"DIAGNOSTIC EFFICACY OF FENYO-LINDBERG SCORING SYSTEM IN PATIENTS OF ACUTE APPENDICITIS A ONE YEAR CROSS SECTIONAL STUDY AT KLE DR.PRABHAKAR KORE HOSPITAL, BELGAUM."

By

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Dissertation

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BELAGAVI, KARNATAKA.

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Sir/Madam,

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LIST OF ABBREVIATIONS

OPD	Out Patient Department
F-L	Fenyo-Lindberg
TLC	Total leucocyte count
CT Scan	Computed Tomography Scan
USG	Ultrasonography
MRI	Magnetic resonance imaging
PPV	Positive Predictive Value
NPV	Negative Predictive Value
PKH	Prabhakar Kore Hospital
MRC	Medical Research Centre
GA	General Anaesthesia
SRC	Self Retaining Catheter
WBC	Whole Blood Count
RLQ	Right Lower Quadrant

ABSTRACT

"DIAGNOSTIC EFFICACY OF FENYO-LINDBERG SCORING SYSTEM IN PATIENTS OF ACUTE APPENDICITIS A ONE YEAR CROSS SECTIONAL STUDY AT KLE DR PRABHAKAR KORE HOSPITAL, BELGAUM."

BACKGROUND AND OBJECTIVES --

Acute appendicitis is an acute inflammatory condition of appendix. Failure in early diagnosis of disease can result in progression and increased severity of disease. In developing countries like India, as early identification of the disease in the first instance is important as good number of people may be working away from home stations, in rural areas or in places where expert clinical advice is not available. These factors can result in missing the diagnosis, and the patient ends up in complications. As higher radiological investigations are costly, clinical examination findings remains the mainstay of diagnosis. Diagnostic scores have been found to be very easy and useful, and help in decision-making. The present study was taken up to calculate diagnostic efficacy of Fenyo-Lindberg scoring system in patients of acute appendicitis.

MATERIALS AND METHODS –

A one year cross sectional study was done between January 2018 and December 2018 in patients who had right lower quadrant pain. A total of 100 patients were taken. All the patients were scored according to the variables of scoring system and then divided them into two groups. Group I included patients with score of -2 and above (patients likely to have acute appendicitis) and Group II were patients with score below -2 (patients unlikely to have acute appendicitis).The diagnosis of acute

appendicitis was confirmed by histopathological examination. The F-L score groups were cross-tabulated against histology, the gold standard. Then, the sensitivity, specificity, Positive Predictive Value (PPV) and Negative Predictive Value (NPV) and accuracy were calculated.

RESULTS –

The present study included 100 patients, the total number of males were 52 and females were 48. In 15 patients TLC was more than 14,000 whereas 16 patients had duration of onset of symptom less than 24 hours. 47 patients had vomiting. On clinical examination of the patients, tenderness at right lower quadrant was present in all cases, while rebound tenderness was present in 54% of cases. In 98% of the patients progression of pain was seen, whereas migration of pain was seen in 76% of patients and in 56% of patients there was increased sensation of pain on coughing. A total of 54 patients had Acute appendicitis on histopathology.

The study shows that this scoring system has sensitivity of 72% and specificity of 71% in diagnosing acute appendicitis. The Positive predictive value was 75% and Negative predictive value was 68%.

CONCLUSION –

The Fenyo-Lindberg score is an inexpensive clinical tool that may help the diagnosis of acute appendicitis. The results are comparable to previous studies but as the sample size is small, study has to be done in higher sample size to get the data necessary to generalize the findings.

KEYWORDS: Appendicitis, Fenyo-Lindberg scoring system.

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INTRODUCTION

Acute appendicitis is an acute inflammatory condition of appendix. Failure in early diagnosis of disease can result in progression and increased severity of disease. It is a very common surgical emergency seen in clinical practice[1].It affects around 7% of general population[2] and studies show highest incidence in the age group of 10-30 years.[3]With advancement in technology there is increased use of USG and CT, but still the rate of misdiagnosis remains high (15.3%). The misdiagnosed cases are seen more in females than males (22.2% vs. 9.3%). Operating on the basis of clinical suspicion alone can result in negative appendicectomy in 15 to 30 % of cases.

In developing countries like India, as early identification of the disease in the first instance is important as good number of people may be working away from home, in rural areas or in places where expert clinical advise is not available. These factors can result in missing the diagnosis, and the patient end up in complications like, perforation peritonitis, abscess formation, mass formation, and hence increases the morbidity.[4]As higher radiological investigations are costly, clinical examination findings remains the mainstay of diagnosis. Diagnostic scores have been found to be very easy and useful and help in decision-making.

So a clinical scoring system that mainly takes into account, the clinical signs and symptoms is important, so that even a doctor working in the remotest area can accurately diagnose appendicitis and can timely refer the patient to a higher surgical center with facilities and can prevent complications and thus reduce the morbidity.

FENYO-LINDBERG scoring system relies mainly on clinical examination and basic investigation i.e. TLC and can be carried out easily. This study aims to calculate its diagnostic efficacy in cases of acute appendicitis

AIM

- To evaluate the diagnostic efficacy of Fenyo-Lindberg scoring system in patients of acute appendicitis.

REVIEW OF LITERATURE

HISTORICAL ASPECT:

A surgeon named Ivanovich Rogozov, in 1960 went on a trip to Antarctica, where he developed pain in his mid part of abdomen which later got localised to right lower quadrant. He diagnosed himself with acute appendicitis. Initially conservative treatment was given but when it failed, he knew the necessity of surgery for his survival. But doing surgery in a place like Antarctica with him being the only physician on base was a challenging task. He decided to operate on himself. After following his instructions, an operation theatre was arranged. He scrubbed and in a semi-reclining position, he infiltrated procaine and made a 10-12cm incision. By the use of mirror and short breaks, in about one and half hour, he was finally able to remove his appendix.[5]

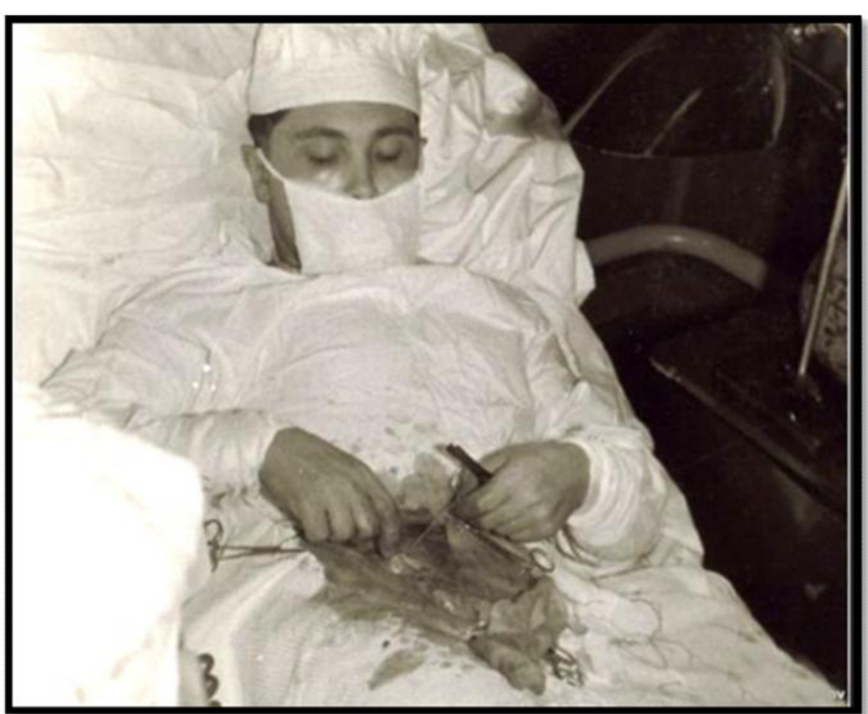


Figure 1: Dr Ivanovich Rogozov performing self appendicectomy

Though there are other references in literature of auto-appendicectomies getting done Rogozov`s self operation was most likely, one of the first such attempt done in hospital setting and still is a great example of determination and will for life.

Mention of appendix can be seen as early as 1492 in anatomical drawings of Leonardo da vinci but was first described by an anatomist Berengario Da Carpi in 1521.

In 1710 Verneys gave the term “Vermiform appendix” meaning worm-like. In 1719 Morgagni published “Aschersaria Anatomica” and gave a detailed information on its site and relations with other structures.

In 1902 Dr A J Oschner in his handbook on appendicitis advised conservative management of appendicitis by keeping patient nil per orally and giving antibiotics and allowing infection to settle down and later interval appendicectomy.

A new variant of well-known grid-iron incision was described by Herrington, Weir and Fowler in which medial extension was done for better exposure, later called Fowler-Weir extension.

In 1982 Semm performed the first successful laparoscopic appendicectomy.[6]

Ultrasonography was first used by Puyleart JBCM et al in 1986 to diagnose appendicitis. At Mc Burney`s point, they were able to visualize base of caecum and appendix. They were also able to comment on its length, diameter, thickness of wall and free fluid in peritoneal cavity[7].Abu-Yousef MM et al in 1989 used transducers to visualize appendix and were able to make diagnosis of appendicitis with sensitivity of 80 to 95%, specificity of 95-100%, and an accuracy of 91-95%[8].CT was used by Paulman AA et al in 1991 to describe characteristics of inflamed appendix[9].

EMBRYOLOGY:-

In 6th week of intra-uterine life, post arterial segment gives rise to caecal bud. It has proximal and distal parts. The former grows and forms the caecum and later part remains narrow and forms the appendix.

ANATOMY:-

It is a blind intestinal diverticulum containing lymphoid tissue. It originates from posteromedial aspect of caecum, just inferior to ileo-cecal junction. The mesoappendix is triangular in shape and arises from posterior part of mesentery of terminal ileum.

It is supplied by appendicular artery which comes from ileo-colic artery. In approximately 50% of all cases, posterior caecal artery gives off accessory appendicular artery of Seshachalam.

Venous drainage is by ileocolic vein which is a tributary of SMV.

Lymphatic drainage is into the mesoappendix lymph nodes and from there into ileocolic group of lymph nodes and then to superior mesenteric group.

From superior mesenteric plexus originates sympathetic and parasympathetic nerves, which supply the appendix. Lower thoracic part of spinal cord gives rise to sympathetic fibres and vagus nerve to parasympathetic fibres.

VARIOUS POSITIONS OF APPENDIX:-

Treves described the following anatomical types comparing the appendix with the face of the clock.

11'O Clock - Paracolic (lies on the sulcus in the lateral aspect of the caecum)

12'O Clock - Retrocaecal

1'O Clock - Pre-ileal

2'O Clock - Post- ileal

3' O Clock - Promontoric

4' O Clock - Pelvic (Appendix dips into the pelvis)

6' O Clock - Subcaecal or mid inguinal

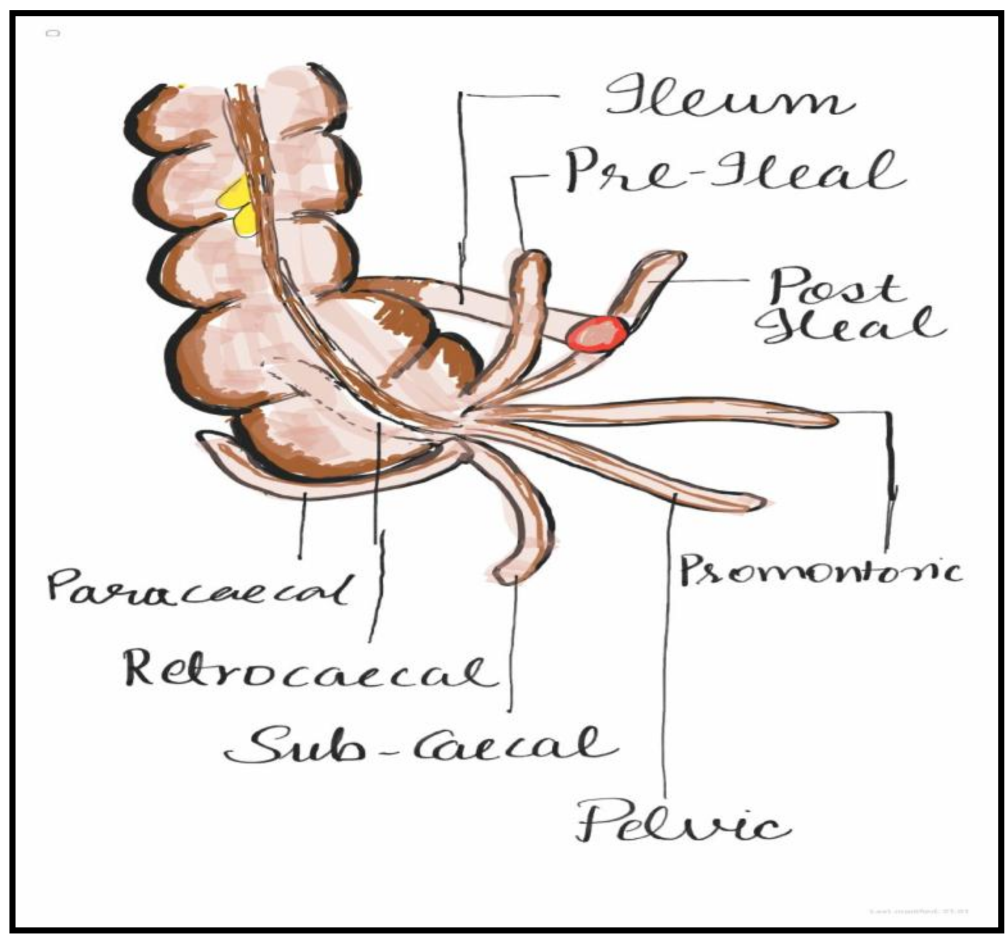


Figure 2: Various positions of appendix

HISTOLOGY:-

The wall of appendix consists of serosa, muscularis, submucosa and mucosa. The mucosa is lined by columnar epithelium. Submucosa has lymphoid tissue. Muscularis layer consists of longitudinal and circular fibres, near the base longitudinal muscle thickens to form taeniae. Serosa completely invests it except along the mesenteric attachment.

ETIOLOGICAL FACTORS[10]:-

For appendicitis following etiological factors are important:-

AGE:

It is more common in 10-30 years of age group and rare in infancy and old age.

SEX:

Before puberty the ratio is 1:1 but the incidence increases in males after puberty to ratio being 2:1 upto 25 years

DIET:

It is more common in highly civilized countries than rural areas.one possible explanation being high use of refined carbohydrates.

SOCIAL STATUS:

It is more common in upper and middle class than lower socio-economic group.

BACTERIAL FACTORS:

Combination of various aerobic and anaerobic organisms is seen in causation of appendicitis. Most common organisms being E.coli, enterococci, non-haemolytic streptococci etc

PATHOLOGY [11]:-

The severity of appendicitis depends upon the degree of peritonitis caused due to

- Perforation.
- Transmigration of bacteria through the appendicular wall

During the initial hours, between the onset of acute appendicitis and rupture, walling off of infective source starts. Intestines and omentum usually form an inflammatory mass, Whereas in other patients a progressive suppurative process produces an expanding collection of pus contained by the walling off process, leading to formation of a peri-appendicular abscess.

Two types of appendicitis are known -

NON OBSTRUCTIVE ACUTE APPENDICITIS:

There is bacterial invasion of mucous membrane and can involve lymphoid follicles. It can end in following ways-

- Resolution
- Suppuration
- Fibrosis
- Gangrene

When the infection reaches the submucosal tissue there is rapid spread of infection. As the distal part of artery is present there, intramural infection can lead to its occlusion by thrombosis resulting in gangrene of the tip

Non-obstructive appendicitis progresses slowly and there is time for immunity to respond and restrain inflammation. As the involvement of tip occurs most frequently, after resolution of the attack, fibrosis occurs and a shrunken tip is classically seen in recurrent appendicitis.

OBSTRUCTIVE ACUTE APPENDICITIS:

On obstruction of lumen, initially there occurs collection of mucus and later bacterial proliferation. After causing breach in mucosa there is involvement of all layers of appendix. Thrombosis of artery secondary to infection happens resulting in gangrene and perforation. The histopathological examination of gangrenous appendices removed shows obstructive pathology (Willkie).[12]The impacted faecolith is usually the site of perforation.

AGENTS CAUSING OBSTRUCTIVE APPENDICITIS:

- Faecoliths
- Worms - Ascariasis, Enterobius vermicularis, taenia, etc.
- Enlargement of lymphoid tissue
- Fibrous stricture
- Band causing kinking of appendix
- Foreign bodies - small fragments of bone, seedsetc
- Carcinoid tumor

When the obstruction is partial and not complicated by infection "mucocele of the appendix" is formed.

CLINICAL FEATURES[10, 13,14] :-

SYMPTOMS:-

MIGRATORY ABDOMINAL PAIN:

Being originated from midgut the first symptom is pain around umbilicus which is constant type of pain resulting from involvement of visceral peritoneum, later there is involvement of parietal peritoneum resulting in localization of pain in right iliac fossa.

FEVER:

When there is more inflammation fever can also be there.

ANOREXIA, NAUSEA, VOMITING:

Nausea and dyspepsia can be seen in milder variants of appendicitis. Whereas in more severe cases there can be reflex pylorospasm resulting in vomiting

BOWEL DISTURBANCE:

Constipation is common. In pre and post ileal positions of appendix due to irritation of distal ileum there can be diarrhea. Pelvic abscesses can cause tenesmus

URINARY DISTURBANCE:

Retrocaecal appendix can irritate ureter and may give rise to pain mimicking right ureteric colic. Increased frequency of micturation, haematuria or dysuria can also occur.

SIGNS:-

TENDERNESS:

As soon as the pain has shifted, there is localized tenderness either at Mc Burney's point or elsewhere, as determine by the site of the appendix. These determine the operative approach.

"Mc Burney's point is described as a point between lateral one-third and the medial two-thirdon spino-umbilical line."

GUARDING AND RIGIDITY:

Guarding is an involuntary contraction of abdominal muscle on palpation. Peritonitis can cause rigidity. Muscular rigidity can be seen if inflamed appendix is in contact with the muscle.

SPECIFIC SIGNS:-

MC BURNEY'S SIGN:

Tenderness is seen on deeper palpation onMc Burney's point.

ROVSING'S SIGN:

When palpating left iliac fossa, there occurs shift in coils of intestines which causes irritation of already inflamed parietal peritoneum resulting in pain in right iliac fossa.

BLUMBERG'S SIGN:

On palpation of right iliac fossa there is rebound tenderness.

PSOAS TEST:

Patient is made to lie on his left side and asked to extend his right thigh. Due to the contraction of psoas muscle over the inflamedretroceacal appendix, pain is felt.

COPE'S OBTURATOR TEST:

Right thigh is flexed and internally rotated, which causes pain in hypogastric region due to irritation with inflamed appendix.

HYPERAESTHESIA IN SHERRENS'S TRIANGLE:

"Sherren's triangle is formed by joining the umbilicus, right anterior superior iliac spine and pubic symphysis."Tapping the skin over this area causes pain. Positive sign helps in diagnosis of acute appendicitis before perforation. If hyperesthesia disappears later in that patient, it indicates perforation of a gangrenous appendix.

BALDWIN'S TEST:

Most tender point is located by finger. Patient is told to lift right leg without flexing knee. Sensation of pain suggests positive test. It is indicative ofretroceacal appendix.

AUSCULTATION:-

Bowel sounds are usually normal. Hyperperistaltic sounds are heard when there is an element of intestinal obstruction.

INVESTIGATIONS:-

TOTAL WBC COUNT:

Increase in TLC and Neutrophil counts is seen in acute appendicitis. Leucocytosis over 10,000/cu mm is seen in over 80-85% of patients of acute appendicitis.[15]Neutrophilia of >75% is seen in about 78% patients.

ERYTHROCYTE SEDIMENTATION RATE (ESR):

Increased ESR is seen in perforated appendix and appendicular abscess and in other types of appendicitis ESR is normal (Albert Lesser Herald and Gold Burger, 1935)

PLAIN X-RAY ABDOMEN:

A number of radiologic signs have been listed by Brookes and Keller (1965) as follows:

- Psoas shadow gets blurred on right side
- Gas in appendix.
- Free intraperitoneal gas with perforated appendix

ULTRASONOGRAPHY:

It is a noninvasive procedure and can be done in all age groups and in pregnant females. It has specificity of 90-99% and sensitivity of 75-90%. The inflamed appendix can be visualized sonographically and the factors like diameter more than 6mm, wall thickness more than 3mm, formed mass, free fluid, local paralytic ileus, graded tenderness over Mc Burney’s point are in favor of appendicitis.

CONTRAST ENHANCED CT SCAN:

It can be done when diagnosis is not clear. It decreases the rates of negative appendicectomies.

DIAGNOSTIC LAPAROSCOPY:

In patients with pain abdomen under evaluation in whom radiological investigations have been of little or no use diagnostic laparoscopy can help in direct visualization of appendix and can also help in finding other abdominal pathologies. It is particularly useful in women of child bearing age group to avoid effects of perforation and peritonitis on future fertility .[16]

SCORING SYSTEMS IN APPENDICITIS:-

Negative appendectomy rate of 15-30% can be seen in patients whom are operated on the basis of just clinical findings .[17]Alvarado in 1986described a scoring system to aid in diagnosis.

"**ALVARADO SCORE**: It is most accepted scoring system. It consists of signs, symptoms and laboratory findings. 1 point each is given to Anorexia, Nausea, Vomiting, migratory RIF pain, Rebound tenderness and Fever, while 2 points are given to Tenderness in right iliac fossa and leukocytosis. 1 point is given to shift to left of neutrophil`s maturation giving a total of 10 points.

Patients having 7 or higher scores have higher chances of appendicitis and surgery is indicated, 5-6 score patients should be observed, and patients with 0-4 score should be given symptomatic treatment and discharged."

The negative appendectomy rate of 14.7% was seen in a study which used Alvaradoscore.[19]

However in 1994, Kalan removed the "shift to left of neutrophils" parameter and proposed **MODIFIED ALVARADO SCORE**. It includes extra signs while examination (cough sign, Rovsing's sign and rectal tenderness) which decreases the chances of negative appendectomy.[20] Ina study a negative appendectomy rate of 11.49% was reported using modified Alvarado score .[21]

Fenyo G, Lindberg G, et al conducted a study on 1167 patients with suspected Appendicitis and out of which 475 patients underwent appendicectomy and 392 (82.5%) patients had histopathologically proven appendicitis. The negative laparotomy rate was 17.5% (11.2% for males and 25.4% for females). The sensitivity of scoring system was 0.73 and the specificity was 0.87 when cut off point of score -2 or more was taken. [22]

FENYO-LINDBERG SCORING SYSTEM:

Gender : Male: 8 Female: -8

TLC :<9,000 microL : -15, 9000 to 13,999 : 2, >=14000: 10

Duration of pain :<24 hours : 3 , 24 to 48 hours : 0, > 48 hours : -12

Progression of pain: YES: 3 , NO: -4

Aggravation of pain by coughing: NO: - 11, YES: 4

Vomiting: NO: -5, YES: 7

Migration of pain: NO: -9 , YES: 7

Rebound tenderness: NO: -10 , YES: 5

Rigidity of abdominal wall: NO: -4, YES: 15

Tenderness outside of RLQ: NO: 4, YES : -6

Total score- max score: 66 min: -84

The higher the score the more likely acute appendicitis is present.

Management-

>= -2 : consider surgery

-3 to -16 : observation with repeated examination

<= -17 : observe or discharge home

<u>DIFFERENTIAL DIAGNOSIS</u>:-

The conditions which can mimic acute appendicitis are-

ABDOMINAL CAUSES:

- PERFORATED PEPTIC ULCER–Passage of perforated contents through the paracolic gutter into the right iliac fossa can result in giving confusion about diagnosis. But typically the pain starts in epigastric and umbilical region and associated history of NSAIDS abuse can be there
- TYPHLITIS – It is commonly amoebic in etiology. Presents with more diffuse tenderness in right lower quadrant. Stool microscopy can be helpful.
- NONSPECIFIC MESENTERIC ADENITIS – Presents with colicky pain and the patient may have pain-free intervals, lasting for a few minutes.
- TERMINAL ILEITIS – It can be associated with abdominal cramps, diarrhea, weight loss suggesting ileitis.
- MECKEL'S DIVERTICULITIS –It closely resembles appendicitis, but pain can be central or left sided.

- ILEO-CAECAL TUBERCULOSIS – It is more common in children and can present with right iliac fossa mass and nausea, vomiting. But the typical symptom sequence is not there.

GYNAECOLOGICAL CAUSES:

- SALPINGITIS – Patient complains of pain in lower abdomen but usually it is bilateral. It can be associated with other symptoms like dysmennorhia , dysuria, vaginal discharge etc. USG can help in diagnosis.
- ECTOPIC GESTATION – It mimics appendicitis especially in cases of right sided unruptured tubal gestation. But there is no history of migratory pain, occurs only in right lower quadrant.It can be associated with complaints of missed menstrual period .Urinary pregnancy test can be positive.
- TWISTED RIGHT OVARIAN CYST – Can be diagnosed with the help of USG.

UROLOGICAL CAUSES:

- RIGHT URETERIC COLIC –Typically the pain starts in the loin and goes till groin. Other urinary complaints are usually present. Plain xray, usg abdomen and pelvis can help in diagnosis.

COMPLICATIONS[10,13,23]:-

PERFORATION AND GANGRENE:

If perforation or gangrene occurs under 12-24 hours of onset of symptoms, there are more chances of generalized peritonitis. Whereas if perforation occurs after 24 hours, walling off process starts which results in containment of infection.

APPENDICULAR MASS:

A perforated appendix can form an inflammatory mass. There can be a history of 4-5 days. It is managed conservatively.

APPENDICULAR ABSCESS:

The features of an appendicular abscess include Fever, leucocytosis and signs of increasing toxicity. The mass and also the area of tenderness enlarge. Patient may have tenesmus or strangury or dysuria if pelvic in position. The commonest site of abscess is right iliac fossa and next is pelvis.

TREATMENT:-

Before appendicectomy is done, pre-operative assessment of patient is done. Intravenous fluids and antibiotics are given. Preoperative antibiotics lower the infectious complications in acute appendicitis.[24]

Surgical Infection Society recommendscefoxitin for mild and moderate infections. For severe infections, carbapenems or combination of3rdgeneration cephalosporin with anaerobic coverage provided by clindamycin ormetronidazole is given.[25]

Appendectomy can be done by open or laparoscopic techniques.

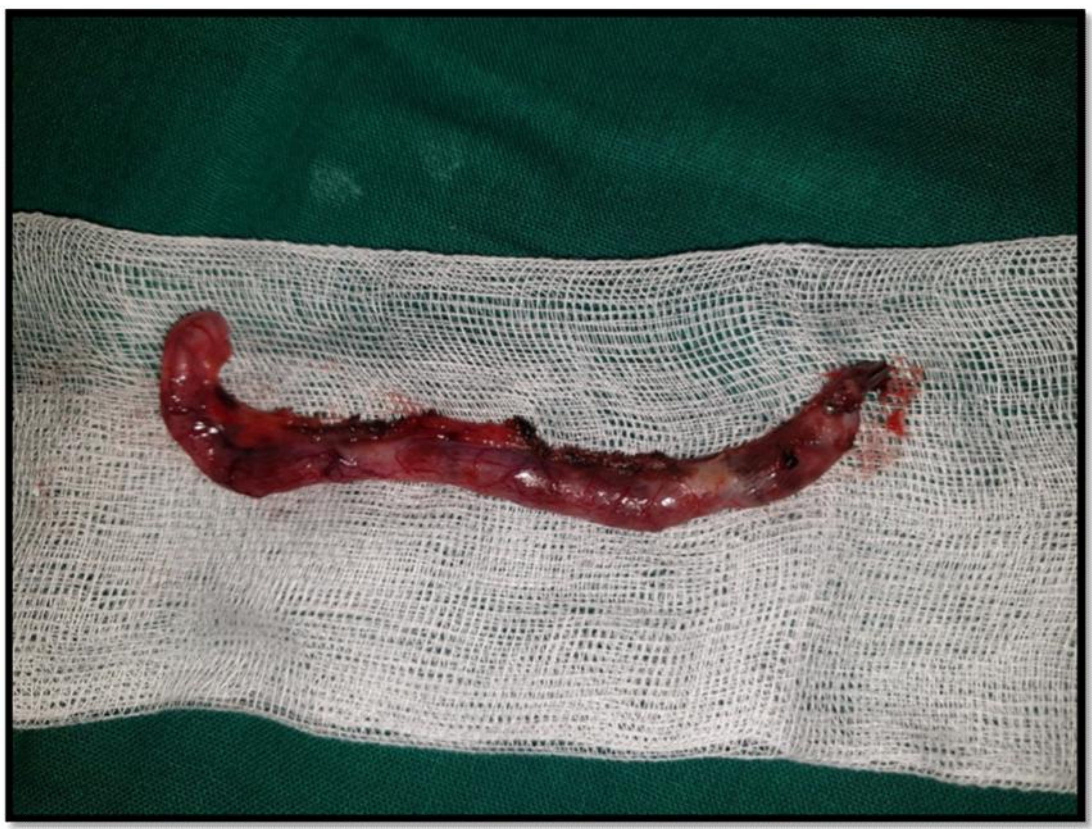


Figure 3: Removed appendix

CONVENTIONAL APPENDICECTOMY [26]:

1. Mc Burney's incision or Mc Arthur gridiron incision: A muscle splitting incision is made perpendicular to right-spino umbilical line at the Mc Burney's point.

2. Rockey-Davis incision: transverse right lower quadrant incision centered over the point of maximal tenderness.

3. Lanz's incision: This incision iscentred on the midclavicular–midinguinal line 2 cm below the umbilicus.

4. Rutherford Morrison's incision: It is an oblique musclecutting incision.

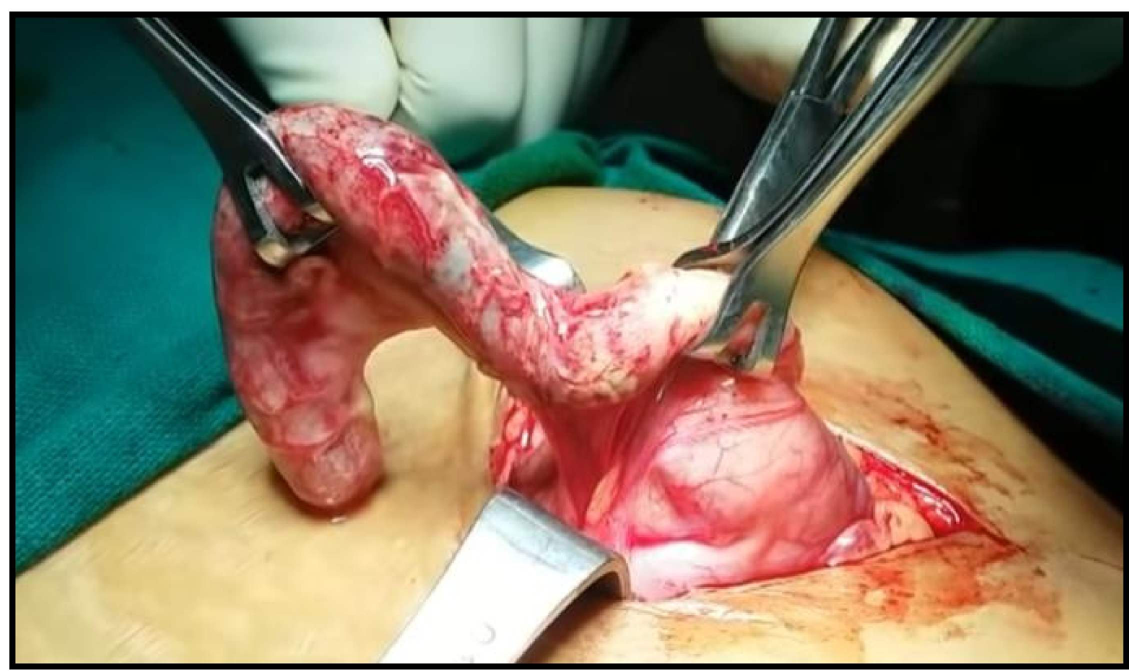


Figure 4: View of appendix during open appendicectomy

LAPAROSCOPIC APPENDECTOMY:

It is done under GA. A Ryle`s tube and SRC are inserted .Pnemoperitoneum is created using open technique or veeres needle. Usually three ports are made. Trocar is placed at umbilicus (10 mm) ,insuprapubic location (5 mm) and in right orleftlower quadrant(5mm). Appendix is identified. Window is created between mesentery andappendix and then ligated. The appendix is removed either through the trocar site or by a retrieval bag. Trocars are taken out under direct vision.[27,28]

Open versus Laparoscopic Appendectomy[29,30,31]:-

Open appendectomy:

1. It is less time consuming.
2. Lesser chances of intra-abdominal abscesses.
3. Cost - efficient

Laparoscopic appendectomy:

1. Less postoperative pain
2. Reduced length of stay
3. Lesser chances of surgical site infection.
4. Diagnostic scopy can be done especially in cases of pain abdomen under evaluation.It is useful in women of child bearing age group. In more than 40% of the suspected cases a normal appendix is found.[32]

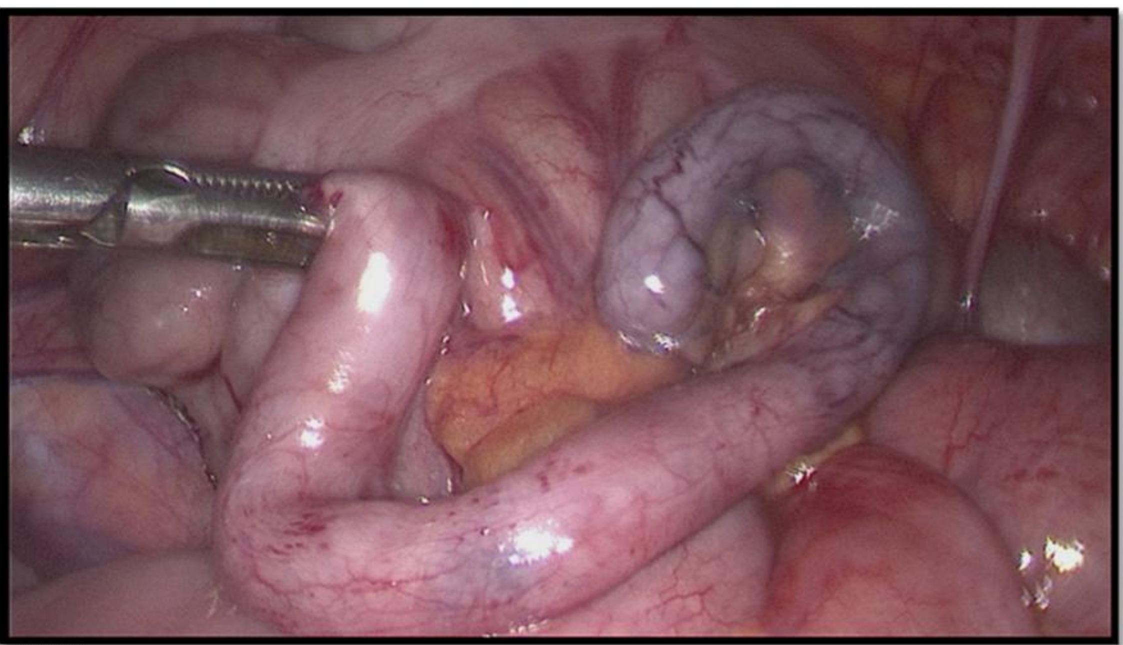


Figure 5: View of appendix during laparoscopy.

PERFORATED APPENDIX:

When appendicitis progresses to perforation, its management depends upon the nature of the perforation. If the perforation is contained and a mass is formed then conservative management is done. If perforation is present with spillage of contents leading to peritonitis then laparotomy is done.

In cases of appendicular mass ,appendectomy can be difficult because of dense adhesions and associated inflammation. Ileocecectomy may be needed if inflammation involves cecum. Complications such asenterotomy, postoperative abscess, or entero-cutaneous fistula can occur postoperatively. Because of these potential complications, an initial non-operative approach is used.[33-35]It is called **Ochsner-Sherren** regimen. Treatment failure is indicated by persistent pain, fever, leukocytosis or increasing mass size, requires immediate appendectomy. If there is symptomatic improvement, diet can be slowly advanced, usually over 3–5 days. Patients are discharged when clinical parameters become normal. Using this approach, more than 80% of patients can be spared an appendectomy at the time of initial presentation.[33,34]

Radiological imagingguided drainage can be done per-cutaneously or transrectally in cases of contained abscesses.[36,37] Studies suggest that this approach to appendiceal abscesses results in fewer complications and decreased total length of hospital stay.[35,38]After drainage procedure, the patient is closely monitored and is placed on bowel rest with intravenous antibiotics and fluids. Advancement of diet progress as clinically indicated.

Interval appendectomy:

Treatment after initial non-operative management of an appendiceal mass or abscess remains controversial. Some recommend interval appendectomy[38,39],while others consider subsequent appendectomy unnecessary.[34,40]Authors who advise against interval appendectomy cite a relatively low incidence of future appendicitis (20% or less)[40] and high complication rates from interval appendectomy i.e. upto16%.[35] Proponents of interval appendectomy point to the low morbidity relative

to appendectomy for acute appendicitis, the likelihood of recurrence, and the possibility of ongoing appendiceal pathology,[39] including cancer. Interval appendectomy has morbidity rate of less than 3% and hospital stayof 1-3 days.[41] Interval appendectomy should be considered for most patients who had previously undergone non-operative management.

OSCHNER SHERREN (CONSERVATIVE) TREATMENT[42]:

One of the complications of acute appendicitis is Appendicular mass.It is an inflammatory mass formed by loops of ileum and omentum.It can be managed conservatively by Ochsner-Sherren regimen.

Technique:

Abdomen is palpated and boundaries of mass are marked.Patient is kept nil per orally and Ryle`s tube is passed. 2nd and 4th hourly measurement of pulse rate and blood pressure is done respectively and fluid balance charting is done. Intravenous antibiotics and fluids are started.

Operation is indicated if there is increase in pulse rate or pain abdomen or vomiting even after 6 hours of treatment.

Usually there is symptomatic improvement after 24-48 hours. Ryle`s tube can be removed once patient regains bowel activity, then interval appendicectomy can be done in 4-6 weeks.

INDICATIONS:

1. Appendicular lump
2. Symptom duration >50 hours

CONTRA-INDICATIONS:

1. Hyperesthesia
2. Age < 5 yrs.
3. When differential diagnosis includes perforated diverticulitis or duodenal ulcer
4. Presence of general peritonitis

METHODOLOGY

This study was done in department of general surgery of KLES Dr. PKH and MRC, Belgaum over a period of one year, from January 2018 to December 2018.

STUDY DESIGN: Cross sectional study

STUDY PERIOD: 1st Jan 2018 - 31st Dec 2018

SAMPLE SIZE AND SAMPLE SIZE CALCULATION:

25% of average of total no. of cases of acute appendicitis in last 3 years=

25% of (625+502+380) / 3 =

25% of 1507/3=

25% of 502=

112 cases 100 cases

SAMPLING PROCEDURE:

All consecutive patients fulfilling the criteria and who give informed consent during the period of study will be sample of this study.

METHOD FOR ANALYSIS:

All the patients were scored by the scoring system and were put into two groups. In 1st group, patients with a total of -2 or more were put and in 2nd group, patients scoring less than -2 were put.

FENYO-LINDBERG SCORING SYSTEM:

Gender: Male: 8 Female: -8

TLC: <9,000 microL : -15 ,9000 to 13,999 : 2 , >=14000: 10

Duration of pain: <24 hours : 3 , 24 to 48 hours : 0 , > 48 hours : -12

Progression of pain: YES: 3 , NO: -4

Aggravation of pain by coughing: NO: - 11 , YES: 4

Vomiting: NO: -5 , YES: 7

Migration of pain: NO: -9 , YES: 7

Rebound tenderness: NO: -10 , YES: 5

Rigidity of abdominal wall: NO: -4 , YES: 15

Tenderness outside of RLQ: NO: 4 , YES : -6

Total score- max score: 66 min: -84

The higher the score the more likely acute appendicitis is present.

Management-

>= -2 : consider surgery

-3 to -16 : observation with repeated examination

<= -17 : observe or discharge home

After appendicectomy the samples were sent for histopathological examination.

INCLUSION CRITERIA:

- Patients presenting with right lower quadrant pain attending surgery OPD , getting admitted and under treatment at KLES DR PKH and MRC BELGAUM.
- Age group – 17 to 65 years.
- Sex- both male and female.

EXCLUSION CRITERIA:

- Patient not fit or willing for surgery.
- Appendicular perforation, peritonitis, appendicular abscess, appendicular mass.
- Pregnancy.
- No consent for study.

Ethical clearance:

Approval for this study was given by the Ethical and Research Committee, JNMC, Belgaum.

Informed Consent:

The patients were informed in detail about the risks and benefits of the procedure and a written informed consent was taken before enrollment.

Method of collection of data:

Demographic data such as age and sex were recorded and patients were examined. According to examination findings Fenyo-Lindberg scoring was done. These findings were recorded on a predesigned proforma.

INVESTIGATIONS: TLC

RESULTS

This one year hospital based, cross-sectional study was conducted on hundred patients with right lower quadrant pain in Department of General Surgery, KLES Dr.PKH and MRC, Belgaum over a period of one year, from January 2018 to December 2018.

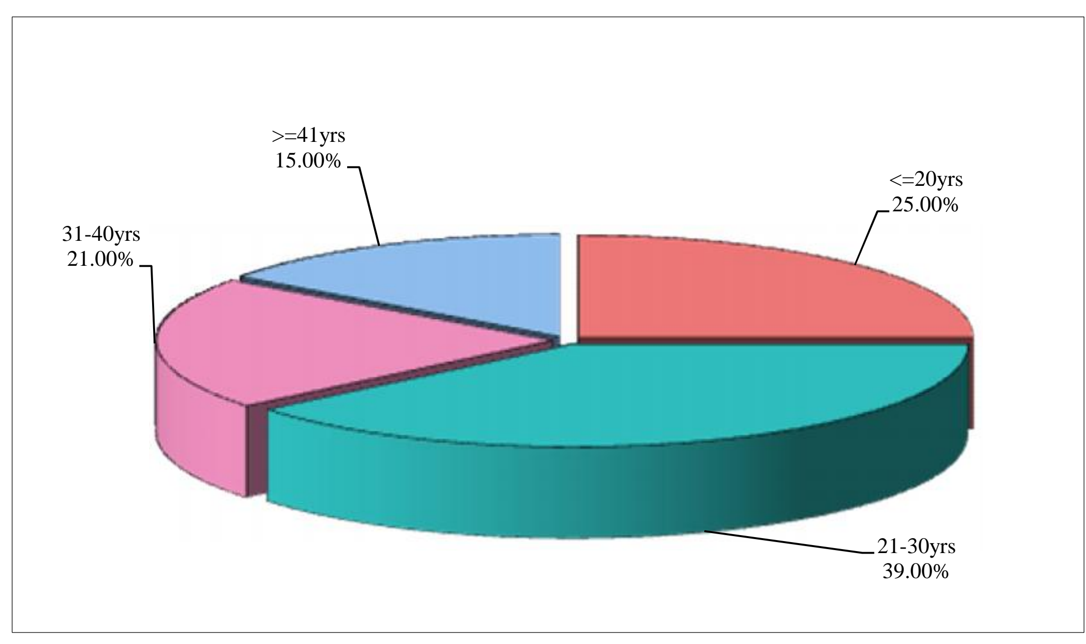
Demographic data such as age and sex were recorded and patients were examined. According to examination findings Fenyo-Lindberg scoring was done. The final scores of F-L score were then compared with histopathology reports.

The data obtained was entered in Microsoft Excel Spreadsheet. The data was analysed and the observations were interpreted as below.

Table 1: Age wise distribution of patients

Age groups	No of patients	% of patients
<=20yrs	25	25.00
21-30yrs	39	39.00
31-40yrs	21	21.00
>=41yrs	15	15.00
Total	100	100.00
Mean age	28.77	
SD age	10.64	

Graph 1: Age wise distribution of patients

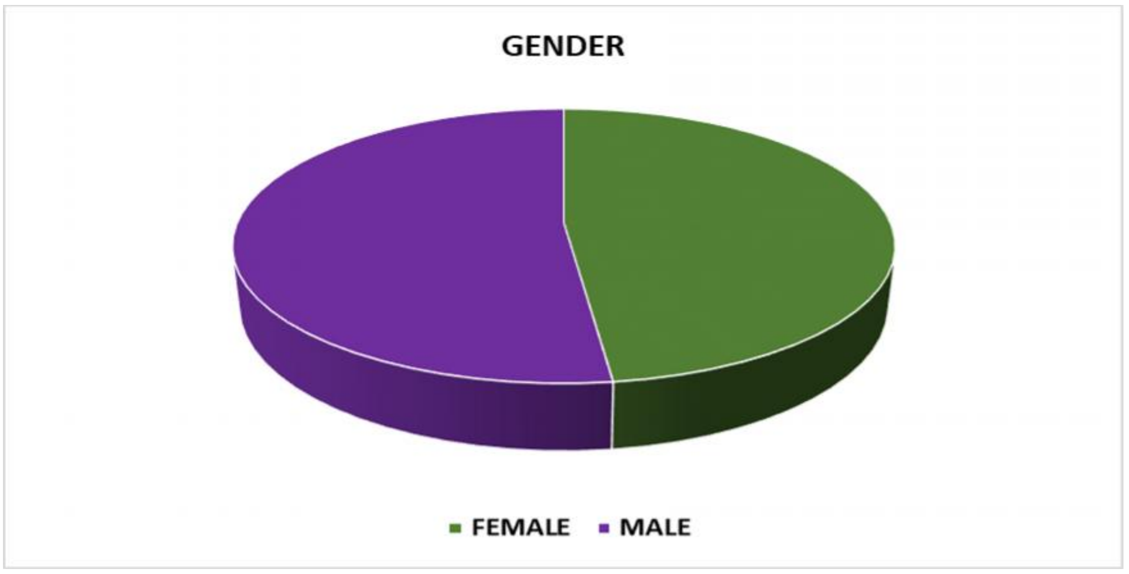


In our study, 64% of patients were of age between 16-30 years.

Table 2: Gender wise distribution of patients

Gender	Number	Percentage
Female	48	48
Male	52	52
Total	100	100

Graph 2: Gender wise distribution of patients

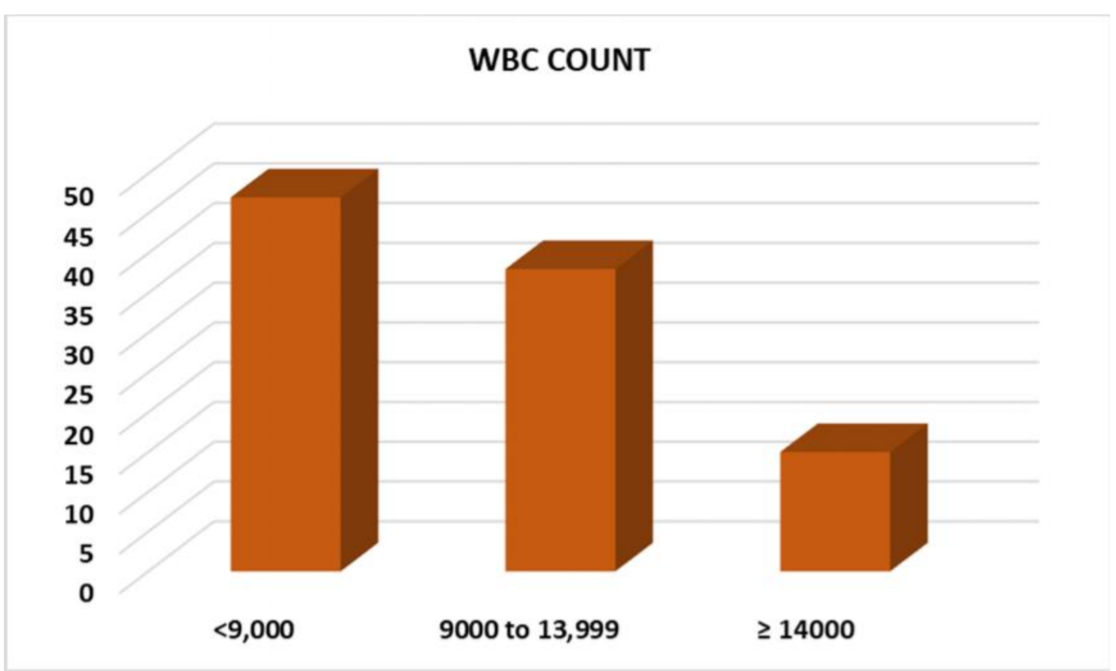


In our study of 100 patients, the total number of males were 52 and females were 48.

Table 3: Distribution of patients according to TLC

WBC count	Number	Percentage
<9,000	47	47
9000 to 13,999	38	38
14000	15	15
Total	100	100

Graph 3: Distribution of patients according to TLC

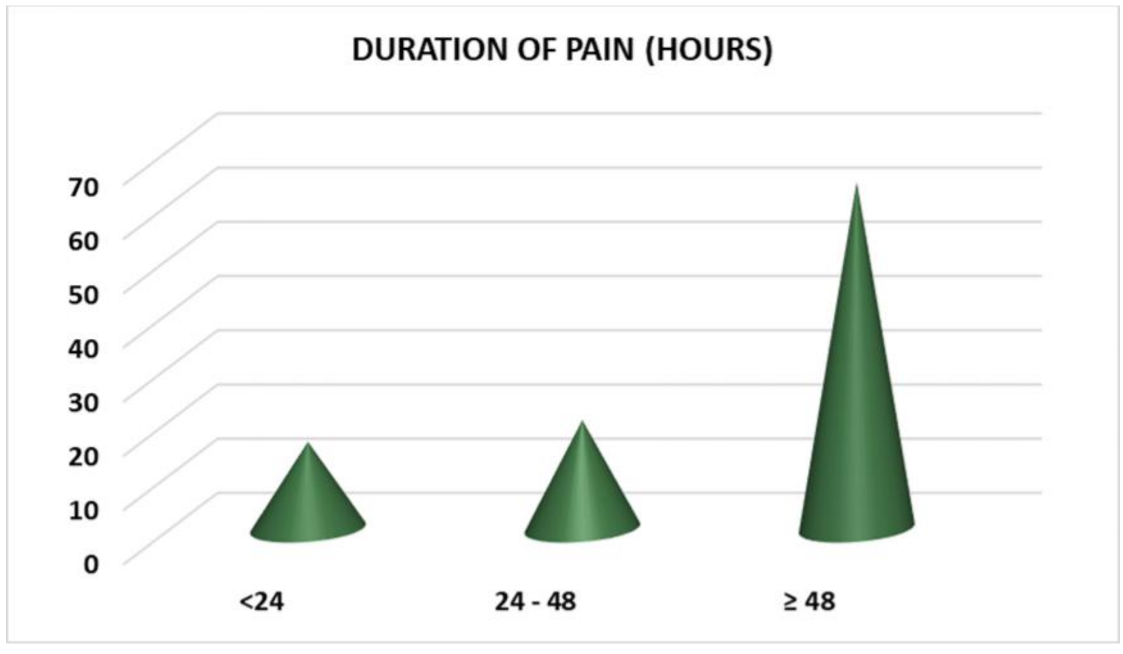


In our study, 47 out of 100 patients had total leucocyte count less than 9000, whereas 38 patients had it in the range of 9000-13999 and only 15 patients had total count above 14000.

Table 4: Distribution according to duration of pain

Duration of pain (hours)	Number	Percentage
<24	16	16
24 – 48	20	20
48	64	64
Total	100	100

Graph 4: Distribution according to duration of pain

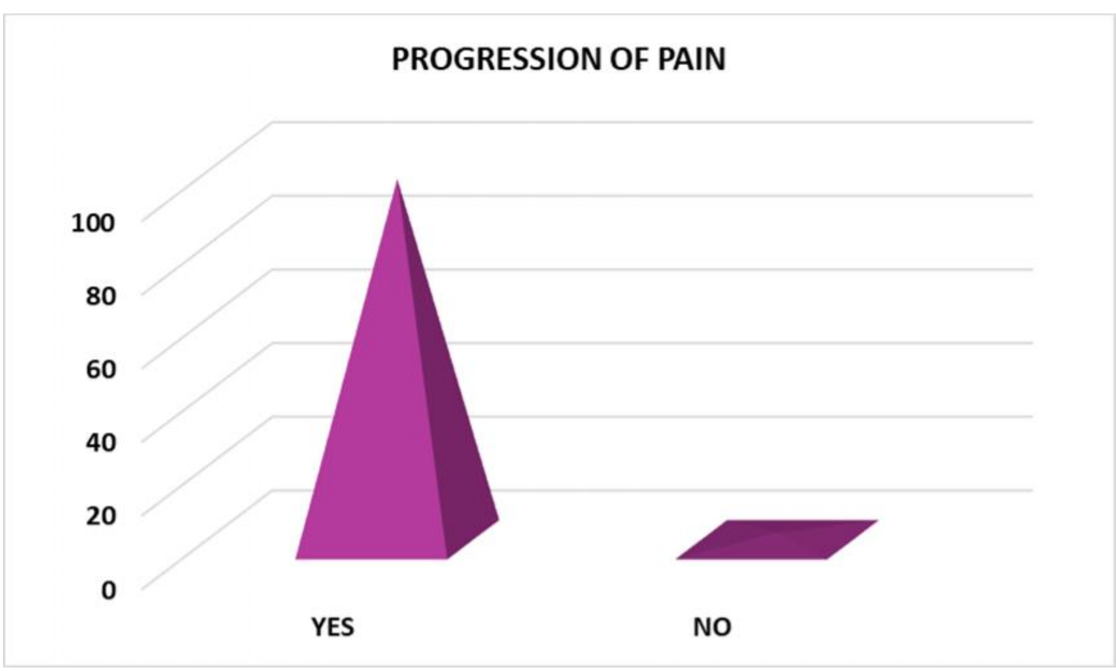


In our study, 16 patients presented in less than 24 hours of onset of symptom, whereas 20 patients presented within 24 to 48 hours of symptom. Majority of patients i.e 64 out of 100 presented after 48 hours of onset of symptom

Table 5: Distribution according to progression of pain

Progression of pain	Number	Percentage
Yes	98	98
No	2	2
Total	100	100

Graph 5: Distribution according to progression of pain

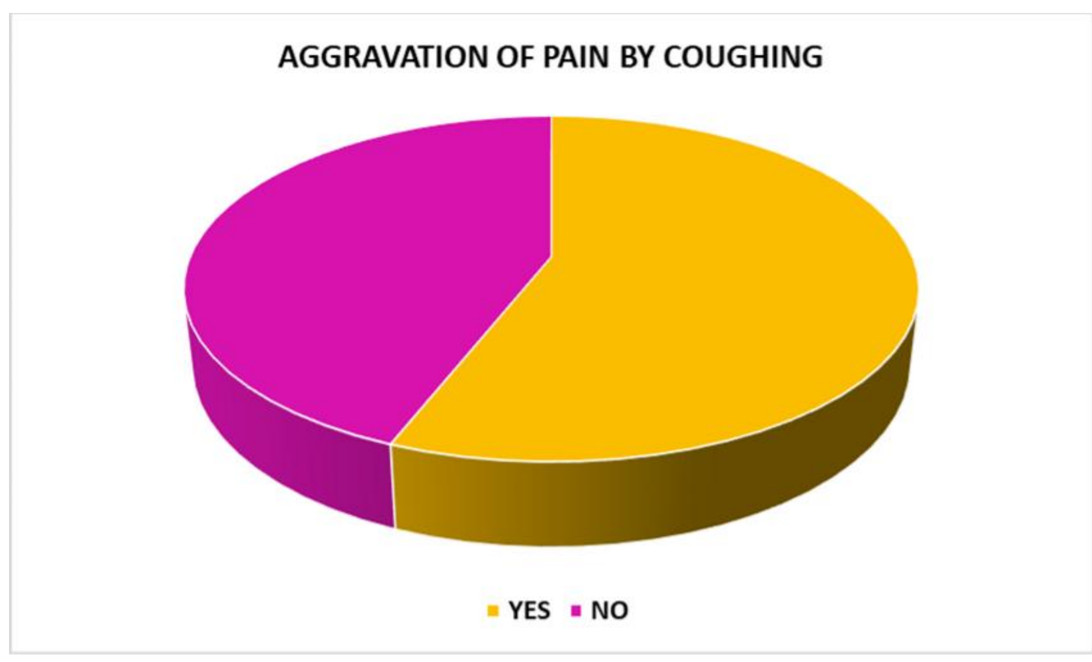


Majority of patients i.e 98 out of 100 had progression of pain

Table 6: Distribution according to aggravation of pain on coughing

Aggravation of pain by coughing	Number	Percentage
Yes	56	56
No	44	44
Total	100	100

Graph 6: Distribution according to aggravation of pain on coughing

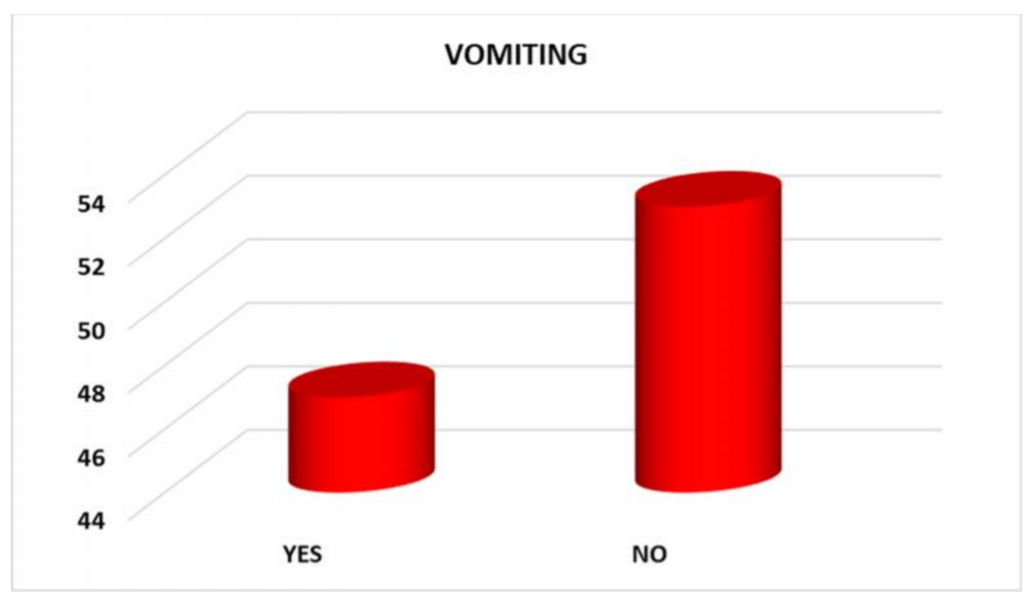


In our study, 56 out of 100 patients complaint of increased pain on coughing.

Table 7: Distribution according to no. of patients who had vomiting

Vomiting	Number	Percentage
Yes	47	47
No	53	53
Total	100	100

Graph 7: Distribution according to no. of patients who had vomiting

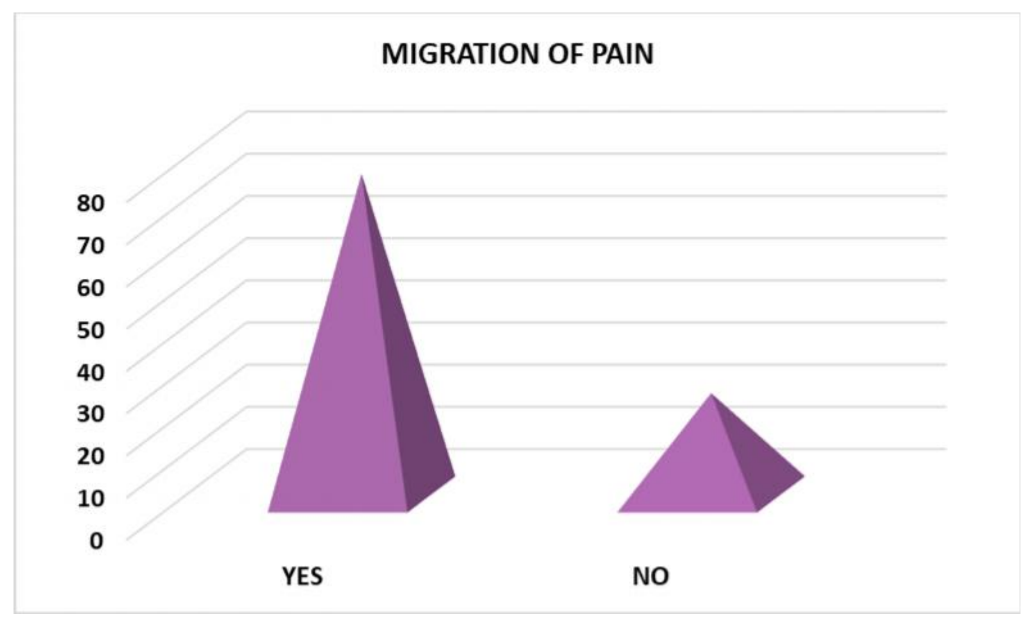


In our study 47 patients complaint of vomiting.

Table 8: Distribution according to no. of patients who experienced migration of pain

Migration of pain	Number	Percentage
Yes	76	76
No	24	24
Total	100	100

Graph 8: Distribution according to no. of patients who experienced migration of pain

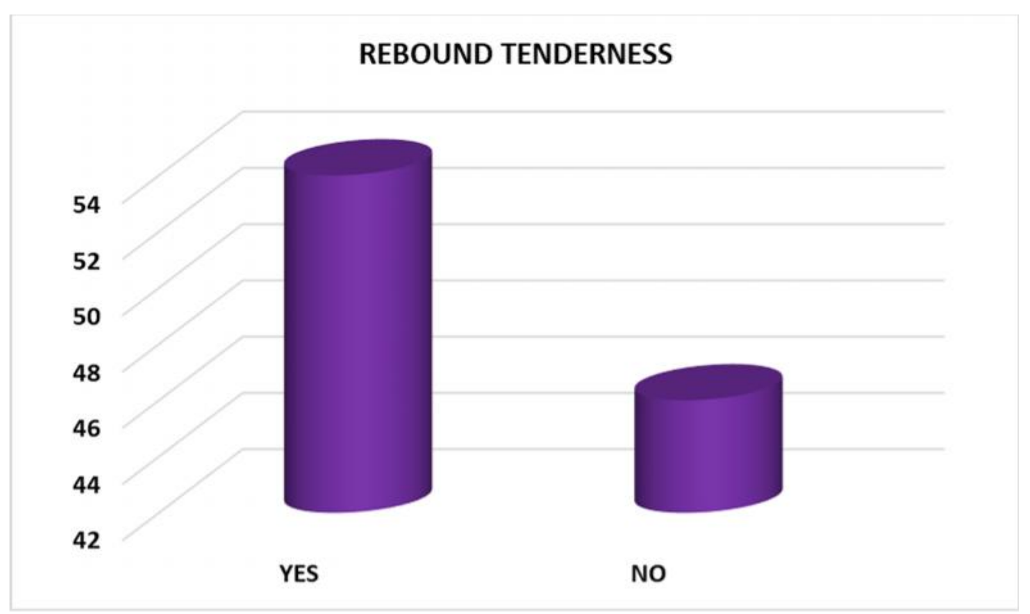


In our study 76 patients experienced pain initially in umbilical region which later shifted to right iliac fossa.

Table 9: Distribution according to no. of patients who experienced rebound tenderness

Rebound tenderness	Number	Percentage
Yes	54	54
No	46	46
Total	100	100

Graph 9: Distribution according to no. of patients who experienced rebound tenderness

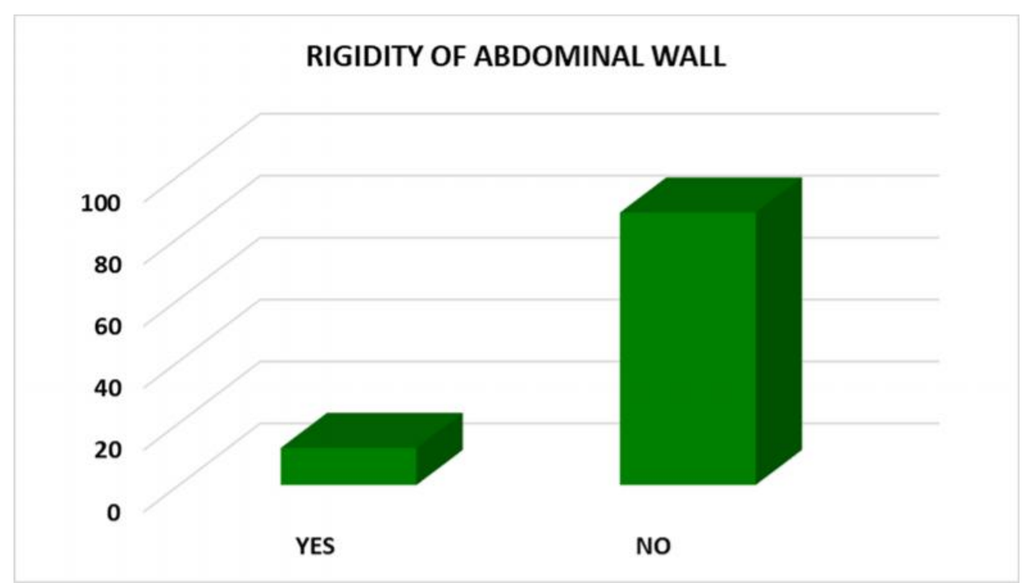


A total of 54 patients had rebound tenderness on palpation

Table 10: Distribution according to no. of patients who experienced rigidity of abdominal wall

Rigidity of abdominal wall	Number	Percentage
Yes	12	12
No	88	88
Total	100	100

Graph 10: Distribution according to no. of patients who experienced rigidity of abdominal wall

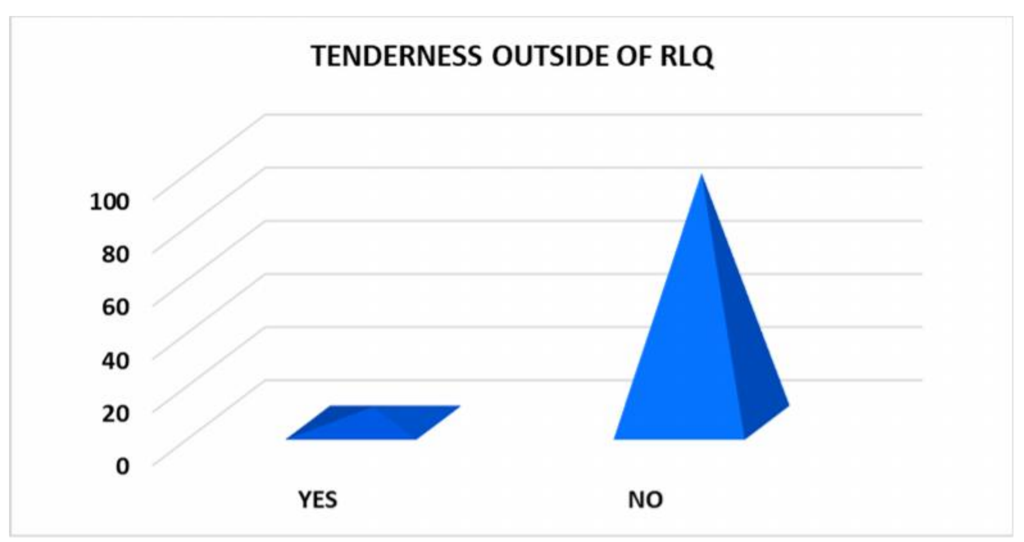


Only 12 patients had rigidity of abdominal wall indicating peritonitis.

Table 11: Distribution according to no. of patients experiencing tenderness outside RLQ

Tenderness outside of RLQ	Number	Percentage
Yes	6	6
No	94	94
Total	100	100

Graph 11: Distribution according to no. of patients experiencing tenderness outside RLQ



Only 6 patients had involvement of abdomen other than right lower quadrant.

All the patients were given scores according to the variables of this scoring system and were put into two groups. Patients with a total of more than -2 i.e. those who had more chances of having acute appendicitis, were put in group 1 and patients with score of less than -2 i.e. those who had less chances of having acute appendicitis were put in group 2.Then, these values were compared with histopathology reports. Acute appendicitis was taken as positive while chronic appendicitis and patients who didn`t undergo surgery were put into negative.

Table 12: Comparison between F-L scoring system and Histopathology

	Histopathology		
F-L Scoring system	**Positive**	**Negative**	**Total**
> -2	39	13	52
< -2	15	33	48
Total	54	46	100

Using this data, efficacy of Fenyo–Lindberg scoring system was assessed by calculating sensitivity, specificity, positive predictive value and negative predictive value.

Sensitivity = 72.22 %

Specificity = 71.74%

Positive Predictive Value = 75%

Negative Predictive Value = 68.75%

DISCUSSION

A cross sectional study of 100 patients presenting with right lower quadrant pain to surgery OPD at KLES Dr. PKH and MRC Belgaum was undertaken to evaluate the diagnostic efficacy of Fenyo-Lindberg scoring system in appendicitis .

Acute appendicitis is still a common abdominal emergency throughout the world. Its diagnosis mainly depends upon the clinical examination.

So a thorough clinical examination with basic investigations is one of the best diagnostic tools for acute appendicitis. The Fenyo-Lindberg score only uses history, clinical examination findings and total leucocyte count, so it can be easily applied, even in remote areas where facilities are less and can help in reaching diagnosis before complications can occur.

The present study was undertaken to evaluate the usefulness of Fenyo-Lindberg scoring system in diagnosing acute appendicitis and reducing the number of negative appendicectomy.

All the patients having right lower quadrant pain were scored according to the variables of the scoring system. Histopathology was considered the gold standard for the confirmation of the diagnosis. A total of 54 patients had acute appendicitis on histopathology, while 36 patients had chronic appendicitis.10 patients were further evaluated and surgery was not considered.

In our study of 100 patients, the total number of males were 52 and females were 48.In 1992 C. K. Pillar in his study on acute appendicitis, found more incidence

of this disease in males in comparison to females.[43] Walker SJ et al in their study conducted on 248 patients found this ratio to be 1.3:1 .[44]

In our study 47% patients had vomiting. According to review of literature, 51-69% of patients who suffer from appendicitis experiencevomiting.[45]

In a study done by Ohmann C et al, more than 95% of patients experienced right lower quadrant pain whereas nausea and vomiting was experienced by more than 65% of patients.[46]

In 15 patients TLC was more than 14,000 whereas a total of 16 patients duration of onset of symptom was less than 24 hours, suggesting association of more severity of appendicits with high TLC counts.

The total leucocyte count is used regularly to diagnose acute appendicitis. A raised TLC is considered sensitive for acute appendicitis but has low specificity. According to studies upto 80% to 85% of patients of acute appendicitis have total count above 10,000/mm^3.[47] In our study 53% of patients had TLC over 9000/mm^3.

In 98% of the patients progression of pain was seen, whereas migration of pain was seen in 76% of patients and in 56% of patients there was increased sensation of pain on coughing indicating involvement of parietal peritoneum.

On clinical examination of the patients, tenderness at right lower quadrant was present in all cases, while rebound tenderness was present in 54% of cases.

In our study sensitivity was 72 % and specificity was 71%. The results of our study were similar to results of previous studies. Fenyo G, Lindberg G, et al conducted a study in which they applied this scoring system in a total of 1167 patients

with suspected appendicitis were taken, the sensitivity of scoring system at a cut-off point of score -2 or more was 73% and the specificity was 87% .[22]

Fenyö G, et al did a study in which 259 patients with suspected acute appendicitis were prospectively taken and scoring system was applied. The scoring system had 90.2% sensitivity, 91.4% specificity, 82.5% positive predictive value and 95.4% negative predictive value[48]

In a study done by Chong CF et al, on RIPASA score, sensitivity was 88% and specificity was 67%, suggesting that RIPASA score has better sensitivity in diagnosing acute appendicitis.

In a study done by Dey, S., Mohanta, P.K., Baruah, A.K. et al.,on Alvarado scoring system, found sensitivity and specificity of 94.2 and 70% respectively.[49]"The sensitivity and specificity of MASS in study done by Kanumba, Emmanuel S et al was 94.1% (males 95.8% and females 88.3%) and 90.4% (males 92.9% and females 89.7%) respectively."[50] These studies show that Alvarado and Modified Alvarado scoring system have very high sensitivity and specificity in diagnosing appendicitis, when compared to our scoring system.

The results of this study are similar to the previous studies done on F-L scoring system but when these results are compared to those of other studies done on other scoring systems, we find that sensitivity and specificity of this scoring system is less. The number of studies on this scoring system are less, so more studies are needed and that too on larger sample sizes to know the extent of its diagnostic accuracy.

CONCLUSION

- In this study it was found that males suffered more from acute appendicitis than females and the commonest affected age group was 16-30 years of age.
- Leucocytosis is a sensitive test for acute appendicitis but its diagnostic value is limited because of its low specificity. Its significance is in its use with clinical examination and other investigations, not as a separate entity.
- Pain in right iliac fossa of duration less than 24 hours, of progressive nature, which increases on coughing appears to be the most important symptom while diagnosing appendicitis.
- Right iliac fossa tenderness along with rebound tenderness appears to be most reliable for diagnosing acute appendicitis
- The Fenyo-Lindberg scoring system has a moderate diagnostic efficacy for acute appendicitis.
- In our study this scoring system had a sensitivity of 72% and specificity of 71% in diagnosing acute appendicitis.
- Though it is less sensitive than more widely used Alvarado scoring system. It can be applied on a larger sample size to know the extent of its diagnostic accuracy.
- The sensitivity and specificity are comparable to previous studies but as the sample size is small, study has to be done in larger sample size to get the data necessary to generalize the findings and if deemed necessary modifications can be done and it can be supplemented by other means leading to better accuracy.

SUMMARY

This one year hospital based cross-sectional study was conducted on a total of hundred patients with right lower quadrant pain in the Department of General Surgery, KLES Dr. PKH and MRC, Belgaum over a period, from January 2018 to December 2018.

In our study appendicitis was more common in males when compared to females and its peak incidence was seen in 16-30 age group.

In 98% of the patients progression of pain was seen, whereas migration of pain was seen in 76% of patients and in 56% of patients there was increased sensation of pain on coughing indicating involvement of parietal peritoneum. On clinical examination of the patient, tenderness at right iliac fossa was present in all cases, while rebound tenderness was present in 54% of cases.

In 15 patients TLC was more than 14,000 whereas a total of 16 patients duration of onset of symptom was less than 24 hours, suggesting association of more severity with high TLC counts.

This scoring system has sensitivity of 72% and specificity of 71% in diagnosing acute appendicitis. The Positive predictive value was 75% and Negative predictive value was 68%.

The results are comparable to previous studies but as the sample size is small, study has to be done in higher sample size to get the data necessary to generalize the findings.

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ANNEXURE –I - CONSENT TO PARTICIPATE IN THE STUDY

I Mr./Ms.____

have been explained about the research study, the need of the study, the intervention, their risks, benefits and alternatives available in my own vernacular language.

I voluntarily agree to participate in this study by signing up this form below. I understand that I may withdraw at any time from this study. I have been given adequate time to clarify my doubts about the study and my rights as a study participant.

My signature / thumb impression below indicates that I have read or information in the consent been read to me including the risks and benefits and have cleared my doubts.

Name of participant: Signature/LTI:

Name of legally authorized Signature/LTI:

Representative (if applicable):

Relationship with participant:

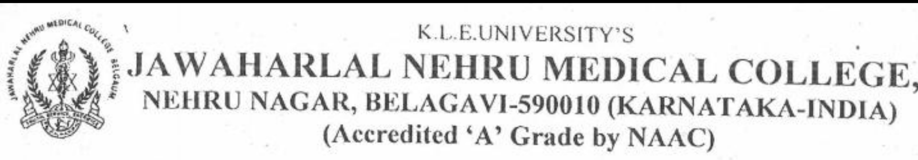
Name of witness: Signature:

Name of investigator: Signature:

Date:

Place:

ANNEXURE –II – ETHICAL CLEARANCE LETTER



K.L.E.UNIVERSITY'S
JAWAHARLAL NEHRU MEDICAL COLLEGE,
NEHRU NAGAR, BELAGAVI-590010 (KARNATAKA-INDIA)
(Accredited 'A' Grade by NAAC)

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Ref: MDC/DOME/ 22

Date: 22/11/2017

To,

PG student in Surgery,
J.N.Medical College,
BELAGAVI.

Sub: Institutional Ethical Clearance for the study.

With reference to the above, we wish to inform you that your proposed research project titled **"DIAGNOSTIC EFFICACY OF FENYO-LINDBERG SCORING SYSTEM IN PATIENTS OF ACUTE APPENDICITIS A ONE YEAR CROSS SECTIONAL STUDY AT KLE DR PRABHAKAR KORE HOSPITAL"**, is ethical and justifiable. The proposed research project has been cleared by the JNMC Institutional Ethics Committee on Human Subjects Research.

(Dr. Arathi Darshan)
Member Secretary
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

(Dr. Roopa M Bellad)
Chairman,
JNMC Institutional Ethics Committee
on Human Subjects Research,
J.N.Medical College, Belagavi.

ANNEXURE –III - PROFORMA / QUESTIONNAIRE TO BE USED FOR DATA COLLECION

The proposed proforma / questionnaire to be used for data collection for the study titled **DIAGNOSTIC EFFICACY OF FENYO-LINDBERG SCORING SYSTEM IN PATIENTS OF ACUTE APPENDICITIS A ONE YEAR CROSS SECTIONAL STUDY IN KLE DR PRABHAKAR KORE HOSPITAL** is as follows:-

PATIENT IDENTIFICATION DATA

Group: Ward:

Name: IP No.:

Age: Sex: D.O.A:

Address:

Education:

Religion:

Marital Status:

Occupation:

Socio-Economic Status:

CHIEF COMPLAINTS:

HISTORY OF PRESENTING COMPLAINTS:

Past History:

Personal History:

Family History:

GENERAL PHYSICAL EXAMINATION:

Built and Nourishment:

Weight:

Pallor / Icterus / Cyanosis / Clubbing / Edema / Lymphadenopathy

Vital Signs: PR: /min; BP: mmHg; RR: /min; Temp:

PER ABDOMINAL EXAMINATION

Inspection :

Palpation : (with special mention for right iliac fossa tenderness)

Auscultation : BS

SYSTEMIC EXAMINATION

CNS:

CVS:

R S:

CLINICAL IMPRESSION:

INVESTIGATIONS:

MANAGEMENT :

ANNEXURE –IV - KEY TO MASTER CHART

Fenyo-Lindberg scoring system:

Gender : Male: 8 Female: -8

TLC : <9,000 microL : -15, 9000 to 13,999 : 2, >=14000: 10

Duration of pain : <24 hours : 3, 24 to 48 hours : 0, > 48 hours : -12

Progression of pain : YES: 3, NO: -4

Aggravation of pain by coughing : NO: - 11, YES: 4

Vomiting: NO : -5 , YES: 7

Migration of pain : NO: -9, YES: 7

Rebound tenderness : NO: -10, YES: 5

Rigidity of abdominal wall : NO: -4, YES: 15

Tenderness outside of RLQ : NO: 4, YES : -6

Category I : Sum total of variables

1 = score more than -2

2 = score less than -2

Category II : Histopathology reports

A = Acute and acute on chronic appendicitis

B = Chronic appendicitis and no surgery

Sr. no	IPD No.	Patient's Name	Age	Sex	TLC	Duration of pain	Progression of pain	Aggravation of pain on coughing	Vomiting	Migration of pain	Rebound tenderness	Rigidity of abdominal wall	Tenderness outside RLQ	Total	Category I	Category II
1	868027	Aisha chansab	21	F	-15	-12	3	-11	-5	7	-10	-4	4	-51	2	B
2	873187	Mohammed deasi	44	M	10	3	3	4	7	7	5	-4	4	49	1	A
3	869194	Pavan medar	17	M	2	-12	3	4	7	7	-10	-4	4	9	1	B
4	887553	Ningappa kadam	22	M	-15	-12	3	-11	-5	7	-10	-4	4	-35	2	B
5	884342	Mangesh deshpande	42	M	10	-12	3	4	7	7	5	-4	4	32	1	A
6	882787	Manjunath mudapaki	25	M	2	-12	3	4	7	7	5	-4	4	24	1	B
7	875901	Ranjana patil	45	F	10	0	3	4	7	7	5	-4	4	36	1	A
8	878762	Tishakumari kolkar	18	F	-15	-12	3	-11	-5	7	-10	-4	4	-51	2	B
9	869292	Lakkava naganur	34	M	-15	-12	3	4	7	7	5	-4	4	7	1	B
10	881085	Nikhil desai	20	M	10	0	3	4	7	7	5	-4	4	44	1	A
11	891865	Mahadevi patat	36	F	-15	-12	3	-11	-5	-9	-10	-4	-6	-63	2	B
12	882101	Joseph yalakapati	17	M	10	3	3	4	7	7	5	15	4	65	1	A
13	889018	Mahantesh khot	27	M	-15	0	-4	-11	-5	7	5	-4	4	-15	2	A
14	876648	Kumarswamy bevanurmath	37	M	-15	-12	3	-11	-5	7	-10	-4	-6	-45	2	B
15	874042	Yuvraj Nimbalkar	34	M	-15	-12	3	4	7	7	5	-4	4	7	1	B
16	868690	Somaling Magadum	18	M	-15	-12	3	-11	-5	-9	-10	-4	-6	-61	2	B
17	890598	Sadhana sonappanavar	22	F	2	-12	3	4	7	7	5	-4	4	8	1	A
18	892065	Bhagyashree kavalapure	28	F	-15	-12	3	4	-5	-9	5	-4	4	-37	2	B
19	891802	Neeta nalawade	34	F	2	0	3	4	-5	7	5	-4	4	8	1	B
20	890258	Santosh gadagina	31	M	2	-12	3	4	7	7	7	-4	4	26	1	A
21	890305	Pratiksha patil	19	F	2	-12	3	-11	-5	-9	-10	-4	-6	-60	2	A
22	889567	Shamshudin tashed	21	M	2	0	3	4	7	7	5	-4	4	37	1	B
23	885657	Deepa kolkar	22	F	2	0	3	4	7	7	5	-4	4	21	1	A
24	884655	Arbiya pathan	19	F	2	0	3	4	7	7	5	-4	4	20	1	B
25	877834	Rahul shinde	28	M	-15	-12	3	-11	-5	7	-10	-4	4	-35	2	B
26	860619	Iranna nesargi	24	M	10	0	3	4	7	7	5	15	4	59	1	A
27	861908	Priyanka kakatikar	20	F	2	-12	3	4	-5	7	5	-4	4	-6	2	A
28	873954	Rahul shivannagol	25	M	-15	-12	3	4	7	7	5	-4	4	7	1	B
29	860970	Prema lamani	32	F	2	-12	3	4	7	7	5	-4	4	8	1	A
30	863628	Syarif noor	22	F	2	3	3	4	7	7	5	-4	4	23	1	A
31	863146	Kavita rathod	24	F	2	3	3	4	7	7	-10	-4	4	8	1	B
32	862362	Vijaylaxmi mantur	44	F	2	-12	3	-11	-5	7	-10	-4	4	-36	2	A
33	862417	Vasantha sontakki	44	F	-15	-12	3	-11	-5	7	-10	-4	4	-29	2	B

Sr. no	IPD No.	Patient's Name	Age	Sex	TLC	Duration of pain	Progression of pain	Aggravation of pain on coughing	Vomiting	Migration of pain	Rebound tenderness	Rigidity of abdominal wall	Tenderness outside RLQ	Total	Category I	Category II
34	862065	Jabeen patait	20	F	-15	-12	3	-11	7	7	-10	-4	4	-39	2	B
35	862207	Sachin ankali	21	M	2	0	3	4	7	7	5	-4	4	36	1	A
36	860450	Vinayak hindalkar	17	M	10	0	3	4	7	7	5	15	4	63	1	A
37	859548	Pratap honole	17	M	2	3	3	4	7	7	5	-4	4	39	1	A
38	851111	Keerthi shetty	18	F	2	-12	3	4	7	7	5	-4	4	8	1	A
39	847566	Mohammed faizan	17	M	2	-12	3	-11	7	7	-10	-4	4	-6	2	A
40	860618	Deepa nandi	21	F	2	3	3	4	-5	7	5	-4	4	11	1	B
41	850348	Mahadev gujanatti	38	M	2	3	3	4	7	7	5	-4	4	39	1	A
42	912127	Shankar gudani	50	M	2	-12	3	4	-5	7	5	-4	4	12	1	A
43	916180	Sanyam gundappagol	18	M	-15	-12	3	-11	-5	7	-10	-4	4	-51	2	A
44	861136	Aliya gavandi	45	F	-15	-12	3	-11	-5	-9	-10	-4	4	-67	2	B
45	895471	Shivanand kokane	19	M	-15	-12	3	-11	-5	-9	-10	-4	4	-40	2	B
46	894273	Prakash shirole	32	M	-15	-12	3	-11	7	7	-10	-4	4	-23	2	A
47	912033	Rameja khaji	19	F	-15	-12	3	-11	7	7	-10	-4	4	-39	2	B
48	917548	Sunita baradur	24	F	2	-12	3	-11	-5	-9	-10	-4	4	-50	2	A
49	891021	Vikas varpe	22	M	10	0	3	4	7	7	5	15	4	63	1	A
50	895333	Sanjana meti	18	F	2	3	3	4	7	7	5	15	4	50	1	A
51	905887	Sangappa desai	63	M	2	3	3	4	-5	7	5	15	4	46	1	A
52	910259	Anita awate	27	F	2	-12	3	4	7	7	5	-4	4	8	1	A
53	918599	Ravasab aihole	41	M	2	3	3	4	-5	7	5	15	4	46	1	A
54	886063	Bhairu hosurkar	45	M	-15	-12	3	-11	7	7	-10	-4	4	-23	2	A
55	893677	Runi devi	31	F	2	3	3	4	7	7	5	-4	4	31	1	A
56	904102	pavan khande	21	M	10	3	3	4	7	7	5	15	4	66	1	A
57	875162	Sumangala baluragi	30	F	-15	0	3	4	7	7	5	-4	4	3	1	B
58	902338	Anil jorapur	35	M	10	-12	3	4	7	7	5	-4	4	32	1	A
59	886981	Bharata palkar	32	F	-15	-12	3	4	-5	-9	-10	-4	4	-52	2	B
60	894907	Suvarna nippani	23	F	-15	-12	3	-11	-5	7	-10	-4	4	-51	2	B
61	900084	Maruti mugali	28	M	2	3	3	4	-5	7	5	15	4	46	1	A
62	908750	Shidesh patil	22	M	2	-12	-3	-11	-5	7	-10	-4	4	-24	2	A
63	896936	Nikita ankole	19	F	-15	-12	3	-11	-5	-9	-10	-4	4	-67	2	A
64	905964	Mohsin bepari	38	M	10	0	3	4	7	7	5	15	4	63	1	A
65	908267	Nazhat patel	29	F	-15	-12	3	-11	-5	7	-10	-4	4	-51	2	B
66	866841	Kashawwa naganuri	52	F	-15	-12	3	-11	-5	7	-10	-4	4	-61	2	B
67	909387	Yallappa hinglaje	28	M	-15	-12	3	-11	-5	7	-10	-4	-6	-45	2	B

Sr. no	IPD No.	Patient's Name	Age	Sex	TLC	Duration of pain	Progression of pain	Aggravation of pain on coughing	Vomiting	Migration of pain	Rebound tenderness	Rigidity of abdominal wall	Tenderness outside RLQ	Total	Category I	Category II
68	865565	Indrabai saganur	40	F	-15	-12	-4	-11	-5	-9	-10	-4	-6	-84	2	B
69	910998	Swati balekundri	17	F	2	-12	3	-11	-5	-9	-10	-4	4	-50	2	A
70	913325	Santosh naragund	34	M	-15	-12	3	-11	7	-9	-10	-4	4	-39	2	B
71	903907	Manoj pujeri	19	M	-15	-12	3	-11	-5	-9	-10	-4	4	-51	2	A
72	892681	Laxmi malannavar	25	F	-15	-12	3	4	7	7	5	15	4	10	1	A
73	899812	Vaishnavi powar	19	F	-15	3	3	4	-5	7	-10	-4	4	-21	2	A
74	889359	Sunil bandivaddar	18	M	-15	-12	3	-11	-5	-9	-10	-4	4	-51	2	B
75	856115	Asha more	30	F	-15	3	3	4	7	7	5	-4	4	7	1	B
76	856124	Doddappa naikar	36	M	-15	-12	3	-11	-5	-9	-10	-4	4	-51	2	B
77	863884	Iravva khanadale	38	F	-15	-12	3	-11	-5	-9	-10	-4	4	-67	2	B
78	877617	rupali patil	21	F	2	0	3	4	7	7	5	-4	4	20	1	A
79	894810	Anita chougala	26	F	10	3	3	4	7	7	5	15	4	50	1	A
80	887074	Basavraj birader	32	M	-15	-12	3	-11	-5	-9	-10	-4	4	-51	2	B
81	879822	Goura halolli	29	F	10	-12	3	4	7	7	5	-4	4	16	1	A
82	874787	Ramesh pawale	41	M	-15	-12	3	-11	-5	7	-10	-4	4	-35	2	B
83	891419	Shrishail	30	M	2	-12	3	-11	7	7	5	-4	4	9	1	B
84	880126	Renuka pamnar	20	F	-15	-12	3	-11	-5	7	-10	-4	4	-51	2	B
85	904443	Sandeep Murkute	22	M	-15	-12	3	4	-5	7	-10	-4	4	-20	2	A
86	918882	Basavraj godikatti	23	M	-15	-12	3	-11	-5	-9	-10	-4	4	-51	2	B
87	894993	Chandrappa gudagi	62	M	-15	-12	3	-11	-5	-9	-10	-4	4	-51	2	B
88	873925	Bharati sannaki	35	F	-15	-12	3	-11	-5	-9	-10	-4	4	-67	2	B
89	896216	Ashrit patil	21	M	-15	-12	3	-11	7	-9	5	-4	4	-24	2	B
90	913690	Nagappa bhagoji	40	M	-15	-12	3	-11	-5	-9	-10	-4	4	-51	2	B
91	908627	Najamunnisa shaikh	55	F	-15	-12	3	-11	-5	-9	-10	-4	4	-67	2	B
92	911111	Rajiya alase	52	F	-15	-12	3	-11	-5	-9	-10	-4	4	-67	2	B
93	917301	Sheetal talawar	17	F	2	0	3	4	7	7	5	-4	4	20	1	A
94	891654	Anita bagi	23	F	2	-12	3	4	7	7	5	-4	4	8	1	A
95	890502	Mounesh badiger	26	M	10	0	3	4	7	7	5	-4	4	44	1	A
96	891665	Surekha kamble	30	F	2	0	3	4	7	7	5	-4	4	20	1	A
97	886373	Malashri jipare	18	F	2	0	3	4	7	7	5	-4	4	20	1	A
98	904096	Ladkoba desai	21	M	10	0	3	4	7	7	5	-4	4	44	1	A
99	906541	Kamalawwa roni	27	M	2	0	3	4	7	7	5	-4	4	20	1	A
100	903907	Rakesh Bhosle	34	M	2	-12	3	4	7	7	5	-4	4	24	1	A