

A dissertation on
NON TRAUMATIC ABDOMINAL SURGICAL EMERGENCIES

A dissertation submitted in
partial
fulfillment of the requirements
for

**M.S.DEGREE EXAMINATION
BRANCH I - GENERAL SURGERY**

**KILPAUK MEDICAL COLLEGE
CHENNAI**



**THE TAMIL NADU Dr.M.G.R.MEDICAL UNIVERSITY
MARCH 2007**

CERTIFICATE

This is to certify that this dissertation in "**NON TRAUMATIC ABDOMINAL SURGICAL EMERGENCIES**" is a work done by **Dr.S.K.S.Sutha, S.Sellamoni** under my guidance during the period 2004-2007. This has been submitted in partial fulfillment of the award of MS Degree in General Surgery (Branch-I) by the Tamil Nadu Dr.M.G.R. Medical University, Chennai - 600 032.

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ACKNOWLEDGEMENT

I thank the Dean **Dr.Mrs.Thiagavalli Kirubaharan, M.D.** for permitting me to conduct the study in Kilpauk Medical College Hospital, Chennai.

I am thankful to **Prof.P.Kulothungan, M.S.** Professor, and Head of the Department of General Surgery, Kilpauk Medical College Hospital for his valuable guidance.

I owe my sincere thanks to my Assistant Professors of our Unit. **Dr.V.Ruckmanganathan, M.S., Dr.V.Kopperun Devi, M.S.** and **Dr.M.Alli, M.S.** for their valuable guidance, help constant encouragement and suggestion in the conduction of my study.

Lastly, but not the least, I thank my patients with gratitude for their cooperation in the study.

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INTRODUCTION

An acute abdomen is best defined as a short-term occurrence of abdominal symptoms that suggest disease, which definitely or possibly threatens life, and may or may not demand immediate operative interference.

The majority of emergency admissions to surgical wards are patients complaining of acute abdominal pain. Acute abdominal pain continues to provide a large work load for the general surgeon and also many diagnostic and management problems. Different techniques have been introduced over the past to help in the management of acute abdomen.

An accurate diagnosis is essential for the correct treatment, which in many cases will prevent the death of the patient. The natural history of acute abdomen depends on the pathological process involved, which in some instances may resolve spontaneously with or without treatment and at other times may progress to generalised peritonitis and death. Hasty decisions are rarely necessary and if carried out may be incorrect or misleading.

The history and physical examination done by an unhurried surgeon remains the cornerstones of the diagnosis, which is confirmed by laboratory data and or when necessary, by radiographic studies. If this information is unnecessary, the periodic reexamination helps document the progression of the disease and often avoids unnecessary surgical intervention. Understanding the anatomy and physiology of the peritoneal cavity as well as the pathological process that occurs is essential for an accurate diagnosis and treatment.

Today the combination of improved diagnostic procedures, antibiotics and better anaesthesia and preoperative and post operative patient care has led to a decrease in morbidity and mortality of patients with acute abdomen.

HISTORICAL BACKGROUND

Even in ancient times, surgeons were aware of the potential seriousness of a "painful abdomen". Surgical advances were scarce until the last part of the nineteenth century because of the absence of autopsies and clinico pathological correlation. Reluctance to perform abdominal exploration existed until a little less than 100 years ago. The long debates, disagreements of the leading surgeons of the period who assembled at the patients bed side have been described in a report "the cliniques delannelongue". Less than 100 year ago Lannelongue a surgeon, Cornil a pathologist demonstrated at autopsy that the starting point of a purulent peritonitis was a perityphilitis, convincing the contemporaries of its appendicular origin, Mondor 1974.

Hippocrates divided abdominal crisis into "colic and ileus" related to intestinal obstruction. The term peritonitis was defined by William Cullar in 1776 to denote inflammation of the lining of the cavity of abdomen, omentum and mesentery. It is only in the last few decades, that the multiple causes of "acute abdomen" have been well elucidated with the aid of better clinico pathological correlation and the development of aseptic techniques. Of late improved anaesthesiology, good resuscitation, with blood transfusions newer antibiotics and improved techniques in surgery, the outcome is dramatic. It should be remembered that in 1886 Reginald Fitz a pathologist suggested surgeons that an inflamed appendix should sometimes be removed, it was in this way that the earlier emergency appendicectomies were performed.

REVIEW OF LITERATURE

The abdomen as the largest cavity in the body holds both fixed as well as relatively mobile organs which when either diseased, traumatized malfunctioning or infected may present a wide and diverse range of signs and symptoms. Clues to the origin of abdominal pain can be well localised or referred and quite obtuse.

KNOWLEDGE OF ANATOMY

Many examinations of the abdomen are imperfect because the doctor does not act upon the important principle of applying his knowledge of anatomy. One should cultivate the habit of thinking anatomically in every case where the knowledge of structural relations can be put to advantage. The muscles like psoas, quadratus lumborum erector spinae, piriformis, obturator internus, rectus and the diaphragm are of valuable clinical significance for if any of them be irritated directly or reflexely by inflammatory changes, it becomes tender rigid and pain is caused when the muscle fibres are moved.

Every one is aware of the rigidity of the rectus and the lateral abdominal muscles. When there is subjacent inflammatory focus, but few take much note of the rigidity of the diaphragm in a case of subphrenic abscess, because the diaphragm is invisible and impalpable. Its immobility may be reduced by the impairment of the movement of the upper part of the abdominal wall and if the x-rays are available the rigidity and the absence of movements of the diaphragm can be demonstrated directly.

In some cases appendicitis and other conditions, affecting the psoas there is flexion of thigh due to constriction of muscle because of direct or reflex irritation. Again the obturator internus is covered by a dense fascia and is not readily irritated by pelvic inflammations, but if there is an abscess immediately adjacent to the fascia, pain will be caused if the muscle be put through its full movement. The pain is referred to the hypogastrium. This sign is not present in every other case of pelvic appendicitis, but when present denotes a definite pathological change.

The knowledge of the anatomical course and distribution of the segmental nerves is also important. Pain referred to testicles does not always denote primary genito urinary disease. It is probable that the main nerve supply to the appendix comes from the 10th dorsal segment. So that pain in one or both testicles may be caused by such a condition as appendicitis. The dorsal distribution of referred pain should also be noted (Eg. Biliary colic, acute pancreatitis, perforated duodenal ulcer).

Another segmental pain of great importance is that referred from the diaphragm. The diaphragm begins to develop in the region of the 4th cervical segment, from which is obtained the major part of its muscle fibres. The growth of the thoracic contents causes the muscles to be displaced caudal wards as the lower outlet of the thorax. Hilton was one of the first to suggest the diaphragmatic pain might be referred to the shoulder via the phrenic nerve and Ferguson proved experimentally the phrenic nerve contained afferent as well as efferent fibres. Pain in the top of the shoulder may be the only signal which an articulate liver

abscess, threatening to perforate the diaphragm may be able to produce. Pain may be referred to shoulder in case of subphrenic abscess, diaphragmatic pleurisy, acute pancreatitis, ruptured spleen, DU. Perforation and in some cases of appendicitis with peritonitis.

Errors in diagnosis also result from want of appreciation of another anatomical point i.e. the lack of representation in the muscular abdominal wall of the segments which form the pelvis, so that irritation of the pelvic nerves causes no abdominal wall rigidity.

The general principle may be laid on that the rigidity of the abdomen in response to irritation varies in proportion to the extent of the cerebrospinal nerve supply to the subjacent peritoneum. Indeed the whole of the peritoneal lining of the abdomen may be divided into demonstrative and non demonstrative areas, the former causing reflex muscular rigidity and the later not doing so.

KNOWLEDGE OF PHYSIOLOGY

The localisation of inflammatory lesions is aided particularly by the knowledge of anatomy, whilst in obstructive lesions the application of physiological knowledge plays perhaps more important role. The question of shock, the nature of movements and sensations of the intestines are intimately bound up with the problem of acute abdominal pain. Very important is the study of the effects of various toxins upon the viscera and the neuro muscular reflexes of the abdomen.

A very large number of cases are accompanied by pain due to abnormal conditions in tubes whose walls are composed mainly by smooth muscle fibres. There is no high grade sensitivity in such tubes and inflamed abdominal viscera are not necessarily tender on palpation. It is possible to crush, cut or tear the intestine without the patient experiencing any pain, yet every one is aware that pain does take origin from the intestine. This is because of stretching due to distension of the intestine or excessive interaction against resistance. Evidence of pain arising from a tube of involuntary muscle is therefore indicative of local distension either by gas or fluid or of vigorous contraction.

In mild degrees in the intestine this is commonly called flatulence in greater degrees in intestinal, renal, interine and biliary tree it is called colic. Severe colic always indicate obstruction. It occurs in paroxysms and the pain which is often of an excruciating nature is referred to sympathetic centre from which the nerves come and also to the segmental distribution corresponding to the part of spinal cord from which the sympathetic nerves to the affected viscus are derived. Colic of the small intestine causes pain referred chiefly to the egigastric and the umbilical region, whilst large intestinal colic is usually referred to hypogastrium. The pain of biliary distension is usually felt more in the right subscapular region.

Severe colic is certainly one of the terrible trials to which a human being can be subjected. Patients tend to fling themselves about twist and double themselves in a characteristics way. In a case of peritonitis movements generally increases pain.

In acute abdominal diseases two varieties of shock can be recognised. One is the initial primary shock due to sudden stimulation of many nerve terminals as in the perforation of gastric ulcer into the general peritoneal cavity, or the severe stimulation of a few nerve terminals as in a case of severe biliary distension.

The second variety of shock is that some what similar symptoms arise at a later stage, partly no doubt from severe efferent nerve stimulation, often from loss of fluid from the blood vessels into the extra vascular tissues but possibly sometimes from the absorption of toxins. The terminal stage of secondary shock is commonly termed collapse.

In many cases of perforated ulcer, the sudden stimulation of the nerve ending in the peritoneum of sub peritoneal tissue causes the appearance of severe shock with diaphoresis, pallor and tachycardia, although the systolic blood pressure is seldom much depressed. After a time the irritative fluid is diluted by the outpouring of serum, the nerve equilibrium is restored and pulse, respiration, temperature and appearance of the patient improve so much, That one might think the pathological process was stayed or improving. Soon however, the symptoms of peritonitis dominate the scene and realised that the calm period was that of physiological reaction.

Another physiological fact of importance is that hyperaesthesia and tenderness due to irritation of nerves by unilateral lesion are not usually felt on the opposite side of the body.

VISCERAL PAIN

There are certain important facts that must be constantly remembered in connection with sensation and pain felt in the small and large intestine and the diverticula.

The intestine themselves are insensitive to touch and also insensitive to inflammation that does not affect the enclosing peritoneum. Severe pain may originate from any part of the intestine when it is severely distended or when its muscle contracts violently, but this pain is always referred some where along the midline of the abdomen in front except when the affected part is close to or in contact with the abdominal parieties which is well supplied with very sensitive cerebrospinal nerves. This is particularly important with acute inflammation of the appendix and of the gall bladder. The interior of the gall bladder may become inflamed or irritate the mucosa and cause central abdominal referred pain. Yet there may be no pain on manipulation and pressure on the distended gall bladder itself: the mucus may leave the gall bladder and central pain subside, the inflammation remains and gradually extends through the visceral wall without any local pain until the products of inflammation and the microbes themselves penetrate the wall of the gall bladder to irritate the parietal peritoneal nerves, thus cases severe local pain.

CLINICAL CONSIDERATIONS

In diagnosing the acute abdominal disease, it is use to have a routine method of examination, not to be slavishly followed, but to be modified according to circumstances.

HISTORY OF PRESENT CONDITION

1. Age

It is helpful to know the patients age, since the incidence of certain conditions is limited within a particular range of years. Acute intususception in temperate climate occurs generally in infants under 2 yrs of age. Obstruction of large intestine by a cancer is seldom seen before thirty, is infrequent before forty but very common after forty years of age. Conditions such as cholecystitis or twisted pedicle of an ovarian cyst may occur in childhood though much more commonly in adult life.

Exact time and mode of onset

The awakening out of sleep by acute abdominal pain is so startling that it is not forgotten. Acute appendicitis very commonly and perforation of a gastric or duodenal ulcer not infrequently commence in this manner. Many cases, the incipient pain become much worse soon after the administration of castor oil or its equivalent. The temporary increase of intra abdominal tension by a slight straining effort may cause the giving way of the thin floor of gastric ulcer.

The onset is sudden in perforation, colic, torsion, volvulus etc. In acute intestinal obstruction the pain may not be severe at the onset but gradually increases in intensity. In acute appendicitis the pain become boring in the beginning and suddenly becomes acute as in obstructive appendicitis.

3. Pain

(a) Situation of the pain at first

It usually coincides with the position of the affected organ. When the peritoneal cavity is flooded suddenly by either blood or pus or acid fluid the pain is frequently diffuse. When the pain is below the right costal margin liver or gall bladder disease is suspected. If it is in the epigastric region, peptic ulcer perforation acute pancreatitis are considered. Pain arising from the small intestine is always felt first and chiefly in the epigastric and umbilical regions. The pain arising from the large gut is more commonly felt at first in the hypogastrium.

b. Localisation

Well localised pain indicates inflammation of the peritoneum directly adjoining the area and helps localising the disease to organs in the particular quadrant where the pain is located.

Eg. McBurney's Point - Acute appendicitis

Sub costal pain acute cholecystitis.

c. Referred pain

The pain is said to be referred when it is felt at some other regions having the same segmental innervation as the site of the lesion.

Stomach, duodenum and Jejunum (T5-T8)-Epigastrium, Ileum and appendix (T9-T10)-around umbilicus. Colon (T11-T12, L1-L2)-Hypogastrium. Biliary (T7-T9) Inferior angle of scapula.

d. Character

1. Colicky pain: It is a sharp intermittent gripping pain which comes suddenly and disappear suddenly. It indicates obstruction to hollow viscus.
2. Constant burning pain - peritonitis and is often seen in perforated peptic ulcer
3. Severe agonising-pain acute pancreatitis
4. Throbbing pain-Cholecystitis

e. Aggravating and relieving factors

1. Peritonitis - Pain increases in movement, pain decreases in lying still
2. Diaphragmatic irritation - Deep inspiration increases pain
3. Cholecystitis - Pain increased taking fatty foods, decreased by taking fat free food.
4. Pancreatitis - Pain relieved to a certain extent by sitting up from the recumbent position.

4. Vomiting

In acute abdominal lesions apart from acute gastritis vomiting almost always due to one or more of the following causes.

- a. Severe irritation of the nerves of the peritoneum or mesentery.

Eg. Perforation

- b. Obstruction of an involuntary muscular tube

- c. The action of absorbed toxins upon the medullary centre.

The relationship with pain precedes vomiting in acute appendicitis, acute pancreatitis, peptic ulcer and biliary colic. In high intestinal obstruction, vomiting appears almost simultaneously with pain. In obstruction of lower end of ileum vomiting occurs after few hours. In large bowel obstruction vomiting is absent or it is late.

Character

Projectile-High intestinal obstruction, Frequent and profuse-acute intestinal obstruction and acute pancreatitis. In peptic ulcer perforations - vomiting is not a diagnostic feature. Clear vomitus suggests an obstructed pylorus, where as bile stained emesis indicates the obstruction is distal to the entrance of the CBD into the duodenum. As the site of obstruction moves distally in the small intestine, the vomitus becomes brown and feculent.

5. Anorexia

It is usually associated with acute abdominal pain and in patient with acute appendicitis, it precedes pain.

6. Bowels

Constipation, diarrhoea and a recent change in bowel habits are important factors in the diagnosis. The failure to pass flatus associated with cramping pain and vomiting strongly supports mechanical obstruction.

7. Menstruation

An accurate menstrual history is especially valuable in the assessment of abdominal pain in females. The type of contraception and its duration of use are also important.

8. Micturition

In inflammatory conditions in the neighbourhood of bladder and ureters such as retrocaecal appendicitis, pelvic peritonitis may give rise to frequent and burning micturition.

9. Personal history

Smoking, alcohol consumption and diet habits should always be enquired into.

10. Past History

The patients history before the present illness is of special value. Particularly in regard to previous surgeries the previous diagnosis of abdominal or inguinal hernia, typhoid fever, peritonitis may contribute to the diagnosis of present illness.

11. Family History

The portability of acute abdominal pain relating to a familial disease is unlikely but does occur in some situations. Familial Mediterrean fever sickle cell anaemia in black patients.

Physical Examination

1. General Survey

a. Appearance

In acute abdomen the patient usually presents a peculiar facial expression - abdominal facies. In terminal stages of peritonitis, the typical "facies hypocratica" can be observed. An anxious look, bright eyes, pinched face and cold sweat on the surface are the features. The peculiar lividity is blueness (cyanosis) of the face is a feature which is characteristic though not often found in acute haemorrhagic pancreatitis.

b. Attitude

In colic, the patient is either tossing on the bed, doubled up or rolls in agony seeking in vain a position of comfort. In peritonitis the patient lies still. Only in the last stage of peritonitis and post operative peritonitis the patient becomes highly excitable.

c. Pulse

In the early stage of many acute abdominal conditions, the pulse remains normal in rate, volume and tension. In peptic perforation the pulse may become normal in the early stage but with the spread of peritonitis, the pulse remains normal in the beginning but with the advent of dehydration the volume and tension falls and its rate increases with no tendency to return to normal.

d. Respiration

This is chiefly of importance in differentiating between an abdominal and thoracic condition. Barring an internal haemorrhage and late cases of peritonitis the rate of respiration may seldom be high in acute abdominal condition. If the temperature becomes high, the respiratory rate will be proportionately increased.

e. Temperature

In infective conditions the temperature will be raised. The rise or temperature varies from condition to condition. Temperature may be raised high in cases like acute appendicitis and acute cholecystitis but may not be so in case of acute pancreatitis and of acute diverticulitis.

f. Tongue

It is supposed to be an index of the state of digestive system. In acute appendicitis and acute intestinal obstruction there is usually a slight coat in the tongue and the breath is frequently foul.

g. Anaemia, cyanosis and jaundice

Cyanosis is noticed in cases of haemorrhagic acute pancreatitis. Jaundice is noticed after biliary colic and occasionally in acute pancreatitis. Obvious pallor is seen in haemorrhagic conditions.

2. Examination of the Abdomen

The abdomen should be examined in a routine manner with inspection palpation, percussion and auscultation performed sequentially.

a. Inspection:

- i. all hernial orifices
- ii. Contour of the abdomen
- iii. Movement with respiration
- iv. Visible peristaltic movements
- v. Skin
- vi. Position of the umbilicus

b. Palpation

- i. Hyperaesthesia
- ii. Tenderness
 1. Bed shaking test
 2. Rebound tenderness
 3. Rovsings sign
 4. Cope's psoas test
 5. Obsturator test
 6. Baldwin's test

- iii. Rigidity
- iv. Distension
- v. Mass
- vi. Palpation of hernial sites

c. Percussion

- i. Shifting dullness
- iii. Obliteration of liver dullness

d. Auscultation

Quality of bowel sounds

e. Rectal examination

No examination of an acute abdominal condition is complete without digital examination of the rectum.

f. Vaginal examination

3. All other systemic examinations should be done thoroughly.

Investigations of acute abdomen

The routine investigation performed in patients with acute abdominal illness includes.

Hb

PCV

WBC Count

Blood urea creatinine electrolytes

Liver function tests

Serum amylase

Urine analysis

Urinary HCG and serum HCG may be indicated in the individual case.

Radiology

This includes a chest radiograph and straight abdominal films. The abdominal films are used selectively to establish the following.

Calculi

Air under diaphragm

Dilation of hollow organs including intestinal loops

Fluids levels

Free fluid / blood in the peritoneal cavity

Herniation of intra abdominal contents through the diaphragm

Distortion of stomach air bubble

Obliteration of the psoas outline

Contrast radiology may be necessary in the diagnosis of oesophageal perforations. Usually gastrograffin is used for this purpose since it does not cause a granulomatous reaction. Gastrograffin is however hypertonic and may lead to serious complications like electrolyte imbalances, pulmonary edema and rarely intestinal necrosis.

Barium enema is required in patients with sub acute large bowel obstruction.

Endoscopy

Emergency UGI endoscopy has largely replaced the barium meal examination in the acute situation in view of its superior diagnostic yield sigmoidoscopy and colonoscopy are extremely useful in patients with rectal bleeding and large bowel obstruction. The contra indication to emergency colonoscopy are the presence of active inflammation with peritoneal irritation such as toxic megacolon and acute diverticulitis when the risk of perforation is great.

Ultra sonogram

Abdominal ultra sound has an established place in acute abdominal illnesses such as acute cholecystitis, amoebic liver abscess, acute pancreatitis etc. USG is also useful in acute appendicitis but should be used only in doubtful case. USG is also useful to investigate the pelvic organs in female patients.

CT SCAN

CT scanning is very accurate in the detection of intra abdominal abscesses. It is useful in documenting pancreatic necrosis in severe pancreatitis. It is not however generally available for emergency use. More over it is an expensive investigation CT scanning is useful in evaluation of liver abscess and acute diverticulitis where USG is notoriously poor.

Isotope scinti scanning

Isotope scintigraphy is valuable in detection of intra abdominal abscess (isotope labelled autology WBC scan) and in patients with suspected acute cholecystitis where the E. HIDA scanning is the most accurate test of cystic duct obstruction. A normal E.HIDA gall bladder scan excludes acute cholecystitis with 100% reliability.

Peritoneal cytology

The demonstration that high quality cytological smears showing the percentage of polymorphonuclear cells could be produced by inserting a small catheter in the peritoneal cavity has provided a scientific base for the practice of paracentesis. A smear showing more than 50% of WBC directly correlates with the presence of acute inflammatory conditions and helps in surgeons in the assessment of patients with acute abdominal pain.

Diagnostic laparoscopy

It is particularly valuable in doubtful acute abdomen, where physical findings and the results of investigations are inconclusive. The laparoscopic findings will establish the diagnosis and the need otherwise for surgical intervention (Eg) Perforated ulcer Vs. acute cholecystitis or pancreatitis. It is also valuable when one suspects mesenteric ischaemia as a etiology. Emergency laparoscopy is contraindicated in established acute generalised peritonitis, gross ileus, and intestinal obstruction, obstructed, strangulated external hernial etc.

SPECIFIC CONDITIONS OF NON TRAUMATIC ABDOMINAL SURGICAL EMERGENCIES

Acute appendicitis

Can occur at any age, more common below 40, especially between 8 & 14
very rare below the age of 2.

Surgical anatomy

The vermiform appendix is present only in humans, apes and the wombat. It is a blind muscular tube with its base lying postero medial to the ileo caecal junction. The tip is variable in position: 1. Retrocaecal 74%, 2. Pre ileal 1%, 3. Post ileal 5%, 4. Paracaecal 2% and 5. Pelvic 21%.

It has a meso appendix in which runs the appendicular artery a branch of the ileocolic. An accessory appendicular artery may be present. The appendix is lined by columnar cell intestinal mucosa of colonic type. The submucosa contains numerous lymphatic aggregations leading to the term abdominal tonsil for the appendix.

Aetiology

No definitive etiology has been established.

1. Males are more affected.
2. A diet poor in fibre is linked in the increased risk
3. Familial susceptibility

4. Purgative abuse
5. Distal obstruction of colon.
6. Luminal obstruction - some form of obstruction can be shown in 80% of cases. Causes of obstruction are faecolith, strictures, worms foreign body, growth.

Pathology

Two types: 1) Non obstructive type-Here the inflammation is limited to the mucous membrane but can progress to involve the other layer, 2) Obstructive type: Due to obstruction, the inflammation proceeds more rapidly and more certainly to gangrene or perforation.

CLINICAL FEATURES

General features

There is slight pyrexia with increase in pulse rate to 80 or 90. There is an increase in white cell count

Specific features

1. Abdominal pain which shifts initially the pain in and around the umbilicus (visceral pain) and is poorly defined. It then localises in the right iliac fossa the pain being accurately localised and constant (somatic pain).
2. Upset of gastric function-protective pylorospasm manifest itself as an anorexia nausea and vomiting.

3. Localised tenderness at the site of appendix.
4. Rigidity in the right iliac fossa-In obstructive appendicitis, the sequence of clinical events occur much more quickly with more rapid progression to features of peritonitis.

Special features

1. According to position: In retrocaecal type-rigidity can be absent. There can be psoas spasm with flexion of hip. In the pelvic type early diarrhoea can be present. There can either be psoas spasm or spasm of obturator internus. In the post ileal type, the features mimic those of acute GE.
2. According to age-in extremes of age, the incidence of perforation and peritonitis is much higher
3. Pregnancy-there is a shift in the position to the upper abdomen thus favouring peritonitis.

The appendix mass

Usually develop by the 3rd day and consists of greater omentum caecal wall, small bowel in the middle of which lies an inflamed appendix. It can be in the right iliac fossa or in the pelvis. By the 5 or 10th day it is well circumscribed. It can either form an appendicular abscess or resolve as the inflammation subsides.

Appendix-abscess

The position of the appendix determines the location of the abscess. Thus the commonest site of the abscess is the lateral part of the RIF (extension of retrocaecal suppuration).

The second most common is in the pelvis notwithstanding, an abscess centered, beneath Mcburney's point is not so unusual.

Surgery of acute appendicitis: Appendicetomy.

The incision: is the grid iron incision which is at right angle and to the spino umbilical line and is thus centered in the Mcburney's point. Lanz incision - transverse incision on Mcburney's point. Rutherford morrison's incision-an oblique muscle cutting incision. Right paramedian incision can also be used.

Removal of appendix

On the peritoneal cavity the caecum is first drawn, medially and then to the left, to show the appendix. The meso appendix is then ligated and divided. The base of the appendix is crushed and a ligature applied above the crushed portion. Appendicectomy is then done. Burying the base of the appendix, is still a matter of debate. If one was to bury the stump it is done by either a pursestring suture or by a Z stitch. Before closing the abdomen. The ileum is inspected to rule out any meckel's diverticulum or mesenteric adenitis. In female patients the adnexa are inspected and palpated.

Retrograde appendicectomy

When the appendix is retrocaecal and adherant, the base is first divided. The meso appendix is then clamped and divided, working distally to expose the tip of the appendix.

Management of an appendix mass

The standard modern treatment is the oshner sherren Regimen. This consists of

- i. Marking out the size of the mass
- ii. Maintenance of pulse and temperature chart
- iii. Maintenance of nutrition of patients.
- iv. Antibiotic therapy.

Criteria for stopping conservative treatment

- i. Rising pulse rate
- ii. Vomiting or copious gastric aspirate
- iii. Increasing or spreading abdominal pain
- iv. Increasing size of abscess
- v. No symptomatic improvement

Contra indications to conservative treatment

1. Extremes of age-more risk of complications.
2. The diagnosis can not be made between acute appendicitis and another acute abdominal condition.
3. The signs indicate the inflammation is still confined to the appendix.

Appendix abscess

Treatment depends on position of abscess, retrocaecal abscess should be opened extra peritoneally to avoid contamination of the peritoneal cavity.

A subcaecal abscess is opened in the same manner. Preileal, post ileal abscesses can be reached only through the peritoneal cavity. A pelvic abscess is usually opened into the rectum.

Interval appendicectomy

After complete resolution of an appendicular mass or a drainage of an appendix abscess a appendicectomy is done after 3 months to remove the source of attacks.

Laparoscopic appendicectomy

Laparoscopic removal is the procedure of choice for early appendicitis. It should not be done when there is peritonitis or the diagnosis is in doubt.

Complications after appendicectomy

Early - Ileus, wound sepsis faecal fistula, intestinal obstruction, bleeding, adhesions.

Late: Incisional hernia, late intestinal obstruction, sterility in women due to a frozen pelvis.

Perforations

Perforated peptic ulcer

Sex: 2:1 men predominated

Age: Highest incidence is between 45-65 yrs.

Aetiology

The exact cause which precipitate perforation are not clearly known. But there are the following associations.

- i. Burns - curling ulcer
- ii. Neurological injury - cushing ulcer
- iii. Zollinger Ellison syndrome
- iv. Aortic aneurysm surgery
- v. Renal transplantation
- vi. Drug usage

In 20-25% there is no history of APD, this is the silent chronic, ulcer which perforates.

Site

The commonest site is the anterior surface of the duodenum. Less common sites are the anterior surface of the stomach near the lesser curvature of the pyloric antrum. Rarely an ulcer on the posterior wall of the stomach or duodenum perforates.

Clinical features

The patient is usually seized by an acute agonizing abdominal pain which passes into the following stages.

The primary stage or state of peritoneal irritation

In this stages there is extense peritoneal irritation to the escaping duodenal and gastric contents. The patient can present with features of shock and the abdomen is board like and rigid on palpation.

2. Secondary stage of peritoneal reaction

Transition to this stage takes 2 to 6 hrs. There is an apparent general improvement in the patients condition as there is a lessening of the peritoneal irritation. This stage is often called the stage of delusion.

3. Teritary stage of bacterial peritonitis

Seen 10-12 hrs after perforation. There are clinical features of septicaemia. Such as fever, tachycardia and multisystem failure. The abdomen becomes distended due to paralytic ileus and the formationof large amounts of peritoneal fluid.

Special situations

Subacute perforation

The perforation is rapidly sealed off by adjacent viscera or omentum this type is known as the forme fustre type of perforation.

Chronic perforation

This occurs when an ulcer perforates into an area walled. In these conditions the perforation presents as a chronic abscess.

Associated conditions

The perforation may be associated with either Haemorrhage or with gastric outlet obstruction.

Treatment

Preoperative management:

Resuscitation of the patient with IV fluids passage of Naso gastric tube, performance of relevant. Radiological and blood investigations passage of urinary catheter, administration of appropriate antibiotics and pain relief are the initial vital steps in the management. Once the general condition of the patient has stabilised, the patient is then mobilized for surgery.

Operative approach

Technique of simple closure

Abdomen can be opened through either a midline or paramedian incision. On opening the peritoneal cavity, the perforation is usually well made out. When there are difficulties, mobilization of the duodenum, to identify a duodenal ulcer or entering the lesser sac to identify an ulcer on the posterior surface of the stomach may be necessary.

Closing a perforation

There are many techniques

1. **Simple Closure - i.e.** simple apposition of this edges of he perforation.
2. **Omental patch techniques** - here an omental patch is used to close and reinforce the opening. The patch can be live patch - The cellan Jones Technique or it can be free omental patch - graham's method.
3. **The falciform ligament** can be devided and reflected to close the perforation. Suture materials-this is a subject of contraversy, the ideal suture is synthetic monofilament sutures such as PDS. Chronic catgut sutures can also be used. Silk sutures can also be used. Silk sutures may cause chronic silk ulcers. Avoid the use of either pursestring sutures of seromuscular sutures.

After perforation closure portion of the peritoneal fluid is sent for culture and sensitivity. Thorough peritoneal toileting is done, more so if there is extensive soiling. Adrain is kept and the wound is closed in layers.

Indications of definite surgery at the time of perforation closure.

1. Presence of synchronous second ulcer complications.
2. Previous ulcer complication.
3. Perforation during antisecretory treatment.

Relative indications

1. Long pre perforation ulcer history
2. Young patient

Definite procedures are contraindicated when there is extensive contamination, when the general condition of the patient is poor and when the surgeon is not experienced.

Choice of Definitive - Operation for perforated duodenal ulcer PGV, Truncal vagotomy with drainage highly selective vagotomy. For perforated gastric ulcers gastrectomy of both types.

Operation of perforation associated with stenosis

The simplest procedure is a truncal vagotomy combines with a gastro enterostomy.

Perforation with Haemorrhage

Convert perforation into pyloroplasty, so suture ligation of the bleeding vessel, close the pyloroplasty and do a truncal vagotomy.

Laparoscopic closure of Perforation

Perforation closure can be done by laparoscopically. The patient is spared an incision. However this cannot be done when there is extensive peritoneal soiling or when the general condition of the patient is poor.

Non operative Treatment

Rarely - non operative treatment can be done. The indications are serious systemic disease which preclude anaesthesia and surgery and when there are signs that localisation and spontaneous sealing of the perforation are taking place.

The Principle involved in the tendency of the perforation to be closed by either the omentum or adherence to the liver.

The treatment includes naso gastric aspiration, IV fluids antibiotics, pulse and temperature chart and X-ray investigations.

Flank Drainage

In moribund patients, bilateral peritoneal flank drainage can serve as a temporary decompressing measure for the peritoneal cavity till definitive surgery can be done.

Other Perforations

Perforation of malignant growths

This is rare. The commonest growth the perforate is the stomach. Here the treatment of choice is gastrectomy. Other growths which perforate include large bowel growths.

Perforation of Meckels diverticulum

This is either due to diverticulitis or associated with peptic disease. The treatment of choice is resection and anastomosis of the terminal ileum.

Small intestine Perforation

The most common cause of perforation here are due to typhoid. Other causes include perforations due to crohn's disease ZE syndrome. In perforations due to typhoid it usually occurs in the 3rd week of the disease the common site is the terminal ileum. Closure of the perforation with thorough peritoneal toileting is the treatment of choice.

INTESTINAL OBSTRUCTION

This may be classified into two types.

1. **Dynamic** obstruction here there is peristalsis working against an obstructing agent which might be luminal, intramural or extra mural.
2. **Adynamic** - here, peristasis caeces and no true propulsive waves occur as in paralytic ileum and mesenteric vascular occlusion.
3. **Dynamic Obstruction** - clinically classified into
 1. Acute Obstruction - Favours the small gut with immediate central, severe, colicky abdominal pain, early vomiting, central abdominal distension and constipation
 2. Chronic Obstruction-favours the large bowel with lower abdominal colic, constipation and later only there is distension.
 3. Acute on chronic obstruction which spreads from the large bowel to involve the small intestine

Pathology

The intestine above the point of obstruction to overcome the obstruction by vigorous peristalsis after a period of time if the obstruction is not relieved there is cessation of peristalsis with dilatation of the bowel. Distension of the bowel is due to gas and various fluid secretions.

Strangulation

This is when the blood supply of this bowel is progressively interfered with strangulation leads to gangrene of the bowel. Gangrene causes loss of blood volume with the affected segment and transmigration of toxins and bacteria into the blood stream and peritoneal cavity.

Closed Loop Obstruction

This occurs in a stricture of the colon. A competent ileo caecal valve and the stricture create a closed loop and transmit the entire pressure on the caecum which can result in ulceration perforation or gangrene of the caecum.

Strangulation Obstruction

It is of high importance because if it is not recognised quickly and operated upon gangrene can occur. The diagnosis made on clinical grounds and picture is that of obstruction with a degree of shock. There might be generalised guarding and rigidity, pain is always constant. Pain made worse if the palpating hand is removed - Rebound tenderness is a valuable sign. A strangulated external hernia is tense, tender irreducible with no cough impulse.

Management

The initial management is

1. Naso gastric suction drainage - This helps by reducing the abdominal distension and by removing the toxic fluid in the intestines which might be otherwise absorbed.

2. Fluid and electrolyte balance-correction of hypovolemia and electrolyte imbalances along with correction of metabolic acidosis are vital preliminary steps.

Relief of Obstruction by operation.

The abdomen is opened by either a midline or right paramedian incision when the obstruction is in the small intestine.

On opening the abdomen the caecum is identified if it is collapsed then the obstruction is in the small bowel. The site of obstruction is then relieved depending upon its type.

Decompression of small bowel this can be done by various methods.

1. Moynihan and monks method-this is stripping of the distended gut via an enterostomy.
2. Decompression by savages-decompressor which is introduced via a stab incision in the bowel.

3. Balloon lung tubes such as Baker's tube which decompress the gut.
4. Retrograde displacement into the stomach from which the contents are aspirated via the nasogastric tube.

Small bowel Strangulation

The most important clinical decision taken in to resect or conserve bowel.

Intestine	Viable	Non-viable
Colour	Red to dark purple becomes lighter	Black to green
Mesentary	Oedematous, pulsations present. Beeds, No thrombosis	No bleed, no pulsation thrombosis seen
Peritoneum	Shiny	Dull and lusterless
Intestinal musculature	Firm, peristalsis seen	Flabby then pressure rings persist

In addition a nonviable gut does not change colour and application of warm packs or administration of 100% oxygen.

A non viable gut is resected and intestinal contimity restored by end to end anastomosis.

Obstruction in the large bowel

On opening the abdomen, the caecum is palpated, A distended caecum pints to a diagnosis of large bowel obstruction. As the cause is usually a growth or a stricture, resection is generally the treatment of choice. In extremely ill patients

when the growth is not removable or when the surgeon is not experienced a by pass anastomosis such as transverse anastomosis or a decompressing colostomy is done initially. A definitive treatment is carried out at a later date.

Management of specific condition Acute intususception

One portion of the gut becomes invagination into another immediately adjacent. It is usually proximal with distal. Very rarely it is retrograde.

Aetiology

Polyps, submucous lipoma malignant growth meckels diverticulum. In infants idiopathic intussuception is common.

The presentation is usually that of an acute intestinal obstruction. If it is not relieved it passes into strangulations and gangrene of the bowel treatment

Reduction by hydrostatic pressure this is usually carried in the paediatric age group. Reduction is by either saline or by barium enema. This method is contra indicated if gangrene or perforation are suspected.

Operative Reduction

Reduction is accomplished by squeezing the lowest part of the sausage like, mass. Donot pull. The pant is the most difficult to reduce and is facilitated by the use of warm compresses.

Cope's method - where adhesion between the parts of mass are separated by fingers can be separated by fingers can be tried out for difficult cases. If reduction is not possible their resection with end to end anastomosis is done.

Volvulus

This result from axial rotation of a portion of the alimentary tract.

Volvulus of the small intestine

This is due to adhesive band passing from the intestine to the abdomen wall or the pelvis. Treatment is to derotate the bowel and divide the band.

Volvulus of the caecum

A rare condition and occurs when the right colon is lax and mobile, simple untwisting is usually enough.

Volvulus of pelvic colon

This is a common cause of large bowel obstruction. The predisposing conditions are adhesions an overloaded pelvic colon, a long pelvic mesocolon, narrow attachment of pelvic mesocolon. The twisting is always in the anticlockwise direction. After this loop has rotated $1\frac{1}{2}$ tissue the venous supply impaired. After more than $1\frac{1}{2}$ turns the entire blood supply is cut off and the loop become gangrenous.

Clinical features

The onset is usually sudden and is accompanied by massive abdominal distress in there is vomiting and constipation.

Treatment

Conservative treatment can be tried as an initial procedure by sigmoidoscopic deflation of the volvulus.

If this fails laparotomy is done and decompression of the large bowel is done and resection of the bowel or exteriorisation of the bowel and resection by Paul Mikulicz procedure can be done. There is no rule for any form of colopexy. Compound volvulus also known as ileo sigmoid knotting. The long pelvic mesocolon allows the ileum to twist around the sigmoid colon and become gangrenous. At operation decompression, resection and anastomosis is required.

Obstruction by adhesions and bands

This is one of the most common cause of intestinal obstruction. Neither the causative or preventive factors have been discovered. The surgeon encounters only flimsy adhesion which can be easily separated or dense adhesions which need sharp dissection for separation. Treatment as a first resort, conservative treatment which consist of naso gastric aspiration and IV fluids is tried. Failure of response to conservative treatment and signs of strangulation are an indication for operative intervention. The adhesions are separated and any non viable portion is resected. There were wide spread adhesions, then a plication operation such as the Noble's operation or Child Philip transmesenteric plication can be done to prevent recurrent of the intestinal obstruction.

Obstruction due to an internal hernia

The potential internal hernal sites are the foramen of Winslow, a hole in the diaphragm in transverse mesocolon or broad ligament or with the fossa around the duodenum caecum and the sigmoid. This is a rare cause of intestinal obstruction. obstruction due to stricture of small intestine.

This is usually an aftermath of either TB or Crohn's disease. Multiple strictures are usually seen. Treatment is resection of the affected portion - No bypass anastomosis is done as it can lead to the formation of a blind loop syndrome. In Crohn's disease where there is extensive involvement of the small bowel stricture - plasty can be done.

Obstruction due to worm

Commonly it is due to ascaris rarely due to thread worms there is debility out of proportion to the obstructive. The obstructive can be precipitated by an antihelminthic. The worm bolus is usually milked into the caecum. Rarely the worm can cause perforation peritonitis. Rare causes of obstruction include gall stones, stercolith, and food bolus.

Adynamic Obstruction

Paralytic ileus - this is a state in which the intestine fails to transmit peristaltic waves and is due to failure in the neuro muscular mechanism

Commonest causes

1. Post operative

Infective

Uraemia

Hyparkalemia

5. Reflex as in fracture rib, retroperitoneal haematoma

Management

Prevention in the essence

Treatment of the primary cause

Adequate and thorough gastro intestinal decompression

Fluid and electrolyte balance.

If prolonged laparotomy with decompression of the bowel. A gastrostomy is done to introduce a long line intestinal decompression tube.

Pseudo obstruction

Colon is most commonly affected. Common associations are severe trauma, shock, septicemia, retroperitoneal irritation, idiosyncratic drug reaction and metabolic disorders. Treatment is to treat the primary cause.

Obstructed hernia

The hernia is irreducible with the intestinal contents being obstructed within or without but there is no interference to the blood supply.

Strangulated Hernia

This occurs when the blood supply of its contents is impaired rendering gangrene imminent. Gangrene occurs within 0-8 hours after the first symptoms of strangulation. Clinically the hernia is extremely tense, irreducible and there is no expansile cough impulse. Strangulated omentocele - as the omentum can survive on a very meager blood supply strangulation occurs very late. Infection is limited to the sac for days and usually terminates as a scrotal abscess, but extension of peritonitis to the general peritoneal cavity is always a possibility.

Management

Vigorous manipulation (taxis) and reduction of the hernial sac have no role in the management of a strangulated hernia due to various associated dangers. like reduction an massae, rupture of the intestinal wall, rupture of sac into the peritoneal cavity.

Strangulated original hernia

Initial measures include passage a nasogastric tube, correction of fluid and electrolyte balance and antibiotics.

Operative Steps

The incision is placed over the most prominent part of the swelling, the hernial sac is delivered, its layers are dissected, sac is then incised and the toxic fluid is completely removed. The external oblique aponeurosis is divided. The

constricting agent which is usually at the external ring or deep ring is then divided. The contents are inspected. If they are viable they are returned to the peritoneal cavity. If they are non viable appropriate resection is done. Once this sac has been dealt with repair is carried out using a technique which the surgeon is most comfortable with. Synthetic implants are to be avoided due to high risk of infections.

Strangulated sliding hernia

Here the post wall of the sac is not formed of peritoneum alone but by abdominal viscera such as the sigmoid and caecum. The danger here is extensive dissection posteriorly in the sac which can lead to peritonitis or a faecal fistula. The excessive peritoneum is sutured by purse string sutures and returned through the internal ring into the peritoneal cavity.

Strangulated femoral hernia

There is rapid, development of gangrene due to the rigidity of the femoral ring and the narrowness of the neck of the sac. No conservative management. Surgery is the inguinal approach by Lothiessen and high approach of Mc Everdy.

Gynaecological Emergencies

1. Ruptured Ectopic Pregnancy

Rupture can cause severe clinical shock with dramatic bleeding. This is a rare instance in which operation may be indicated prior to full resuscitation. The

clinical condition improves markedly by on opening the peritoneal cavity and clamping of the bleeding fallopian tube. The operation - once inside the peritoneal cavity, the uterus is palpated and this site of ruptured ectopic is identified, the uterus and the tubes are lifted into the wound and the bleeding point is immediately clamped. The blood and clot are sucked out. A salpingectomy can be done. No attempt should be made to join the ends of the tubes in an emergency procedure.

Pelvic Infection

Pyosalpinx

Tubal infection which does not drain via the fimbrial end by the tube or the uterine cavity many result in a swollen, tender tube. On opening the abdominal cavity, the operative procedure is a salpingectomy, rarely tube conservation surgery is carried out.

Tubo ovarian abscess

Occasionally pelvic infection becomes walled off by dense fibrous tissue. Bowel and omentum might become adherent to form an ill defined mass. The initial treatment is conservative. However if the mass increase in size, the fever does not subside or the abscess points in the posterior vaginal fornix then drainage of the abscess is essential. Drainage is done through the posterior vaginal fornix or by an abdominal approach.

Rupture of a pelvic abscess

Rupture into the peritoneal cavity often presents with features of shock and hypotension. After resuscitation of the patient, immediate laparotomy is done, the abscess cavities are drained with careful peritoneal toileting.

Ovarian Cysts

Can present as surgical emergencies when the cyst ruptures, bleeds internally or undergo torsion

Ruptured ovarian cyst

Can occur spontaneously corpus luteum cyst which occur physiologically after ovulation are the most common cause - It is vital to differentiate this from a ruptured ectopic pregnancy.

Laparoscopy can be both diagnostic and therapeutic to control minor bleeding if there is persistent bleeding from the torn ovary then laparotomy, & repair of the bleeding ovary is carried out

Torsion of an ovarian cyst

A mobile cyst may undergo torsion around its pedicle. It presents with severe unilateral pain. If gangrene has set in signs of peritoneal irritation are seen laparotomy is done if there is gangrene. The ovary and the tube are removed intact. If viable, then the torsion is undone and an ovarian cystectomy is done. If the gangrenous mass is to be removed, the cyst is mobilised, but the torsion is not undone and the gangrenous mass is resected.

Other gynaecological conditions which may present as acute surgical emergencies include haemocolpus, haematometra, pyometra, ovarian haematoma etc.

Others

Meckels diverticulum

common complications associated with this are

1. Severe haemorrhage caused by peptic ulceration
2. intussusception
3. Meckels diverticulitis
4. Chroni peptic ulceration
5. Intestinal obstruction due to band

Surgery

Meckels diverticulectomy is the surgery of choice.

When there is induration of the base of the diverticulum extending into the ileum, resection and anastomosis of the ileum is advised.

Gall bladder

The most common cause of GB presenting as a acute abdominal emergency is acute cholecystitis. 95% due to gallstones rarely an empyema, mucocele or perforation of GB can present as an emergency.

Non operative treatment

Relief of pain by pethidine antibiotics, IV fluids, nasogastric aspiration, nil by mouth and other symptomatic measures with careful systemic monitoring.

Indications for surgery

Uncertainty about diagnosis in a patient with marked upper abdominal peritoneal irritation.

2. Failure of response to non operative treatment.
 - a. Persistent fever
 - b. unchanged and advancing signs of peritoneal irritation
 - c. presence of mass
 - d. Development of general peritonitis
 - e. Features of acute cholangitis

Choice of operation

The surgery of choice is cholecystectomy

However there are certain indications for cholecystectomy which are

1. When dissection and identification of this cystic artery and duct are not possible due to extensive inflammatory reaction.

2. When the general condition of the patient is so poor then only surgery under LA. can be done
3. An inexperienced surgeon

Cholecystostomy - The GB is located and then aspiration of all fluid. The opening is enlarged and any stones and debris are removed. A drainage catheter is placed and the GB closed by a purse string suture.

Cholecystectomy

Transverse or vertical incision may be used. The cholecystectomy can be carried out by ligating the cystic artery and duct first or by commencing dissection from the fundus of the GB. Sometimes a portion of the GB wall might be left behind the subtotal cholecystectomy, Laparoscopic cholecystectomy can be done.

Pancreas

Acute pancreatitis can present as a surgical emergency. In 80-85% of patients simple conservative treatment is enough. The minority of patients who do not settle down, present with fulminant pancreatitis and delayed or unremitting pancreatitis in both cases there is necrosis of pancreas and peripancreatic necrosis.

Surgery can be done only in cases of infected necrosis.

Management

Severe acute pancreatitis rarely requires removal of the entire gland. The objective should be to remove as much nonviable gland and peripancreatic tissue as possible. Removal of the gland up to anterior aspect of this portal vein is usually enough. Loose peri pancreatic slough and debris should be removed. A thorough lavage is given and drains are laid down to retroperitoneum and splenic bed. Abdomen can be closed with mesh laparostomy to help in daily lavage and inspection of wound.

Other complication

Haemorrhage - erosion of arteries

Pseudocyst - stress ulceration

pancreatic abscess - simple drainage

Liver Abscess

There are either pyogenic or amoebic in nature. Treatment is usually antibiotic or anti amoebic with percutaneous drainage. However ruptured amoebic abscess - needs Laparotomy and open drainage of the abscess with post operative anti amoebic treatment. For multiple abscesses - drainage under ultrasonographic control is the treatment of choice.

Tuberculosis of the intestine

Common site - proximal colon, ileum and peritoneum

main types - hyperplastic and ulcerative

Hyperplastic occur in ileocaecal region usually, this type of patients presents acute intestinal obstruction Treatment is resection of the affected segment with a course of postoperative chemotherapy. TB of the mesenteric nodes can rarely present as intestinal obstruction due to adherence of bowel loops to the mass.

PART-II

AIM OF THE STUDY

1. To determine the common causes of acute abdomen and their incidence in our hospital.
2. To study the age and sex distribution of these condition.
3. To findout the various types of the above causes of non traumatic abdominal emergencies and discuss their incidence, age and sex distribution of each.

MATERIALS AND METHODS

Patient Selection criteria

1. All the patients presenting as acute abdomen who are taken up for surgery during the period from June 2004 to May 2005 at Kilpauk medical college and Hospital were included in my study. All patients with trauma induced abdominal injuries were excluded from the study.
2. Patients treated by conservative management were excluded from this study.

Methodology

A total of 390 patients were studied during this period. On admission a detailed history was taken and a thorough physical examination was done. Necessary emergency investigations were done for all the patient. A methodical diagnosis was arrived at and treated accordingly.

- iii. Amount
 - iv. Type
 - v. Content
 - e. Nausea or anorexia
 - d. Fever
 - i. Duration
 - ii. Type
 - iii. Associated with chills/rigors/sweating
 - e. Distension of abdomen - upper lower
 - f. Bowels: Regular/Otherwise
 - Diarrhoea
 - Constipation
 - Blood motion
 - g. Urine : Frequency/Burning
 - h. Menstruation: LMP/Painful/not
 - i. Chest symptoms
4. Past History
- a. Any serious previous illness
 - b. Indigestion
 - c. Jaundice
 - d. Haematemesis

- e. Malena
 - f. Haematuria
 - g. Loss of weight
5. Personal history
- a. Smoking
 - b. Alcohol consumption
 - c. Dict
 - d. TB/DM (HT/IHD)

General Examination

- a. Vital signs pulse BP Temp RR
- b. Build
- c. Nutrition
- d. Jaundice
- e. Edema
- f. Anaemia
- g. Lymphadenopathy

Abdominal Examination

- A. Inspection
 - 1. Shape 2. Umbilicus 3. Distension
 - 4. More with Resp 5. Ext-hernia 6. Renal angle

- B. Palpation
 - 1. Tenderness 2. Guarding and Rigidity
 - 3. Any mass
- C. Percussion
 - 1. Liver Dullness 2. Free Fluid
- D. Auscultation:
 - BS: Normal/Increased/sluggish/absent)
 - Per rectal Examination.

Examination of other systems:

- a. Cardio vascular system
- b. RS
- c. CNS

Clinical Diagnosis Investigations

- a. Urine-Alb/Sug/Deposits
- b. Haemogram
 - Hb% TC DC ESR
- c. Blood urea sugar
- d. Serum Electrolytes creatinine amylase
- e. Blood grouping and Rh typing
- f. Chest xray PA view
- g. Abdominal Xray Erect view
- h. ECG
- i. USG Abdomen

THE STUDY

A total of 390 patients were included in my study. The study was conducted over a period of one yrs. from 2004 June to 2005 may. Each etiological group of emergencies will be discussed separately.

Appendicitis

A total of 245 cases of acute appendicitis were operated on. These include cases of uncomplicated acute appendicitis as well as those associated with complications such as appendicular abscess, mass, perforation and gangrenous appendix.

Age incidence

I have classified the incidence of the disease as follows:

In the 1st decade	2
Second decade	93
Third	96
Fourth	37
Fifth decade	14
>50 Yrs.	3

The youngest was a 10 yr. old child while the oldest was 57 yrs. old. It was observed that the majority of cases 77% were in the 10-30 age group 2% of the cases were above the age of 50 or below 10 yr. none of the patients were more than 60 yrs. The low incidence of patients <10 yr. was probably due to the presence of referral paediatric centre nearby.

Sex Incidence

Of the 245 cases studied 138 cases (56%) were male. While 107 cases (44%) were female patients. This reflected of a male preponderance.

Nature of the presentation

Of the total of 245 patients in my study the position of appendix was as follows.

Causes	Total No.	Percentage
Retrocaecal	20	89.7
Pre illeal	8	3.2
Post illeal	3	1.2
Para caecal	1	0.2
Subcaecal	1	0.4
Pelvic	12	5

Associated findings and complications of the total 245 cases analysed there were 12 case of appendicular perforations, 10 cases of early mass formation in which appendicectomy was possible. 2 cases were appendicular abscess 1 patient had an appendicular carcinoid, gangrenous appendix in 4 cases of fecolith in 1 case.

Procedure

For the appendicectomy in the majority of the patients, stump burial was done by either using a purse string or a Z plasty technique. Less than (7 cases) 3 of the patients necessitated a retrograde technique. For the appendicular abscess patient of cases an (extra) peritoneal drainage was done and in all cases a drain was kept. In the appendicular mass patients as there was only early mass formation, separation of the appendix with appendicectomy was easily done.

The material used in burying the stump was chromic catgut. In the case of carcinoid due to the localised nature of the disease, appendicectomy was done.

Hollow viscus perforations

A total of 54 perforations were studied in the given time period.

Incidence

	Cases
Duodenal perforation	37
Gastric	10
Ileal	2
Jejunal	2
Caecal	1
Others	2

Duodenal perforation

Age incidence

There was no cases in 1st decade, 5 in the second decade 15 in the third decade 8 in the fourth decade 8 in the fifth decade 1 in the 6th decade. The youngest was 16 yr. old and the oldest was 72 years.

Sex incidence

All the patients who underwent surgery were males.

Site

In all the cases the site of perforation was in the first part of the duodenum in the anterior wall. The average size of perforation was 5mm.

Procedure

Closure was done using either live/dead omental patch majority was live patch-Graham's patch. The suture material used for the closure was vicryl. In 2 patients due to poor general condition, a flank drain had to be kept and no definitive procedure were done. 6 patients had pelvic collections and 4 patients had wound sepsis and no mortality.

Gastric perforation

There were a total of 10 patients. All patients were male. The age group was between 29 yrs. and 66 yrs. In 2 patients, the perforation was located in the pyloric region, 8 at the antrum. Biopsy was taken from all cases of perforation. The closure techniques was similar to that of duodenal perforation closure. In one cases HPE report came as malignancy-adenocarcinoma. In these cases, subtotal gastrectomy was done electively after improving the general condition of the patients. All the patients were discharged after 10 days without any complications.

Jejunal perforations

The 2 patient who had jejunal perforation was 23, 40 yrs. old male. In this case closure was done in 2 layers using vicryl and silk. One patient did not have any complications. Another case had multiple strictures -Resection and anaestomosis done. HPE proved TB in that specimen.

Ileal perforations

There were a total of 2 patients, 1 male and 1 females. 1 Patients had perforations in the terminal ileum, Remaining 1 had in the mid part of ileum. All the perforations were closed in 2 layers using vicryl and silk. Thorough peritoneal lavage with placement of flank drain was done. One patient developed, leak, for which the leakage site was exteriorized and later closure was done after 3 months.

Obstructed Hernias

A total of 50 patients were studied, of which inginal hernia 33, Incisional hernia 12, umbilical 5, femoral 0.

Obstructed inguinal hernia

Age incidence

The were 4 cases in the 3rd decade, 8 cases in the 4th decade 8 cases in the 5th decade 5 cases in 6th decade. 4 cases 7th decade 4 in 8th decades.

Sex incidence

All the patients were male except 1 female.

Types

Right sided inguinal hernias were more commonly obstructed, 23 as compared to 10 on the left. The contents were small intestine 12 or omentum 21. There were 2 sliding hernias. One had both direct and indirect sac. Two cases had non viable and Gangrenous bowel.

The repair procedure most commonly done was modified bassini's method resection and primary anastomosis of the small intestine was done in 4 patients. Prolene was used in the repair. No meshes were used.

Obstructed incisional hernia

All of the 12 patients were females age groups 40-65 yrs. 4 patients had undergone abdominal hysterectomy. 6 patients had LSCS and 2 were other surgeries. Three patients underwent resection anaestomosis of the gangrenous small bowel. The remaining patients underwent anatomical repair after reducing the contents.

Obstructed umbilical hernia

5 were female small intestine and omentum were found as contents. The contents were reduced and anatomical repair was done in all cases obstructed.

Intestinal obstruction

Obstructed inguinal hernia is discussed above. The other intestinal obstructions are discussed broadly as small and large bowel obstruction.

Age and sex incidence

There was 0 cases in the first decade 3 in the second decade 1 cases in the third 1 in the fourth and 2 in the fifth decade.

There were 5 males and 3 females.

Small bowel obstruction

There was a total of 15 cases

Aetiology

Adhesions both post operative and due to TB abdomen were the cause in 6 cases. Wormbolus was the cause in none of my patient. Internal herniation was the cause for none of my patients. There were congenital band in 6 patients. Strictures were causative in 3 cases. In all these cases stricture were due to Tuberculosis.

Procedure

They varied according to the cause. In obstruction due to adhesions, simple adhesiolysis was done. However 2 patients developed postop sub acute intestinal obstruction that was managed conservatively. Two cases had strictures due to tuberculosis of ileum where resection of the strictured segment was done with primary anastomosis was done. One case was managed by simple diversion of constricting band. There were 2 post operative deaths in this series.

Large bowel obstruction

There were a total of 8 cases, 3 were in the third decade of life. The oldest of 65 yrs old with sigmoid volvulus.

Aetiology

4 cases were due to sigmoid volvulus, 1 cases due to recto sigmoid growth. One case of sigmoid voluvulus was 21 yrs old male.

Procedure

For the sigmoid volvulus patients a resection of the sigmoid with descending colorectal anastomosis was done with peroperative decompression of the bowel. One patient died in the post operative period was due to cardiac arrest. One patient had leak from the anastomosis that was managed conservatively. In the case of carcinoma recto sigmoid junction, a sigmoid loop colostomy was done as an emergency procedure after which Anterior resection was done as an elective procedure after one month.

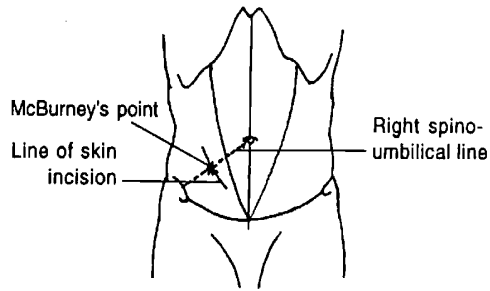
Gynaecological Emergencies (Landing in surgical side)

A total 2 cases were seen. These included 2 cases of ruptured ectopic pregnancies. But no case of twisted ovarian cyst and rupture corpus luteal cyst. A salphingo oophorectomy was done in the cases of ectopic pregnancy.

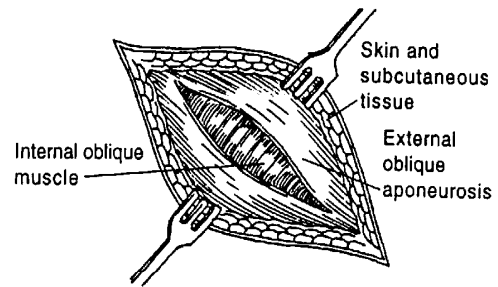
Other emergencies

These included laparotomy and drainage of a ruptured liver abscess was done in 4 cases. A case of extra peritoneal drainage of a psoas abscess in a 10 yr. Old child was done. There were 1 cases of meckels diverticulum for which resection anastomosis was done. 2 cases of pyoperitoneum-Laparotomy and peritoneal lavage was done. In one case an exploratory Laparotomy was done for acute pancreatitis.

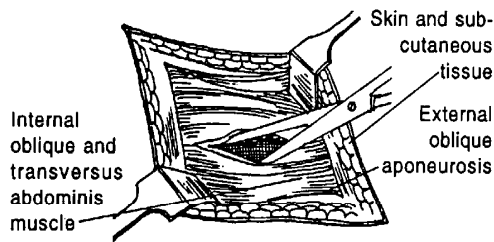
APPENDICECTOMY - STEPS



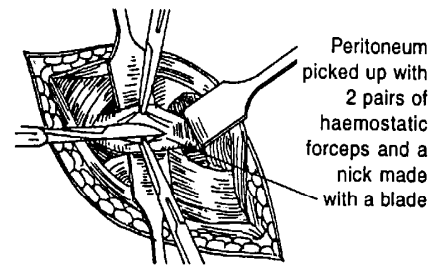
A-Skin incision for appendicectomy



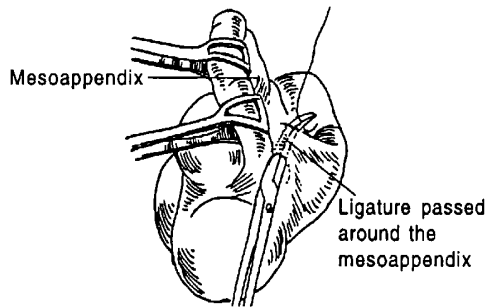
B-Division of external oblique aponeurosis



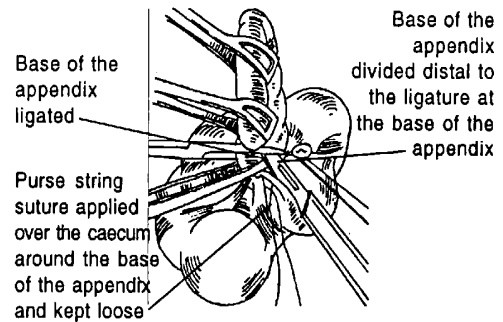
C-Splitting of internal oblique and transversus abdominis muscle



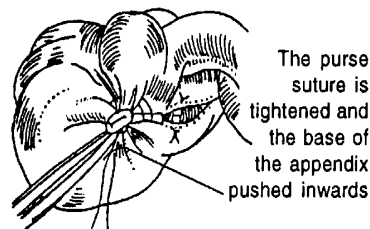
D-Opening of peritoneum



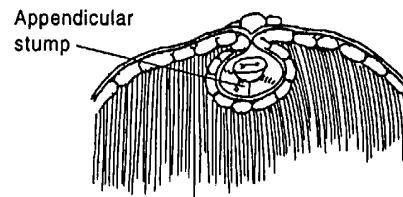
E-Ligation and division of mesoappendix



F-Division of appendix



G-Inversion of stump of appendix



H-The inverted appendicular stump

DISCUSSION

Of the total of 390 cases studied, i.e cases needed emergency surgical intervention. The remaining patients were managed conservatively. The adhesive obstruction and the pancreatitis patients were reviewed periodically and observed for pulse rate, BP and progressive distension of abdomen. Any gross alteration in these parameters, the patients were taken up for surgery. Acute appendicitis was the commonest accounting for 62.8% of all the cases. This was followed by hollow viscus perforation 14% and obstructed hernias 13%.

Table 1: Total cases studied

Type	Total No.	Percentage
Appendicitis	245	62.8
Perforations	54	13.8
Obstructed hernias	50	12.8
Intestinal obstruction	23	5.8
Other cases	18	4.6

Appendicitis

Comparing the age incidence there was a maximum incidence of cases in 11-20 and 21-30 age group, which accounted for almost 77% of all cases. In contrast to general studies and western studies the age incidence is maximum in the 0-10 age group, we had <2% such cases in our study. In our study as in other studies the male incidence (56%) predominated over the female incidence 44%.

Regarding the position of the appendix 89.7% of our cases were retrocaecal as compared to western series 75% to 80%. Also 3.2% of our cases had preileal position. Compared to the usual 1-2%. There was a reduced incidence of pelvic appendix 4-5% as compared to the western series 20-25%.

Our study thus showed an increase in the frequency of retrocaecal position with a sharp drop in the pelvic type. There was 1 case of appendicular carcinoid. As the patient had no evidences of any metastatic disease, no further surgery was done. All other appendix specimen was negative for carcinoid. The oldest patient was a 57 yrs. old male. The mortality in our series was 0% as compared to the usual 3-57. There was one patient who developed a faecal fistula post operatively.

Table 2: Appendicitis

Age in years	Total No.	Percentage
0-10	2	0.8
11-20	93	38
21-30	96	39
31-40	37	15
41-50	14	5.7
>50	3	1.2

Table 3: Position

Position	No.	Incidence
Retrocaecal	220	89.7
Preileal	8	3.2
Post ileal	3	1.2
Para caecal	1	0.4
Sub caecal	1	0.4
Pelvic	12	5

Perforation of the follow viscus

As expected duodenal perforations contributed for more than 65% of our cases followed by ileal perforation 20%.

Duodenal perforations

There was a maximum incidence in the 21-30 age groups (28%) and in the 31-40 age group 15%. This was in contrast to the general studies which showed the maximum incidence in the old age group. The younger age group can probably be attributed to the stress and life style, all our patients belonging to the low socio economic groups. Our study showed a 95% incidences of male compared to western studies which shows only a 50% incidence. This again reflects our culture, with for fewer women in working jobs and exposed to less stress. In our series of peptic ulcer perforations, 68.5% were duodenal and only 18.5% were gastric perforations as compared to the normal 50-60% for duodenal perforations. All there were on the anterior wall of duodenum.

Gastric perforations

Out of the 10 gastric perforations 8 were on the antrum area, 2 in the pylorus. 10 cases of gastric ulcer which had perforated, a simple perforation closure and Biopsy was done. Histopathology came as adenocarcinoma in one patient. A subtotal gastrectomy was done after 1 month due to poor general condition of the patients.

Ileal perforations

Of the ileal perforations, 2 were proven beyond doubt to be due to typhoid as confirmed by widal tests. There were no deaths in the immediate post operative period. An interesting case of jejunal perforation was managed where the patient had multiple strictures in the small bowel, ascites and serosal modules. The resected specimen showed features of TB. Another case simple closure done with vicryl and silk.

Table 4: Perforation

Type	Total No.	Percentage
Duodenal	37	68.5
Gastric	10	18.5
Ileal	2	3.7
Others	5	9.2

Table 5: Duodenal perforation

Age in years	Total No.	Percentage
10-20	5	13.5
21-30	15	40.5
31-40	8	21.6
41-50	8	21.6
51-60	0	0
61-70	1	2.7

Obstructed Hernias

Of the 50 cases, (33 cases) (66%) were obstructed inguinal hernias. Though femoral hernias are the commonest to get obstructed, we had no cases in our series. The age incidence showed a preponderance to those above 45 yrs. There was a preponderance of male patients. There were 2 sliding hernias which got obstructed there was one case of recurrent inguinal hernia with obstruction. Only 2 cases needed resection of small bowel. If the incisional hernias in all the 4 cases, the previous surgery had been an abdominal hysterectomy. 6 cases had caecostomy section 2 cases other surgeries. Anatomical repair was done in all these cases.

Table 6: Obstructed hernias

Type	Total No.	Percentage
Inguinal	33	66
Incisional	12	24
Umbilical	5	10
Femoral	0	0

Intestinal obstructions

Small bowel obstruction. There were more than 50% incidence of patients between 20 and 40 in our series. The average was 25 years. Pointing to the fact that small bowel obstruction was more a disease of the young. 53.3% were male and 46.6% were females. The commonest case was post operative adhesions forming 40% of the cases studies. This confirmed the general view that adhesions were the commonest cases of intestinal obstruction next common cases were the stricture obstruction forming 20% of cases. No cases was due to worm bolus. Due to the nearer paediatric referral centre.

Table 7: Small bowel obstruction

Type	Total No.	Percentage
Adhesions	6	40
Strictures	3	20
Internal herniation	0	0
Band	6	40

Large bowel obstruction

Of the 8 cases in our series the average age was 20-30 yrs. This again points to the fact that large bowel obstructions 62.5% cases were male patients. The commonest cases was sigmoid volvulus followed by carcinoma rectum and sigmoid.

Table 8: Large bowel obstruction

Causes	Total No.	Percentage
Sigmoid volvulus	4	50
Recto sigmoid carcinoma	1	12.5
Others Adhesive obstruction	3	37.5

Gynaecological emergencies (Landing in surgical side)

A total of 2 cases were seen, these included 2 cases of ruptured ectopic pregnancies. A salphingo oophorectomy was done in the case of ectopic pregnancy. All the specimen were sent for HPE.

Other Cases

Our series had 4 cases of ruptured amoebic liver abscess, the patients confirmed to the classical picture of the middle age malnourished alcoholic patients 1 case of meckel's diverticulum were found in our entire series. These formed only 0.25% of our case as compared to the western literature of 2%. They were found incidentally and did not present as a complication. In line with the recent trends forwards more early GB surgery, no emergency cholecystectomies were done. Patient presented with features of peritonitis. Laparotomy showed a picture of acute pancreatitis, a lavage was done, patient recovered well and was discharged without any complications.

CONCLUSION

- Our study shows that appendicectomy still remains the commonest non traumatic abdominal emergency.
- The age incidence of appendicitis in my study show a definite shift to patients between 15 and 30 yrs. accounting for almost 77% of all cases.
- There was a definite male preponderance of cases studied.
- Duodenal perforation was the commonest hollow viscus perforation.
- Our study showed a decrease in the average age of peptic ulcer perforation with an overwhelming majority of male patients.
- Ileal perforation was the next commonest cause of perforations almost all being due to typhoid.
- Inguinal hernias were the commonest herniae to become obstructed. The age and sex incidence conferred to the previous studies.
- Small bowel obstruction seems to be disease of the young as shown by our series. There was almost equal incidence among both sexes.
- Adhesions were the first commonest cause of intestinal obstruction, only after obstructed inguinal hernias.
- Large bowel obstruction with an average age incidence of 50 yrs. and a male predominance seems to be a disease of the middle aged. Volvulus and malignancies accounted for all the cases. This conforms to the general view.

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Chart 2: Perforation

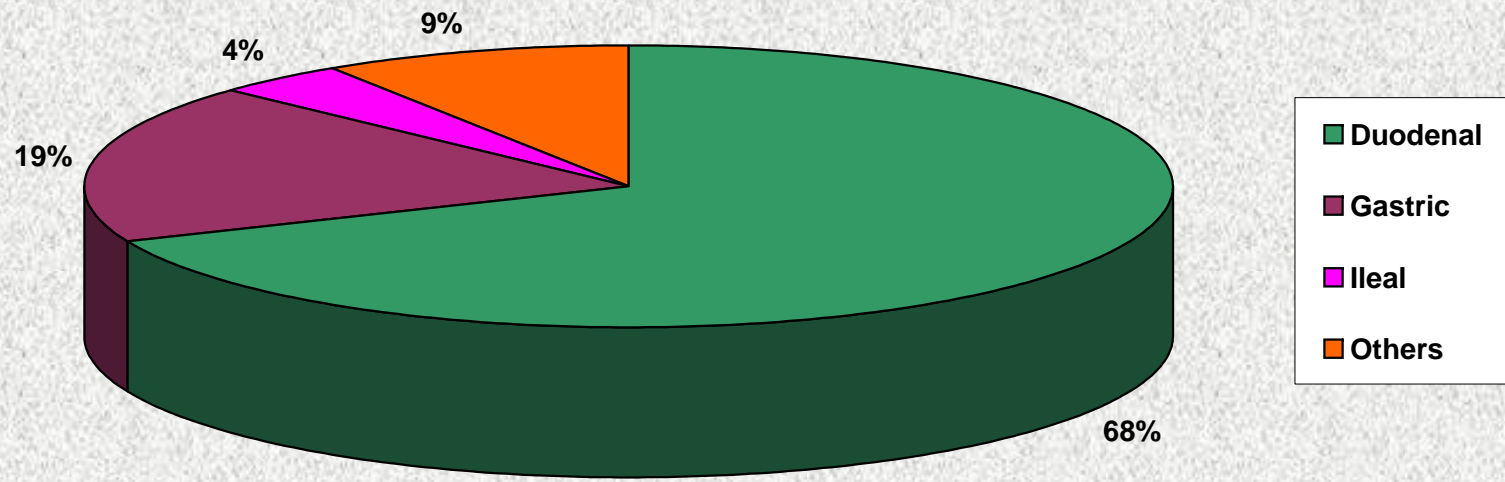


Chart I: Appendicitis

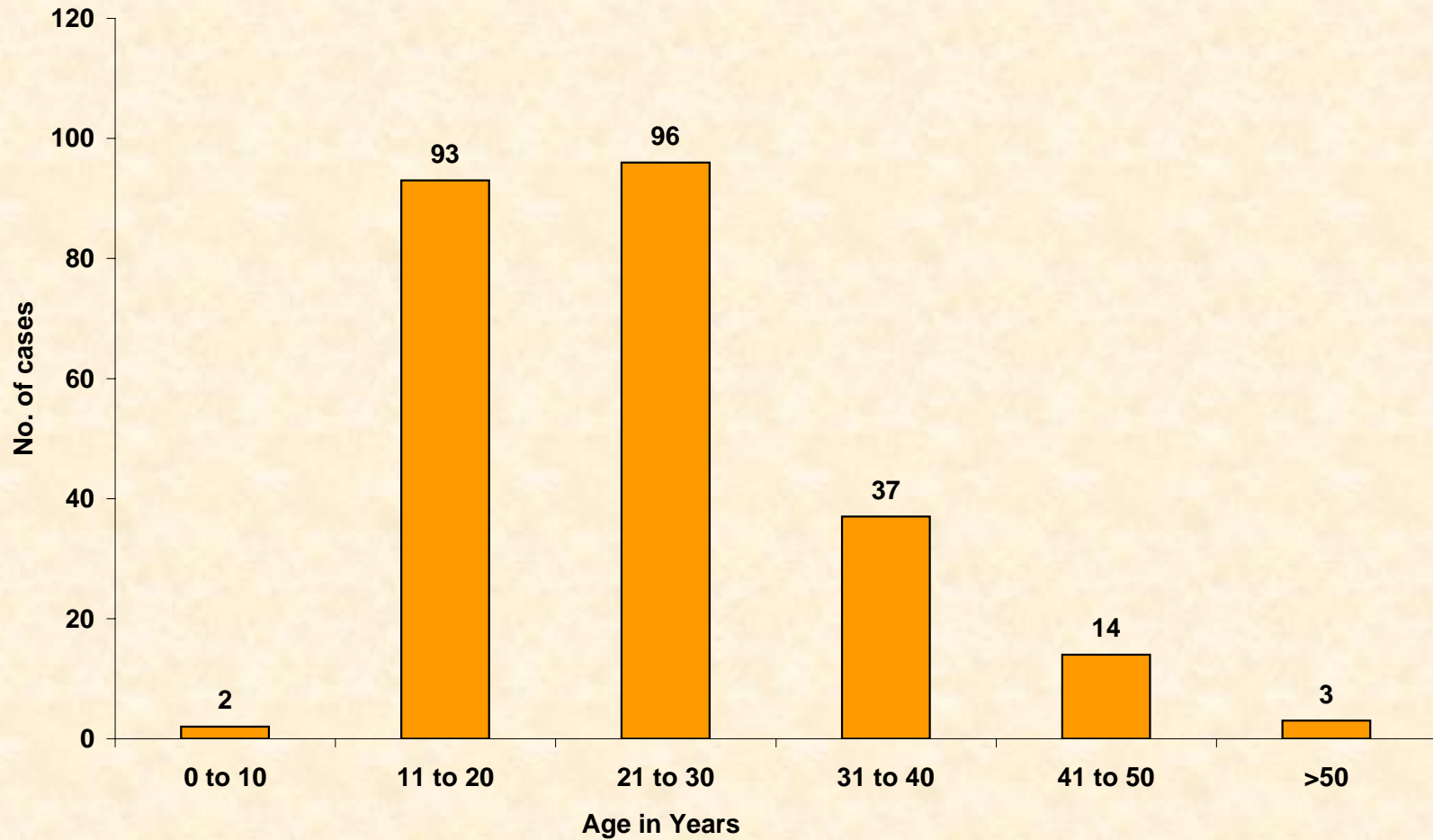


Chart 3: Duodenal perforation

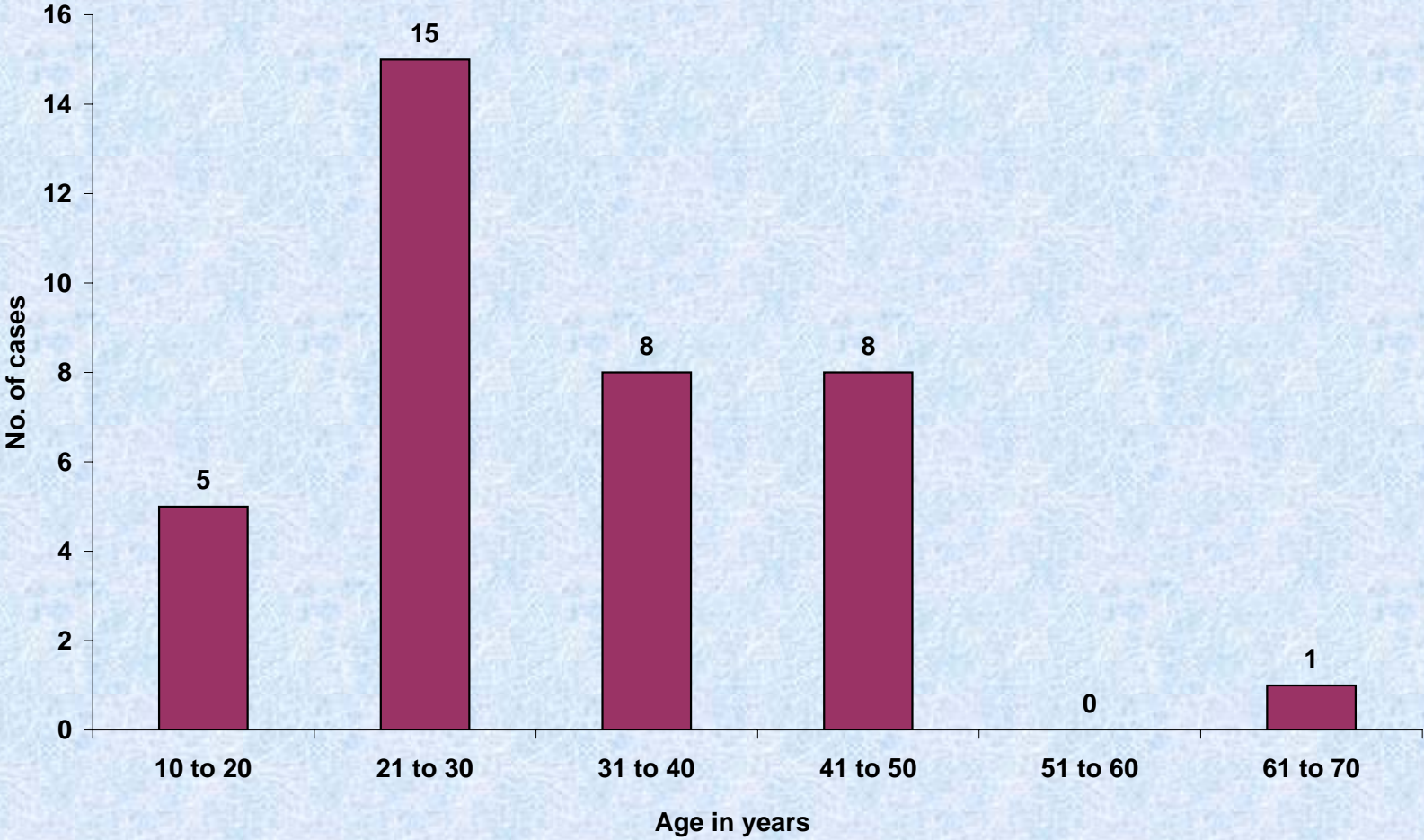


Chart 4: Obstructed hernias

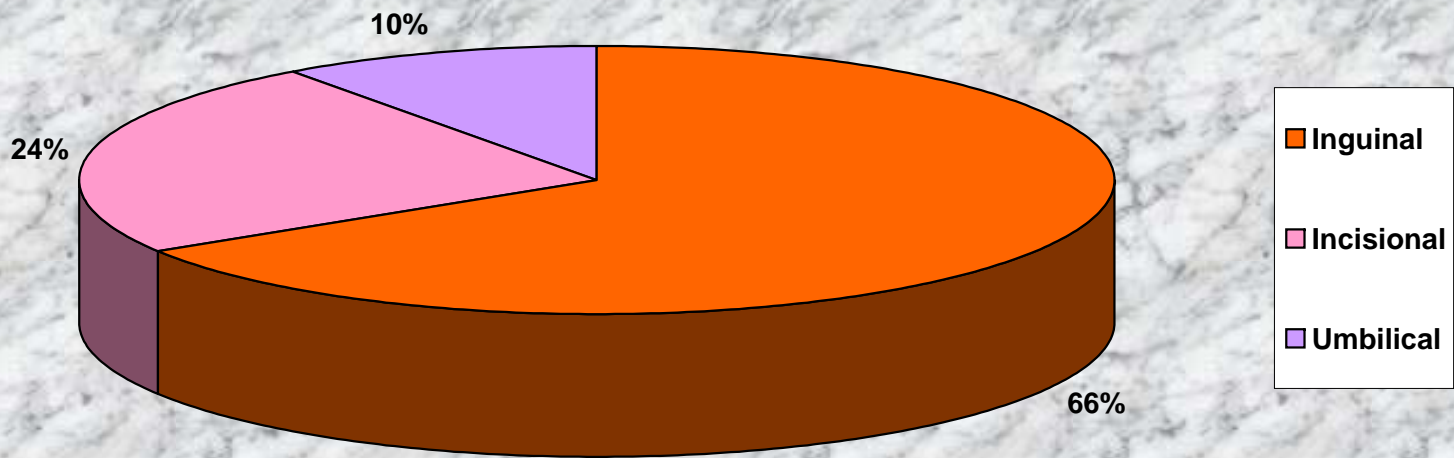


Chart 5: Small bowel obstruction

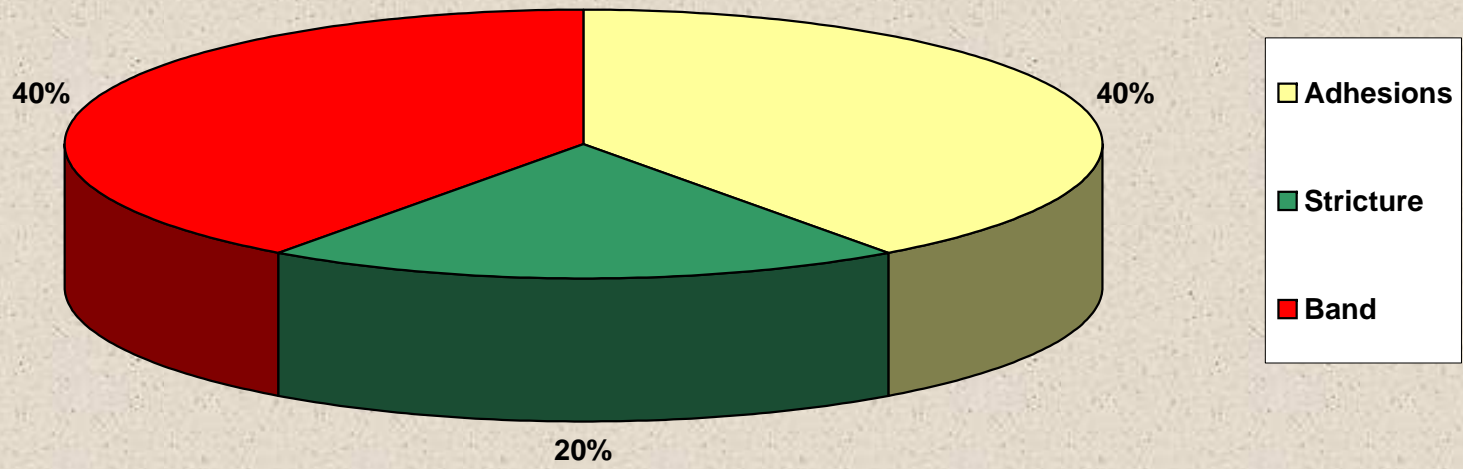
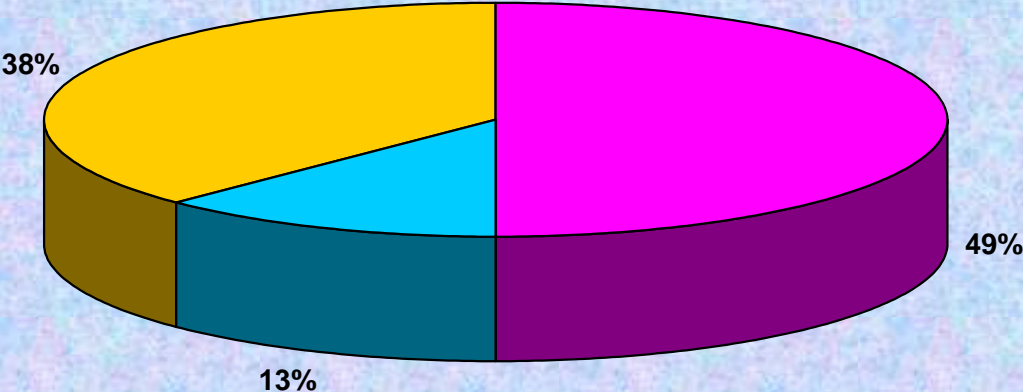
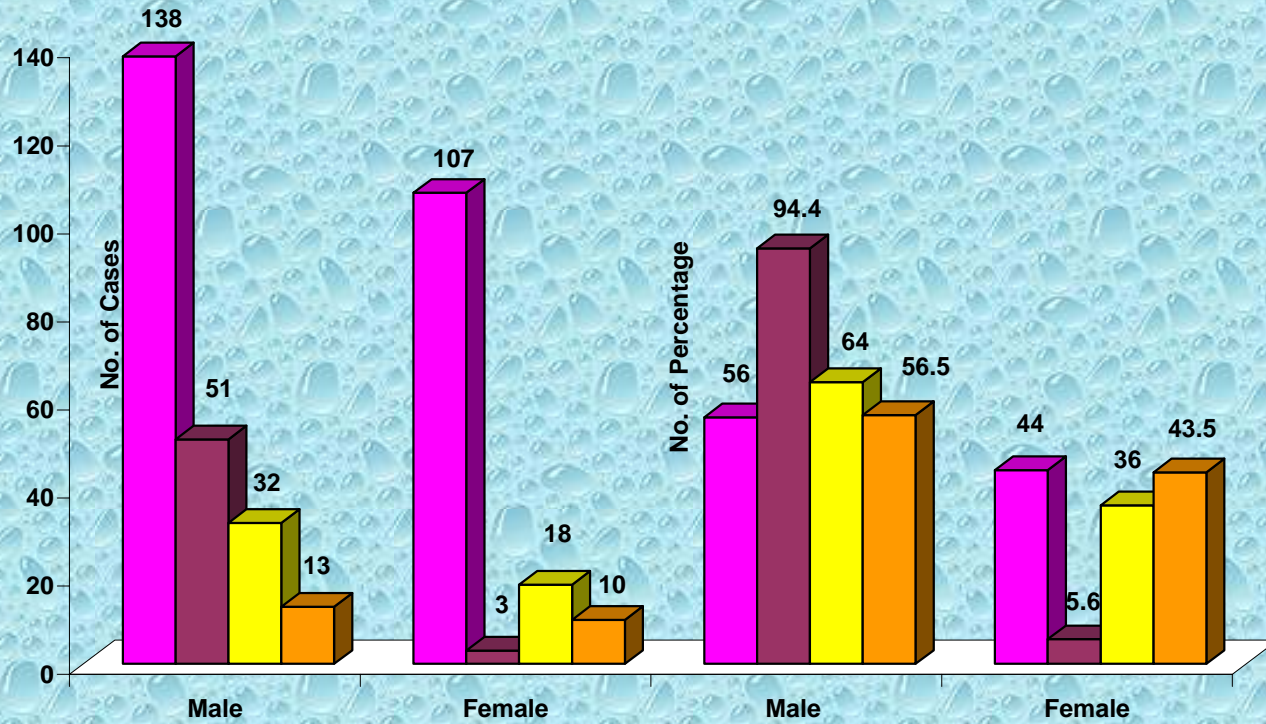


Chart 7: Large Bowel obstructions



■ Sigmoid volvulus ■ Recto sigmoid carcinoma
■ Others adhesive obstruction

SEX INCIDENCE



■ Appendicitis ■ Perforations
■ Obstructed hernia ■ Intestinal Obstruction

0 to 10	2
11 to 20	93
21 to 30	96
31 to 40	37
41 to 50	14
>50	3

Adhesions	40%
Stricture	20%
Band	40%

Duodenal	37
Gastric	10
Ileal	2
Others	5

Inguinal	66%
Incisional	24%
Umbilical	10%

10 to 20	5
21 to 30	15
31 to 40	8
41 to 50	8
51 to 60	0
61 to 70	1

Sigmoid volvul	50%
Recto sigmoid	13%
Others adhesiv	38%

	Male	Female	Male	Female
Appendicitis	138	107	56	44
Perforations	51	3	94.4	5.6
Obstructed hernia	32	18	64	36
Intestinal Obstruction	13	10	56.5	43.5