

**“CHRONIC RECURRENT ABDOMINAL PAIN AND  
EVALUATION OF DISEASE BY VARIOUS  
DIAGNOSTIC MODALITIES”**

Dissertation submitted to

*The Tamil Nadu M.G.R Medical University*

Chennai- 600032



In partial fulfillment of the  
Regulations of the award of degree of  
***M.S. General Surgery***



**DEPARTMENT OF GENERAL SURGERY**

**Coimbatore Medical College Hospital**

**Coimbatore – 641018**

**APRIL 2013**

## **CERTIFICATE**

This is to certify that this dissertation titled “**CHRONIC RECURRENT ABDOMINAL PAIN AND EVALUATION OF DISEASE BY VARIOUS DIAGNOSTIC MODALITIES**” submitted to the Tamil Nadu Dr. M.G.R. Medical University, Chennai in partial fulfillment of the requirement for the award of M.S Degree Branch - I (General Surgery) is a bonafide work done by **Dr. BALA MURUGAN.A** post graduate student in General Surgery under my direct supervision and guidance during the period of September 2011 to November 2012.

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I hereby declare that the dissertation entitled “**CHRONIC RECURRENT ABDOMINAL PAIN AND EVALUATION OF DISEASE BY VARIOUS DIAGNOSTIC MODALITIES**” was done by me at **Coimbatore Medical College Hospital**, Coimbatore – 641018 during the period of my post graduate study for M.S. Degree Branch-1 (General Surgery) from 2010 to 2013.

This dissertation is submitted to the Tamil Nadu Dr. M.G.R. Medical University in partial fulfillment of the University regulations for award of M.S., Degree in General Surgery.

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INTRODUCTION Chronic abdominal pain is defined as constant or intermittent pain persisting for more than 3 months. Intermittent pain may be referred to as recurrent abdominal pain with intervals of asymptomatic periods. It presents a diagnostic and treatment challenge to the general surgeons and it remains a common surgical problem. Specific diagnosis could not be arrived despite all necessary investigations. The cost of health care is high, due to need for sophisticated investigations and the treatment cost. This study is done mainly in arriving the diagnosis of disease, by using various diagnostic modalities available at Coimbatore medical college hospital with the help of Basic...

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## **LIST OF ABBREVIATIONS**

CSF	-	Cerebro Spinal Fluid
CCK	-	Cholecystokinin
CT	-	Computerised Tomography
D Cells	-	Delta Cells
ELISA	-	Enzyme linked Immuno Sorbent Assay
GI	-	Gastro Intestinal
H2 Receptors	-	Histaminic
H Pylori	-	Helicobacter Pylori
Ig	-	Immunoglobulin
L Appendix	-	Laparoscopic Appendicetomy
LA	-	Local Anaesthesia
Los	-	Lower Oesophageal Sphinter
PPI	-	Proton Pump Inhibitors
LFT	-	Liver Function Tests
NSAIDS	-	Non Steroidal Anti Inflammatory Drugs
OGD Scopy	-	Oesophago gastro Duodenoscopy
SAAG	-	Serum Asctic Albumin Gradient
TLOSR	-	Transient Lower Oesophageal Sphinter Relaxation.



## **ABSTRACT**

### **“CHRONIC RECURRENT ABDOMINAL PAIN AND EVALUATION OF DISEASE BY VARIOUS DIAGNOSTIC MODALITIES”**

#### **OBJECTIVES :**

This study is done to make a definitive diagnosis by using various diagnostic modalities available at Coimbatore Medical College Hospital and to identify the Common etiologies for Chronic Recurrent Pain.

#### **METHODS**

This study was conducted at Coimbatore Medical College Hospital. A sample size of 50 patients with complaints of Chronic Recurrent pain abdomen were taken into this study. The patients with Acute Abdomen, patients undergoing previous surgeries and urological and Gynaecological causes were excluded from this Study.

#### **RESULTS**

Of the total 50 patients studied, it was found that the incidence was more commoner in males, and patients between 31-40 years were commonly affected. 16 of the 50 patients were Alcoholics for more than 10 years and Chronic smokers and vegetarians were less commonly affected than people taking mixed diet. The patients with low Socio Economic status were commonly affected in this study. This study also showed that OGD scopy revealed the diagnosis in patients with peptic ulcer disease, GORD and Gastritis, CT was confirmatory in case of Chronic pancreatitis and colonoscopy proved its importance in identification of intra luminal pathologies such as

Neoplastic Growth. Of the total 50 patients 43 patients were treated conservatively of which 17 got relieved of their symptoms and 7 patients were subjected to surgical treatment of which 4 patients got relieved of their symptoms.

## **CONCLUSION**

The common etiology for chronic recurrent pain abdomen in adults at Coimbatore Medical College Hospital was peptic ulcer, chronic pancreatitis, Gastritis, GORD, TB abdomen followed by malignancy. For patients with upper abdominal pathology, endoscopy proves to be a confirmatory diagnosis and for patients with lower abdominal pathology CT abdomen and diagnostic Laparoscopy gives better information in arriving at a diagnosis. For 5 out of total 50 patients, definitive diagnosis could not be established inspite of all investigations. These patients were classified as chronic intractable abdominal pain, which is found to be more common in females. They were given placebo and referred to psychiatrists for further management.

## **KEY WORDS**

Chronic Recurrent Abdominal Pain, Peptic Ulcer, Chronic Pancreatitis, GORD, Gastritis, TB Abdomen, Chronic Appendicitis, USG Abdomen, CT Abdomen, Diagnostic Laparoscopy.

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## **INTRODUCTION**

Chronic abdominal pain is defined as constant or intermittent pain persisting for more than 3 months.

Intermittent pain may be referred to as recurrent abdominal pain with intervals of asymptomatic periods.

It presents a diagnostic and treatment challenge to the general surgeons and it remains a common surgical problem.

Specific diagnosis could not be arrived despite all necessary investigations.

The cost of health care is high, due to need for sophisticated investigations and the treatment cost.

This study is done mainly in arriving the diagnosis of disease, by using various diagnostic modalities available at Coimbatore medical college hospital with the help of Basic investigations, X-rays, contrast studies, USG abdomen, CT-plain and contrast , colonoscopy, OGD scopy, Diagnostic laparoscopy and to study which will be able to arrive at the diagnosis of the disease.

## **AIMS AND OBJECTIVES**

- To make a definitive diagnosis by using various diagnostic modalities available at Coimbatore Medical College Hospital.
- To identify the common etiologies for chronic recurrent pain.
- To give effective relief to the patient.

## **REVIEW OF LITERATURE**

About 70 years ago Hutchinson stated that in the process of treating chronic pain abdomen the important thing is to diagnose the patient at an earlier time. If she has set her feet on the slippery slope which leads to successive operations she is undone.

### **VARIOUS CAUSES OF CHRONIC RECURRENT PAIN ABDOMEN**

#### **PAIN ARISING FROM VISCERA**

- ❖ Peptic ulcer
- ❖ Gastro esophageal reflux disease
- ❖ Gastritis due to *Helicobacter pylori*
- ❖ Ulcer due to intake of Non-steroidal anti-inflammatory drugs
- ❖ Inflammatory bowel disease
- ❖ Neoplasia and psychiatric cause
- ❖ Chronic pancreatitis
- ❖ Chronic appendicitis
- ❖ TB abdomen

## **PAIN ARISING FROM ABDOMINAL WALL**

- Iatrogenic peripheral nerve injuries
- Hernias
- Pain abdomen of spinal origin
- Spontaneous rectus sheath hematoma

## **PSYCHIATRIC CAUSES**

## **UROLOGICAL CAUSES**

## **GYNAECOLOGICAL CAUSES**

Carnett in 1926 suggested a test to differentiate between visceral pain and parietal pain which has been detailed below.

## CLINICAL EXAMINATION

With patient on supine position abdomen palpated in the usual manner



Over the tender spot with the palpating fingers of the surgeon



The patient is asked to raise his head from the bed,there by contracting  
the muscles of abdomen



Once the muscles get tensed, the surgeon reapplies his fingers and asked  
the patient if the pain has changed



The patient will have decreased pain or tenderness, because the tensed  
muscle will shield the intra-abdominal viscera, there by the pain will be  
decreased.



The patient will have increased pain or tenderness will be aggravated if  
the cause resides in the abdominal wall .



Commonest chronic abdominal pain encountered clinically are recurrent peptic ulcer diseases, chronic pancreatitis, GERD, gastritis, TB abdomen and malignancy.

## **CHRONIC INTRACTABLE ABDOMINAL PAIN**

Chronic intractable abdominal pain is defined as abdominal pain that persists for 4 to 6 months when there is no definite pathological diagnosis made after proper medical history and investigation.

## **PEPTIC ULCER**

### **ANATOMY**

1. The stomach is an elegant organ described by Wallace P.Ritchie Jr.
2. Stomach develops during 5<sup>th</sup> week of gestation as a dilatation of embryonic foregut.
3. The stomach occupies the left upper quadrant of the abdomen. The parts of stomach are lesser curvature, greater curvature, fundus, incisura angularis, body, pyloric portion.

## **BLOOD SUPPLY OF STOMACH**

### **ARTERIES**

1. Left gastric artery-a branch of celiac trunk divides into esophageal (ascending) branch and a descending branch. Left gastric artery supplies lesser curvature of stomach.

2. The Right gastric artery-A branch of common hepatic artery, supplies stomach with numerous branches along the lesser curvature and anastomosis with left gastric artery.
3. The Right gastro epiploic artery, a branch of gastro duodenal artery supplies the greater curvature of stomach and anastomosis with left gastro epiploic artery. It is the source of bleeding in duodenal ulcer.
4. The left gastro epiploic artery-A branch of splenic artery supplies greater curvature, numerous short branches (5to7) also supplies the fundus.

### **LYMPHATIC DRAINAGE OF STOMACH**

Lymph nodes draining the stomach are

1. Hepatic group.
2. Sub pyloric nodes.
3. Gastric group
  - a. superior group
  - b. Inferior group.
4. Pancreaticocolineal group.

### **COURSE OF VAGUS AND INNERVATION OF STOMACH**

At the level of esophageal hiatus, the vagus divides into the left vagus anterior and the right vagus posterior to the oesophagus. At the level of cardia of stomach the vagi divides into branches.

## **THE ANTERIOR VAGUS NERVE**

In the abdomen, the anterior vagus gives a branch to pyloric antrum, hepatic flexure, fundal branches, in the lesser omentum as Nerve of Latarjet and supplies acid secreting parts of stomach.

## **CROW'S FOOT**

From 5-7cms proximal to pylorus, anterior vagus nerve divides into branches, this division has been called as CROW'S FOOT, the pyloric antrum being supplied by these the most.

## **THE POSTERIOR VAGUS NERVE**

It gives a branch to coeliac ganglion and supplies antrum.

## **PHYSIOLOGY**

The stomach functions as a storage organ due to receptive relaxation of proximal stomach where solid particles enters fundus along the greater curvature of the stomach and liquid food pass along the lesser curvature. The stomach functions in digestion of meal in addition to food storage.

## **GASTRIC PEPTIDES**

### **GASTRIN**

It is produced by G cells in the gastric antrum. Release of gastrin is facilitated by food in contact with stomach. Gastrin secretion is inhibited by Somatostatin and luminal acid. It plays a major role in gastric phase of acid secretion and gastric mucosal defense system, preventing gastric injury from luminal irritants.

### **SOMATOSTATIN**

It is produced by D cells, stimulus is antral acidification, inhibitory being acetyl choline from vagus. It inhibits parietal cell acid secretion.

Other gastric peptides are histamine, ghrelin, gastrin releasing peptide.

## **STIMULATED ACID SECRETION**

### **CEPHALIC PHASE**

Neuronal phase, where by several centers in the brain transmits signals to the stomach by means of vagus nerves. Vagus nerves release acetyl choline there by activating muscuranic receptors. Acetyl choline acts on parietal cells thereby increasing acid secretion. It accounts to 20to30% of total volume of gastric acid secretion.

## **GASTRIC PHASE**

It is stimulated by mechanical distension of stomach, there by activating stretch receptors to elicit vasovagal reflex. Food interacts with antral G cells there by stimulating gastrin release. It is responsible for 60 to 70% of acid output.

## **INTESTINAL PHASE**

It accounts for 10% of the acid secreted in response to meal and is mediated by entry of chyme into small bowel.

## **GASTRIC BARRIER FUNCTION**

The major determining factor in maintaining gastric mucosal defense is the amount of blood flow. When there is 50% reduction in gastric mucosal blood flow, the effects are minimal on the gastric mucosa, however marked mucosal injury occurs when blood flow is decreased to 75%. Restitution is a process by which damaged mucus cells are replaced by surface mucus cells migration along the basement membrane.

Protective factors for gastric mucosa are mucosal bicarbonate, blood flow, and endogenous prostaglandins mucus production. Damaging or (aggressive factors) factors include hydro chloric acid secretion, smoking, alcohol, NSAIDS, H.pylori infection, hypoxia, pepsins. Peptic

ulcers are caused by decreased defensive factors, increase aggressive factors or decrease in both.

## **EPIDEMIOLOGY**

Peptic ulcer disease is more common in females due to increased smoking habits and increased ingestion of NSAIDS and decrease among males the reason being unknown. The incidence of gastric ulcer remains increased during these years, but incidence of duodenal ulcer seems to be decreasing. Patients seek admission for complication of gastric ulcer such as bleeding, perforation, this may be due to increased intake of non-steroidal anti-inflammatory drugs.

## **PATHOGENESIS**

### **HELICOBACTER PYLORI INFECTION**

More than 90% of duodenal ulcers and 75% gastric ulcers are caused by H pylori infection. H pylori was first isolated and identified by Warren and Marshall. It resides beneath the mucus layer or within gastric epithelium. The shape is helical or spherical, gram negative rod with 4 to 6 flagella. The flagella produce many enzymes including urease that moves through gastric mucosal layer. The temperature optimum for isolation is 35 degrees Celsius. The gastric epithelium produces specific adherence

receptors, for recognition of H pylori, thus it can survive only in gastric epithelium.

*Mechanism by which H pylori initiates gastric injury are*

1. By toxic mediators.
2. Immune response inducted locally.
3. Increased acid secretion due to increased gastrin level.

### **TOXIC MEDIATORS**

Toxic mediators are ammonia (from urease activity), mucinase-degrades mucus, cytotoxins, epithelial cells damage induced by phospholipases, and mucosal injury induced by platelet activating factor. In addition gastro intestinal injury is also caused by mucosal immune response caused by H pylori.

Duodenal ulcer (90%) , Gastric ulcer (60-90%), Acute and Chronic Gastritis , Gastric Cancer. For all These Diseases H. pylori Plays a Major Etiological Factor. Duodenum is commonly affected in H.pylori Infection.

### **NON STEROIDAL ANTI- INFLAMMATORY DRUGS:**

Female in the age group more than 50years take NSAIDS eg. Use of Aspirin in preventing heart attack and stroke have potential

complications. These patients often give History of Associated Use Of Anticoagulants, Steroids and a poor GI Event .

NSAIDS Induces Both Acute and Chronic Gastro duodenal Injuries Where Acute Lesions Appear Within Two Weeks of NSAIDS Ingestions Resulting in Gastric Erosions and Hyperemic Mucosa , Whereas Chronic Injury Appears one Month After Ingestion ,manifesting as ulcerations or erosions in The Gastric Antrum and Duodenum. Stomach is Commonly Affected by NSAIDS.

### **PATHOPHYSIOLOGY OF DUODENAL ULCER:**

Duodenal Ulcer is caused by multiple etiologies. Altered secretory mechanisms play a major role in causation of duodenal ulcer, which is due to increased duodenal acid load, increased day time and nocturnal acid secretion and decreased secretion of bicarbonates. Duodenal ulcer is caused due to interaction of H pylori and NSAIDS and pepsin and acid secretion.

### **GASTRIC ULCER PATHO PHYSIOLOGY**

1. The common site is lesser curvature near incisura, called as type 1 gastric ulcers, and these are not associated with duodenal and pyloric changes.



2. And type 11 gastric ulcers constitute 15% located in the body of stomach associated with duodenal ulcers, caused due to increased acid secretion.
3. Pre pyloric ulcers are type III gastric ulcers constituting 20% of the lesions, caused due to increased acid secretion.
4. Type IV gastric ulcers occurs high near the esophago gastric secretion along the lesser curvature.

People between the ages of 55to65 years are commonly affected and people in low socio economic status are commonly affected. The exact cause of gastric ulcer is still unknown. Predisposing conditions are females, age more than 40, NSAIDS or aspirin ingestion, gastritis, delayed gastric emptying causing gastric stasis, infection with H pylori, chronic alcohol and smoking, long term infections and steroid therapy.

## **DUODENAL ULCER**

### **CLINICAL FEATURES**

#### **1. Pain Abdomen**

Patient having duodenal ulcer present with abdominal pain in mid epigastric region, localized, relieved by food, and is intermittent. When the pain becomes constant it indicates the penetration of ulcer deep into the pancreas.

## 2. Perforation

The incidence of duodenal ulcer perforation is 5%, where the ulcer of duodenum penetrates into the peritoneal cavity causing peritonitis, creating a surgical emergency where immediate surgical intervention is needed.

## 3. Bleeding

Bleeding from duodenal ulcer constitutes 25% of all GI bleeding, and it is the most common cause of death in patients with peptic ulcer disease. The source of bleeding is from gastro duodenal artery, where duodenal ulcer has eroded it.

## 4. Obstruction

Gastric outlet obstruction is manifested due to acute inflammation of duodenum, manifested by vomiting and a delayed emptying of stomach. The prolonged vomiting may lead to hypokalemic hypochloremic metabolic alkalosis due to loss of potassium, chloride, hydrogen from gastric juice loss.

## **GASTRIC ULCER**

Patients with gastric ulcer present with pain, bleeding, and obstruction. The common complication of gastric ulcer is perforation and the lesser curvature along the anterior aspect is commonly involved.

1. Type II and III gastric ulcer manifests as bleeding, where as massive bleeding may be a presentation of type IV gastric ulcer.
2. Type II OR III gastric ulcer can presents with gastric outlet obstruction.
3. Only 8to20% patients require surgical interventions from complications of gastric ulcer.

## **DIAGNOSIS**

All routine investigations should be done such as LFT, Creatinine, complete blood count, calcium levels. A serum gastrin level should be done. X ray chest in erect view should be done to rule out perforation.

1. Upper GI radiography and OGD scopy are the best investigations for diagnosing peptic ulcer disease.

### **2. HELICO BACTER PYLORI TESTING**

It may be invasive and non-invasive. Rapid urease test, culture and histology are the invasive tests where endoscopy is required. Serology and carbon labeled urea breath test are non-invasive tests.

### **3. SEROLOGY**

Serology has 90% specificity and sensitivity of diagnosing H pylori infection. Disadvantage of serology is that throughout the year the antibody titres remains high hence cannot be used to assess

eradication after treatment. Rapid office based immune assays and ELISA are available serological tests.

#### **4. UREA BREATH TEST**

It is a non-invasive test having 95% sensitivity to detect H pylori, and best test to document eradication. It samples the entire stomach and is cheap. Principle of this test is ability of H pylori to hydrolyse urea. The patient is asked to take carbon isotope labeled urea using  $^{13}\text{C}$  or  $^{14}\text{C}$ . After taking carbon isotope, urea will be broken to ammonia and labeled bicarbonate is excreted in the patients breath as carbon di oxide, quantified by mass spectrometry.

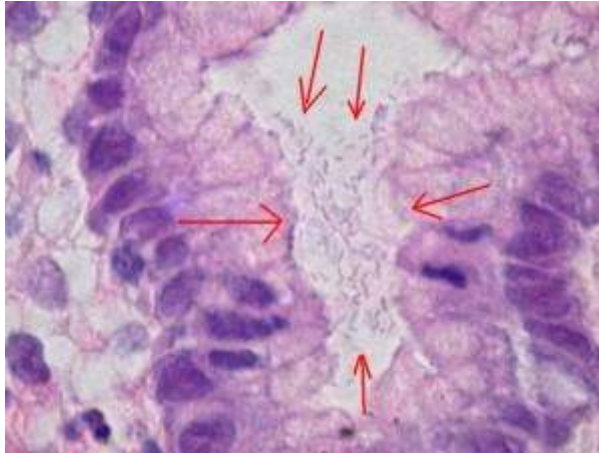
#### **5. RAPID UREASE ASSAY**

This method has a specificity of 98% and sensitivity of 90% and within few hours results can be arrived. The principle of this test is the ability of H pylori to hydrolyse urea. Endoscopy is required for this test.

#### **6. HISTOLOGY**

By mean of endoscopy gastric mucosal biopsy samples taken and examined for H.pylori under the microscope histologically. Stains used are Giemsa, silver and Hematoxylin and eosin stains. Sensitivity and specificity is about 95% and 99% respectively .

## **H Pylori IN GASTRIC MUCOSA**



### **7. CULTURE:**

By mean of endoscopy culture can be done after obtaining a bit of Gastric mucosa. However it is expensive and requires expertise. The sensitivity and specificity are 80% and 100% respectively.

### **8. UPPER GASTROINTESTINAL RADIOGRAPHY**

The principle of diagnosing peptic ulcer by upper GI Radiography, is demonstration of Barium in the Ulcer crater appearing as round or oval surrounded by edema. The location and depth of penetration of ulcer, deformation from fibrosis can be studied. About 80 to 90% of the ulcer craters can be diagnosed by double contrast studies. In malignancy ulcer crater is manifested by irregular filling defects around the ulcer.



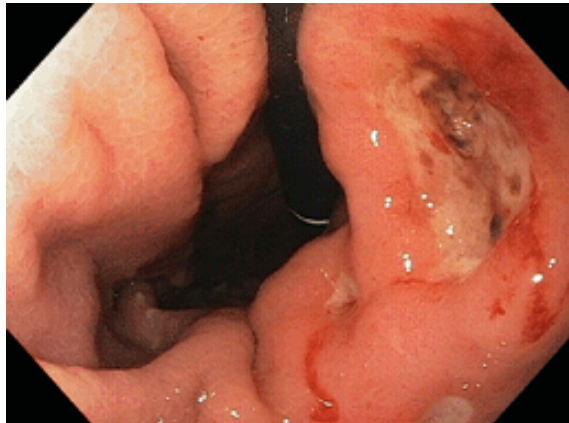
**This is the picture of benign appearing gastric ulcer protruding medially from lesser curvature of stomach.**

### **9.FIBER OPTIC ENDOSCOPY**

The best investigation for diagnosing gastric ulcer is endoscopy. The sensitivity approaches 90% if multiply biopsies are performed for cytology. Benign ulcer have regular, edges rounded, flat and ulcer base is smooth, whereas malignancy appears as mass protruding into the lumen, on the folds may be nodular, Fused clubbed surrounding the ulcer crater.

Endoscopy proves to be diagnostic and therapeutic. Sample tissue for H.pylori testing may be done by mean of endoscopy. For GI bleeding and obstruction therapeutic procedures can be done.

## **ENDOSCOPIC VIEW OF GASTRIC ULCER**



### **TREATMENT**

#### **MEDICAL MANAGEMENT**

1. It involves lifestyle modifications, stoppage of cigarette and Alcohol, discontinuing of aspirin or NSAIDS, Neutralization of Acid secretion, H.pylori eradication.

#### **ANTACIDS**

Antacids are the oldest form of treatment for peptic ulcer. Antacids interact with Hydrochloric Acid thereby reducing gastric acidity by forming salt and water. The dose is 200 to 1000 mmol per day. Antacids taken 1 hour after meals and at one month it produces 80% healing of ulcers. Magnesium Antacids are good except for side effects of diarrhea. Aluminum acids can result in constipation and causing Hypophosphatemia.

## **H<sub>2</sub> RECEPTOR ANTAGONISTS**

These are similar to Histamine. The potent drug is famotidine. H<sub>2</sub> Receptor Antagonists administered by continuous infusion produces more uniform acid inhibition. Studies done indicate that H<sub>2</sub> Receptor Antagonists after 4 weeks of therapy has 70 to 80% healing rates whereas after 8 weeks of therapy, 80 to 90% healing rates observed.

## **PROTON PUMP INHIBITORS**

Proton pump inhibitors are the potent anti-secretory agents classified under benzimidazoles. They are more potent than H<sub>2</sub> receptor antagonists by binding to catalytic alpha sub unit of proton pump. Studies have showed that after 4 weeks PPIS produces 85% healing rates and after 8 weeks it produces 96% healing rates. Concurrent use of proton pump inhibitors, antacids and H<sub>2</sub> Receptor Antagonists is contraindicated.

## **TREATMENT OF H PYLORI INFECTION**

Consideration should be given to the management of below three, in the treatment of H.pylori infection

- a. Symptoms
- b. Ulcer
- c. Recurrence



The symptoms and ulcer healing can be achieved by use of Anti Secretory agents. With stoppage of NSAIDS, Recurrence can be prevented. Patients have 72% Healing Rates after H.pylori therapy for duodenal ulcers.

Various triple Regimens used are

1. Proton pump inhibitor in combination with amoxicillin or clarithromycin, and metronidazole.

Duration of therapy is 2 weeks, twice a day. These are commercially available as Helidac. After 2 weeks, 90% eradications rate is achieved. For failure of the above treatment quadruple therapy with bismuth is recommended.

## **CHRONIC PANCREATITIS**

### **DEFINITION**

Chronic pancreatitis is defined as irreversible changes, characterized by pancreatic fibrosis and loss of functional exocrine or endocrine tissue. Females are commonly affected. Age more than 40years are commonly affected.

## **ANATOMY OF PANCREAS**

It is a retro peritoneal organ weighing 80grams. Pain (all) and kreas (flesh).It is divided into head, body and tail constituting 30% and 70% respectively. Pancreas has exocrine and endocrine part. Exocrine part constitutes 80 to 90% of pancreas. The pancreatic duct after branching into inter lobular and intra lobular duct ends in acini.Numerous endocrine cells called islets of Langerhans are distributed throughout the pancreas.

Pancreas develops from ventral and dorsal pancreatic duct from day 26 of gestation. Ampulla of Vater also called as Main duodenal papilla, its anatomy is variable.

SPHINCTER OF ODDI is a complex of

1. Inferior choledochal sphincter.
2. Superior choledochal sphincter.
3. Ampullary sphincter
4. Pancreatic sphincter.

## **PHYSIOLOGY**

After meal ,alkaline rich bicarbonate rich fluid which acts as digestive enzymes secreted from pancreas. Secretin, CCK secreted from duodenum evokes the secretion of bicarbonate.

Pancreas also synthesizes proteins at a good rate (per gram of tissue.)90% of protein functions as digestive enzymes. During the process of protein synthesis proteolytic enzymes are secreted in an inactive form which is important in preventing pancreatitis.

## **CAUSES**

1. Alcohol
2. Pancreatic duct obstruction after trauma or stricture
3. after acute pancreatitis
4. Pancreatic cancer causing duct obstruction.
5. Rare causes like annular pancreas and pancreas divisum.
6. Cystic fibrosis.
7. Hereditary pancreatitis.
8. Idiopathic.

## **PATHOGENESIS**

1. There is still no proper explanation of alcohol causing chronic inflammation is still unknown. May be genetic and metabolic factors may be the cause.
2. Hereditary pancreatitis is an autosomal dominant disorder caused due to cationic trypsinogen mutation located on chromosome 7.

3. In auto immune pancreatitis auto antibodies and immunoglobulin IgG4 concentration increased.
4. Young adults living in warm climates of Kerala have a higher incidence of pancreatitis, have increased incidence of diabetes. These come under idiopathic.

### **CLINICAL FEATURES**

1. Main symptom is pain .Patient will have epigastric pain if the disease is localized to head of pancreas; on the other hand left subcostal pain and back pain are common if the disease is confined to pancreas. Pain may be dull aching and gnawing, and pain may be radiating to the left shoulder.
2. Frequent analgesic use, weight loss is common.
3. Due to loss of exocrine function patient will have steatorrhea, due to loss of endocrine function patient will have diabetes.

### **INVESTIGATIONS**

1. Serum Amylase

It will be increased only in the early stage of the disease.

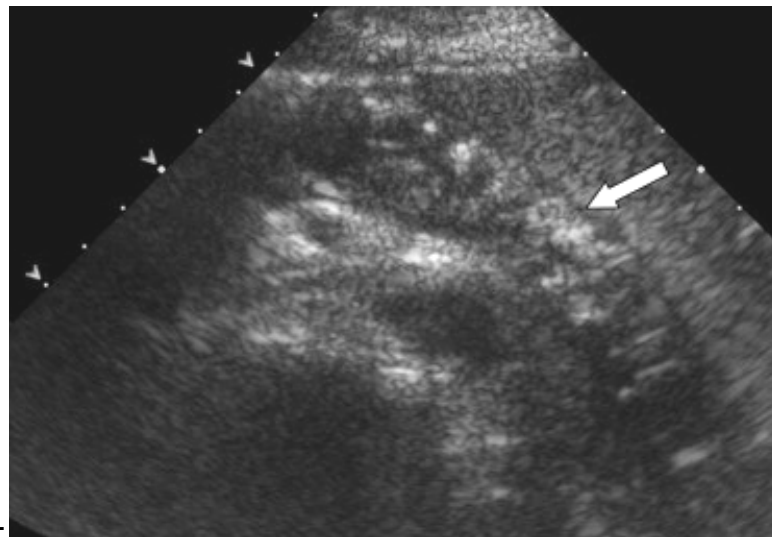
2. X ray abdomen

Pancreatic calcification may be seen on x ray abdomen.

3. Ultrasound Abdomen

Ultra sound abdomen can diagnose chronic pancreatitis with a sensitivity and specificity of 60-70% and 80-90% respectively. Pancreatic duct dilatation, enlargement or atrophy of pancreas, irregular pancreatic contours with increased echogenicity can be appreciated in ultrasound abdomen. It is useful for follow up of complications of pancreatitis such as pseudocysts and fluid collection.

### **USG ABDOMEN –CHRONIC PANCREATITIS**



**Figure showing Hypo echoic gland with multiple punctate calcifications (arrow).**

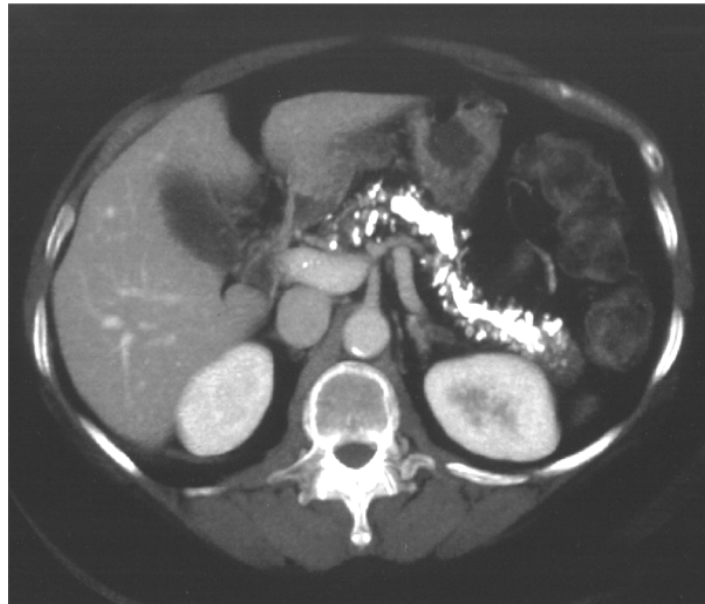
### **4. ENDOSCOPIC ULTRASOUND**

It has got 93% sensitivity in diagnosing chronic pancreatitis. By doing endoscopic ultrasound and MRCP, we can diagnose chronic pancreatitis with a sensitivity and specificity of 98% and 100% respectively. Advantages being it is less invasive than ERCP and can be

used for coeliac plexus block and drainage of pseudocysts. Patient should be sedated, and its limited availability is its disadvantages.

## **5. COMPUTED TOMOGRAPHY**

Moderate to severe pancreatitis can be diagnosed with a sensitivity and specificity of 74-90% and 85% respectively. On CT we can find dilatation of ducts, calcification and parenchymal atrophy.



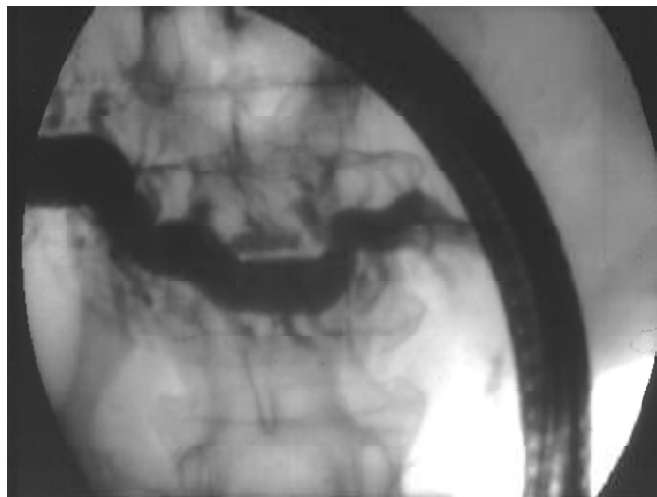
**This is the CT picture showing multiple calcified intra ductal stones in patient with hereditary pancreatitis.**

## **6. MAGNETIC RESONANCE CHOLANGIO PANCREATICOGRAPHY (MRCP)**

The early and mild form of chronic pancreatitis can be diagnosed. It has got sensitivity and specificity of 65% and 90% respectively. It is noninvasive. Anomalies of pancreatic duct can be detected. The disadvantage is that no therapeutic procedures can be done in MRCP.

## **7. ENDOSCOPIC RETROGRADE CHOLANGIO PANCREATICO GRAPHY (ERCP)**

It is the gold standard imaging procedure for planning, treatment and diagnosing chronic pancreatitis. Main advantage is therapeutic procedure can be performed but it requires common bile duct or pancreatic duct cannulation. The complications such as bile leakage, hemorrhage are its disadvantages.



**This is ERCP picture showing pancreatic and its branches irregularly dilated in chronic pancreatitis.**

## **TREATMENT**

The cause of pain in chronic pancreatitis is due to increased perineural inflammation, increased pressure in large and small ducts

## **MEDICAL TREATMENT**

The patients with chronic pain abdomen should be initially treated with acetaminophen and non-steroidal anti-inflammatory drugs, if refractory, tramadol or propoxyphene may be tried. Narcotic analgesics should not be used as it may precipitate gastroparesis. The patient should be advised to avoid alcohol and smoking, and he should be referred to a pain management specialist.

## **NEURO ABLATIVE PROCEDURES**

CT or Endoscopic ultrasound guided coeliac block may be tried for intractable pain.

## **PANCREATIC ENZYMES**

Octreotide relieves pain in patients with chronic pancreatitis, refractory to other modalities of treatment. Octreotide is a Somatostatin analogue that lowers CCK levels and pancreatic secretion.



## **ANTI OXIDANTS**

Anti-oxidants such as vitamins C,E,selenium,Beta carotene, L – methionine can significantly decrease pain if taken for a long time.

## **USE OF ENDOSCOPY IN TREATING CHRONIC PANCREATITIS**

1. The use of endoscopy in treating chronic pancreatitis is, with elevated sphincter of oddi pressures- pancreatic sphinterotomy can be done endoscopically.
2. Pancreatic duct stones can be broken endoscopically.
3. Pancreatic duct stricture can be treated endoscopically by dilatation of stricture.

## **MANAGEMENT OF MALABSORPTION**

Patient develops steatorrhea when his lipase level decreases to 10% of normal. Hence the main process of treatment is through is through exogenous replacement of lipase by means of pancreatic enzymes.

## **SURGICAL INTERVENTION OF CHRONIC PANCREATITIS**

The indications for surgery in chronic pancreatitis are

1. Pain
2. Presence of cancer

## **PAIN**

If patients lifestyle is limited by pain or the pain continues to be present even after abstinence from alcohol completely and intake of analgesics. Proper investigations should be done to define pancreatic and ductal anatomy, and also the merits and demerits of the surgery should be properly explained to the patient, because even after surgery the patient may have persistent pain and loss of exocrine and endocrine function can occur.

## **FOR SMALL DUCTS –DRAINAGE PROCEDURES**

Trans duodenal sphincteroplasty of the common bile duct with pancreatic septotomy i.e. division of septum between pancreatic duct and bile duct can be done for small pancreatic ducts (4-6mms). Patients having multiple duct strictures cannot be managed by these procedures.

## **FOR DILATED DUCTS –DRAINAGE PROCEDURES**

Duval was the first man to describe duct drainage procedure which involves pancreatic tail resection, splenectomy and then creating end to end anastomosis between pancreatic transected end and Roux en Y limb of jejunum. But this procedure got failed.

The pancreatic duct should be dilated more than 1 cms for drainage procedure. The ideal procedure would be to create an anastamotic connection between the intestinal lumen and dilated duct. The various procedures are the PUESTOW and ROCHELLE modification and HO and FREY procedure.

### **PUESTOW PROCEDURE**

By Puestow procedure the entire pancreatic duct is opened longitudinally, and the opened pancreas is invaginated to a Roux en Y loop of jejunum. Complete decompression of duct can be achieved but it requires splenectomy.

### **PARLINGTON AND ROCHELLE MODIFICATION**

Parlington and Rochelle modified the Puestow procedure by creating a side to side anastomosis between the opened pancreatic duct and jejunal loop, thus splenectomy is avoided in this procedure.

In patients with large ducts, longitudinal pancreatico jejunostomy was done results in pain immediate pain relief and long term pain relief in 80% and 60% of the patients respectively.

## **HO and FREY PROCEDURE**

Ho and Frey said a new procedure whereby head of pancreas is removed, Marsupialization of duct is achieved. In this procedure complete duct decompression can be achieved and longer pancreatico jejunostomy can be performed. This procedure can be done when the dilatation of duct is moderate.

## **RESECTIONAL PROCEDURES**

Resective procedures are Distal pancreatectomy ( body and tail of pancreas resected), Whipples procedure (head and uncinata process resected), Subtotal pancreatectomy where by a small rim of pancreas retained along the inner curvature of duodenum, and total pancreatectomy. After total pancreatectomy brittle diabetes can occur. In chronic pancreatitis inflammatory process in head of pancreas decides the symptoms and further progression of the disease in rest of the gland. Hence after resection of pancreatic head, pain relief was achieved in more than 70to80%of patients.

Pancreatico duodenectomy (Whipples procedure) and pylorus preserving Whipples procedure (pylorus is preserved) can be combined with resection of head of pancreas. But pylorus preserving Whipple's procedure has better outcome in view of good quality of life and gastro

intestinal function. In Beger's procedure duodenum and distal bile duct are preserved, and coring of head of pancreas is done.

Distal pancreatectomy is done for patients with chronic pancreatitis, where the disease is confined to the tail of the pancreas. This procedure is not done if the disease is extending to the entire gland, because recurrence in head is common, if re-surgery is done the patient will be let out without any functioning endocrine tissue. Distal pancreatectomy is usually combined with splenectomy, but spleen can be preserved if vascular supply is adequate.

### **TOTAL PANCREATECTOMY**

1. Total or near total pancreatectomy is done for patients for whom drainage procedures have failed
2. Small ducts and patients who have undergone distal pancreatectomy with persisting pain.

### **TUBERCULOSIS ABDOMEN**

Mycobacterium tuberculosis infection is common in tropics. Intestinal tuberculosis should be suspected from any patient arriving from endemic area with symptoms of altered bowel habits and ill health.

## **PATHOGENESIS**

Two pathological entities are described namely

1. Ulcerative
2. Hyperplastic

### **ULCERATIVE TYPE**

The ulcerative type is the severest of the two in which the virulence of the organism is more than the host resistance. This type is caused by swallowing of infected sputum. The organism reaches the terminal ileum producing transverse ulcers and undermined edges.

### **HYPERPLASTIC TYPE**

When the host resistance is stronger than virulence of the organism, hyperplastic type occurs. It occurs due to drinking of infected milk. In hyperplastic type lumen is narrowed with signs of obstruction, due to inflammatory reaction causing thickening and hyperplasia of terminal ileum. Hyperplastic type of intestinal tuberculosis often confused with Crohn's disease. The caecum is pulled up to the sub hepatic position due to shortened bowel. Simultaneously tuberculosis affects lungs and all other organs.

## **CLINICAL FEATURES**

1. Patient presents with signs of tuberculosis such as weight loss, malaise, chronic cough, sweating and evening raise of temperature, altered bowel habits, and intermittent vague abdominal pain with abdominal distension.
2. Due to perforation of tuberculous ulcer in the small bowel, patient may present with features of peritonitis.
3. Patient may present with multiple fistula in ano.
4. In hyperplastic type a mass may be palpable in the right iliac fossa.
5. The patient is usually chronically ill and the abdomen on palpation had a doughy feel.
6. The patient may also present in the terminal stage with signs of intestinal obstruction with abdominal pain, faeculent vomiting and distension for which urgent laparotomy is required.

## **INVESTIGATIONS**

### **LABAROTORY TESTS**

1. The common abnormality is elevated ESR in more than 90% of patients.
2. Patient may have anemia with leucopenia with relative lymphocytosis.

3. Positive tuberculin test has no value in endemic countries, because those who receive bacillus calmette-gurein vaccine have a high rate of positivity even in healthy individuals. It may be used as a screening test in non-endemic countries.
4. Ascitic Fluid Analysis
  - a. The ascetic fluid analysis has a high WBC count.
  - b. The sensitivity approaches 81% if the total white cell count is more than 500/mm<sup>3</sup>.
  - c. The total white cell count is within the normal range if the patient has associated with cirrhosis and AIDS.
  - d. Tuberculous ascitic fluid has high total protein > 2.5g/dl. serum ascetic fluid albumin gradient (SAAG) is less than 1.1.
  - e. The value of lactate dehydrogenase is elevated to more than 90units/l, low ph, and an ascitic fluid; blood glucose ratio less than 0.96.
5. Adenosine deaminase activity is a useful diagnostic test for tuberculosis ascites with a sensitivity of 95%.But if the patient has associated HIV infection, ADA activity is less useful.
6. The assay of interferon by lymphocyte is another useful test.
7. Laparoscopy and peritoneal biopsy



By means of Abram's needle or cope's needle, blind biopsy of the peritoneum can be done in the presence of ascites. These procedures have low complication rates but mortality has been reported. Bowel perforation is the main risk of blind biopsy.

Under LA, open biopsy of parietal peritoneum is safer.

### **LAPAROSCOPIC PICTURE-TB ABDOMEN**



**Straw coloured ascites with scattered multiple whitish nodules all over peritoneum with omental thickening.**

8. By means of ultrasonography or CT guidance, targeted biopsy specimens can be obtained from diseased areas such as lymph nodes which are enlarged.

Miliary tubercles are the characteristic finding, where the peritoneal lining loses its smooth glistening surface, appearing rough and irregular.

9. Ascitic fluid for biochemical analysis and culture.

10. Histological examination –caseating granuloma can be seen.

11. Imaging studies

**a. PLAIN RADIO GRAPH**

Calcification of the mesenteric lymph nodes, in the liver, spleen and pancreas calcified granulomas can be seen. Air fluid level can be seen in patients with intestinal obstruction.

**b.USG**

In USG peritoneum appears thickened, irregular ,poor echoic, nodular or sheet like appearance. It is sensitive for detection of small quantities of fluid.

***CLUB SAND WICH APPEARANCE***

The presence of alternating echogenic and echo free layers produced by the bowel wall, serosa and the adjacent bowel loop causes the characteristic CLUB SAND WICH appearance.

**C.CT Abdomen**

In CT the nodularity and thickening of the peritoneum and mesentery can be easily identified.

**D.BARIUM STUDIES**

It provides information on the extent and severity of intestinal disease.

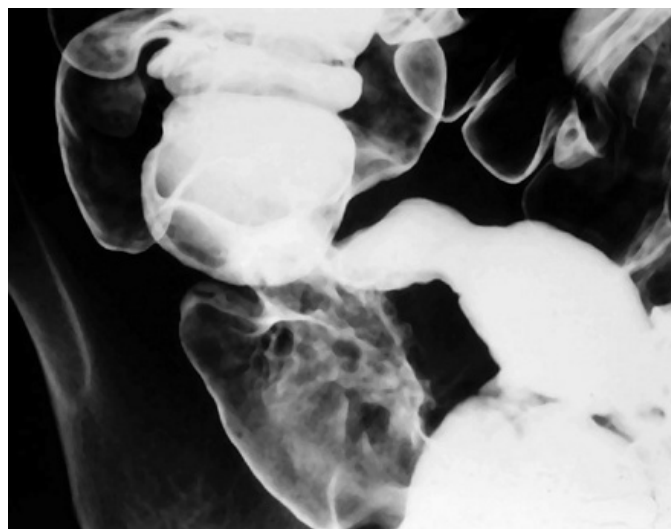
Irregularity and thickening of the mucosal folds are the earliest abnormalities. In barium swallow compression of oesophagus with mediastinal nodes can be seen.

In advanced disease mucosal ulcers, bowel lumen deformity, and stricture can be seen in advanced disease.

FLEISCHNER SIGN-Narrowing of terminal ileum with thickening of ileo caecal valve.

STERLIN SIGN-Fiber optic terminal ileum opening into a contracted caecum is suggestive of intestinal tuberculosis.

### **DOUBLE CONTRAST BARIUM ENEMA –ILEO CAECAL TB**



**Marked retraction of ileo caecal area with incompetent ileo caecal valve in ileo cecal TB**

### ***ENTEROLYSIS (small bowel enema)***

Best method of assessing the small bowel. It has got low sensitivity rate. Crohn's disease and lymphoma are confused with TB on barium studies.

### **e. ENDOSCOPIC BIOPSY**

By means of colonoscopy ileo caecal region can be assessed. Proximal small bowel loops assessed by enteroscopes,

Findings are mucosal ulcerations, nodularity, deformity, and narrowing and bowel stricture. Ulcers in TB are transversely arranged and have sharply defined margins with the surrounding mucosa. By means of endoscopy carcinoma and lymphoma can be excluded.

### **f.SEROLOGICAL STUDIES**

ELISA has got sensitivity and specificity with accuracy of 80% .It can detect mycobacterium infection, active disease and patients with previous BCG inoculation.

### **g. POLYMERASE CHAIN REACTION**

Clinical specimens used are sputum, CSF, pleural and peritoneal fluids. It has got sensitivity, specificity and positive predictive value of 85%, 99%and95% respectively.

## **TREATMENT**

The treatment for intestinal tuberculosis is similar to the management of Crohn's disease. After completion of medical treatment, intestine should be looked through laparoscopy for strictures. If the patient has features of sub-acute intermittent intestinal obstruction resection and anastomosis can be done. Limited ileo colic resection can be done with anastomosis between terminal ileum and ascending colon. Alternative procedures are Right hemicolectomy and stricturoplasty.

Treating patients in the emergency department present a challenge to the surgeon. Since most of the patients are from low socio economic status they presents at the extremity with acute small bowel obstruction. The patient may be sick from malnutrition, anaemia,dehydration and other systemic evidence of active pulmonary tuberculosis.

On laparotomy if the patient has terminal ileal stricture, side to side ileo transverse anastomosis should be done. Before laparotomy the patient should be resuscitated properly.

## **FOLLOW UP**

These patients should be followed periodically both by the surgeons and physicians. After 6 months after completing anti

tuberculous drugs the patient should be reviewed for the disease and also the bypass procedure done should be checked.

On the basis if the patient has negative sputum smears, weight gain and normal inflammatory markers Elective Right hemicolectomy can be performed. After right hemicolectomy it is supplemented by stricturoplasty.

If perforation is the complication of TB abdomen, affected segment should be resected. If there is no any gross peritoneal contamination resection and anastomosis can be done at the first stage, on the other hand if there is any gross peritoneal contamination resection and exteriorization can be done and once after the patient got stabilized resection and anastomosis done as second procedure.

## **CHRONIC APPENDICITIS**

### **ANATOMY**

Appendix is derived from midgut. At 8 weeks of gestation appendix is formed as out-pouching of cecum. The length of appendix is 2 to 20 cms on an average 9 cms in adults. Appendix is supplied by appendicular artery a branch of ileo colic artery. The lymphatics of appendix drain into anterior ileo colic lymph nodes.

The base of appendix is located where all the three taenia converge at inferior aspect of caecum. The tip of appendix has many locations, common being Retro caecal, pelvic 30% and Retro peritoneal 7%.

## **PHYSIOLOGY**

The appendix has no function in the adults.

## **HISTORY**

1. Reginald Fitz of Boston in 1886 told that the cause of right lower quadrant pain is appendix. The word appendicitis was coined by him and he advised early intervention for this disease.
2. The migration of pain in appendicitis was first described by Chester Mcburney.
3. Kurt semm in 1982, a gynecologist was the first to do laparoscopic appendectomy and after her, it gained popularity all over the world.

## **PATHOGENESIS**

1. The pathophysiology behind chronic appendicitis is recurrent obstruction of the appendicular lumen by faecoliths, foreign body, tumors, adhesions, and kinking of the appendix.

2. Pin worms an internal parasite is also responsible for luminal obstruction.
3. Chronic appendicitis is seen in cystic fibrosis where lumen of the appendix is occluded by mucoid material.

### **CLINICAL FEATURES**

1. Patient may present with recurrent episodes of acute appendicitis and at each time, spontaneous resolution occurs with use of antibiotics, analgesics.
2. Clinical signs of chronic appendicitis similar to acute appendicitis but symptoms have prolonged course.

### **CRITERIA FOR CHRONIC APPENDICITIS**

1. Presence of symptoms for more than 2 weeks.
2. Relief of symptoms after appendicectomy.
3. On pathological examination confirmation of chronic appendiceal inflammation.

### **DIFFERENTIAL DIAGNOSIS**

1. Crohn's disease.
2. Irritable bowel syndrome.
3. Amoebic colitis.



## **Stump Appendicitis**

After appendicectomy if the appendicular stump is not properly buried this appendiceal stump can act as small appendix leading to frequent obstruction and inflammation causing recurrent pain.

CT – Stump appendix can be seen as-Focal thickening of caecal apex with pericaecal fat stranding.

Recurrent appendicitis and chronic appendicitis are difficult to distinguish from acute appendicitis on CT.

## **Diagnosis**

1. Done mainly by Clinical assessment.

WBC count – leucocytosis .

Urine Analysis – Renal causes to be excluded.

Pregnancy Test – To rule out ectopic pregnancy.

2. Ultra Sound

Useful for excluding other diseases that mimic chronic appendicitis

3. CT Findings for chronic Appendicitis

a. Appendix is enlarged more than 6 mms.

b. The wall is thickened Asymmetrically (Target Sign).

- c. Periappendiceal inflammatory mass can be seen in the advanced stage and disease.
- d. Cecum and ileum may be seen thickened (Arrow Head Sign) in appendicoliths.

### **Laparoscopy**

Therapeutic and Diagnostic Laparoscopy can be done.

### **Complications**

Appendiceal perforation can lead to peritonitis and appendicular mass.

### **Treatment**

Treated by Open Surgery or Laparoscopy

### **Open Appendectomy**

Various incisions used for appendectomy are Mcburney (oblique), modified Mcburney (curvilinear) over the Langer line also called Lanz incisions, Rockey – Davis (Transverse Incision) muscle splitting incision and Rutherford Morrison s incision.

### **Laparoscopic Appendectomy**

Hassan Technique is used

## **Carcinoma Caecum**

The caecum, Appendix, Ascending colon, transverse colon, descending colon, sigmoid colon, rectum and Anal canal forms part of large bowel and it extend from ileo caecal valve to the Anus. The large bowel has fixed and mobile parts. The caecum, transverse, sigmoid colons are mobile whereas the ascending colon and descending colon are fixed to the posterior abdominal wall.

## **Caecum**

1. The caecum forms the saccular commencement of colon.
2. Caecum occupies the right iliac fossa and it lies over the iliacus muscle.
3. It may cross the pelvic brim and may occupy the position of true pelvis
4. caecum is an intraperitoneal structure, but it has no mesentery possessing considerable range of mobility.

## **Relations of Caecum**

Anteriorly it is contact with anterior abdominal wall and superiorly it continuous as ascending colon. The ileum enters the caecum at its medial border and it enters at ileo-caecal ostium.

## ***ILEO CAECAL VALVE***

At the point ileum enters caecum, there are 2 flaps containing circular muscle fibers derived both from caecal and ileal musculature. It functions as functional sphincters but its function is still doubtful.

At the posterior-medial border of caecum the appendix taken origin and it can be traced by following the anterior taenia to its junction with the other two taenia. The length of appendix is 8 to 10 cm in length, diameter 5 to 10 mms.

### **Surgical Resection for Cancer**

The whole of the gut supplied by right colic and ileo colic artery and their branches, its related peritoneum should be removed, so that all lymph territory that converges on these vessels is removed.

Superior mesenteric plexus supplies caecum by sympathetic and parasympathetic nerves.

### **Blood Vessels to the area of Resection**

Ileocolic, Right colic, right branch of middle colic, all the three arteries ligated and divided at their origin.

## **Structures removed in Right Hemicolectomy**

Caecum, ascending colon, hepatic flexure, proximal one third of transverse colon, terminal 15 cms of ileum.

## **Physiology**

It takes place in the process of fluid and electrolyte reabsorption. The "Sac like" morphology of caecum and its distensible nature, it can adapt to storage of large volumes of semi liquid chyme entering through ileo caecal valve from small bowel.

Normal colon function

a) Water absorption

Colon can absorb 5 to 6 Liters of fluid per day, majority of colonic absorption take place in right colon.

b) Electrolyte Transport

By active processes, in exchange of potassium and bicarbonate sodium and chloride absorption occurs.

## **Nutrition**

Absorption of short – chain fatty acids produced by colonic bacteria can produce 540 kcal/day and it provides much of the energy for electrolyte transport in colon.

## **Colonic gas**

By fermentation of colonic bacteria about 2000ml of colonic gas produced is composed of swallowed nitrogen and oxygen, and carbon dioxide and methane produced on fermentation.

## **Clinical Features**

1. Patient may present with severe anaemia.
2. Mass in the right iliac fossa may be the presentation.
3. It may be the apex of intussusception, with symptoms of sub-acute intestinal obstruction.
4. Presentation may be of metastatic disease to liver, lungs, brains, skin, and bone.

## **INVESTIGATIONS**

### **Flexible Sigmoidoscopy**

It can be done as outpatient procedure. It is 60 cms in length, flexible and it can be used without sedation, and disposable enema can be used.

## **Colonoscopy**

- This is the choice of investigation for colorectal cancer and this is the confirmatory test for colonic cancer.
- It not only detect primary lesion but also detect secondary deposits.
- It gives a definitive histological diagnosis before operating the patient.
- Bowel should be prepared properly before the procedure.
- Disadvantage is small risk of perforation.
- Inability to get caecum in 10% of cases, by experienced endoscopist.
- This is now the diagnostic confirmatory test for colonic malignancy.

## **Colonoscopy Technique**

- Preparation of bowel by giving clear fluids 48 hours before procedure.
- Enema before beginning a procedure.
- Poly ethylene glycol in hypertonic lavage preparation used to purge the colon for 4 hours.
- Position: Lateral Decubitus position.

- Proper digital rectum examination should be done for dilating the rectum, and then Colonoscope should be introduced.
- After the positioning the colonoscope in the rectal vault the colonoscope should be introduced, ahead only if the lumen of bowel is clearly visible.
- Perforation may be caused if blind insertion of colonoscope done.
- The colonoscope would reach the caecum by 100 cm or less, splenic flexure can be reached 50 to 55 cm.

### **Mercedes Sign**

On colonoscopy caecum is demonstrated as an arch where the three taenia converge. This is called Mercedes sign. Therapeutic applications of colonoscopy are polypectomy and biopsy.

### **CAECUM IN COLONOSCOPY**





## **Radiology**

It colonoscopy is contra indicated double contrast – barium enema can be used.

Carcinoma is seen as constant irregular filling defect.

False positive 1 - 2%,

False Negative 7 – 9%



**This is the barium enema picture showing polypoid carcinoma arising from caecum.**

## **USG Abdomen**

To detect liver metastasis

## **CT Abdomen**

To asses local invasion and pelvic invasion

Spiral CT is used in the elderly when colonoscopy and contrast enema are contra indicated.

## **Virtual Colonoscopy or CT Colonography**

It may replace colonoscopy as the gold standard investigation in future where it can detect polyps of size 6 mm.

Preparation of colon is essential

Preparation consists of 3 elements

## **DIET**

Clean fluid diet 24 – 48 hrs, before the examination.

## **Purgation**

Cleaning the bowel can be achieved by dry and wet preparations.

Wet preparation can be done by using PEG (Poly ethylene glycol), followed by 2 sachets of sodium picosulphate 24 hours prior to the procedure.

## **Colonic Distension**

For a good quality CTC examination, adequate colonic distention is essential. Distension can be achieved by the use of spasmolytics by method of insufflation.

## **Reading CTC examination**

After the above procedure, About 1000 to 1200 images will be yield in a complete two position examination.

This is now the diagnostic confirmatory test for colonic malignancy.

## **Preoperative Preparation**

1. 48 hours before surgery, the patient should be advised to take only fluids.
2. On the day of operation sodium Pico sulphate used to purge the colon.
3. Stoma site is selected preoperatively after consulting with stoma care specialist.
4. Before surgery the patient should be started on subcutaneous Heparin and prophylactic antibiotics should be administrated.

## **Test of Operability**

1. Presence of secondary deposits in liver.
2. Peritoneal seedings.
3. Lymph nodes draining the involvement segment should be assessed.
4. Growth should be examined for mobility and operability.
5. Surgical intervention is done by by right hemicolectomy.

## **GORD (GASTRO OESOPHAGEAL REFLUX DISEASE)**

### **Clinical features**

1. Retrosternal burning pain, epigastric pain and regurgitation constitutes classical triad of GORD.
2. Symptoms are provoked by fat & spicy foods, stopping or exercises, hot beverages, citrus drinks, alcohol, nocturnal reflux.
3. Due to stricture dysphagia occur and it's a late sign.
4. Since GORD is such a common disorder, it should be anticipated when patient presents with oesophageal symptoms that are unusual or defy diagnosis after series of investigation.

### **Diagnosis**

1. Patient may present with less typical symptoms such as chest pain laryngeal or pulmonary symptoms.
2. In most cases, diagnosis is assumed rather than proven and treatment is empirical.
3. Investigation is only required when diagnosis is in doubt, when patient does not respond to Proton Pump Inhibitor or if dysphagia is present.
4. Most important investigation is endoscopy with biopsy.

5. There could be reflux esophagitis – peptic stricture or Barrett’s esophagus

(Due to increase in use of Proton Pump Inhibitor leading to rapid healing of early mucosal lesions).

6. There is strong correlation between worsening endoscopic appearances and oesophageal acidification on PH testing.
7. If symptoms persist despite treatment, oesophageal manometry and 24 hour PH recording guides in diagnosis and management.

### **Diagnostic Measurement in GORD**

1. 24 hrs pH recording is the 'gold standard' for diagnosis of GORD.
2. Most important manometric findings are TLOSRS.
3. Length and pressure of Los is also important.
4. Achalasia is differentiated by slow undulations in pH trace and complete absence of peristalsis whereas in GORD there are rapid bursts of reflux in pH trace ,but peristalsis is not totally absent.
5. Barium swallow and meal examination given best appreciation of anatomy of Gastro oesophageal sphincter.

## **PH Monitoring**

This study is done after placing thin catheter containing 1 or 2 solid catheter in the oesophagus. The electrode connected to data recorder, and the electrodes are placed 5 to 10 cm apart, in the pH 2.7. They are capable of sensing electrons.

Inferences from the study are

1. Longest episode to reflux.
2. Total number of reflux episodes .
3. Number of episodes lasting more than 5 minutes.
4. Extent of reflex in upright and supine position.
5. The total score is obtained using all of the above parameters. The score obtained is Demeester Score and it should be less than 14.7.

## **Esophagogram**

This test is performed for patients with symptoms of GERD who are to undergo surgery and whose symptoms do not respond properly after treatment.

By this method the anatomy of proximal stomach and external anatomy of oesophagus can be studied. It is not useful for diagnosis the disease, but useful for planning surgery.

Oesophageal lengthening procedure has to be done, if during the study if mediastinal gastro oesophageal junction does not invaginate into the peritoneal cavity. Diverticula, para esophageal hernias can be discovered on Esophagogram.

### **Endoscopy**

1. It can exclude other diseases.
2. In can detect the presence of peptic esophageal injury.
3. Severity of Injury can be measured using a scoring system called savary-miller interpretation.
  - a. Erythema
  - b. Linear Ulceration
  - c. confluent ulceration
  - d. Stricture
4. Barrett's esophagus is extremity of mucosal injury.

### **New and evolving endoscopic techniques**

GORD treatment has been attempted by new techniques such as suturing devices, Radio frequency energy and injector polymers.

### **NOTES**

NOTES is Natural Orifice Trans Luminal Endoscopic Surgery  
(NOTES)

Various surgeries that can be done using NOTES are

1. Cholecystectomy
2. Appendicectomy
3. Peritonoscopy

In Humans both pure and hybrid procedures have been performed.

In this procedure, after advancing endoscope into the rectum, mouth, surgery is done after puncturing the viscus.

Endoscopic staplers are useful for performing resection of Gastric carcinomas.

Endoscopic suturing has been used for narrowing of stomach after gastric bypass surgery.

Capsule endoscopy is one of the latest imaging techniques of the bowel.

## **OTHER INVESTIGATIONS**

1. Scintigraphy study can be useful to evaluate can reflux and esophageal clearance.
2. It can detect motility disorder and gastro esophageal reflux.
3. Delayed emptying causing gastric distension can be diagnosed by this study.



4. Patients having laryngeal symptoms of Gastro esophageal reflux can be screened by laryngoscopy and stroboscopic examination.
5. Findings in this procedure are Laryngeal mucosal inflammation, mucus tension abnormalities and subglottic stenosis.

### **Therapeutic Interventions of Upper GI Endoscopy**

1. Monopolar (or) Bipolar probes can be used to coagulate bleeding points.
2. Rubber banding (or) Injection sclerotherapy are used to treat Esophageal varices.
3. Pyloric, esophageal strictures can be treated by means of dilatation by using hydrostatic balloons and obstructive esophageal tumors . Stomach vascular lesions are treated by laser energy through the scope.
4. Barrett's esophagus, dysplasia and early carcinoma can be treated by endoscopic mucosal resection.
5. Suck-and-ligate and suck-and-cut are the EMR techniques employed.
6. Radio frequency Ablation through the endoscope used to treat barret's esophagus.

## **MANAGEMENT OF UNCOMPLICATED GORD: MEDICAL MANAGEMENT**

1. Simple measures like weight loss, avoiding smoking, avoiding consumption of alcohol, tea or coffee, avoidance of large late night meals and modest head-up tilt of bed (similar effect to taking the receptor antagonist).
2. 'Step Down' PPI treatment for 8 weeks are the most effective treatment for GERD.

## **SURGERY**

### **Endoscopic Treatment**

They include endoscopic suturing to plicate gastric mucosa just below the cardia to accentuate angle of His, Radio frequency ablation at sphincteric level and injection of submucosa polymers into lower esophagus.

They prove temporary symptomatic improvement.

Failure rates at 1 years are > 50%.

## **GASTRITIS**

### **Types of Gastritis**

1. Hypertrophic Gastritis (Menetrier's disease).
2. Antral Gastritis
3. Stress Gastritis

## **Hypertrophic Gastritis**

1. Also called as Menetrier's disease or Hypoproteinemic Hypertrophic Gastropathy is a pre malignant condition characterized by gastric folds in the fundus to stomach, giving cobble stone appearance,
2. This condition is associated with excessive mucus production, hypochlorhydria and protein loss from stomach.
3. The cause is unknown.
4. It may be due to over expression of TGF – Alfa.

## **Antral Gastritis**

1. Antral gastritis is associated with peptic ulcer.
2. The cause due to H-pylori Infection.
3. Patient with peptic ulcer had antral gastritis proven histologically
4. The most infection is confined to antrum.

## **Stress Gastritis**

Synonyms: Stress ulcerations, stress erosive gastritis and haemorrhagic gastritis.

## **Clinical Features**

1. Stress gastritis occurs after physical trauma, shock, sepsis, respiratory failure and it can lead to gastric bleeding which may be life threatening.
2. Stress gastritis is characterized by superficial (Non ulcerating) erosions. That usually starts in the Acid secreting portion of stomach and progressing distally.
3. Cushing's Ulcer – Occur in central nervous system disease.
4. Curling' Ulcer – It occurs as a Result of Thermal Burn injury. involving more than 30% of the body surface area.
5. Stress gastritis changes with time duration. It is considered to be early if they appear with in the first 24 hours after injury. The lesions are multiple and shallow, with isolated area of erythema along the focal hemorrhage.
6. Frank bleeding may occurs if the lesion erodes into the Submucosa where blood vessels are located.
7. On microscopy-The lesions are characterized by wedge shaped mucosal Haemorrhagic areas with superficial mucosal cells appearing in the form of coagulative necrosis.

8. In stress gastritis, the ulcers usually seen in the fundus of the stomach, they are seen rarely on the distal stomach.
9. Late acute gastritis is usually seen 24 to 72 hours after injury and there is tissue reaction around a clot.
10. Late lesions appears similar in appearance to regenerating mucosa around the area of gastric ulcer healing site .

### **Investigation**

- Endoscopy for confirmatory diagnosis.
- It is used to differentiate stress gastritis from other causes of GI Haemorrhage.

### **Therapy**

- Patient with upper GI bleeding requires the correction of coagulation abnormalities. Fluid resuscitation should be done properly.
- Fresh frozen plasma and plates should be given to the patient if the patient has clotting anomalies (or) platelet deficiencies.
- Broad spectrum antibiotics should be given for treating sepsis, and also useful in treating the gastric erosions.

## **MATERIALS AND METHODS**

- Time period of study : - September 2011 to November 2012
- AGE OF PATIENTS –older than 13years
- GENDER OF PATIENTS –male and female
- STUDY AREA –Coimbatore medical college hospital
- STUDY POPULATION-patients presenting to the surgical department with features of chronic recurrent pain abdomen

### **SELECTION CRITERIA**

- **INCLUSION CRITERIA**

- Chronic recurrent pain abdomen
- Age more than 13years

- **EXCLUSION CRITERIA**

- Acute pain abdomen
- Patients treated by psychiatrists
- Coagulopathy, severe cardiopulmonary disease
- Previous surgeries
- Urological and gynecological causes

## **STUDY DESIGN**

- Prospective observational study was conducted on 50 patients admitted with chronic recurrent pain abdomen

## **PARAMETERS STUDIED**

- Age
- Sex
- Dietary pattern
- Smoking pattern
- Socio economic status
- Habit of beeten nut chewing
- Type of pain
- Location of pain
- Etiology in males
- Etiology in females
- Diagnostic investigation which was confirmatory
- Treatment given –conservative and surgical
- Outcome

## **OBSERVATIONS MADE**

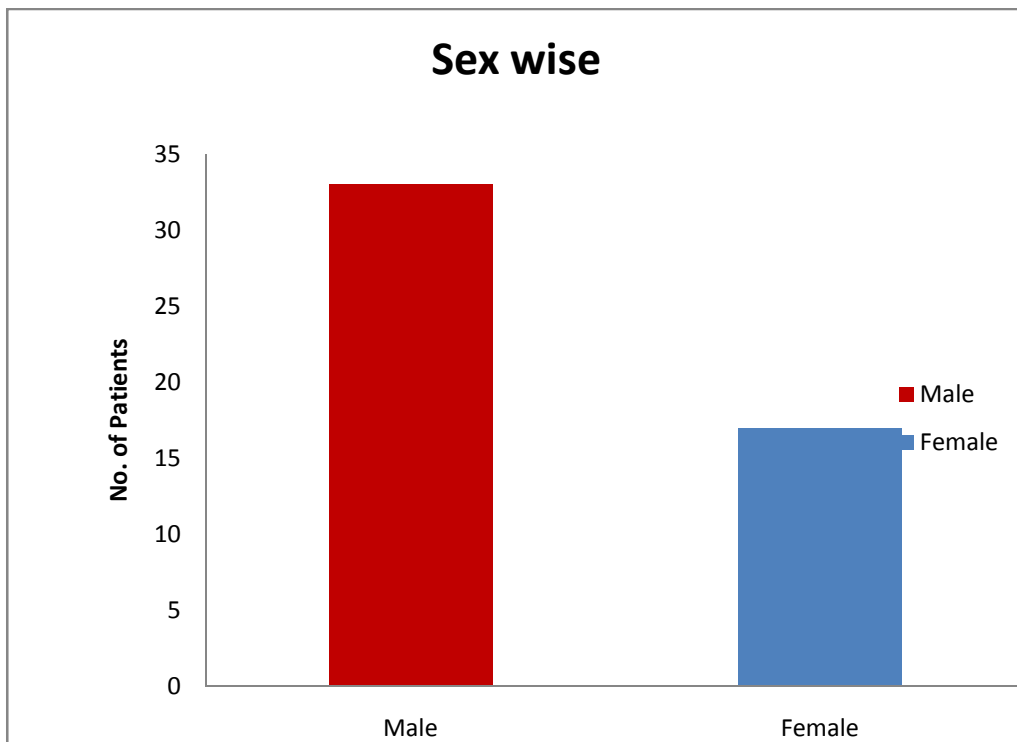
Proper history and clinical examination was done in all 50 patients suspected to have chronic recurrent abdominal pain. They were subjected to series of investigations after getting consent from each of them and the following observations were made .



# OBSERVATIONS

## SEX WISE DISTRIBUTION

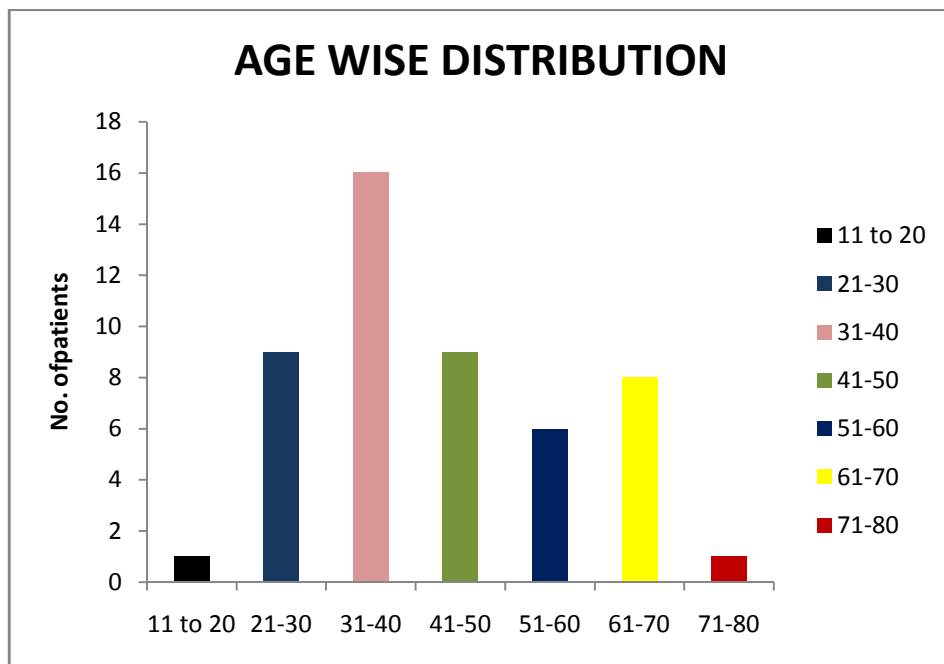
The incidence is more common in males than females in a ratio of 2:1. Males comprised 66% of our study compared to 33% in females. However the incidence in females is catching up due to the altered lifestyle of female population.



## AGE WISE DISTRIBUTION

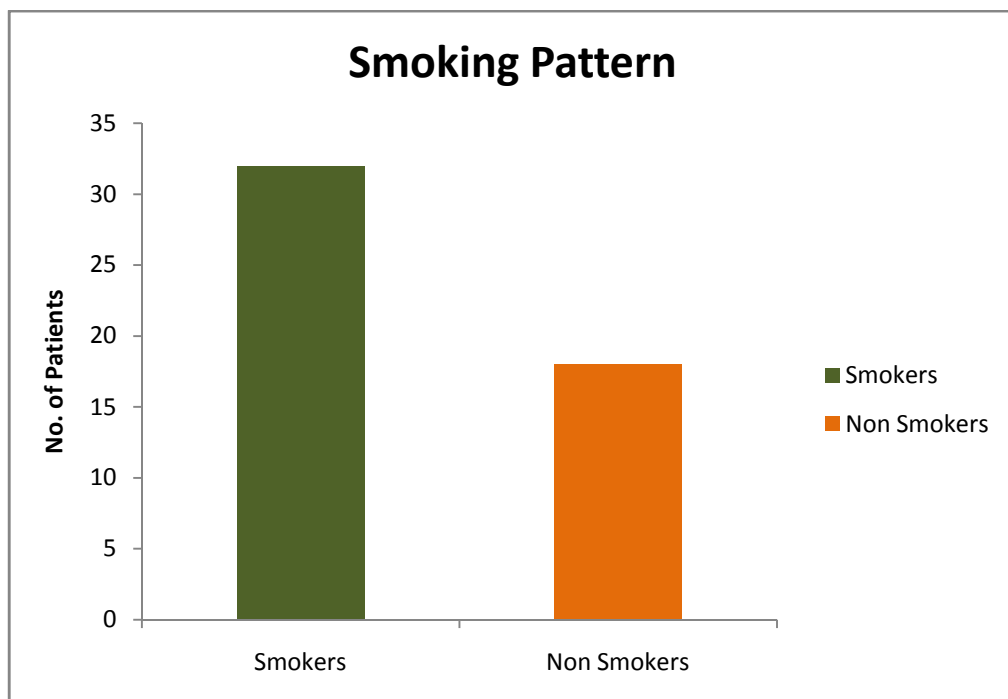
Patients in the age group 31-40 years are commonly affected with a mean age of 43.64 years.

Age Group	No of Patients	Percentage
11-20	1	2
21-30	9	18
31-40	16	32
41-50	9	18
51-60	6	12
61-70	8	16
71-80	1	2



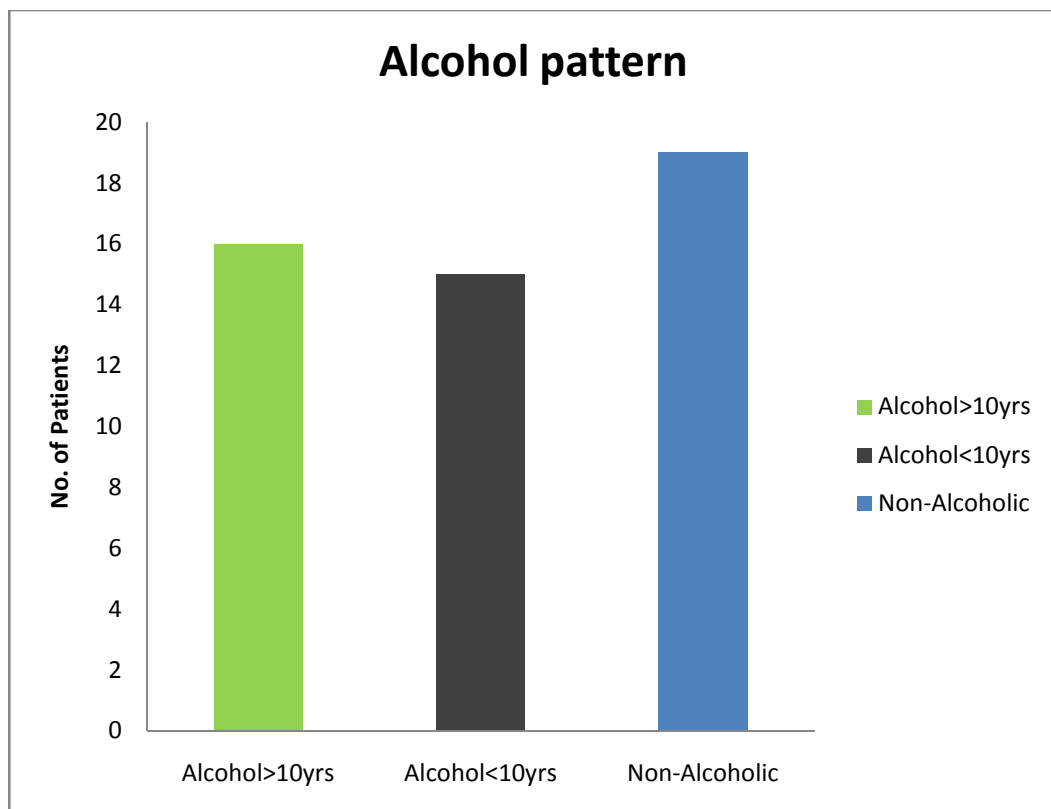
## SMOKING PATTERN

64% of the study group was smokers as compared to the 36% non-smokers. This may suggest that smoking may have a positive correlation with chronic abdominal pain of certain causes.



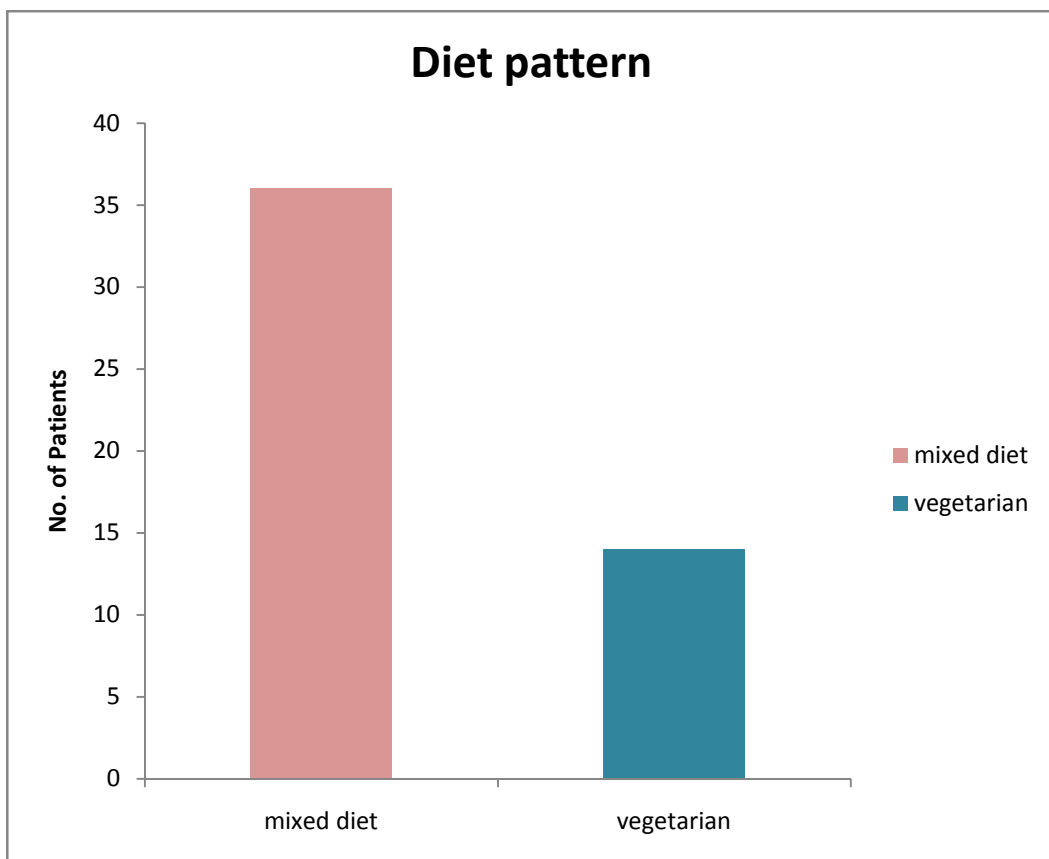
## ALCOHOL INTAKE PATTERN

62% of our patients were consumers of alcohol and of these, 32% had consumed for more than 10 years. Hence alcohol may also act as an additive factor in many diseases presenting as chronic abdominal pain.



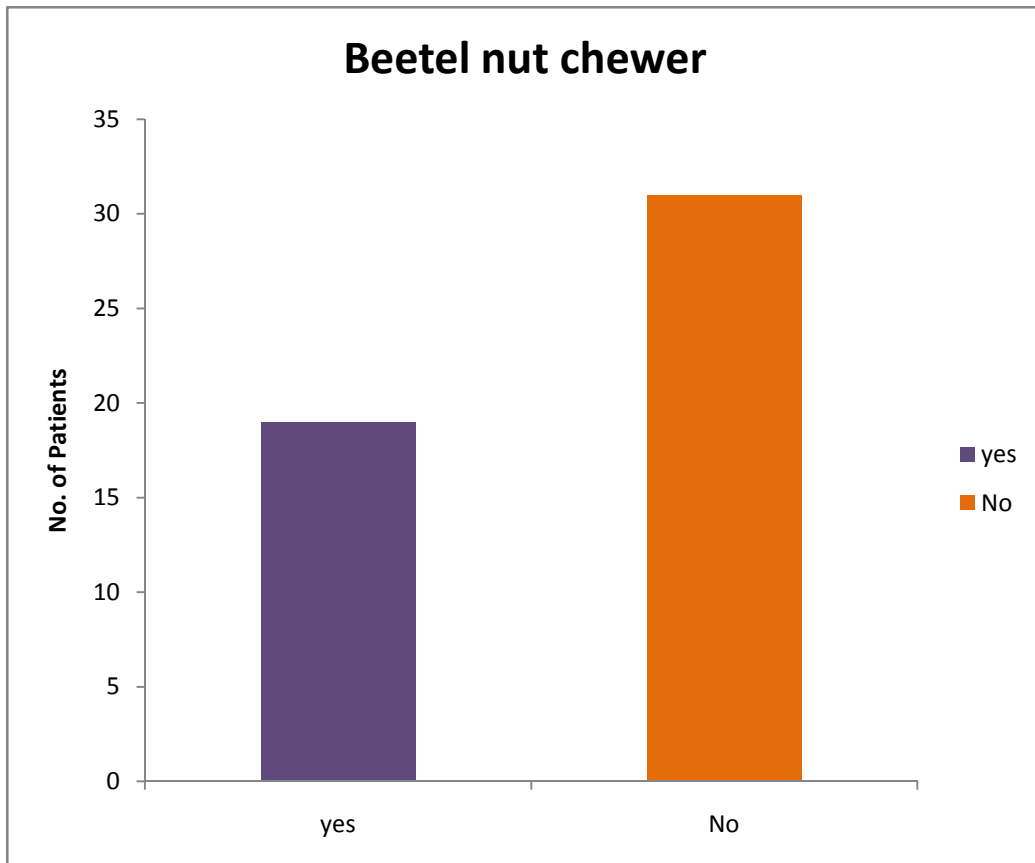
## DIETARY PATTERN

72% of the patients consumed non-vegetarian food which suggests that non-vegetarian food may be a predisposing factor in diseases causing chronic abdominal pain



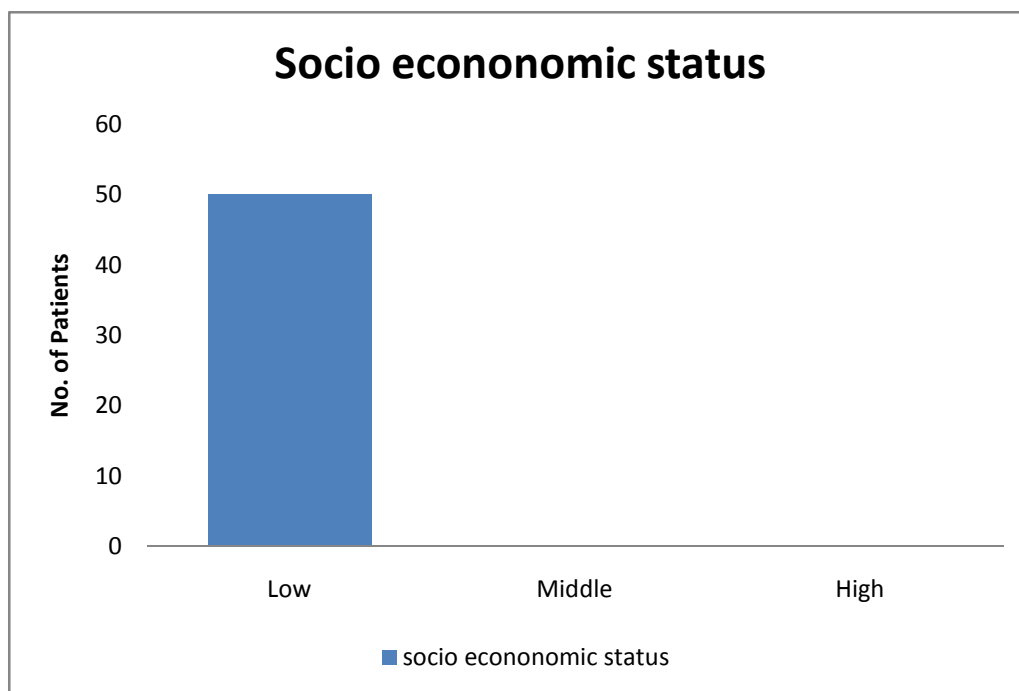
## HABIT OF BEETLE NUT CHEWING

38% of patients were beetelnut chewers chronically and more among this group was female individuals.



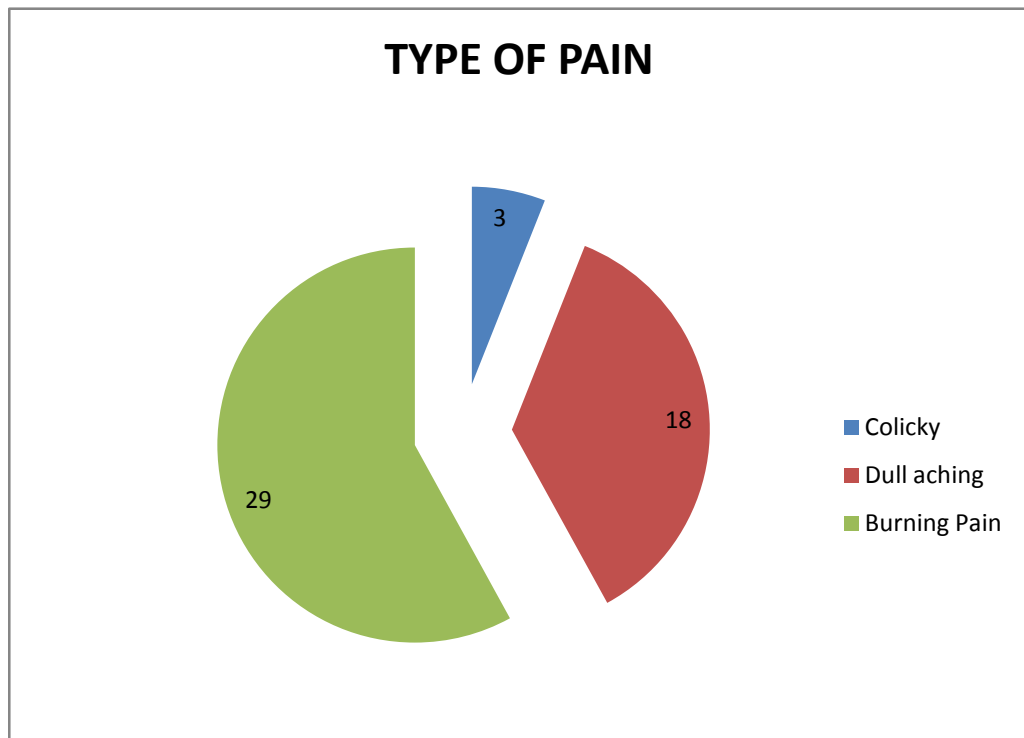
## SOCIO ECONOMIC STATUS

Being a government run tertiary care institution, all the patients that were observed in the study were from a lower socio-economic class.



## TYPE OF PAIN

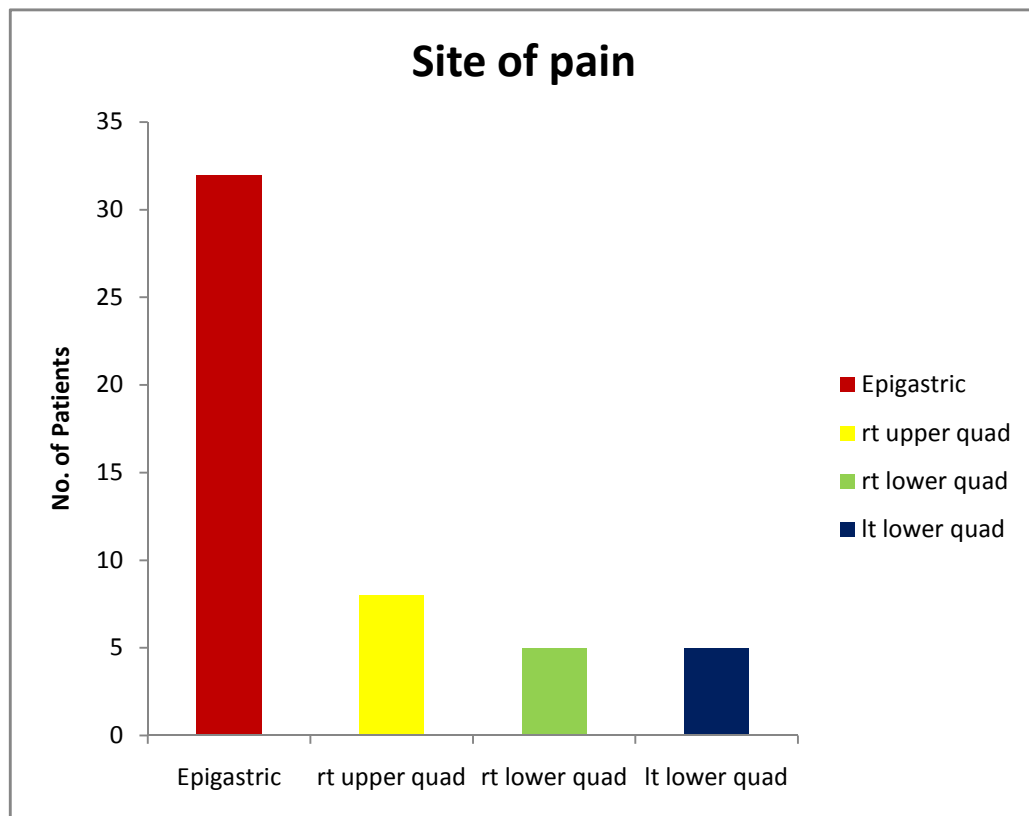
Most of the patients presented with dull aching pain, burning pain and small number of patients with colicky pain abdomen.





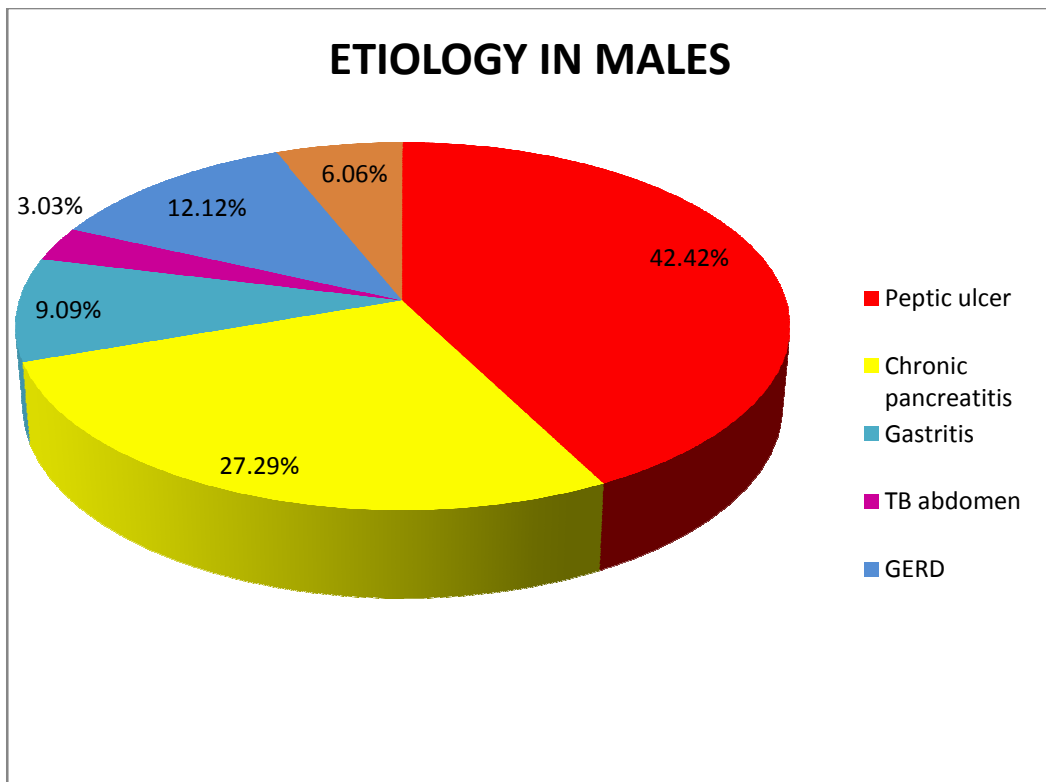
## SITE OF PAIN

64% of patients complained of epigastric pain followed by Right upper quadrant (16%), right lower quadrant (10%) and left iliac fossa (10%).



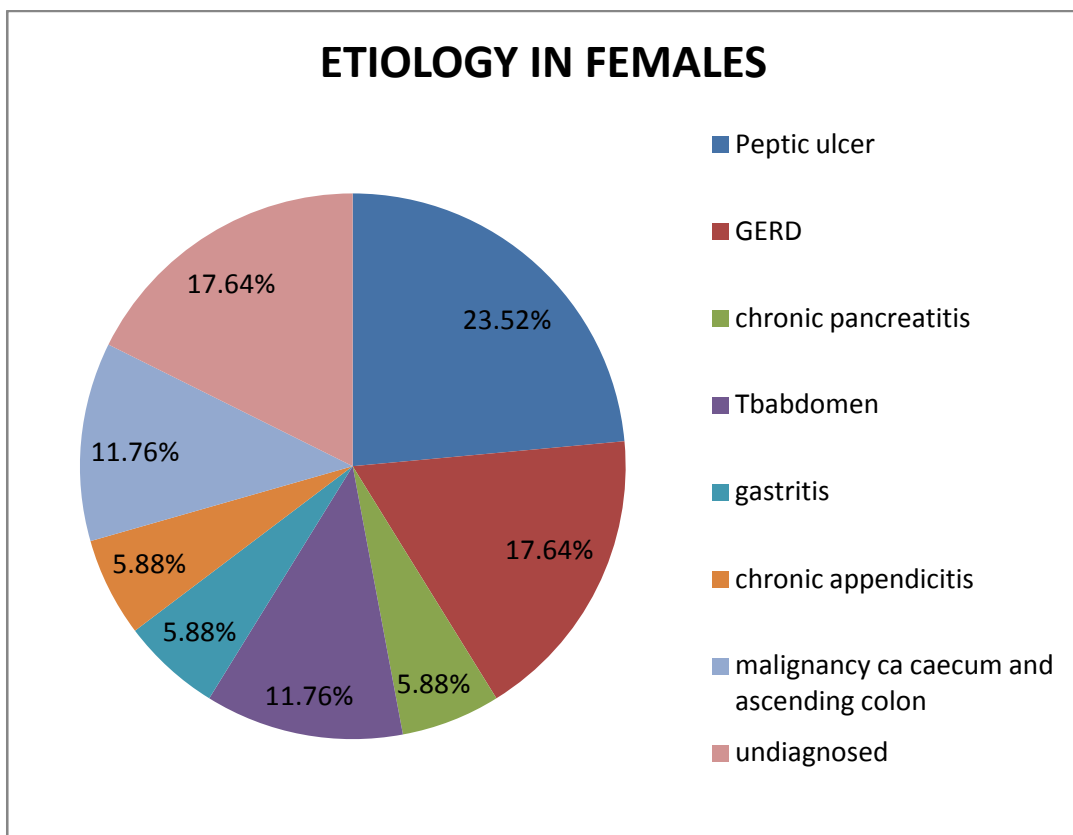
## ETIOLOGY IN MALES

Peptic ulcer was the common disease found followed in order by chronic pancreatitis, GERD, gastritis followed by TB abdomen. The percentage of undiagnosed patients was 6%.



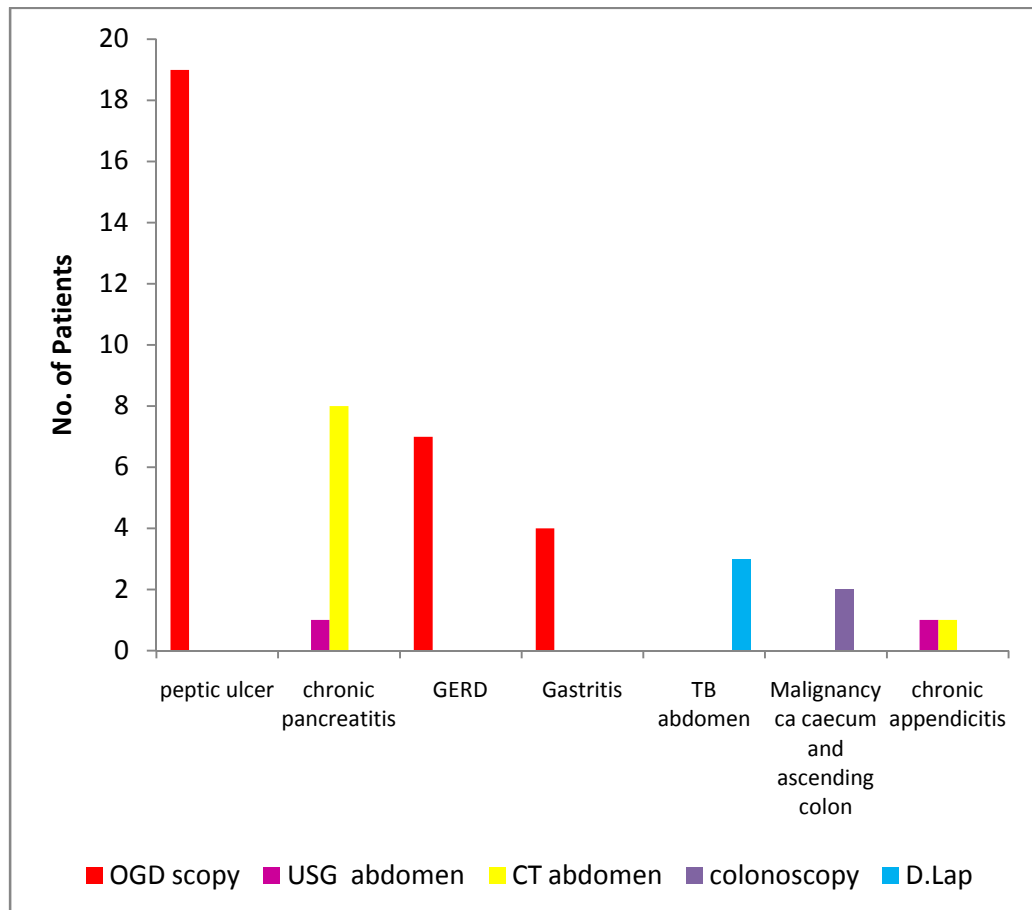
## ETIOLOGY IN FEMALES

Peptic ulcer was the common disease found followed in order by GERD, TB abdomen, chronic pancreatitis, malignancy ca ascending colon and caecum, gastritis and chronic appendicitis. The percentage of undiagnosed patients is 17.64%.



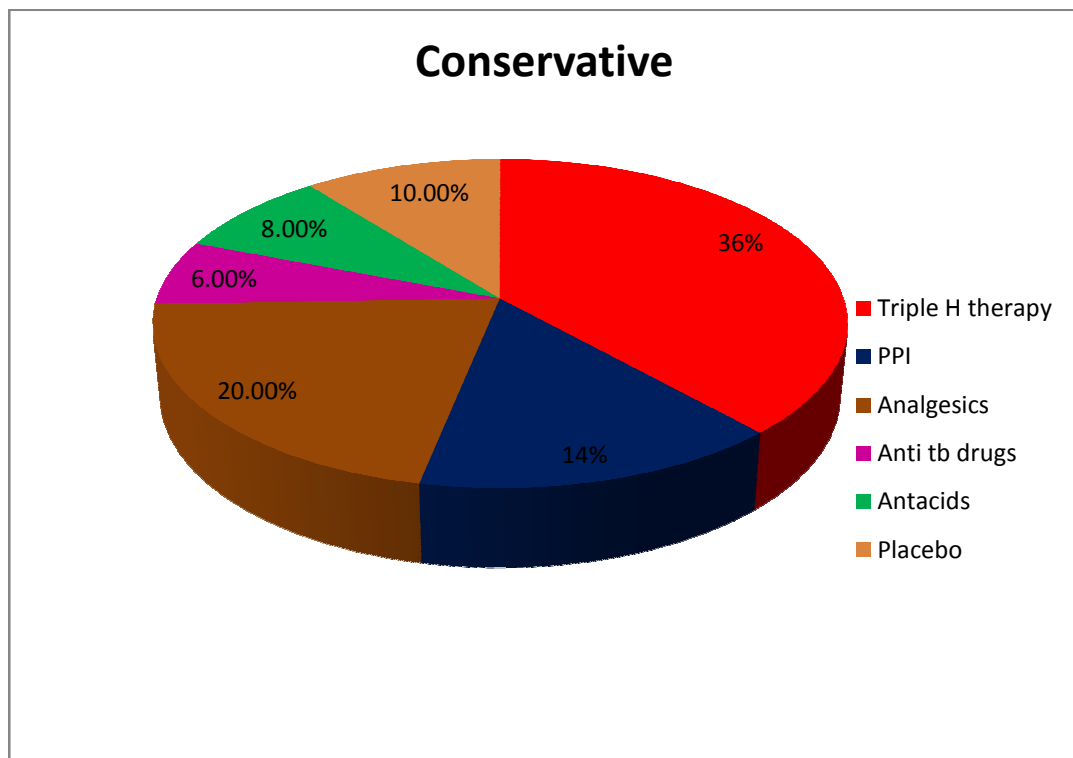
## DIAGNOSTIC INVESTIGATION WHICH WAS CONFIRMATORY

OGD scopy revealed the diagnosis in most patients with GERD, peptic ulcer disease and gastritis. CT was more useful than ultrasonography in cases of pancreatitis. TB abdomen was confirmed only by diagnostic laparoscopy. Colonoscopy proved its importance in intraluminal pathologies such as neoplastic growths.



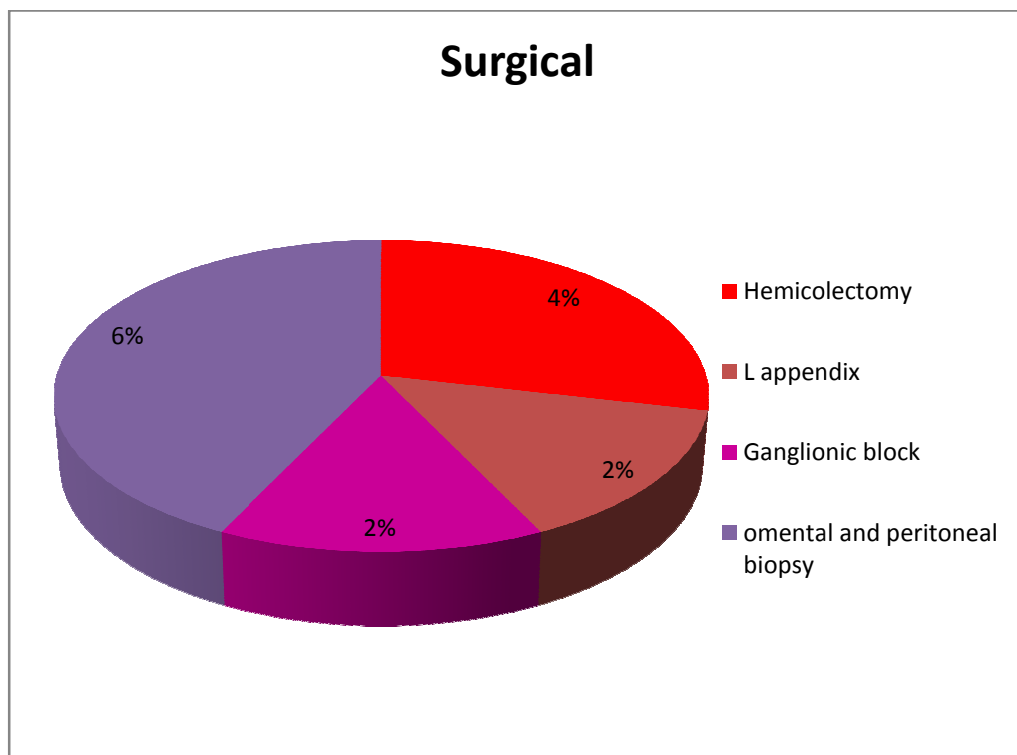
## CONSERVATIVE MANAGEMENT

Patients with peptic ulcer, gastritis, GERD treated with triple H therapy for 2 weeks. Patients diagnosed with TB abdomen were treated with 6 months course of anti TB regimen, patients with chronic pancreatitis treated with simple analgesics ,refractory to analgesics referred to ganglionic blockade. For undiagnosed chronic pain abdomen placebo was given.



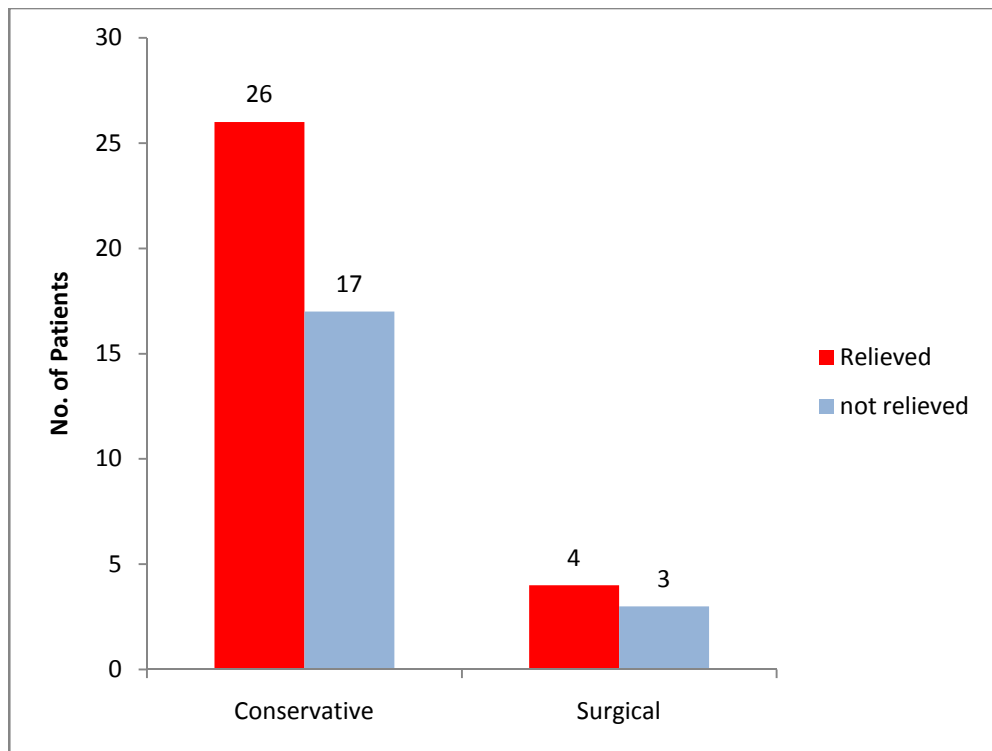
## SURGICAL INTERVENTION

Surgical intervention was given to 7 patient for etiology ca caecum, ascending colon,chronic appendicitis,TB abdomen and chronic pancreatitis. out of which ca caecum and ascending colon treated with Right Hemi colectomy .Chronic appendicitis was treated with Lap appendectomy.Chronic abdominal pain suggestive of TB was subjected to Diagnostic laparoscopy,omental and peritoneal biopsy taken,and based on biopsy report they were treated conservatively by 6 months ATT regimen.Chronic pancreatitis not relieved by medications subjected to ganglionic blockade.



## TREATMENT AND OUTCOME

Out of the 50 patients 43 patients were treated conservatively, of which 26 patients were relieved of their symptoms .And out of the 7 patients treated surgically 4 patients got relieved of their symptoms.



## DISCUSSION

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whom coeliac ganglionic blockade done was completely relieved of pain.

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## **SUMMARY**

This study is a prospective observational study conducted from September 2011 to November 2012 at Coimbatore medical college hospital. In this study the sample size is 50 patients. Both male and female patients older than 13 years were included. The patients were admitted, evaluated based on their chronic repetitive presentations with features of pain abdomen. The patients with acute abdomen, psychiatric patients and patients with urological and gynecological causes were excluded from the study.

In the study of 50 patients, the etiology is most common in males than females of which patients with age group 31-40 years were commonly affected. 16 of the 50 patients were alcoholics for more than 10 years and chronic smokers and vegetarians were less commonly affected than people taking mixed diet. Beetel nut chewing has no positive correlation with the etiology. But patients with low socioeconomic status were commonly affected. 29 out of 50 patients presented with dull aching pain, 18 with burning pain and 3 with colicky abdominal pain. Of the 50 patients, 32 patients had complaints of epigastric pain, 8 patients had complaints of right upper quadrant pain and rest of the patients has right lower quadrant and left lower quadrant pain.

Peptic ulcer disease was the most common disease in males followed by chronic pancreatitis, gastritis and TB abdomen. The percentage of undiagnosed patients were 6%. In females, peptic ulcer was the commonest disease followed in order by GERD, TB abdomen, chronic pancreatitis followed by malignancy.

OGD scopy revealed the diagnosis in patients with peptic ulcer disease, GERD and gastritis. CT was more useful than USG in cases of chronic pancreatitis. Colonoscopy proved its importance in intra luminal pathologies such as neoplastic growths.

Patients with peptic ulcer, gastritis and GERD were treated with triple H therapy for 6 weeks, chronic pancreatitis treated with simple analgesics. For 5 patients definitive diagnosis could not be established in spite of all investigations, and were treated with placebo. Patients with symptoms and signs suggestive of TB were subjected to diagnostic laparoscopy, omental and peritoneal biopsy was taken and based on biopsy report they were conservatively treated with 6 months ATT regime. Patient with chronic pancreatitis not relieved by medications was subjected to ganglionic blockade. Out of total 50 patients, 43 patients were treated conservatively of which 17 got relieved of their symptoms. 7 patients were subjected to surgical treatment of which 4 patients got relieved of their symptoms.

## CONCLUSION

1. The common etiology for chronic recurrent pain abdomen in our hospital is Peptic ulcer, chronic pancreatitis, Gastritis, GERD, TB abdomen followed by malignancy.
2. For patients with upper abdominal pathology endoscopy proves to be a confirmatory diagnosis, and for patients with lower abdominal pathology CT abdomen and Diagnostic laparoscopy gives better information in arriving at a diagnosis.
3. X rays do not pick up any confirmatory diagnosis in the diagnosis of chronic recurrent pain abdomen.
4. Peptic ulcer patients were treated by conservative management and did not develop any surgical complications. On 3 months follow up 8 patients were relieved of their symptoms and at 6 months follow up 8 patients were relieved of their symptoms.
5. For patients with chronic pancreatitis symptomatic pain relief was given to the patient, however general condition of the patient could not be improved. Most of the patients were treated conservatively. On follow up at 3 and 6 months only one patient who had undergone coeliac ganglionic blockade got relieved of his pain and rest of the patients were not relieved of their symptoms.

6. Patients with chronic pain abdomen due to tuberculous etiology were given anti tuberculous drug regimen for a period of 6 months. On 3 and 6 months follow up, all the three patients followed continues to have refractory pain.
7. For 5 patients of which 3 are females and 2 are males for whom definitive diagnosis could not be arrived at inspite of all investigations. Hence these patients were classified as chronic intractable abdominal pain, found to be more common in females, they were given placebo referred to psychiatrists for further management.

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6. Palpable Mass
7. Hernial Orifices
8. Digital Rectal Examination
9. Organo megaly

### **Investigations**

#### Hematological

1. Hb%
2. Total Count
3. Differential Count
4. B.Urea
5. B.sugar
6. S.Creatinine
7. S.Sodium
8. S.Potassium

#### Radiology

1. Chest X-Ray
2. X-ray Abdomen
3. USG Abdomen
4. CT Scan Abdomen

1. OGD Scopy
2. Colonoscopy
3. Diagnostic Laparoscopy

**Diagnosis:**

**Treatment:**

**Follow-up:**

## MASTER CHART

Sl no	Name	Age	Sex	IP no	DOA	DOD	Pain Duration	dietary habits	smoking	alcohol> 10years	alcohol< 10 yaers	beetelnut chewer	socio economic status	Type of Pain	site of pain	Associated symptom	Diagnostic Investigation	Diagnosis	Treatment Given	Outcome
1	SENTHIL KUMAR	40	male	54437	10/4/2012	14-4-12	4months	mixed diet	yes	yes	no	no	low	burning	epigastric	heart burn	UGI Scopy	Peptic ulcer disease	conservative	Relieved
2	GANESH	55	male	15625	1/4/2012	28-4-12	4months	mixed diet	yes	yes	no	no	low	colicky	rt upper quadrant	nausea	nil	un diagnosed	conservative	not relieved
3	SAROJA	34	Female	41109	16-7-12-	31-7-12	3months	veg	no	no	no	no	low	Dull Aching	rt lower quadrant	nausea	USG abdomen	chronic appendicitis	surgical	Relieved
4	MAGUDESWARI	29	Female	53554	14-09-2012	22-09-12	3months	mixed diet	no	no	no	no	low	Dull Aching	rt upper quadrant	fever	USG abdomen	chronic pancreatitis	conservative	not relieved
5	NAGARAJ	42	male	28859	26-5-12	29-05-12	5months	mixed diet	yes	no	yes	no	low	Dull Aching	rt lower quadrant	fever	diagnostic laparoscopy	TB abdomen	surgical	not relieved
6	MAHESWARAN	36	male	503475	3/8/2012	6/9/2012	5months	mixed diet	yes	yes	no	no	low	Dull Aching	rt upper quadrant	weight loss	ct abdomen	chronic pancreatitis	conservative	not relieved
7	UDAYA KUMAR	48	male	42185	7/1/2012	3/2/2012	4months	veg	yes	yes	no	yes	low	colicky	left lower quadrant	weight loss	nil	un diagnosed	conservative	not relieved
8	SURESH	16	male	25725	1/5/2012	8/5/2012	3months	mixed diet	no	no	no	no	low	Dull Aching	rt upper quadrant	weight loss	ct abdomen	chronic pancreatitis	conservative	not relieved
9	ALAGAR	29	male	25148	1/5/2012	7/5/2012	3months	mixed diet	yes	no	yes	no	low	Dull Aching	rt upper quadrant	mild jaundice	ct abdomen	chronic pancreatitis	conservative	not relieved
10	KUPPURAJ	30	male	44122	30-7-12	6/8/2012	4months	mixed diet	yes	no	yes	no	low	Dull Aching	rt upper quadrant	weight loss	ct abdomen	chronic pancreatitis	conservative	not relieved
11	DEVI	29	Female	36858	30-6-12	4/7/2012	3months	veg	no	no	no	no	low	Dull Aching	rt lower quadrant	weight loss	diagnostic laparoscopy	TB abdomen	surgical	not relieved
12	PARVATHY	66	Female	35842	1/7/2012	17- 7-12	3months	mixed diet	no	no	no	yes	low	Dull Aching	left lower quadrant	fever	nil	un diagnosed	conservative	not relieved
13	PALANIAMMAL	48	Female	21192	19-4-12	14-5-12	3months	veg	no	no	no	yes	low	Dull Aching	left lower quadrant	weight loss	diagnostic laparoscopy	TB abdomen	surgical	not relieved
14	DEVI	37	Female	72430	1/1/2012	7/1/2012	3months	veg	no	no	no	no	low	burning	epigastric	regurgitation	UGI Scopy	GERD	conservative	Relieved
15	MAHENDRA KUMAR	55	male	50112	15-1-12	21-1-12	3months	mixed diet	yes	no	yes	no	low	burning	epigastric	nausea	UGI Scopy	GERD	conservative	Relieved
16	DEVARAJ	59	male	13380	15-1-12	21-1-12	3months	mixed diet	yes	yes	no	yes	low	burning	epigastric	heart burn	UGI Scopy	Peptic ulcer disease	conservative	relieved
17	BABU	34	male	14306	15-1-12	17-1-12	3months	veg	yes	no	yes	no	low	burning	epigastric	nausea	UGI Scopy	Peptic ulcer disease	conservative	Relieved
18	KRISHNAN	32	male	48652	14-1-12	17-1--12	3months	mixed diet	no	no	no	no	low	burning	epigastric	nausea	UGI Scopy	Peptic ulcer disease	conservative	Relieved
19	SHANMUGASUNDARAM	31	male	81765	1/2/2012	8/2/2012	3months	mixed diet	yes	no	yes	no	low	burning	epigastric	nausea	UGI Scopy	chronic gastritis	conservative	not relieved
20	SHANKAR	21	male	22271	5/2/2012	9/2/2012	4months	veg	no	no	no	no	low	burning	epigastric	nausea	UGI Scopy	gastritis	conservative	Relieved
21	SUBRAMANI	39	male	150782	5/2/2012	14-4-12	4months	mixed diet	yes	no	yes	no	low	burning	epigastric	regurgitation	UGI Scopy	GERD	conservative	Relieved
22	PERIYAMMAL	45	Female	177802	10/5/2012	15-5-12	4months	mixed diet	no	no	no	no	low	Dull Aching	epigastric	nausea	nil	un diagnosed	conservative	not relieved
23	RANGAN	65	male	27006	10/5/2012	19-5-12	4months	veg	yes	yes	no	yes	low	burning	epigastric	nausea	UGI Scopy	gastritis	conservative	Relieved
24	SIVA KUMAR	38	male	20253	12--5-12	17-5- 12	4months	mixed diet	yes	no	yes	no	low	burning	epigastric	regurgitation	UGI Scopy	GERD	conservative	not relieved
25	CHELLAMMAL	55	Female	19895	12/5/2012	17-5-12	4months	mixed diet	no	no	no	yes	low	burning	epigastric	nausea	UGI Scopy	GERD	conservative	not relieved

26	PUSHPAM	65	Female	230631	12/5/2012	18-5-12	3months	mixed diet	no	no	no	no	low	burning	epigastric	nausea	UGI Scopy	GERD	conservative	Relieved
27	KALIMUTHU	23	male	17076	13-5-12	18-5-12	3months	mixed diet	yes	no	no	yes	low	burning	epigastric	regurgitation	UGI Scopy	GERD	conservative	not relieved
28	JEYA KUMAR	32	male	24480	13-5-12	18-5-12	4months	mixed diet	yes	no	yes	no	low	burning	epigastric	Vomiting	UGI scopy	Peptic ulcer disease	conservative	relieved
29	PALANISAMY	60	male	37295	12/5/2012	17-5-12	3months	mixed diet	yes	yes	no	yes	low	burning	epigastric	heart burn	UGI Scopy	Peptic ulcer disease	conservative	relieved
30	AARON	59	male	48553	12/5/2012	17-5-12	3months	veg	yes	yes	no	yes	low	burning	epigastric	heart burn	UGI Scopy	Peptic ulcer disease	conservative	not relieved
31	RANGAN	50	male	485544	12/5/2012	17-5-12	4months	mixed diet	yes	yes	no	no	low	burning	epigastric	heart burn	UGI Scopy	Peptic ulcer disease	conservative	not relieved
32	PARVEEN	35	male	358025	11/5/2012	17-5-12	3months	mixed diet	yes	no	yes	yes	low	burning	epigastric	Vomiting	UGI Scopy	Peptic ulcer disease	conservative	relieved
33	KALAISELVI	38	Female	885193	11/5/2012	18-5-12	3months	veg	no	no	no	yes	low	burning	epigastric	nausea	UGI Scopy	Peptic ulcer disease	conservative	Relieved
34	BHUVANESHWARI	65	Female	365399	10/5/2012	15-5-12	3months	mixed diet	no	no	no	yes	low	burning	epigastric	nausea	UGI Scopy	Peptic ulcer disease	conservative	Relieved
35	G OVINDARAJ	63	male	237711	12/5/2012	16-5-12	4months	mixed diet	yes	yes	no	no	low	burning	epigastric	heart burn	UGI Scopy	Peptic ulcer disease	conservative	Relieved
36	SHIVA KUMAR	34	male	422144	12/5/2012	17-5-12	3months	mixed diet	yes	no	yes	yes	low	burning	epigastric	Vomiting	UGI Scopy	Peptic ulcer disease	conservative	relieved
37	ARIYA	37	Female	297655	12/5/2012	17-5-12	3months	veg	yes	no	yes	no	low	burning	epigastric	weight loss	UGI Scopy	Peptic ulcer disease	conservative	relieved
38	SELVARAJ	48	Female	447347	11-5012018-5-12	18-05-12	3months	mixed diet	yes	yes	no	yes	low	burning	epigastric	heart burn	UGI Scopy	Peptic ulcer disease	conservative	not relieved
39	PARVATHY	34	Female	426706	12-7-12-	19-7-12	4months	mixed diet	no	no	no	yes	low	burning	epigastric	nausea	UGI Scopy	gastritis	conservative	Relieved
40	NATARAJAN	63	male	52299	12-8-12-	20-8-12	3months	mixed diet	yes	yes	no	yes	low	burning	epigastric	heart burn	UGI Scopy	Peptic ulcer disease	conservative	relieved
41	SENIAPPAN	62	male	523485	13-8-12	20-8-12	5months	mixed diet	yes	yes	no	yes	low	burning	epigastric	heart burn	UGI Scopy	Peptic ulcer disease	conservative	Relieved
42	KAMARAJ	48	male	34125	27-9-12	27-9-12	4months	veg	yes	no	yes	no	low	Dull aching	Rt upper quadrant	Fever	Ct abdomen	Chronic pancreatitis	Conservative	Not relieved
43	LAKSHMANAN	28	male	39509	9/7/2012	11/7/2012	3months	mixed diet	yes	no	yes	no	low	Dull aching	Epigastric	Fever	Ct abdomen	Chronic pancreatitis	Conservative	Not relieved
44	SUBRAAMANIYAN	40	male	53413	13-9-12	21-9-12	3months	mixed diet	yes	yes	no	no	low	Burning	Epigastric	Heart burn	Ugi scopy	Peptic ulcer disease	Conservative	Relieved
45	ALAGAPPAN	23	male	66373	2/11/2012	7/11/2012	5months	veg	yes	no	yes	no	low	Dull aching	Epigastric	Vomiting	Ct abdomen	Chronic pancreatitis	Surgical	Relieved
46	CHANDRASEKAR	43	male	59048	26-9-12	2-10=12	3months	mixed diet	yes	yes	no	no	low	Dull aching	Rt upper quadrant	Vomiting	Ct abdomen	Chronic pancreatitis	Conservative	Not relieved
47	GOVINDARAJ	44	male	59060	26-9-12	4/10/2012	4months	mixed diet	yes	yes	nl	no	low	Dull aching	Epigastric	Vomiting	Ct abdomen	Chronic pancreatitis	Conservative	Not relieved
48	RANGATHAL	66	Female	43845	24-1-12	30-1-12	3months	mixed diet	no	no	no	yes	low	Dull aching	Rt lower quadrant	Altered bowel habits	Colonoscopy	ascending colon growth	Surgical	Relieved
49	CHANDRAKALA	29	Female	35567	21-7-12	30-7-12	4months	mixed diet	no	no	no	no	low	Colicky	Left lower quadrant	Weight loss	nil	Un diagnosed	Conservative	Not relieved
50	CHELLAMMAL	80	Female	51398	25-9-12	3/10/2012	4months	veg	no	no	no	yes	low	Dull aching	Rt lower quadrant	Weight loss	C olonoscopy	Ca caecum	Surgical	Relieved