):

Inflammation of mucous membrane occurs with redness, oedema & haemorrhages which may go for following courses:

- _ Resolution.
- _ Ulceration.
- _ Fibrosis.
- _ Suppuration.
- _ Recurrent appendicitis.
- _ Gangrene—rare initially in nonobstructive type but later can occur.
- _ Peritonitis.

APPENDICITIS IN OLDER PATIENTS

Older patients with appendicitis are more likely to delay seeking treatment, present with atypical findings, & have higher rate of perforation at time of presentation .

CT is widely used in older patients to establish that diagnosis of appendicitis & to exclude neoplasms, diverticulitis, & confounding conditions.

Perforation & abscess formation are relatively common operative findings in older patients with appendicitis. Older people have an increased incidence of cardiovascular, renal, & pulmonary complications after appendectomy.

ACUTE APPENDICITIS DURING PREGNANCY

Appendectomy for presumed appendicitis is that most common surgical emergency during pregnancy. That incidence is approximately 1 in 766 births. Acute appendicitis can occur at any time during pregnancy but is rare in that third trimester. That overall negative appendectomy rate during pregnancy is approximately 25% & appears to be higher than that rate seen in nonpregnant women. That diversity of clinical presentations & that difficulty in making that diagnosis of acute appendicitis in pregnant women are well established. In addition, during pregnancy, there are anatomic changes in that appendix & increased abdominal laxity that may further complicate clinical evaluation.

Appendicitis in pregnancy should be suspected when a pregnant woman complains of abdominal pain of new onset. That most consistent sign encountered in acute appendicitis during pregnancy is pain in that right side of that abdomen. When diagnosis is in doubt, abdominal ultrasound may be beneficial. Another option is magnetic resonance imaging, which has no known deleterious effects on that fetus. Appendicitis is that most

common nonobstetric surgical disease of that abdomen during pregnancy. Diagnosis may be difficult because symptoms of nausea, vomiting, & anorexia, as well as elevated white blood cell count, are common during pregnancy. Moreover, that location of tenderness varies with gestation. After that fifth month of gestation, that appendix is shifted superiorly above that iliac crest & that appendiceal tip is rotated medially into that right upper quadrant by that gravid uterus.

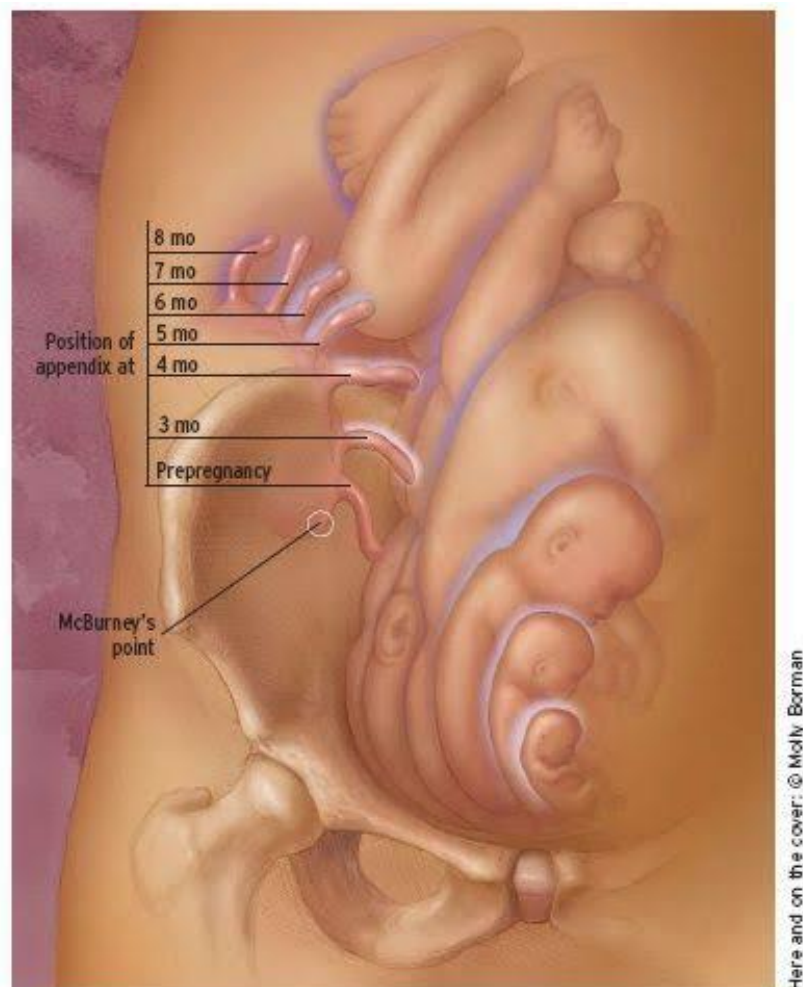


FIGURE 1. The growing uterus progressively displaces the appendix in a counterclockwise rotation out of the pelvis into the right upper quadrant.

APPENDICULAR MASS (PERIAPPENDICULAR PHLEGMON)

It is that localisation of infection occurring 3 to 5 days after an attack of acute appendicitis.

Inflamed appendix, greater omentum, oedematous caecum, parietal peritoneum & dilated ileum (Ileus) forms a mass in that right iliac fossa. This mass is tender, smooth, firm, well localised, not moving with respiration, not mobile, all borders well made out (well localised) & resonant on percussion. Patient may have fever & features of toxicity.

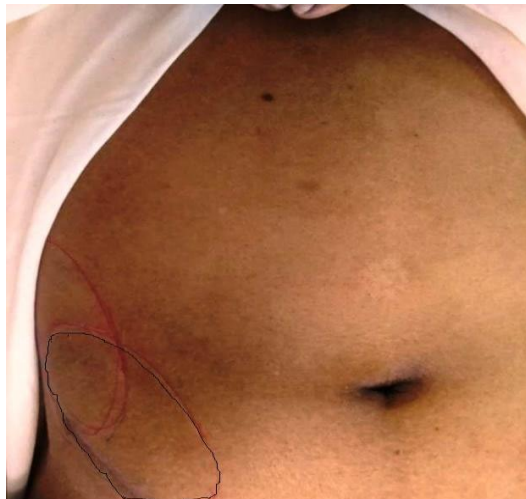


Fig 13- appendicular mass

Appendicular mass is formed by dilated ileum; greater omentum; inflamed appendix & caecum. It is resonant, smooth, firm, & tender with well defined borders which does not move with respiration & does not have mobility

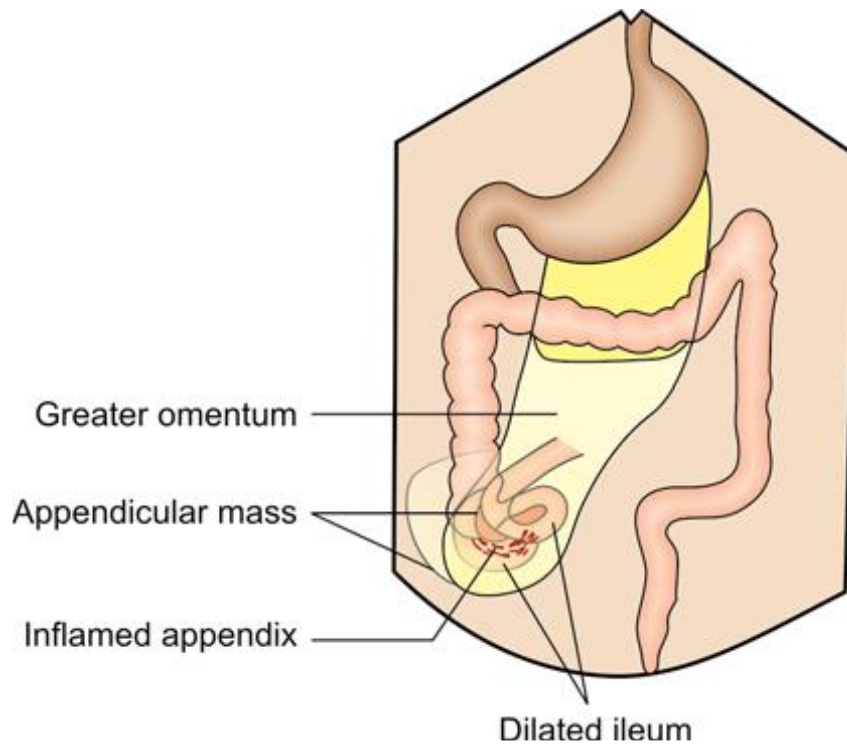


Fig 14 – appendicular mass

Differential diagnosis

Carcinoma caecum

Actinomycosis

Crohn's disease

Mesenteric lymphadenitis

Ovarian disease

Ruptured ectopic pregnancy

Twisted ovarian cyst

Ileocaecal tuberculosis

Investigations

TC is increased.

U/S confirms that mass.

CECT ABDOMEN & PELVIS

TREATMENT

Conservative (*Ochsner-Sherren Regimen*), as nature has already localised that infection, if now disturbed will cause faecal fistula.

Includes observation:

_ Temp, BP, pulse chart.

_ *Marking that mass to identify that progression/regression.*

_ Antibiotics (Ampicillin, metronidazole, gentamicin, or

other drugs given depending on severity & requirement).

_ IV fluids.

_ Analgesics.

_ Initial nasogastric aspiration.

Patient usually shows response by 48 to 72 hours & mass reduces in size, temperature & pulse becomes normal. Appetite is regained. 90% of patients respond to conservative therapy.

Routinely Patient is discharged & advised to come *for interval appendicectomy* after 6 weeks.

Contraindications for Ochsner-Sherren regimen

1. When diagnosis is in doubt.
2. In acute appendicitis in children & elderly.
3. In burst, gangrenous appendicitis.
4. In patients in whom diffuse peritonitis sets in.

Criteria to discontinue *Ochsner-Sherren* regimen

Patient becomes more toxic (tachycardia, high fever)

Persistent vomiting

Increase or spread of pain abdomen (means onset of diffuse peritonitis)

Increased size of mass

Suppuration (abscess formation) in mass

In these patients that regimen is discontinued. That patient is taken for immediate surgery, either through laparotomy or through classic approaches.

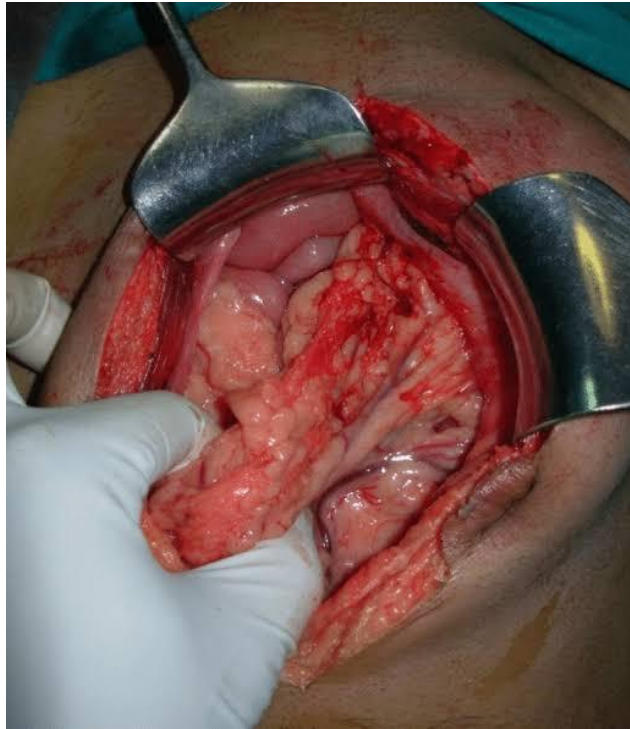


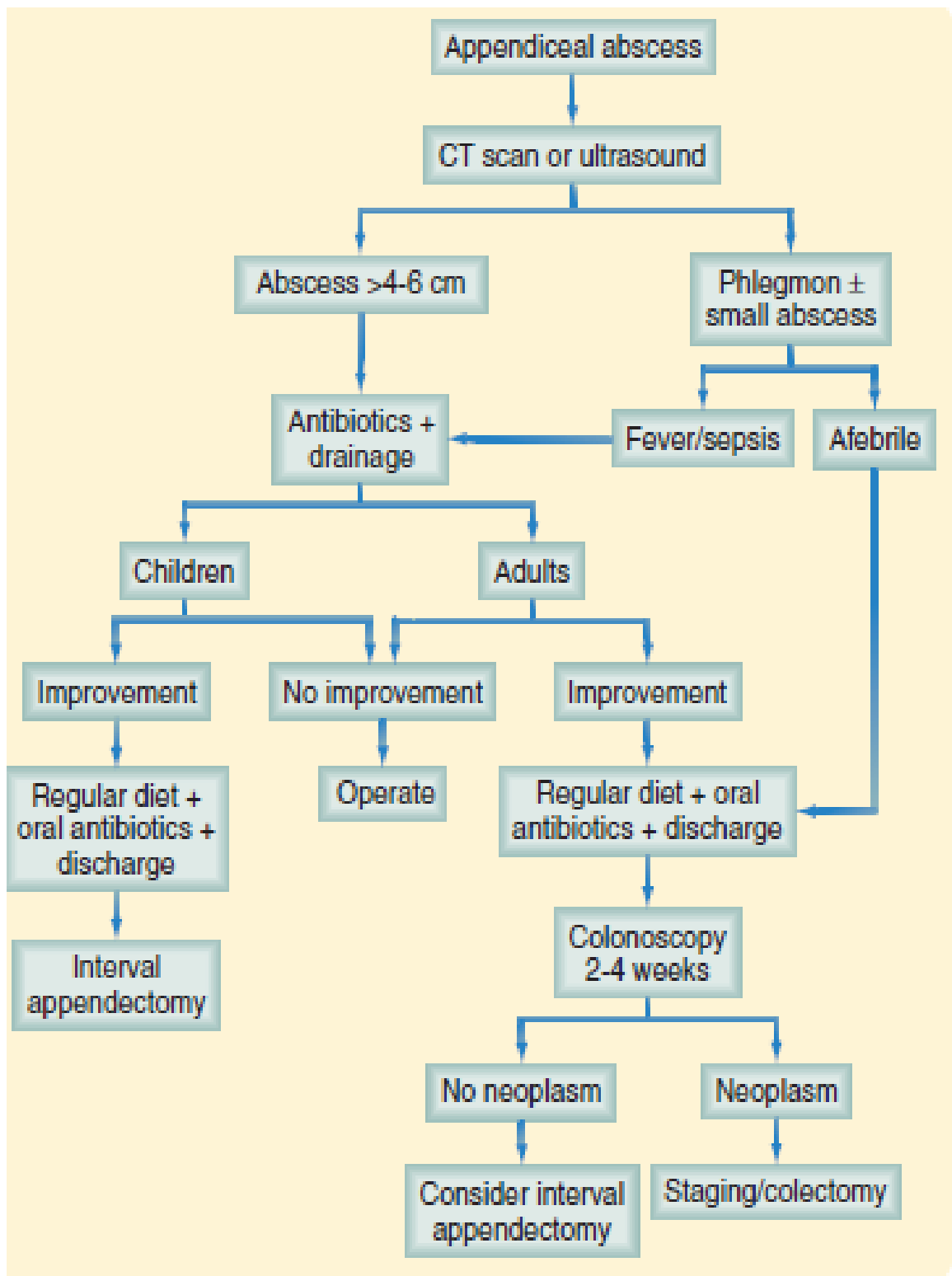
Fig 15 – appendicular mass

APPENDICEAL ABSCESS

Patients who present late in that course of appendicitis with a mass & fever may benefit from a period of nonoperative management, which reduces complications & overall hospital stay.

Imaging studies are useful for confirming that diagnosis & for evaluating that size of any abscess present. Patients with large abscesses, larger than 4 to 6 cm, & especially those patients with abscess & high fever, benefit from abscess drainage. This may be accomplished via that transrectal or transvaginal route using ultrasound guidance if that abscess is suitably located or by a percutaneous image-guided approach. Patients

with smaller abscesses or phlegmon & who are not sick may be successfully managed initially with antibiotics alone. Patients who continue to have fever & leukocytosis after several days of nonoperative treatment are likely to require appendectomy during that same hospitalization, whereas those who improve promptly may be considered for interval Appendectomy.



OPEN APPENDICECTOMY

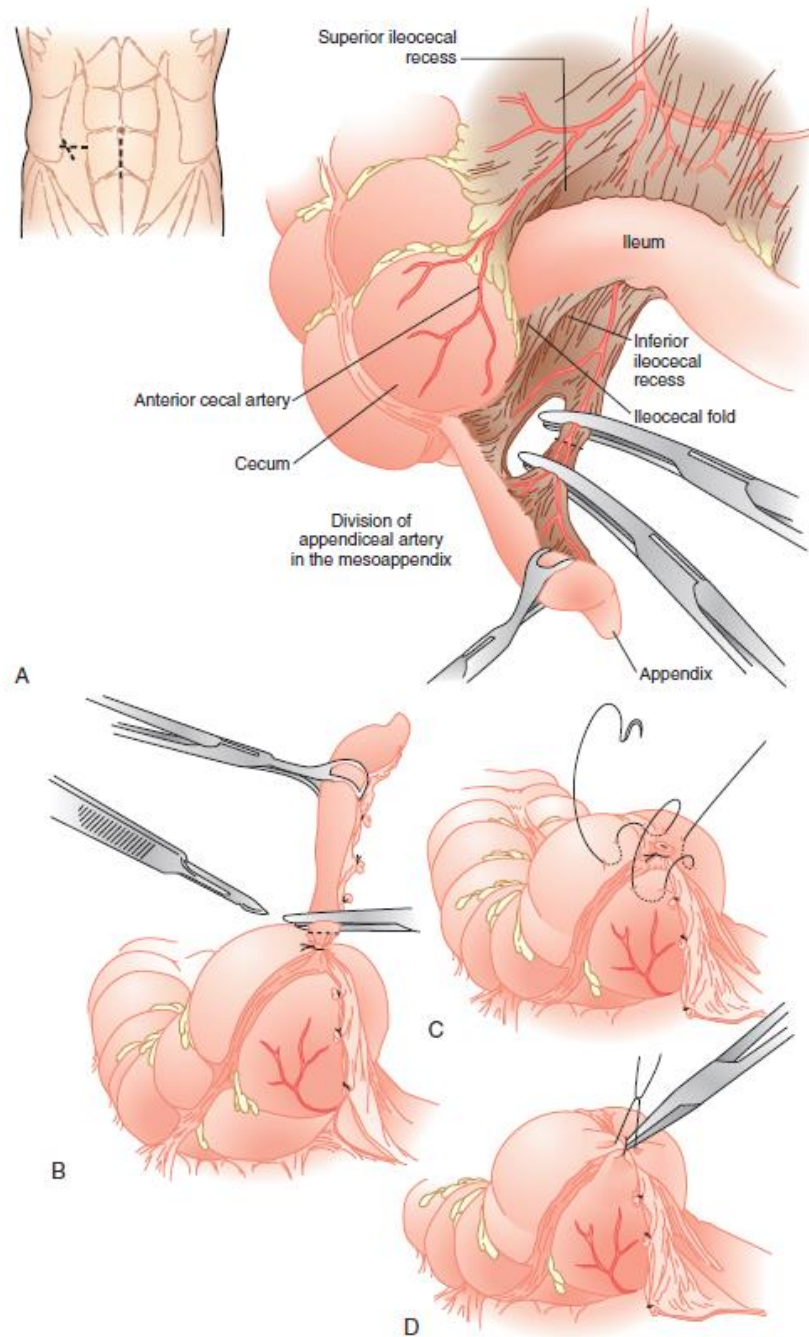


FIGURE 51-4 *A, Left*, Location of possible incisions for an open appendectomy. *Right*, Division of the mesoappendix. *B*, Ligation of the base and division of the appendix. *C*, Placement of purse-string suture or Z stitch. *D*, Inversion of the appendiceal stump. (From Ortega JM, Ricardo AE: Surgery of the appendix and colon. In Moody FG [ed]: Atlas of ambulatory surgery, Philadelphia, 1999, WB Saunders.)

LAP APPENDICECTOMY

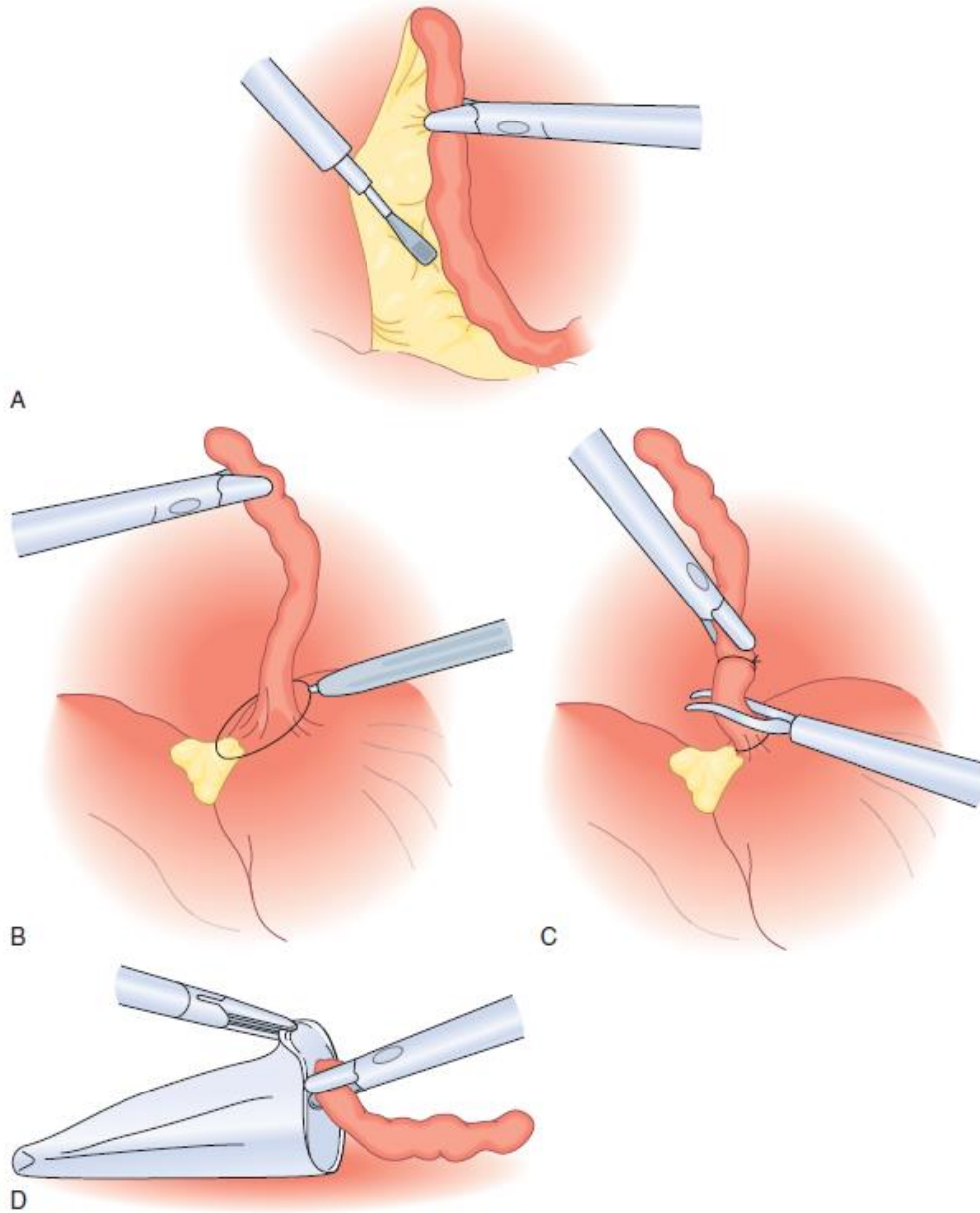
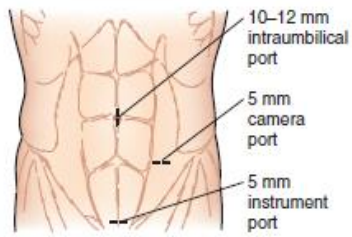


FIGURE 51-5 **A**, Upper left, Location of port sites for laparoscopic appendectomy. **Right**, Division of the mesoappendix using the harmonic scalpel. **B**, Placement of an absorbable Endoloop encircling the base of the appendix. **C**, Division of the appendix between Endoloops. **D**, Placement of the appendix into a specimen bag before removal of the appendix with the umbilical port.

LAPAROSCOPIC APPENDECTOMY

First reported laparoscopic appendectomy was performed 1983 by Semm; laparoscopic approach did not come into widespread use until much later, following success of laparoscopic cholecystectomy. This due to small incision already commonly used with open appendectomy. Laparoscopic appendectomy is performed under general anesthesia. An oro- or nasogastric tube and urinary catheter are placed. The patient should be placed supine with his or her left arm tucked and securely strapped to operating table. Both surgeon and assistant should be standing on the patient's left facing appendix. laparoscopic screens should be positioned on patient's right or at foot of bed. Standard laparoscopic appendectomy typically uses three ports. Typically, a 10- or 12-mm port is placed at umbilicus, whereas two 5-mm ports are placed suprapubic and in left lower quadrant. The patient should be placed in Trendelenburg, tilted to left.

Appendix should be identified similarly as in open surgery by tracking taenia libera/coli to appendiceal base. Through suprapubic port, appendix should be grasped securely & elevated to 10 o'clock position. An "appendiceal critical view" should be obtained where taenia libera is at 3 o'clock position, terminal ileum at 6 o'clock position, and retracted

appendix at 10 o'clock position to allow proper identification of base of appendix

Through infraumbilical port, mesentery should be gently dissected from base of appendix and window created. Typically base of appendix stapled, followed by stapling mesentery. Mesentery may be divided by an energy device or clipped and base of appendix secured with Endoloop. The stump should be carefully examined to ensure hemostasis, complete transection, & ensure that no stump is left behind. The appendix is removed through infraumbilical trocar in retrieval bag. (3)

LAPAROSCOPIC SINGLE-INCISION APPENDECTOMY

There has been growing interest in laparoscopic single-incision appendectomy. Instead of two or three incisions, a single incision is made, typically periumbilical. The first published laparoscopic-assisted, single-incision appendectomy was reported by Inoue in 1994, where the appendix was identified laparoscopically & grasped & pulled through the laparoscopic incision & the appendectomy completed in an open manner. The first reports of a pure laparoscopic single-incision appendectomy were described in 2009 by multiple surgical groups

NATURAL ORIFICE TRANSLUMINAL ENDOSCOPIC SURGERY.

Natural orifice transluminal endoscopic surgery (NOTES) is a new surgical procedure using flexible endoscopes in that abdominal cavity. In this procedure, access is gained by way of organs that are reached through a natural, already-existing external orifice. The hoped-for advantages associated with this method include that reduction of postoperative wound pain, shorter convalescence, avoidance of wound infection & abdominal wall hernia.

POSTOPERATIVE CARE AND COMPLICATIONS.

Following uncomplicated appendectomy, complication rates are low, most patients can quickly be started on a diet and discharged home same day or following day .Postoperative antibiotic therapy is unnecessary. Alternatively, with complicated appendectomy, complication rates are increased compared to uncomplicated appendicitis. Patients should be continued on broad-spectrum antibiotics for 4 to 7 days. Postoperative ileus may occur, so diet should be started based on daily clinical evaluation. These patients are at increased risk for surgical site infections.

SURGICAL SITE INFECTION.

In patients with incisional (superficial or deep) surgical site infection, treatment should be opening of incision and obtaining a culture. Following laparoscopic appendectomy, the extraction port site is most common site of surgical site infection. Patients with cellulitis can be started on antibiotics. cultured organisms are typically bowel flora, as opposed to skin flora. Patients with postoperative intra-abdominal abscesses can present in variety of ways. Although fever, leukocytosis, abdominal pain are common presentations, patients with ileus, bowel obstruction, diarrhea, tenesmus may also harbor intra abdominal abscesses. Small abscesses can be simply treated with antibiotics; larger abscesses require drainage. Most commonly, percutaneous drainage with CT or ultrasound guidance is effective. For abscesses not amenable to percutaneous drainage, laparoscopic abscess drainage is a viable option.

STUMP APPENDICITIS

Incomplete appendectomy represents a failure of removing the entire appendix on the initial procedure. A review of literature has revealed only 60 reports of this phenomenon. Likely, incomplete appendectomy is underreported, true prevalence is much higher. Reported as “stump appendicitis,” patients typically present with recurrent symptoms of

appendicitis approximately 9 years after their initial surgery. There was no difference in initial surgery between laparoscopic and open procedures.

However, there were more complicated appendectomies on initial surgery. Patients presenting with stump appendicitis are more likely to have complicated appendicitis, have an open procedure, and undergo colectomy. The key to avoiding stump appendicitis is prevention. Use of “appendiceal critical view” (appendix placed at 10 o’clock, taenia coli/libera at 3 o’clock, terminal ileum at 6 o’clock) identification of where taeniae coli merge and disappear is paramount to identifying , ligating base of appendix during initial operation. remaining stump should be no longer than 0.5 cm, as stump appendicitis has only been noted in stumps ≥ 0.5 cm in literature.

In patients who have had prior appendectomy, a low index of suspicion is important to prevent delay in diagnosis and complications. Prior appendectomy should not be an absolute criterion in ruling out acute appendicitis.

INCIDENTAL APPENDECTOMY

Decisions regarding efficacy of incidental appendectomy should be based on epidemiology of appendicitis. The best data were published by the Centers for Disease Control and Prevention based on period from 1979 to 1984. During this period, an average of 250,000 cases of appendicitis and 310,000 incidental appendectomies occurred annually in United States. It was estimated that 36 incidental appendectomies had to be performed to prevent one patient from developing appendicitis. In view of added costs & risk of morbidity for each extension of a surgical intervention, this does not seem to justify incidental appendectomy. Although incidental appendectomy is generally neither clinically nor economically appropriate, there are some special patient groups in whom it should be performed during laparotomy or laparoscopy for other indications. These include children about to undergo chemotherapy, the disabled who cannot describe symptoms or react normally to abdominal pain, patients with Crohn's disease in whom cecum is free of macroscopic disease, and individuals who are about to travel to remote places where there is no access to medical or surgical care.¹²³ Appendectomy is routinely carried out during the performance of Ladd's procedure for malrotation because displacement of cecum into left upper quadrant would complicate diagnosis of subsequent appendicitis(.3)

MATERIALS & METHODS

That study was conducted in that Department of General Surgery, Govt.Rajaji Hospital & Medical College, Madurai during that period of August 2017 to August 2018.

STUDY DESIGN

A prospective non randomised study.

SOURCE

That present study was conducted in that Department of Surgery, Govt.Rajaji Hospital & Medical College, Madurai

STUDY PERIOD

One year from to . January 2018 to January 2019.

SOURCE OF DATA

Patients admitted with clinical diagnosis of appendicular mass under that Department of Surgery, Govt.Rajaji Hospital & Medical College, Madurai during that study period.

SAMPLE SIZE.

A total of 50 patients with clinical diagnosis of appendicular mass were studied.

SELECTION CRITERIA.

Inclusion criteria

1. All patients with clinical findings & investigation report in favour of appendiceal mass were included
2. All age group from 13 to 70 years
3. Both male & female patient were included.

Exclusion criteria.

- Patients less than 13 years of age & more than 70 years of age.
- Patients with generalised peritonitis were excluded..
- Non cooperative patients for regular follow up..

Patients with comorbidities like diabetes mellitus, end stage liver disease, immunocompromised state.

PROCEDURE

Ethical clearance has been obtained from “Ethical Clearance Committee” of that institution for that study. Based on that selection

criteria patients admitted with diagnosis of appendicular mass patients under Department of Surgery, Govt. Rajaji Hospital & medical college, Madurai during that study period were screened. That nature of that study was explained to that patients. That patients were included in this study after getting written informed consent. History & clinical examination was done for all & recorded in that profoma.

That following tests were carried out on admission.

Routine blood investigations (Complete blood count, platelet count, reticulocyte count).

serum electrolytes .

Blood sugar ,

serum urea & creatinine

Serum Bilirubin (Total & Direct bilirubin). Liver Function Tests

XRAY CHEST

ECG

USG ABDOMEN & PELVIS

CECT ABDOMEN & PELVIS

Seropositivity for HbsAg,

VCTC

Urīnē analysis (routine & microscopy).

Initially all were treated conservatively as described by Oschner & Sherren regimen.

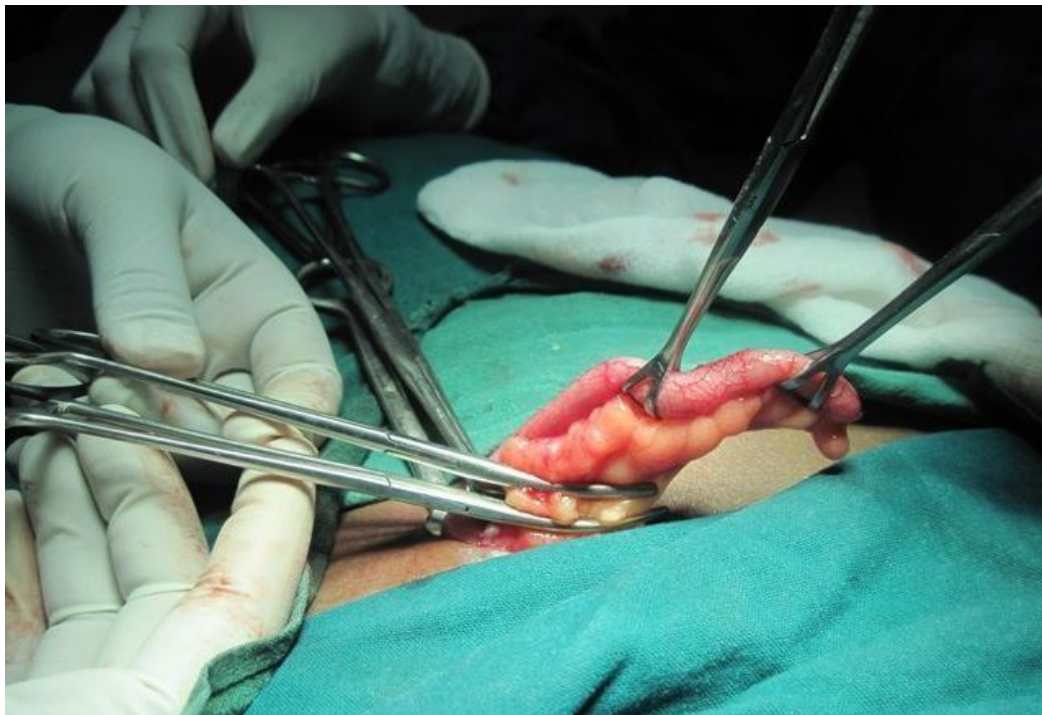
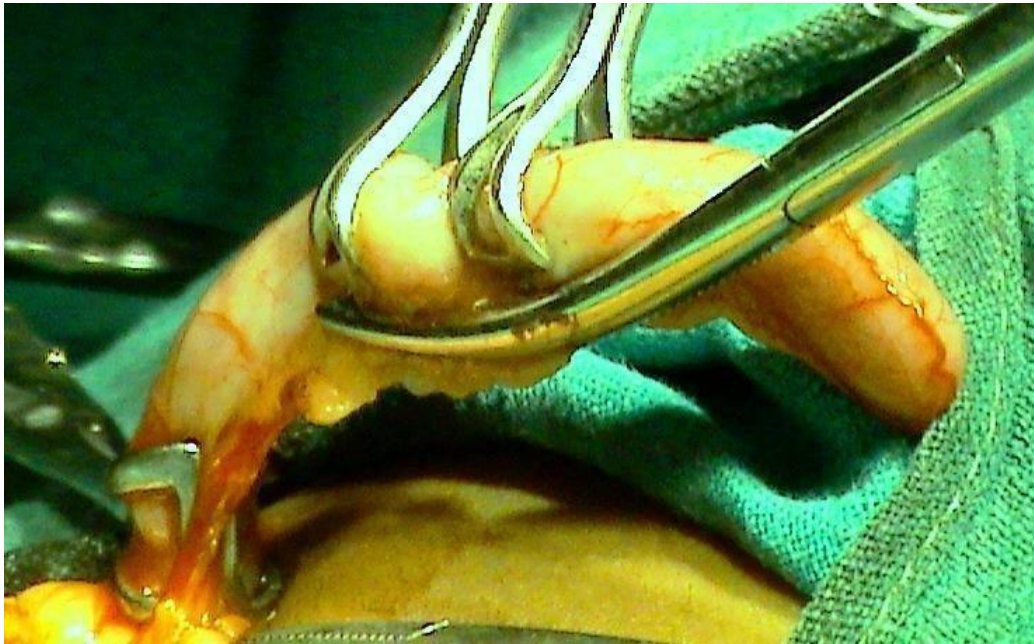
After successful management of appendiceal mass patients, In group I patients were advised to come periodically for review or as soon as any recurrence of symptoms appear. Patients with recurrence were admitted and appendectomy done either by open or laparoscopic procedure. Patients who did not turn up for review were closely followed up by telephonic conversation and their complaints if any present were recorded.

Group I patients were advised to come for interval appendectomy in 6 to 8 weeks. On their readmission they were performed appendectomy either by open or laparoscopic procedure. All were followed up for minimum 6 months for any complication and to assess prognosis.

In group II patients were advised to come periodically for review or as soon as any recurrence of symptoms appear. Patients with recurrence were admitted and appendectomy done either by open or laparoscopic procedure.

PHOTOGRAPHS

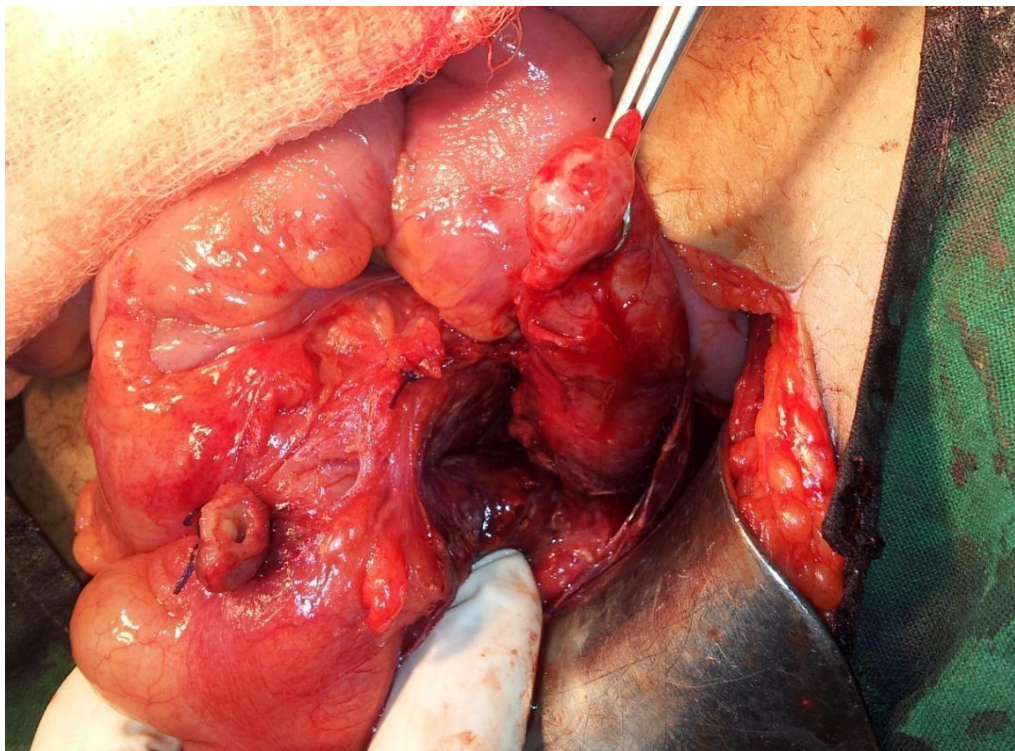
Photograph 1: Acute Appendicitis



Photograph 2. Acute appendicitis (meso appendix being ligated)



Photograph 3: Inflamed Appendix with Faecalith



Photograph 4: Appendicular perforation (ligated & cut at base)

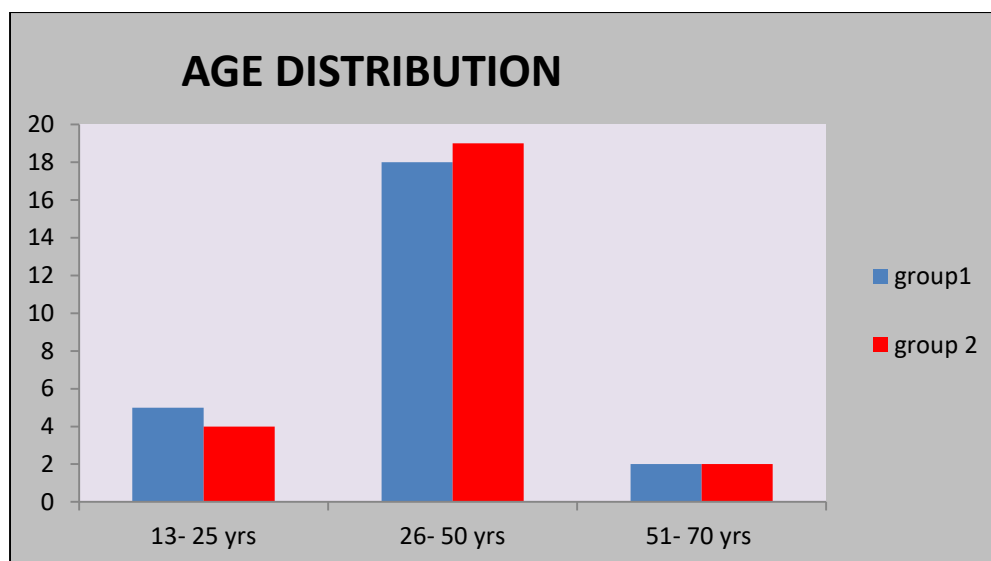
RESULTS

Outcome of our study are shown in the tables attached. The age and sex distribution in each group are as follows.

GROUP 1 – CONSERVATIVE MANAGEMENT , GROUP 2- INTERVAL APPENDICECTOMY

1. AGE DISTRIBUTION:

Age	GROUP 1 (CONSERVATIVE MANAGEMENT)	GROUP 2 (INTERVAL APPENDICECTOMY)	% total
13 to 25	5	4	18%
26 to 50	18	19	74%
51 to 70	2	2	8%



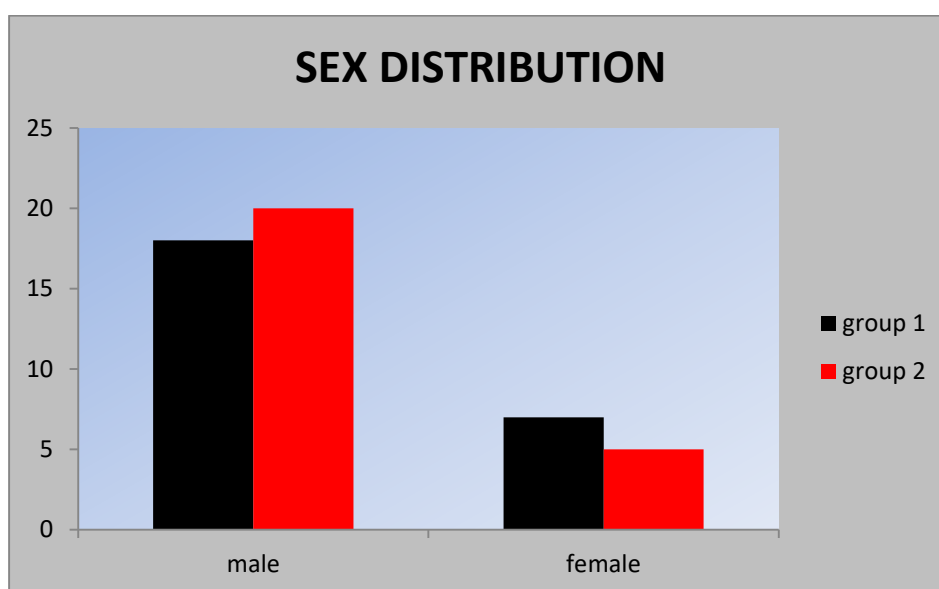
Age	Group		Total
	Group 1 Conservative	Group 2 Interval appendicectomy)	
13 to 25	5	4	9
26 to 50	18	19	37
51 to 70	2	2	4
Total	25	25	
P VALUE		0.834 NOT SIGNIFICANT	

The mean age group was similar in both groups (26 TO 50 yrs).

There was no statistical significance .

2. SEX DISTRIBUTION.

SEX	GROUP 1 (conservative)	GROUP 2 Interval appendicectomy	% TOTAL
MALE	18	20	76%
FEMALE	7	5	24%

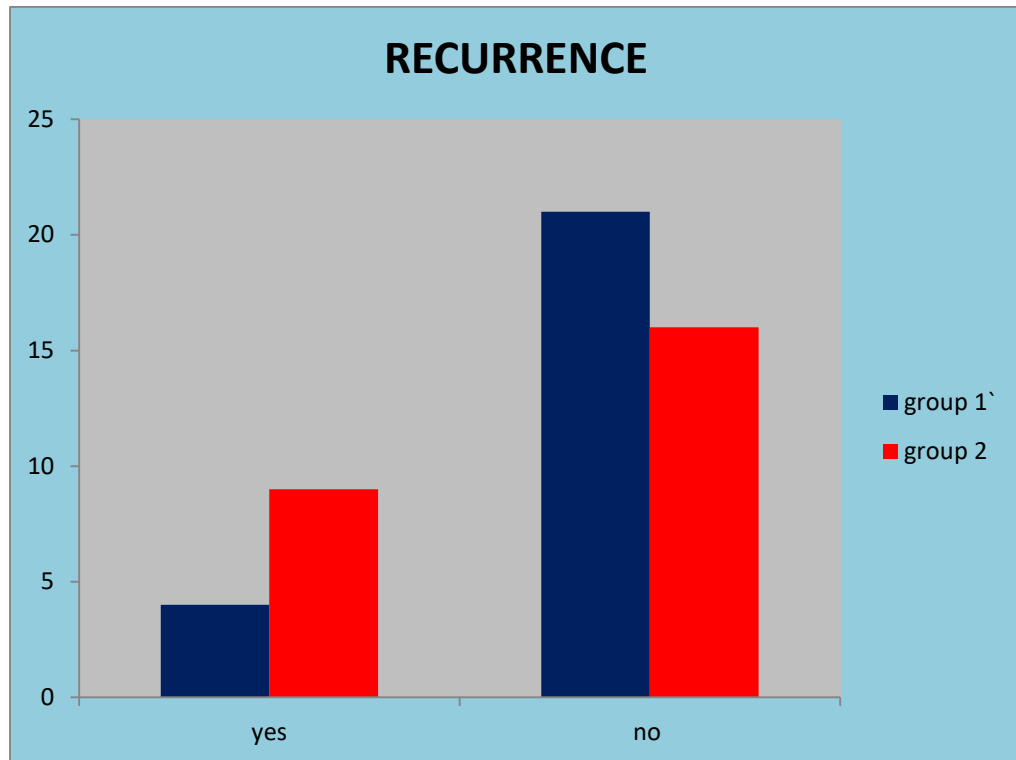


In the CONSERVATIVELY MANAGED group among 25 patients 18 were male 7 were female . In INTERVAL APPENDICECTOMY group 20 were male patients and 5 were females . There was no statistical significance among sex in both groups . MALES were affected more than females .

3. RECURRENCE

Recurrence	GROUP 1	GROUP 2
	conservative	Interval appendicectomy
yes	4	9
no	21	16
Total	25	25

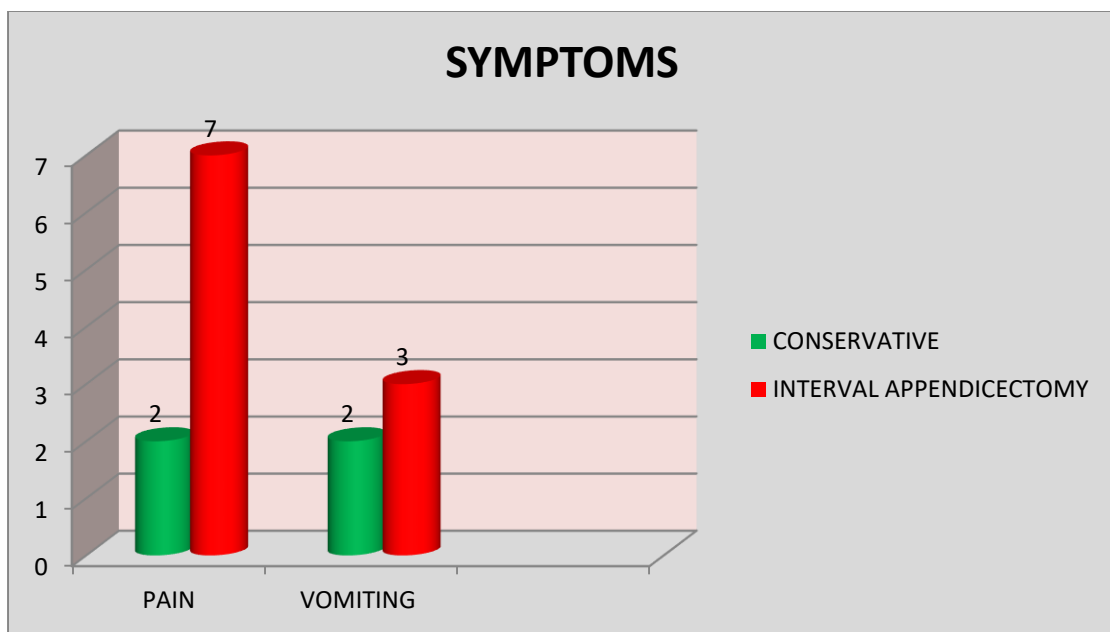
	GROUP 1	GROUP II
Recurrence	4	9
Total	25	25
proportion	0.16	0.36



In the CONSERVATIVELY MANAGED group among 25 patients 4 patients got recurrent appendicitis. In INTERVAL APPENDICECTOMY group 9 patients got recurrent appendicitis. There was no statistical significance among sex in both groups . MALES were affected more than females .

4.SYMPTOMATOLOGY

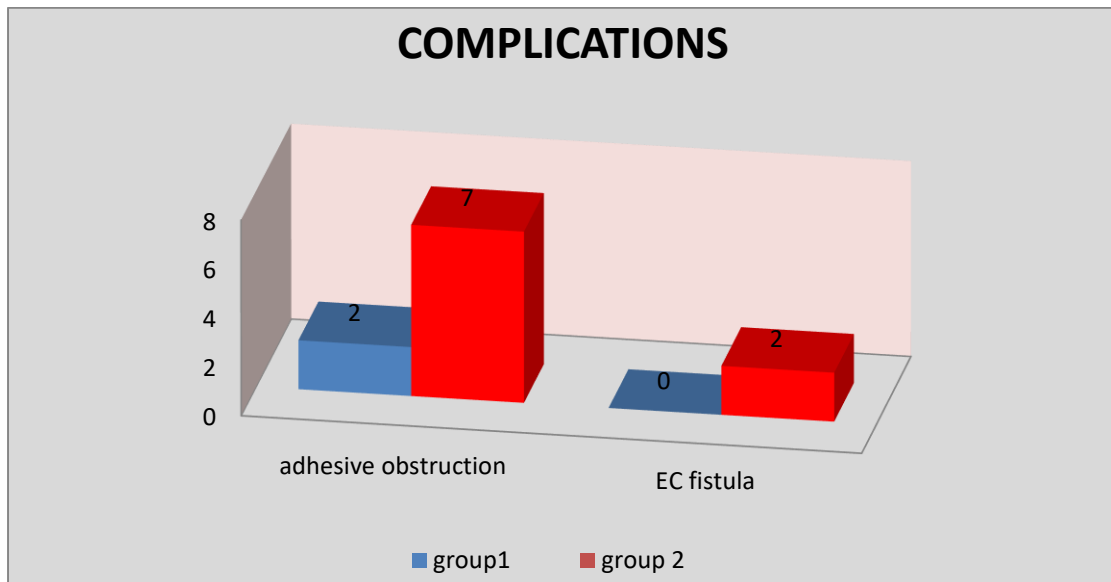
Symptoms	Group 1 (Conservative)	Group 2 (Interval appendicectomy)
Pain	2	7
Vomiting	2	3
Total	4	10



In the CONSERVATIVELY MANAGED group among 25 patients 4 patients developed symptoms of appendicitis . In INTERVAL APPENDICECTOMY group 10 patients developed symptoms of appendicitis.

5.COMPLICATIONS

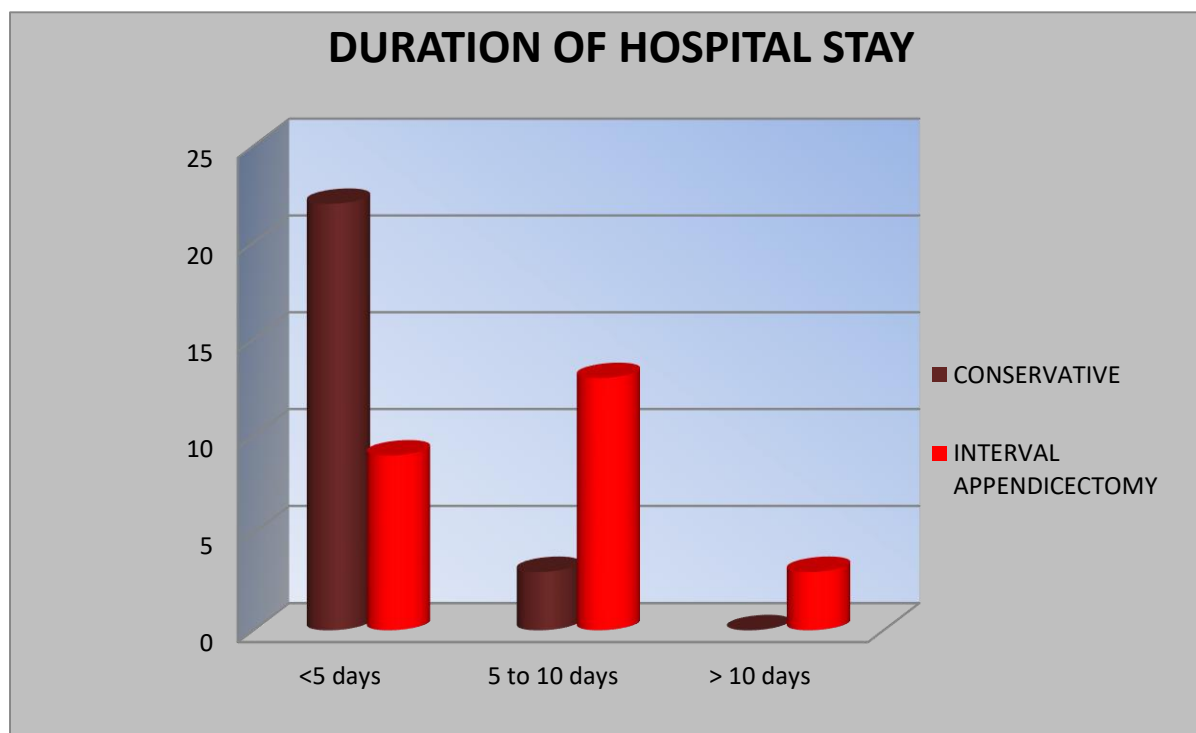
COMPLICATIONS	Group I	%	Group II	%
ADHESIVE OBSTRUCTION	2	8%	7	28%
EC FISTULA	0	Nil	2	8%
TOTAL	2	8%	9	36%



In the CONSERVATIVELY MANAGED group among 25 patients 2 patients developed complications . In INTERVAL APPENDICECTOMY group 9 patients developed complications

6.DURATION OF HOSPITAL STAY

Duration of hospital stay	Group 1 (Conservative)	Group 2 (Interval appendicectomy)
Less than 5 days	22	9
5 to 10 days	3	13
>10 days	0	3
MEAN	3.409091	5.22222
P VALUE	0.00001 SIGNIFICANT	



In the CONSERVATIVELY MANAGED group among 25 patients, patients stayed in hospital Less than 5 days -22 patients, 5 to 10 days 3 patients . In INTERVAL APPENDICECTOMY group patients stayed in hospital Less than 5 days -9 patients, 5 to 10 days 13 patients , more than 10 days 3 patients. P value was significant . It was stasitically significant.

DISCUSSION

Early appendicectomy is the treatment of choice in acute appendicitis. Once mass has formed the line of management is controversial subject. Current study mostly favours conservative management for appendiceal mass. Following conservative management to go for interval appendectomy in 6 to 8 wks period or conservative management alone with regular follow up is still a debatable question.

Following conservative management the intension for doing interval appendectomy is mainly to avoid recurrence. The prospective study done by Youssuf *et. al.* revealed that interval appendectomy done at 6 and 12 weeks had prevented 10.6% and 6.7% of recurrent appendicitis respectively. that means that in 89.4% and 93.3% the interval appendectomy done was unnecessary. In literature the reported rate of recurrence after conservative management alone was 6.2% which was more common during the first six months. The one year recurrence rate was low. (1.9—2.2%) . In another random perspective study conducted by Kumar and Jain the recurrence was only 10% where conservative management with regular follow up alone was done .

Based on these observations doing routine interval appendectomy is not mandatory to prevent recurrent appendicitis since the results clearly show the recurrence rate is considerably less to go for interval appendectomy straightaway. Moreover recurrence after conservative management has mild clinical course and surgical treatment has little complications.

Another important point to study is the complications related to conservative management with interval appendectomy and conservative management only with regular follow up. In a series of studies the complications following interval appendectomy was 12% to 23% which included sepsis, bowel perforation, ileus, fistulas and adhesive obstruction . The relative occurrence was equal to the complications occurring while doing immediate appendectomy for appendiceal mass .

- In our study the mean age group of surgery in both groups was 26 to 50 years with majority of the cases being males compared to females .
- Recurrent appendicitis is more common in interval appendicectomy group.
- In group II among 25 patients , 10 patients developed symptoms of appendicitis .

The incidence of complications include adhesive obstruction 2 (8%) in group I . In group II the main complications like obstruction 7(28%) , EC Fistula 2 (8%) . It clearly shows since the morbidity is more (36%) after interval appendectomy it is better to go for conservative management with regular follow up and plan for surgery if recurrence occurs. Among two groups , group II patients has long duration of hospital stay than group 1 patient.

CONCLUSION

Recent studies in literature are mostly not in favour of routine interval appendectomy following conservative management of appendiceal mass. Based on the results of our study recurrence rate in both interval appendectomy group and conservative management alone group are comparatively less and the COMPLICATION RATE, DURATION OF HOSPITAL STAY more in the interval appendectomy group, we conclude it is better to go for conservative management with regular follow up and intervene only when recurrence occur in case of appendiceal mass

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INFORMED CONSENT

Name:

Age/

Sex:

IP NO:

I herewith declare that I have been explained in a language fully understood by me regarding that purpose of this study, methodology, proposed intervention, plausible side effects, if any & sequelae.

I have been given an opportunity to discuss my doubts & I have received that appropriate explanation.

I understand that my participation in this study is completely voluntary & that I am free to withdraw from this study at anytime without any prior notice &/ or without having my medical or legal rights affected.

I permit that author & that research team full access to all my records at any point, even if I have withdrawn from that study. However my identity will not be revealed to any third party or publication.

I herewith permit that author & that research team to use that results & conclusions arising from this study for any academic purpose, including but not limited to dissertation/ thesis or publication or presentation in any level.

Therefore, in my full conscience, I give consent to be included in that study & to undergo any investigation or any intervention therein.

Patient'Sign

Investigator's Sig

(Dr.T.JOHN VESLIN)

PROFORMA

A prospective Comparative study of Interval Appendicectomy vs Conservative Management With follow up in appendiceal mass in GRH Madurai.

Investigator: **Dr.T.JOHN VESLIN** , PGY3 – MS (Gen Surg)

Guide: **Prof. Dr.A.M.SYED IBRAHIM MS FAIS**

- NAME :
- SL . NO:
- AGE /SEX:
- ADDRESS WITH CONTACT NUMBER:
- IP NO:
- DATE OF ADMISSION:
- DATE OF SURGERY:

H/O PRESENTING ILLNESS:

PAIN

DURATION

SITE

CHARACTER

VOMITING

ONSET

DURATION

BILIOUS / NON BILIOUS ;

NAUSEA

ANOREXIA

FEVER

DIARROHEA

ANY OTHER RELEVANT HISTORY

PAST HISTORY:

whether a known case of

T2DM/HTN/CAD/BA/EPILEP

SY/PREV SURGERY

H/O jaundice/liver disease/hemolytic
disorders

GENERAL EXAMINATION

PALLOR

ICTERUS

PEDAL EDEMA

BP

PR

TEMP

SYSTEMIC EXAMINATION

CVS

RS

ABDOMEN

PER RECTAL EXAMINATION:

CLINICAL DIAGNOSIS:

INVESTIGATIONS:

HB

TC

DC

ESR

RBS

BLOOD SUGAR

SR.UREA

SR.CREATININE

LFT

CHEST XRAY

ECG

USG ABD & PELVIS

CECT ABD & PELVIS

PATIENT CLINICAL COURSE

TREATMENT

INFORMATION MODULE

You are being invited to be a subject in this study.

Before you participate in this study, I am giving you that following details about this trial, which includes that aims, methodology, intervention, possible side effects, if any & outcomes:

All patients diagnosed with appendicular mass on clinical examination & imaging will be included in this study. A detailed clinical history will be taken following a standardized proforma. A detailed clinical examination will be made & relevant investigations, basic & special investigations will be done at that time of admission. USG abdomen will be done at that time of admission. That results arising from this study will be analyzed & use for academic purposes. You will be given clear instructions at every step & you are free to ask/ clarify any doubts. Your identity will remain confidential. You are free to withdraw from this trial at any point of time, without any prior notice &/ or without any medical or legal implications.

I request you to volunteer for this study.

Thanking You.

(Dr.T.JOHN VESLIN)

Name:

MASTER CHART --- CONSERVATIVE GROUP

S.NO	NAME	AGE	SEX	IPNO	DIAGNOSIS	RX	RECURRENCE	SYMPTOMS	COMPLICATIONS	DURATION OF HOSPITAL STAY (DAYS)
1	NATARAJAN	28	M	100023	APP.MS	CM	NO	NIL	NIL	3
2	Mani	39	M	12004	APP.MS	CM	NO	NIL	NIL	4
3	SEKAR	32	M	13134	APP.MS	C.M	NO	NIL	NIL	3
4	RANI	19	F	14567	APP.MS	C.M	NO	PAIN	ADHESIVE OBSTRUCTION	7
5	CHINNARAJ	37	M	15632	APP.MS	C.M	NO	NIL	NIL	3
6	PARAMAN	35	M	16574	APP.MS	C.M	NO	NIL	NIL	4
7	SUBBAIYA	54	M	17654	APP.MS	C.M	NO	NIL	NIL	3
8	SELVI	39	F	18765	APP.MS	C.M	NO	PAIN	NIL	3
9	Senthil	28	M	19876	APP.MS	C.M	NO	NIL	NIL	3
10	Chinnan	47	M	20123	APP.MS	C.M	PRES ENT	NIL	NIL	3
11	Raja	25	M	21345	APP.MS	C.M	NO	NIL	NIL	3
12	KANAGAVEL	40	M	22348	APP.MS	C.M	NO	NIL	NIL	4
13	Savithri	55	F	23543	APP.MS	C.M	NO	NIL	NIL	3
14	RANJITH	18	M	24563	APP.MS	C.M	NO	VOMIT ING	NIL	4
15	MARIAMMAL	45	F	25438	APP.MS	C.M	NO	NIL	NIL	3
16	KUMAR	34	M	27894	APP.MS	C.M	NO	NIL	NIL	3
17	JEEVA	22	M	28765	APP.MS	C.M	PRES ENT	NIL	NIL	4
18	MUTHU	37	M	29876	APP.MS	C.M	NO	NIL	NIL	4
19	ARUL	33	M	30123	APP.MS	C.M	NO	NIL	NIL	4
20	MURUGAN	48	M	32456	APP.MS	C.M	PRES ENT	VOMIT ING	ADHESIVE OBSTRU CTION	7 DAYS
21	AARUMUGAM	44	M	33489	APP.MS	C.M	NO	NIL	NIL	3
22	RAJESHWARI	47	F	35643	APP.MS	C.M	NO	NIL	NIL	3
23	KANNAN	23	M	39876	APP.MS	C.M	PRES ENT	NIL	NIL	4
24	SELVARANI	38	F	43215	APP.MS	C.M	NO	NIL	NIL	4
25	LAKSHMI	40	F	45632	APP.MS	C.M	NO	NIL	NIL	3

MASTER CHART – INTERVAL APPENDICECTOMY GRUOP

S.NO	NAME	AGE	SEX	IPNO	DIAGNOSIS	RX	RECUR RENCE	SY MP TO MS	COMPLIC ATIONS	DURATION OF HOSPITAL STAY (DAYS)
1	SANKAR	45	M	9876	APP.MS	I.A	NO	NIL	NIL	4
2	RAJAN	39	M	8765	APP.MS	I.A	PRESE NT	VO MTI NG	ADHESIV E OBSTRUC TION	8
3	KANIYAN	41	M	12367	APP.MS	I.A	NO	PAI N	NIL	4
4	KALAIVANI	52	F	15674	APP.MS	I.A	NO	NIL	NIL	6
5	ARUMPON	29	M	17865	APP.MS	I.A	PRESE NT	PAI N	EC FISTULA	> 10
6	BARATHAN	36	M	19876	APP.MS	I.A	NO	NIL	NIL	6
7	KANMANI	30	F	22345	APP.MS	I.A	PRESE NT	PAI N	ADHESIV E OBSTRUC TION	7
8	SELVAM	39	M	24568	APP.MS	I.A	NO	NIL	NIL	4
9	MANIKANDAN	42	M	25987	APP.MS	I.A	NO	NIL	NIL	5
10	AYYAMAL	40	F	28654	APP.MS	I.A	NO	NIL	NIL	6
11	ANBU	37	M	34670	APP.MS	I.A	NO	NIL	NIL	5
12	RADHA	42	F	37865	APP.MS	I.A	PRESE NT	PAI N	ADHESIV E OBSTRUC TION	> 10
13	VETRI	26	M	39235	APP.MS	I.A	NO	NIL	NIL	6
14	KALA	19	F	42356	APP.MS	I.A	NO	NIL	NIL	5
15	KARUNAKARAN	53	M	43567	APP.MS	I.A	NO	NIL	NIL	4
16	ILANGO VAN	40	M	49876	APP.MS	I.A	PRESE NT	PAI N	ADHESIV E OBSTRUC TION	7
17	RAGHU	36	M	56793	APP.MS	I.A	NO	NIL	NIL	4
18	MOHAN	45	M	65784	APP.MS	I.A	NO	NIL	NIL	4
19	MOORTHY	38	M	76543	APP.MS	I.A	PRESE NT	VO MTI NG	ADHESIV E OBSTRUC	8

									TION	
20	SARAN	27	M	85674	APP.MS	I.A	NO	NIL	NIL	3
21	GURU	30	M	97654	APP.MS	I.A	PRESE NT	PAI N	ADHESIV E OBSTRUC TION	7
22	DEEPAK	17	M	103452	APP.MS	I.A	NO	NIL	NIL	4
23	BALAJI	20	M	110562	APP.MS	I.A	PRESE NT	VO MTI NG	ADHESIV E OBSTRUC TION	8
24	PRADEEP	22	M	123423	APP.MS	I.A	PRESE NT	PAI N	EC FISTULA	> 10
25	LAKSHAMANAN	47	M	134567	APP.MS	I.A	NO	NIL	NIL	4

KEY TO MASTER CHART

M- MALE

F- FEMALE

RX- TREATMENT

APP.MS- APPENDICULAR MASS

CM- CONSERVATIVE MANAGEMENT

IA- INTERVAL APPENDICECTOMY



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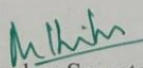
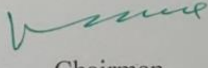
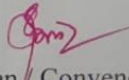
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**ETHICS COMMITTEE
CERTIFICATE**

Name of the Candidate : Dr.John veslin
Designation : PG in MS., General Surgery
Course of Study : 2017- 2020
College : MADURAI MEDICAL COLLEGE
Research Topic : A prospective comparative study
of interval appendicectomy vs
conservative management with
follow up in appendiceal mass in
GRH Madurai
Ethical Committee as on : 08.04.2019

The Ethics Committee, Madurai Medical College has decided
to inform that your Research proposal is accepted. \


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CERTIFICATE II

This is to certify that this dissertation work titled, entitled “*A prospective Comparative study of Interval Appendicectomy vs Conservative Management with follow up In appendiceal mass in GRH Madurai*” submitted by **DR.T. JOHN VESLIN MS** with registration number **221711108** for the award of **MASTER DEGREE** in the branch of **GENERAL SURGERY** has been personally verified by me in iurkund.com website for the purpose of plagiarism check. I found that the uploaded thesis file contains from introduction to conclusion pages and result shows 5% percentage of plagiarism in the dissertation.

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