"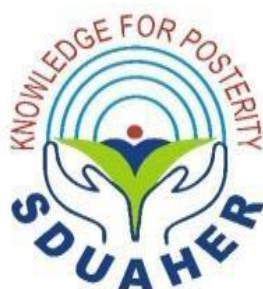A COMPARATIVE STUDY OF A NOVEL PREOPERATIVE COMPLICATED ACUTE APPENDICITIS SCORING SYSTEM AND RIPASA SCORING SYSTEM IN PREDICTION OF COMPLICATED ACUTE APPENDICITIS"

BY

Dr. Anurag Bhavanam M.B.B.S

DISSERTATION SUBMITTED TO SRI DEVARAJ URS ACADEMY OF HIGHER EDUCATION AND RESEARCH, TAMAKA, KOLAR, KARNATAKA.

In partial fulfillment of the requirements for the degree of

M.S. IN GENERAL SURGERY

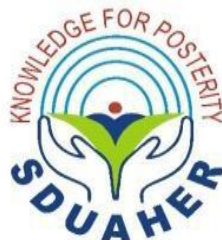## UNDER THE GUIDANCE OF

Prof. DR. PRAKASH DAVE

PROFESSOR & UNIT HEAD DEPARTMENT OF GENERAL SURGERY SRI DEVARAJ URS MEDICAL COLLEGE TAMAKA, KOLAR

SRI DEVARAJ URS MEDICAL COLLEGE

TAMAKA, KOLAR – 563103.

2024

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I hereby declare that this dissertation entitled **"A COMPARATIVE STUDY OF A NOVEL PREOPERATIVE COMPLICATED ACUTE APPENDICITIS SCORING SYSTEM AND RIPASA SCORING SYSTEM IN PREDICTION OF COMPLICATED ACUTE APPENDICITIS"** is a bonafide and genuine research work carried out by me under the guidance of **Dr. PRAKASH DAVE,** Professor & UNIT HEAD, Department of General Surgery, Sri Devaraj Urs Medical College, Kolar, in partial fulfillment of University regulation for the award **"M. S. DEGREE IN GENERAL SURGERY",** the examination to be held in DECEMBER 2024 by SDUAHER. This has not been submitted by me previously for the award of any degree or diploma from the university or any other university.

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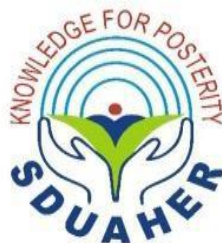**Place:Kolar**   Postgraduate

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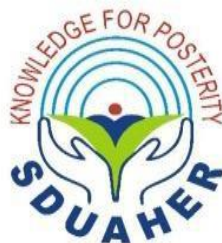**Place:Kolar**

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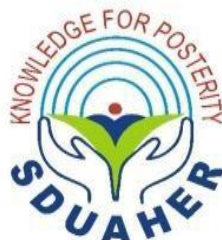Place:Kolar   Professor & HOD

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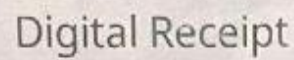
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"A COMPARATIVE STUDY OF A NOVEL PREOPERATIVE COMPLICATED ACUTE APPENDICITIS SCORING SYSTEM AND RIPASA SCORING SYSTEM IN PREDICTION OF COMPLICATED ACUTE APPENDICITIS" ABSTRACT Background: A study was carried out to assess accuracy rates of two scoring systems—the RIPASA scoring system and the Novel Preoperative Complicated Appendicitis Score— in identifying patients who had undergone surgery for acute appendicitis (AA) and had complex appendicitis. Methods: A prospective comparative observational study was carried out among patients admitted with acute appendicitis in the general surgery department of the RL Jalappa Hospital and Research Center. In all, 72 AA individuals were involved in this study. The IEC granted clearance for this study's ethical committee. Detailed history of the participants followed by clinically examination was done by principal investigator post which diagnosis of AA was made. The Novel Preoperative Complicated Acute Appendicitis Score and RIPASA Score were assessed in all cases to predict complicated appendicitis. Results: In the present study Mean age of participants was 34.6 years with female predominance. 75% of the cases presented with diffuse pain abdomen, 68.1% of cases presented with RIF pain, migrating to RIF in 86.1% of the cases, and nausea / vomiting in 45.8% of the cases. Also, fever was present among 34.7% of the patients, and Anorexia in 29.2% of the cases. In the current investigation, guarding was observed in 93.1% of instances, rebound tenderness was present in 86.1% of cases, the Rovsing test was positive in 83.3% of cases, the Psoas test was positive in 84.7% of cases, and the patient had an obturator sign in 80.6% of cases. WBC count was found to be abnormal among 98.6% of the cases, and appendicolith was present among 33.3% of the cases. Based on the operative findings complicated acute appendicitis was noted among 43.1% of the cases and uncomplicated acute appendicitis in 56.9% of the cases. Notably, Novel Preoperative Complicated Appendicitis Score was found to have better diagnostic efficacy compared to RIPASA scoring system in elequening cases diagnosed as complicated appendicitis in patients who had undergone surgery for acute appendicitis. Conclusion: We infer that Novel Preoperative Complicated Appendicitis Score can be used in routine practice in order to identify the complicated cases of acute form of appendicitis. Key words: Acute appendicitis, interval appendicectomy, conservative management INTRODUCTION INTRODUCTION In this surgical field of medicine worldwide, acute appendicitis (AA) is found to be the most common cause of emergency room visits due to its yearly incidence of 1.17 to 1.9 cases per thousand population & lifetime risk of 6.7% for women and 8.6% for men to present with it. 25 to 35 years being the most typical age range1,2. Although acute form of appendicitis is a commonly detected condition, it can still be difficult to diagnose it especially in young people, the elderly, and fertile women. Acute appendicitis-like signs & symptoms can be present in a variety of genitourinary or gynecologic inflammatory diseases3. A high WBC count, for example, is one of the laboratory findings that are coupled with the clinical history and medical exam to make the diagnosis4. In order to boost diagnostic accuracy, late appendectomy raises the risk of sepsis and appendicular perforation, which increases morbidity and death1,3. On the other hand, an early diagnosis of appendicitis decreases diagnostic accuracy, which increases the rate of negative or needless appendectomies—which have been estimated to be between 20 and 40 percent3. While tomography and ultrasound imaging can increase the precision of a diagnosis, they are costly and not always available in medical facilities3,5. Diagnosis of appendicitis with great accuracy is possible using different scoring methods that are inexpensive, non-invasive, and simple to use or replicate4,5. They characterize signs and symptoms using numerical values. Test findings (Leukocytosis) and clinical markers of abdominal pathology (site of pain & migration, type, temperature, peritoneal discomfort symptoms, nausea, and vomiting) are typically used. 5. A number of grading systems have been created in recent years to help physicians evaluate individuals who may have appendicitis6,7. Since ALVARADO scoring system is based on two laboratory measurements and six clinical parameters—rebound pain, leukocytosis, nausea and vomiting, anorexia, migration of pain, temperature elevation, and localized tenderness in the RIF proposed first in 1986— which is one of the most widely used tools for diagnosing acute form of appendicitis.6 A score of four to five is compatible with an AA diagnosis, a score of seven to eight suggests a likely case of appendicitis, and a score of nine to ten indicces a very probable case of acute type of appendicitis, despite the fact that these ranges are not very precise.8,9 Age, gender, & length of symptoms are among the factors that have been demonstrated to be critical in the diagnosis of "AA", but they are also believed to be absent from the Alvarado score10,11. "Raja Isteri Pengiran Anak Saleha Appendicitis Scoring" (RIPASA), One of the newest scoring systems which is based on six clinical and patient-specific factors—age, gender, length of symptoms, guarding, Rovsing's sign, and negative urinalysis—that are not taken into account by the Alvarado score. A "RIPASA score" of higher than 7.5 in this instance is seen to be predictive of appendicitis.12-14. More recently, Kuhlenschmidt KM et al15 established a Novel Preoperative Complicated Appendicitis Score system that took into account a number of USG, clinical, laboratory, and demographic factors. So, it caught the interest of the majority of surgeons. While RIPASA and the new scores are the most often utilised scoring systems in clinical practice, there is currently no conclusive evidence to support the selection of a different scoring system for patients who are at risk of AA16. In light of these, they conducted a study to evaluate the accuracy rates of two scoring systems in identifying cases of difficult appendicitis in patients who had undergone surgery for acute appendicitis: the Novel Preoperative difficult Appendicitis Score system and the RIPASA scoring system. a study was carried out to assess the accuracy rates of two scoring systems—the RIPASA scoring system and the Novel Preoperative Complicated Appendicitis Score system —in identifying cases of complicated appendicitis in patients who had undergone surgery for acute appendicitis. OBJECTIVES OBJECTIVES ? Preoperative evaluation of case of acute appendicitis using The Novel Preoperative Complicated Appendicitis Scoring system ? Preoperative evaluation of the same cases of acute appendicitis using RIPASA scoring system ? Comparing the accuracy rate of both scoring systems namely The Novel Preoperative Complicated Appendicitis Score & RIPASA scoring in predicting cases of complicated appendicitis among patients operated for acute appendicitis REVIEW OF LITERATURE REVIEW OF LITERATURE Acute abdomen: Abdominal pain is the most prevalent complaint associated with a group of illnesses together referred to as acute abdomen. These illnesses range widely in severity and require thorough and methodical evaluation to enhance outcomes17. Sudden, severe abdominal pain is typically the

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"A COMPARATIVE STUDY OF A NOVEL PREOPERATIVE COMPLICATED ACUTE APPENDICITIS SCORING SYSTEM AND RIPASA SCORING SYSTEM IN PREDICTION OF COMPLICATED ACUTE APPENDICITIS"

ABSTRACT

Background: A study was carried out to assess accuracy rates of two scoring systems—the RIPASA scoring system and the Novel Preoperative Complicated Appendicitis Score— in identifying patients who had undergone surgery for acute appendicitis (AA) and had complex appendicitis.

Methods: A prospective comparative observational study was carried out among patients admitted with acute appendicitis in the General Surgery department of the RL Jalappa Hospital and Research Center. In all, 72 AA individuals were involved in this study. The IEC granted clearance for this study's ethical committee. Detailed history of the participants followed by clinically examination was done by principal investigator post which diagnosis of AA was made. The Novel Preoperative Complicated Acute Appendicitis Score and RIPASA Score were assessed in all cases to predict complicated appendicitis.

 Results: In the present study Mean age of participants was 34.6 years with female predominance. 75% of the cases presented with diffuse pain abdomen, 68.1% of cases presented with RIF pain, migrating to RIF in 86.1% of the cases, and nausea / vomiting in 45.8% of the cases. Also, fever was present among 34.7% of the patients, and Anorexia in 29.2% of the cases. In the current investigation, guarding was observed in 93.1% of instances, rebound tenderness was present in 86.1% of cases, the Rovsing test was positive in 83.3% of cases, the Psoas test was positive in 84.7% of cases, and the patient had an obturator sign in 80.6% of cases WBC count was found to be abnormal among 98.6% of the

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Key words: Acute appendicitis, interval appendicectomy, conservative management

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ABBREVIATIONS

ABBREVIAT	IONS
AA	– Acute Appendicitis
AIR	– Acute Inflammatory Response Scale
AUC	– Area Under the Curve
CT	– Computer Tomography
NPV	– Negative Predictive Value
PAS	– Pediatric Appendicitis Score
PPV	- Positive Predictive value
RIF	– Right Illiac Fossa
RIPASA	– Raja Isteri Pengiran Anak Saleha Appendicitis scoring
ROC	- Receiver Operating Curve
Sn	– Sensitivity
Sp	– Specificity
SPSS	- Statistical Package for Social Sciences
WBC	– White Blood Cells
USG	– Ultrasonography

INTRODUCTION

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In this surgical field of medicine worldwide, acute appendicitis (AA) is found to be the most common cause of emergency room visits due to its yearly incidence of 1.17 to 1.9 cases per thousand population & lifetime risk of 6.7% for women and 8.6% for men to present with it. 25 to 35 years being the most typical age range[1,2]. Although acute form of appendicitis is a commonly detected condition, it can still be difficult to diagnose it especially in young people, the elderly, and fertile women. Acute appendicitis-like signs & symptoms can be present in a variety of genitourinary or gynecologic inflammatory diseases[3]. A high WBC count, for example, is one of the laboratory findings that are coupled with the clinical history and medical exam to make the diagnosis[4]. In order to boost diagnostic accuracy, late appendectomy raises the risk of sepsis and appendicular perforation, which increases morbidity and death[1,3].

On the other hand, an early diagnosis of appendicitis decreases diagnostic accuracy, which increases the rate of negative or needless appendectomies—which have been estimated to be between 20 and 40 percent[3]. While tomography and ultrasound imaging can increase the precision of a diagnosis, they are costly and not always available in medical facilities[3,5].

Diagnosis of appendicitis with great accuracy is possible using different scoring methods that are inexpensive, non-invasive, and simple to use or replicate[4,5]. They characterize signs and symptoms using numerical values. Test findings (Leukocytosis) and clinical markers of abdominal pathology (site of pain & migration, type, temperature, peritoneal discomfort symptoms, nausea, and vomiting) are typically used. [5].

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In light of these, they conducted a study to evaluate the accuracy rates of two scoring systems in identifying cases of difficult appendicitis in patients who had undergone surgery for acute

appendicitis: the Novel Preoperative difficult Appendicitis Score system and the RIPASA scoring system. a study was carried out to assess the accuracy rates of two scoring systems—the RIPASA scoring system and the Novel Preoperative Complicated Appendicitis Score system —in identifying cases of complicated appendicitis in patients who had undergone surgery for acute appendicitis.

AIMS & OBJECTIVES

OBJECTIVES

- Preoperative evaluation of case of acute appendicitis using The Novel Preoperative Complicated Appendicitis Scoring system

- Preoperative evaluation of the same cases of acute appendicitis using RIPASA scoring system

- Comparing the accuracy rate of both scoring systems namely The Novel Preoperative Complicated Appendicitis Score & RIPASA scoring in predicting cases of complicated appendicitis among patients operated for acute appendicitis

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Acute abdomen:

Abdominal pain is the most prevalent complaint associated with a group of illnesses together referred to as acute abdomen. These illnesses range widely in severity and require thorough and methodical evaluation to enhance outcomes[17]. Sudden, severe abdominal pain is typically the initial symptom very severe stomach discomfort. The most common reasons for this emergency condition include obstruction, vascular occlusion, inflammation, and infection[18]. Between 7 and 10% of trips to emergency rooms are made primarily due to abdominal pain[19].

Quadrants and Regions of abdomen:

The abdomino-pelvic cavity is divided into four quadrants and nine sections. Sometimes the perineum is considered the eleventh division. By dividing the abdomen into several regions and quadrants, clinincian can pinpoint the exact location of pain that originates from the underlying organs.

In acute abdomen, most common causes are as follows[20]: cholecystitis, appendicitis, pancreatitis, diverticulitis, peptic ulcer perforation, acute pancreatitis, torsion of ovaries, volvulus, ruptured aortic aneurysm, rupture of a sigmoid diverticulum, splenic or liver lacerations, and ischemic bowel[21-23]. It is the most common symptom of diverticulitis, pancreatitis, cholecystitis, and severe appendicitis. In children, appendicitis being the most common cause of an acute abdomen[24-27].
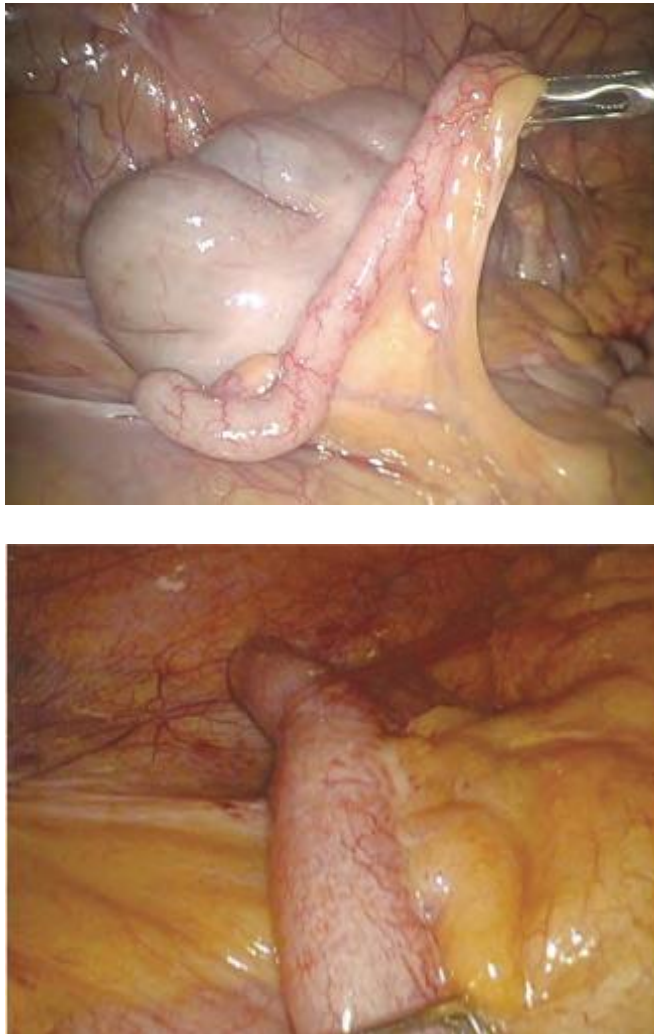
Figure 1: Normal and inflamed appendix

Acute appendicitis:

Anatomy of Appendix:

The appendix is a small, tubular remnant organ that is part of the mid-gut and is located where the small and large intestines converge. It was once known as the vermiform (worm-shaped) appendix. Its length (average: 9 cm) varies from 5 to 35 cm. The mesenteric connection is referred to as the mesoappendix. Blood is provided through the appendicular artery is a branch of the superior mesenteric artery that originates from the ileocolic artery[28].

Pathophysiology of acute appendicitis*:*

The most commonly accepted explanation for how acute appendicitis arises is the "Luminal Obstruction". The luminal blockage could be caused by the following factors:

- Fecoliths,

- Tumours,

- Food waste,

- Lymphoid hyperplasia,

- Strictures, and

- Worm infection (Enterobius vermicularis, Round worms),

are a few of the conditions that can this[29]. After reaching a high in the mid-20s, the incidence rates progressively decrease as people age. Men are impacted more frequently than women[30].

Stages of acute appendicitis:

Acute appendicitis involves the four stages as mentioned below,

1. Stage of luminal obstruction

2. Increased intra-luminal pressure and abdominal distension

3. Vascular congestion

4. Perforation[29,31]

Figure 2: Gross image of acute appendicitis specimen

Scoring system in acute appendicitis:

It is still not possible to consistently, inexpensively, and effectively diagnose appendicitis, despite progress. In the between the age of 10 and 30 years. Scoring systems are important for distinguishing between acute appendicitis and vague abdominal pain. To detect appendicitis and reduce the number of complicated appendectomies and perforations, surgeons have employed a variety of scores[35].

Early lesions may show mucosal erosions & intermittent crypt abscesses. Other low-outcome & lesser known scores include Izbicki score, Christian score, & Appendicitis Inflammatory Response score. The instruments listed above can be used to diagnose patients & determine which ones require surgery & which ones could be managed conservatively with supportive care, iv antibiotics, and monitoring.[36-38].

Novel Preoperative Complicated Appendicitis Score:

Variable	Points
Age >40	1
Duration >48 hours	2
Diffuse pain or Rovsing's pain + obturator+ psoas signs	3
WBC (>13-21.9K)	1
WBC (>22K)	3
Neutrophil percentage >80%	1
Appendicolith	1
Appendix diameter >12mm	1

The Novel Preoperative Complicated Appendicitis Score consist of seven parameters which include demographic, clinical, laboratory and USG findings. Each parameter was scored from minimum score of one to maximum score of three. 0-13 is the scoring system, any clinical score greater than 4 will be considered as complex form of appendicitis.

RIPASA Score:

Table RIPASA score.	Score
Male	1
Female	0.5
< 39.9 years	1
> 40 years	0.5
Foreign national[a]	1
Symptoms	
Pain in the right iliac fossa	0.5
Nausea/vomiting	1
Migratory pain	0.5
Anorexia	1
Symptoms < 48 h	1
Symptoms > 48 h	0.5
Signs	
Tenderness in RIF	1
Abdominal guarding	2
Rebound tenderness	1
Rovsing sign	2
Fever > 37^0C <39^0C	1
Laboratory studies	
Leukocytosis	1
Negative urinalysis	1
Total score	16

RIF: Right iliac fossa.
[a] Foreign patients residing in Mexico.

RIPASA 'Raja Isteri Pengiran Anak Saleha Appendicitis 'score which is meant for clinical prediction which was created in 2010 for the South Asian population. It includes eighteen variables which are fixed, including demographics which are 4 in number, 6 symptoms, 5 indicators, 2 investigations. The RIPASA system, which is comparable to the ALVARADO Score, is used to score appendicitis[39]. It frequently provides a numerical value for the appendicitis as perceived by a clinician. It is quite accurate in diagnosing appendicitis when it is above a specific threshold of points, typically 7.5 points. When compared to Westerners, Asians have been the focus of the most research[40].

Management of Acute Appendicitis

Ultrasound and CT scanning are the main diagnostic methods used to identify cases of acute appendicitis. Depending on how severe the disease is, either surgery or conservative management is used to treat acute appendicitis[41,42].

- Clamping and dividing the mesoappendix and
- Clamping and ligating the appendix base

are the two primary operative steps in acute appendicitis[43,44].

Patient presents to primary care setting with suspected appendicitis

↓

Risk stratification based on history, physical examination, laboratory evaluation, and selected clinical decision rule*

Low risk

Alvarado score < 4

AIR score ≤ 4

↓

Outpatient management

Consider alternative diagnosis, possible discharge with 6 to 12 hours follow-up

Moderate risk

Alvarado score: 4 to 6

AIR score 5 to 8

↓

Consider emergency department evaluation

Male: right lower quadrant ultrasonography

Female: right lower quadrant and pelvic ultrasonography

High risk

Alvarado score ≥ 7

AIR score ≥ 9

↓

Emergency department evaluation

Surgical consultation

Surgery, imaging, or admission for serial examinations or intravenous antibiotics per surgery recommendations

Low clinical suspicion, normal findings

↓

Consider alternative diagnosis, possible discharge with 6 to 12 hours follow-up

High clinical suspicion, negative or indeterminate findings

↓

Computed tomography with intravenous or oral contrast media, or magnetic resonance imaging

Positive findings

↓

Surgical consultation

Surgery, imaging, or admission for serial examinations or intravenous antibiotics per surgery recommendations

Positive findings

↓

Surgical consultation

Surgery, imaging, or admission for serial examinations or intravenous antibiotics per surgery recommendations

Negative or indeterminate findings

↓

Consider alternative diagnosis, possible discharge with 6 to 12 hours follow-up

*—Surgical consultation appropriate at any stage.

Algorithm for evaluation of patients with suspected appendicitis in the primary care setting. (AIR = Acute Inflamma-

Figure 3: Management algorithm of Acute Appendicitis

Recent Literatures:

Van den BWT et al[45] (2004) created a system of scores to determine which patient were of acute appendicitis patients. Leukocyte count more than 10.108/L '2 points', rebound tenderness of around 2 points, & fever more than 38°C (1 point), according to their findings, substantially linked with appendicitis. The grading system was used to identify three patient groups: "unlikely" appendicitis, "uncertain" appendicitis, & "suspected" appendicitis.. The specificity (Sp) & sensitivity (Sn) of the scoring system were 85% and 89%, respectively. When the scoring method is used, the number of laparoscopies performed and the negative appendectomy rates are comparable (9% vs. 7% when using clinical judgment). Nonetheless, it might result in a decreased incidence of appendicitis undetected and perforations. Comparable rates of conducted laparoscopies (32%) and missed appendicitis (2%) were observed in the external validation. However, the rate of negative appendectomy was greater (19%), perhaps due to a lower incidence of appendicitis in hospitals as opposed to other settings. According to their claims, cases can be identified if rebound tenderness is absent and the leukocyte count is less than 10.108/L. If one of these conditions is met, a diagnostic laparoscopy should be carried out; if both are met, an appendectomy may be necessary.

Hannu L et al[46] (2005) developed and verified a prognostic scale for the identification of AA. According to their findings, 27% of children underwent needless appendicectomies based on clinical judgement, while 4% of children received incorrect diagnoses for appendicitis. By using the score, 11% of patients with appendicitis should have been released from the hospital and the number of needless appendicectomies would have dropped to 13%. According to their claims, the application of predictive mathematical models could make it easier to diagnose appendicitis and prevent needless procedures.

SheraA H et al[47] (2011) employed an altered version of the Alvarado scoring system, which has eight factors and would give a precise preoperative diagnosis for AA, allowing for prompt and appropriate treatment. They stated that 73 of the 90 patients had surgery, and 68 of those instances had appendicitis verified. There was a 6.84% negative appendicectomy rate and a 36.9% perforation rate. 93.1% positive predictive value was observed. They stated that their scoring system is helpful in lowering the occurrence of negative appendectomy rate and serving as a first line, quick, dependable, and cost-effective method of early preoperative identification of AA.

Díaz BCZ et al[48] (2018) examined the differences between the RIPASA & modified ALVARADO scores when diagnosing patients - probable acute form of appendicitis and abdominal pain. When patients reporting with suspected AA and using RIPASA score for prediction of appendicitis did not provide any advantage when compared with Modified ALVARADO score.

Frountzas M et al[49] (2018) conducted a meta-analysis in order to assess the RIPASA and ALVARADO rating systems 'diagnostic accuracy. Their meta-analysis comprised twelve trials with a total of 2161 patients. The RIPASA score had a Sn of 94% and a Sp of 55%. Additionally, the diagnostic OR was 24.7 and the AUC is 0.943. ALVARADO score had 69% sensitivity& 77% specificity. Additionally, the disgnostic OR was 8.0 & the AUC was 0.794. Furthermore it was claimed that the RIPASA scoring system was more sensitive than the Alvarado one, but because of its poor specificity, a second mean is necessary to arrive at a proper diagnosis.

Celerino AR et al[50] (2018) evaluated how well RIPASA &Alvarado scores performed in clinically evaluating AA. The findings showed that the RIPASA score, with a 71.4% specificity and a 98.8% sensitivity as opposed to 90.7% & 64.3%, respectively, had better diagnostic accuracy than the ALVARADO score. ALVARADO scale was 0.8 & RIPASA score was 0.88 for the area under the curve. They argued that, for the Mexican population, RIPASA score is a more convenient ,accurate, & specific system compared to 'ALVARADO 'score.

Rohat A et al[51] (2019) evaluated the clinical suitability of the RIPASA, AIR, and Alvarado ratings for identification of AA in subjects experiencing pain in RIF. They claimed that 114 out of the 218 patients had surgery. AA was pathologically diagnosed in 107 of the 114 cases. With an accuracy of 0.88, RIPASA was shown to be the most valuable score. AIR and Alvarado scores were next, with AUC values of 0.79 and 0.71, respectively.

They stated that when it came to diagnosing AA, RIPASA had a greater accuracy rate than the remaining scores. According to their study, the RIPASA cut-off from 7.5-point threshold provides practical, fast, non-invasive diagnostic method which enhances the differentiating ability of AA when a patient presents with pain in the right lower quadrant.

Zehra UO et al[52] (2019) sought to evaluate the precision and efficacy of various scoring schemes. 76 patients were there in all, with a mean age of 33.8 years. 77.6% of those cases had an AA diagnosis based on a histological analysis. Accuracy was highest with RIPASA. The leukocyte counts cut-off value was $13900 \times 103/\mu L$. PPV was 95%, whereas the corresponding Sn and Sp were 64% and 88% respectively.

The examination of the ROC revealed an AUC of 74%. They argued that compared to the scoring systems used by Ohmann, Eskelinen, and Alvarado, the RIPASA

scoring system is more trustworthy.When a general surgeon is not available, general practitioners may find it helpful to assess patients with RIPASA scores in emergency rooms who have suspected AA. Consequently, patients are able to obtain timely assistance, reducing likelihood of issues arising from delays. One important marker for AA is CBC count cut off value of $13,900 \times 103/\mu L$.

Chisthi MM et al[53] (2020) conducted a study to determine the 'Modified Alvarado score', 'RIPASA score', & 'Appendicitis Inflammatory Response '(AIR) score's predictive accuracy in a diagnostic test assessment study. They stated that 16% of cases involved negative appendicectomy.

Sn, Sp, PPV, NPV and DA for Modified Alvarado were 64%, 59%, 89%, 24%, and 64% correspondingly; for AIR, they were 98%, 29%, 88%, 71%, and 87%; and for RIPASA, they were 88%, 77%, 95%, 54%, and 86%. Modified ALVARADO area under curve was 0.727, apendicitis inflammatory response was 0.947, and RIPASA's was 0.911. They concluded that the 'Appendicitis Inflammatory Response '(AIR) score is probably better than Alvarado in the pediatric population because it asks children to identify subjective symptoms that may or may not be genuine, whereas the attributes evaluated in ALVARADO are easy for application in children.

'Modified ALVARADO 'is not a good diagnostic grading system for AA; RIPASA and AIR are. Also, a detailed history, a detailed clinical examination, & fundamental laboratory tests shall be used to simply determine both of these scores.

Juan CMDO et al[54] (2020) evaluated the diagnostic performance of the most popular clinical prediction scales, such as RIPASA, AAS, AIR, Alvarado, and AIR. 'ALVARADO score 'turned out to be most successful diagnostic technique. However, the

most decreased & predictive combination of examined values were anorexia, WBC count greater than 8275 leukocytes/µL, neutrophilia greater than 75%, stomach discomfort less than 48 hours, RIF migration pain, and axillary temperature outside the range of 36 –39 ºC.

Johanna G et al[55] (2020) showed that appendicitis affected 47% of the 318 participants.' The Appendicitis Inflammatory Response score '& the pARC showed much higher specificity, positive predictive value, & a decreased proportion of false positives when compared to PAS & Alvarado score. Across all age and gender categories, the Appendicitis Inflammatory Response score and pARC exhibited lesser false positives than the PAS and 'ALVARADO score'. Sn, NPV, missed appendicitis rates, & the Reciever Operating Characteristic Curve analysis did not reveal any statistically significant variations..

At most threshold probabilities, Appendicitis Inflammatory Response score & pARC fared better than the PAS and Alvarado score. They came to the conclusion that when diagnosing children with probable appendicitis, the pARC & Appendicitis Inflammatory Response scoring system are more accurate than PAS and Alvarado scoring systems.

Wei F et al[56] (2020) examined the independent risk variables for children under five who have complicated appendicitis. They reported that in children under five years old with AA, age, WBC, & length of clinical symptoms might be utilised to predict complex appendicitis. A new but promising technique that helps distinguish between acute simple and complex appendicitis is the prediction model.

Awan S et al[57] (2021) established the RIPASA score's diagnostic accuracy in identifying AA. The subjects in their study had mean age of 27.1 years. With regard to AA, RIPASA score has a 'sensitivity 'of 48.6%, 'specificity of 86.6%, 'Positive Predictive Value ' of 98.5%, 'Negative Predictive Value 'of 8.3%, and diagnostic accuracy of 49.6%. they came to the conclusion that the RIPASA score was an unreliable diagnostic technique for

identifying individuals with AA.

Yang C et al[58] (2021) created and verified internally a nomogram to assess young children's AA severity. They claimed that it would be easier to assess the degree of appendicitis in younger children and identify the best course of treatment in a timely manner by using their unique nomogram, which included weights for years of age, beginning time, admitting temperature, WBC count, neutrophils ratio, and total bilirubin.

Ar-aishah D et al[59] (2021) sought to identify the reliable clinical predictors for diagnosis of paediatric appendicitis According to their observation diagnosis was predicted by a progressive increase in pain, soreness in RIF of abdomen, the manifestation of peritoneal irritation symptoms, and an absolute neutrophil count greater than 75%. Based on the significant variables, a diagnostic prediction probability scoring system with a range of 0.05 to 0.95 was created. The ROC curve indicated a cut-off point of around 0.086. The children who require surgery can be identified with the use of predictive criteria for the diagnosis of pediatric appendicitis.

Mumtaz H et al[60] (2022) compared the RIPASA score's prognostic accuracy for identifying AA to the gold standard of histopathologically confirmed appendicitis. 37.93 ± 10.36 years was considered the mean age for diagnosis. In contrast to Alvarado's score, Kendall's Tau along with Chi Square were demonstrated as important. 98% PPV, 96.8% Sn, 82.4% Sp, & 95.3% diagnostic accuracy were demonstrated by RIPASA Scoring. They claimed that RIPASA score greater accuracy than the Alvarado score for diagnosing AA in Asian populations.

Giuliana F et al[61] (2022) carried out a meta-analysis and systematic review of epidemiological data, comparing ALVARADO & RIPASA scores for identification of AA. When we compare ALVARADO score, they found that the RIPASA score had a better

sensitivity but a lower specificity. New scores must be developed for the risk assessment of patients with suspected acute appendicitis because the sensitivity & specificity limits of the existing scoring methods are not the same.

Roby M et al[62] (2023) assessed the level of agreement in the diagnosis of AA between 'Pediatric Appendicitis Score'(PAS) & the RIPASA, also a gold standard of histological analysis. 10.1 years was decided to be the age distribution in this study.

Acute gangrenous appendicitis accounted for 73.3% of cases, early acute appendicitis accounted for 3.3% of cases, acute suppurative appendicitis for 20% of cases, and other cases for 3.3%. Sensitivity, Specificity & diagnostic accuracy were, respectively, 82.8%, 100%, and 80% for RIPASA and 75.8%, 100%, and 73.3% for PAS, with a 9.5 cutoff point value for RIPASA and 7 for PAS. They claimed RIPASA score with a cutoff level of 9.5 has higher sensitivity along with accuracy than PAS for identifying Acute Appendicitis in pediatric patients. As such, it could be utilized to help in determining presence of acute form of appendicitis in pediatric age group.

Rishikesh G et al[63] (2023) assessed the diagnostic accuracy of the RIPASA and ALVARADO scoring systems for the acute type of appendicitis. They claimed that while the Alvarado and RIPASA scores had poor Sp and true negative rates, they both have good Sn Therefore, in the treatment of acute appendicitis, both of these scores can be utilised as screening tools. Because ALVARADO scoring is less accurate than RIPASA scoring, it should be used.

MATERIALS & METHODS

MATERIALS AND METHODS

Study Design:

This prospective comparative observational study was conducted to compare the accuracy rate of both scoring systems namely The Novel Preoperative Complicated Appendicitis Score and RIPASA scoring in predicting cases of complicated appendicitis among the patients operated for acute appendicitis.

Study locality:

This study was conducted in department of General Surgery of RL Jalappa Hospital and Research Centre, Tamaka, Kolar attached to Sri Devraj URS Medical College.

Study population:

Patients admitted with Acute Appendicitis in General Surgery department

Study period:

September 2022 to June 2024

Inclusion criteria:

- All patients diagnosed with acute appendicitis above 18years of age

Exclusion criteria:
- Patients in septic shock
- Immunocompromised patients
- Pregnant patients
- Patients with multi organ dysfunction

- Patients with known abdominal malignancies

- Patients with appendicular lump

- Patients who are unwilling for appendicectomy

Conditions included as complicated appendicitis:

- perforated appendicitis, periappendicular abscess, peritonitis, appendicular abscess and gangrenous appendicitis

Sample size:

Sample size estimation was based on the sensitivity of Novel Preoperative Complicated Acute Appendicitis score was 78.8% for cut off > 4 value in predicting complicated appendicitis as reported by study done by Kuhlenschmidt et al. With 95% Confidence level a sample size of 65 subjects was arrived and considering 10% Non-response rate the sample size was derived as 72 in the study. Thus, the study included seventy-two AA subjects in all.

Approval of Ethical committee:

The Institutional Human Ethics Committee granted ethical committee approval for this investigation.

Data Collection:

Prior to the interview, the study participants provided written informed consent. Following the acquisition of signed informed consent, the lead investigator in this study followed a pre-structured proforma to evaluate each participant's clinical presentation and demographics.

Post that, the lead researcher evaluated each participant's comprehensive medical history, conducted a clinical examination of the patients, and determined that each had AA. The Novel Preoperative Complicated Acute Appendicitis Score and RIPASA Score were assessed in all cases. Also AA cases underwent surgical management. The lead investigator also recorded the clinical presentation of each discovery on the same proforma.

Data analysis

Statistical Package for Social Sciences (SPSS) - Version 19 was used to evaluate data after it was entered into an Excel sheet. Descriptive statistics, such as standard deviation, mean and proportions (%), were calculated for quantitative variables. To assess hypothesis, diagnostic efficacy and 'Chi- Square' testing were used.

RESULTS

RESULTS

In this study, of the individuals with acute appendicitis cases, 26.4% were under 30 years old, 31.9% were in between 31 and 40 years old, and 29.2% were in between 41 & 50 years old. Twelve percent of the cases were found to be in the 51–60 age group. Mean age of participants was 34.6 years.

Table 1: Proportion of cases based on Age group

Age group	Frequency	Percentage
≤ 30 years	19	26.4
31-40 years	23	31.9
41-50 years	21	29.2
51-60 years	9	12.5
Total	72	100.0

Graph 1: Proportion of cases based on Age group
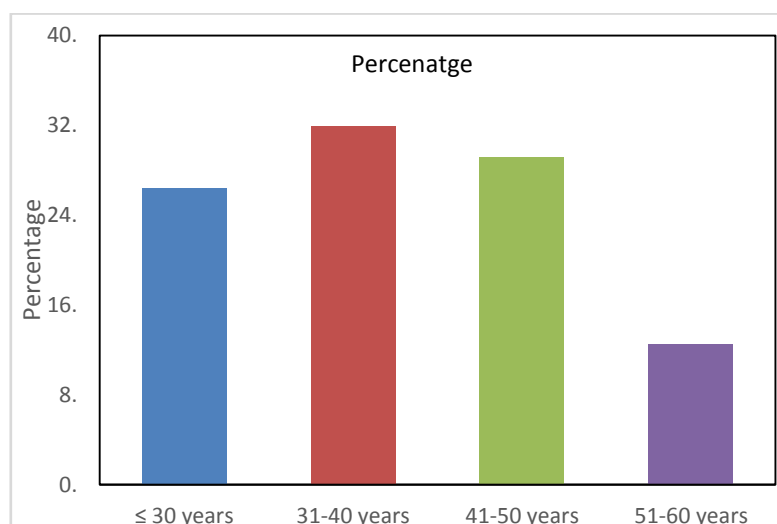
Among the study subjects 47.2% were males while 52.8% were females.

Table 2: Participant's gender distribution in the study

Gender	Frequency	Percentage
Female	38	52 .8
Male	34	47 .2
Total	72	100 .0

Graph 2: Participant's gender distribution in the study
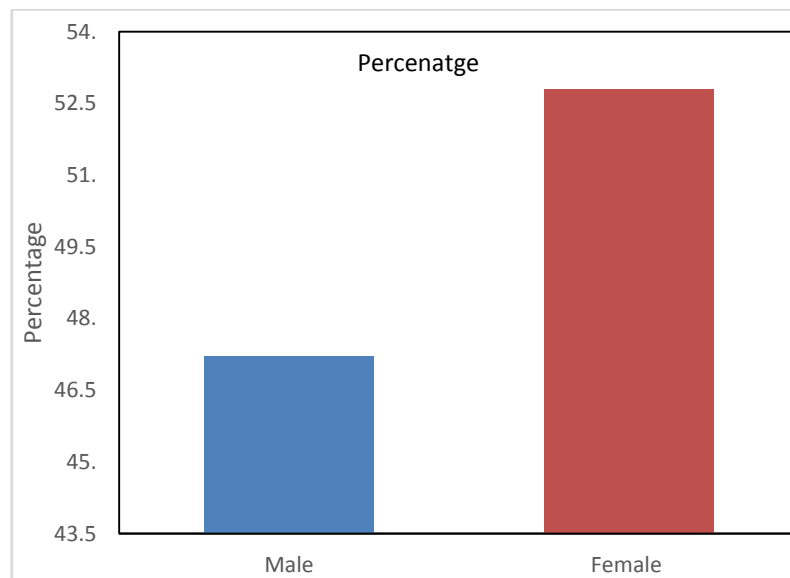
91.7% of the cases were economically employed while 8.3% of the cases are unemployed in this study.

Table 3: Occupational status of the participants

Occupation	Frequency	Percentage
Employed	66	91.7
Unemployed	6	8.3
Total	72	100.0

Graph 3: Occupational status of the participants
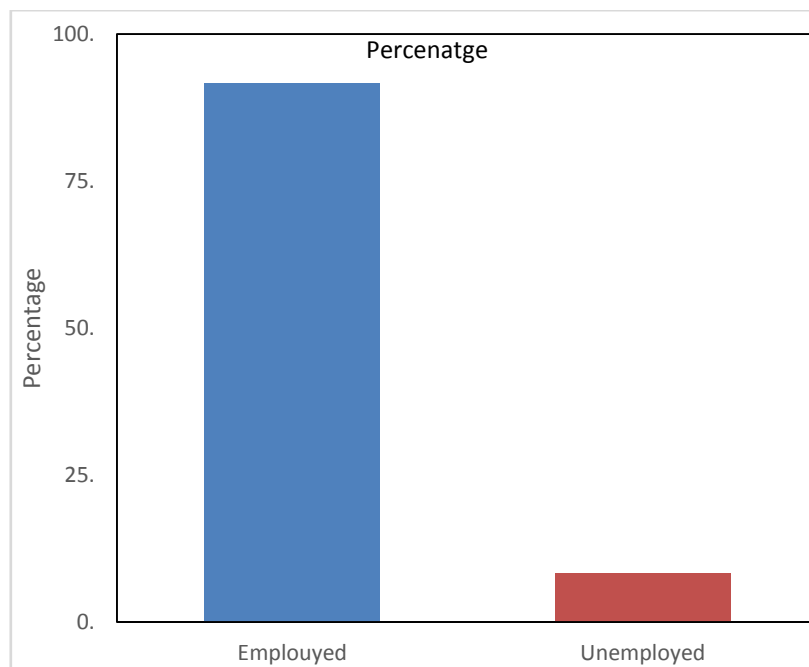
Pain was localized to right lower abdomen was present among 75% of the subjects in this study whereas 25% of the subjects had no pain abdomen.

Table 4: Cases with Diffuse Pain abdomen

Diffuse Pain abdomen	Frequency	Percentage
Present	54	75.0
Absent	18	25.0
Total	72	100.0

Graph 4: Cases with Diffuse Pain abdomen
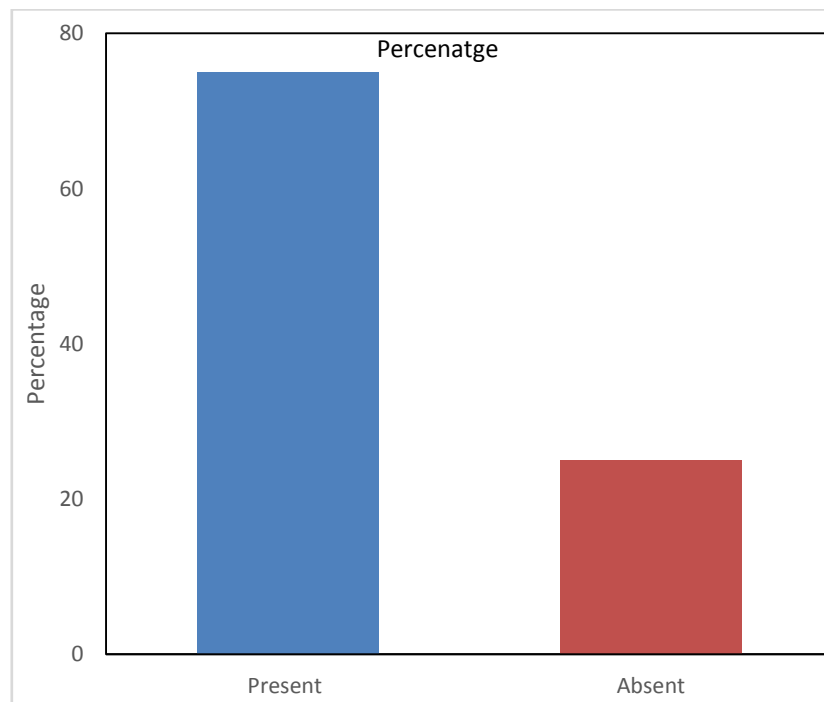
In this study RIF pain was noted among 68.1% of the study participants, however 31.9% of the participants had no RIF pain.

Table 5: percentage of patients determined by RIF pain

RIF pain	Frequency	Percentage
Present	49	68.1
Absent	23	31.9
Total	72	100.0

Graph 5: Percentage of patients determined by RIF pain
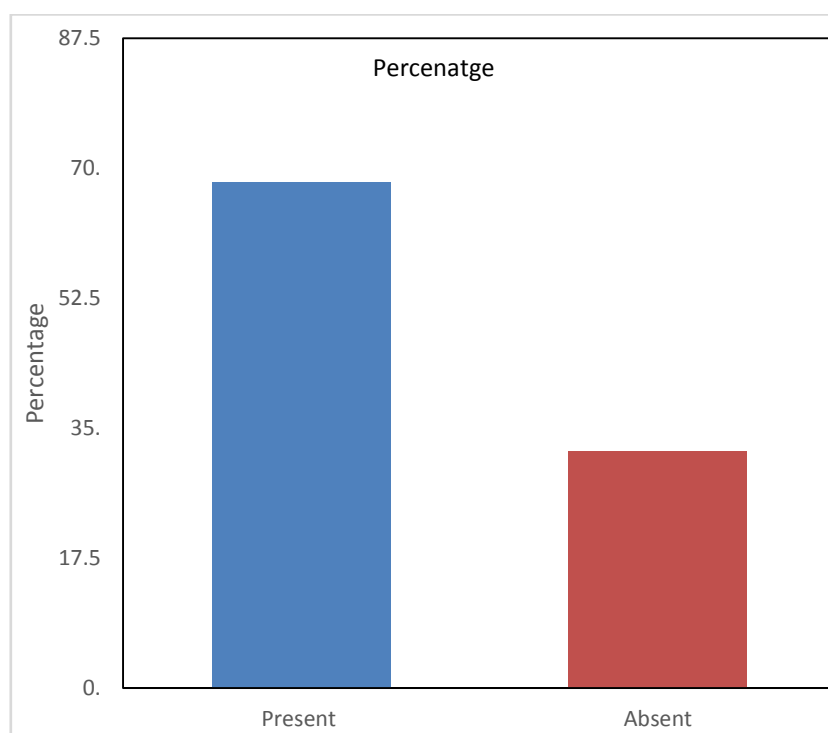
On assessing the migrating pain to RIF, 86.1% of the cases had migrating pain to RIF while 13.9% of the cases had no migration pain to RIF.

Table 6: Distribution of cases based on pain migrating to RIF

Pain migrating to RIF	Frequency	Percentage
Present	62	86.2
Absent	10	13.8
Total	72	100.0

Graph 6: Distribution of cases based on pain migrating to RIF
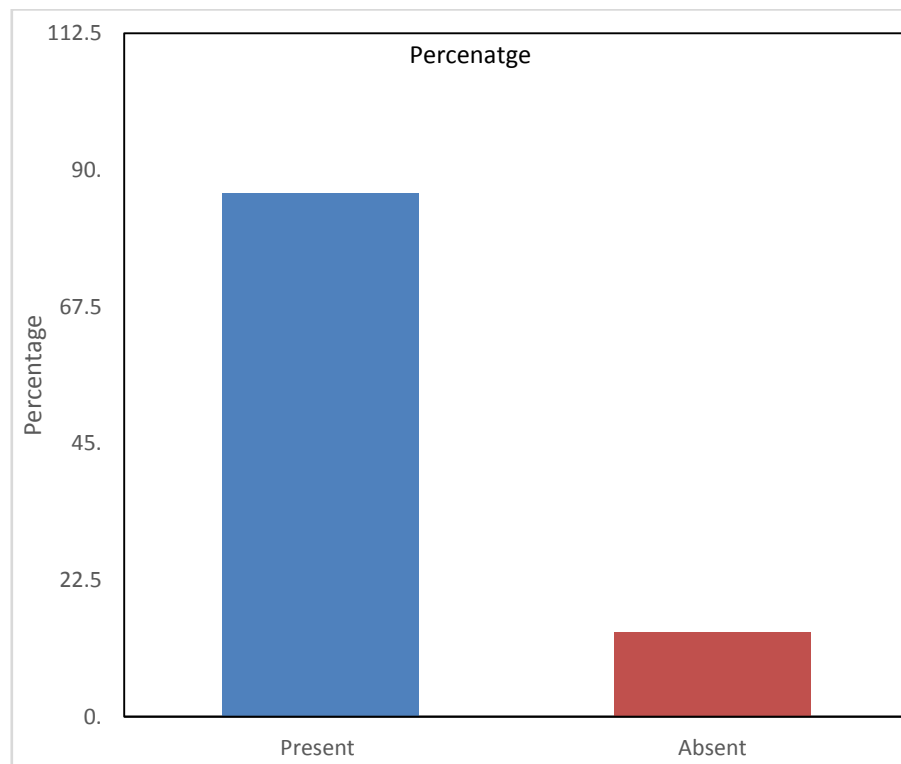
In this study among acute appendicitis cases nausea / vomiting was present among 45.8% of the cases.

Table 7: Proportion of cases based on Vomiting

Nausea or vomiting	Frequency	Percentage
Present	33	45.8
Absent	39	54.2
Total	72	100 .0

Graph 7: Percentage of cases determined by vomiting
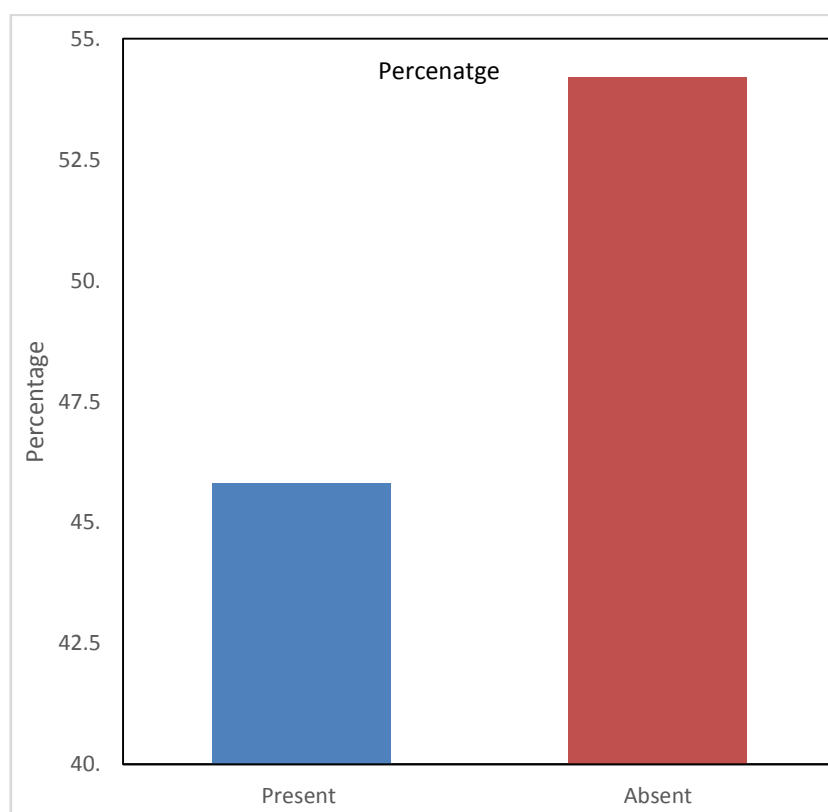
In this study fever was present among 34.7% of the patients, whereas 65.3% of the cases were afebrile.

Table 8: Distribution of study participants based on fever

Fever	Frequency	Percentage
Present	25	34.7
Absent	47	65.3
Total	72	100.0

Graph 8: Distribution of study patients based on fever
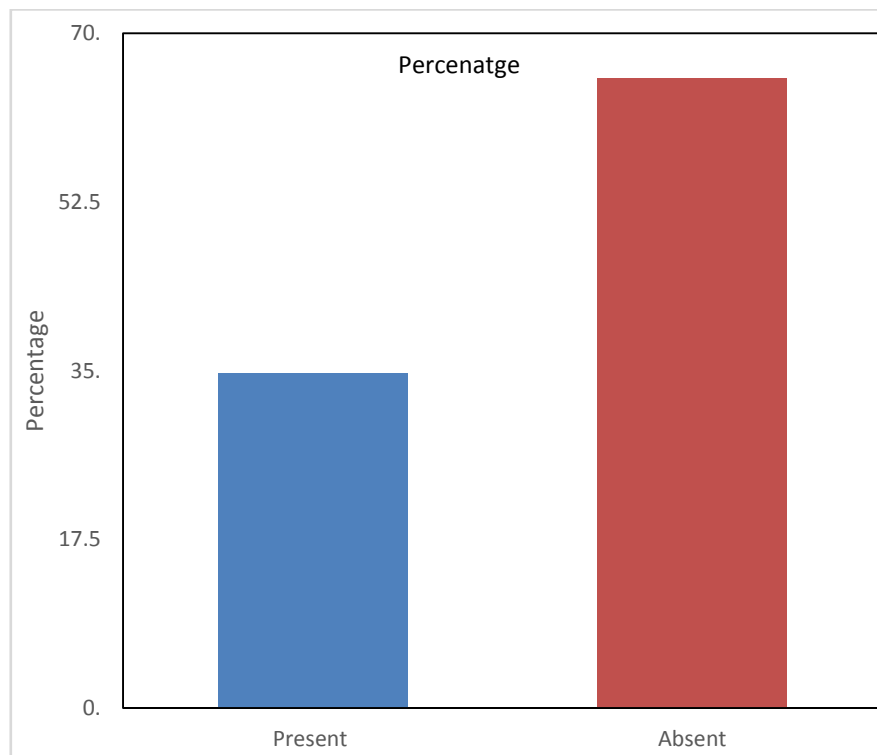
Anorexia was found among 29.2% of the cases in this current study while 70.8% of the cases had normal appetite.

Table 9: Anorexia among the study participants

Anorexia	Frequency	Percentage
Present	22	29. 5
Absent	52	70. 9
Total	72	100. 0

Graph 9: Anorexia among the study participants
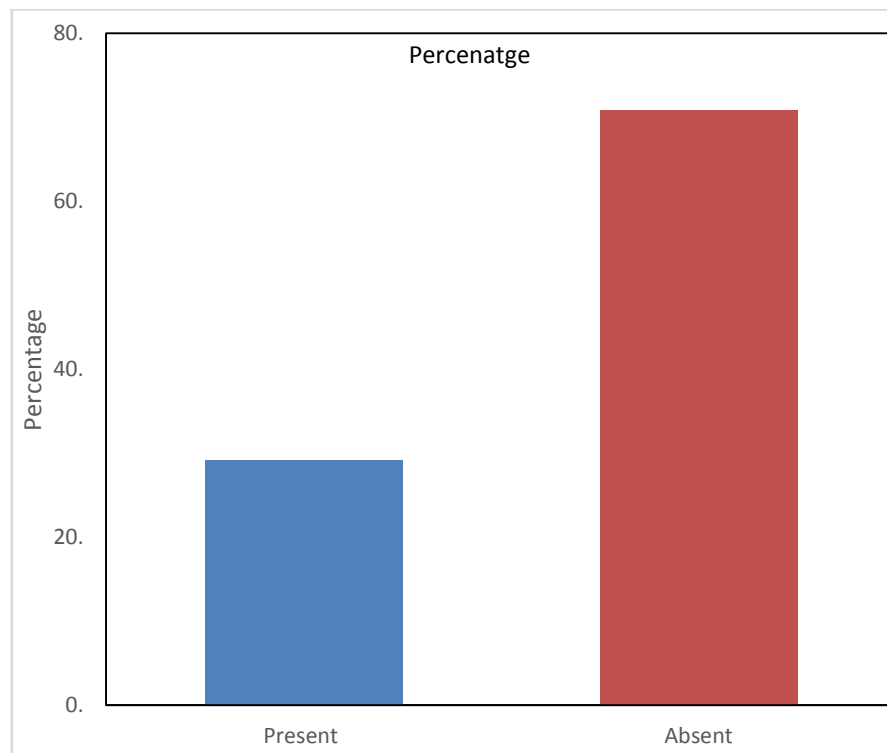
Based on the duration of illness 48.6% of the cases had illness for ≤ 2 days while 51.4% of the cases had illness for > 2 days duration.

Table 10: Duration of Illness

Duration of Illness	Frequency	Percentage
≤ 2 days	35	48.6
> 2 days	37	51.4
Total	72	100.0

Graph 10: Duration of Illness
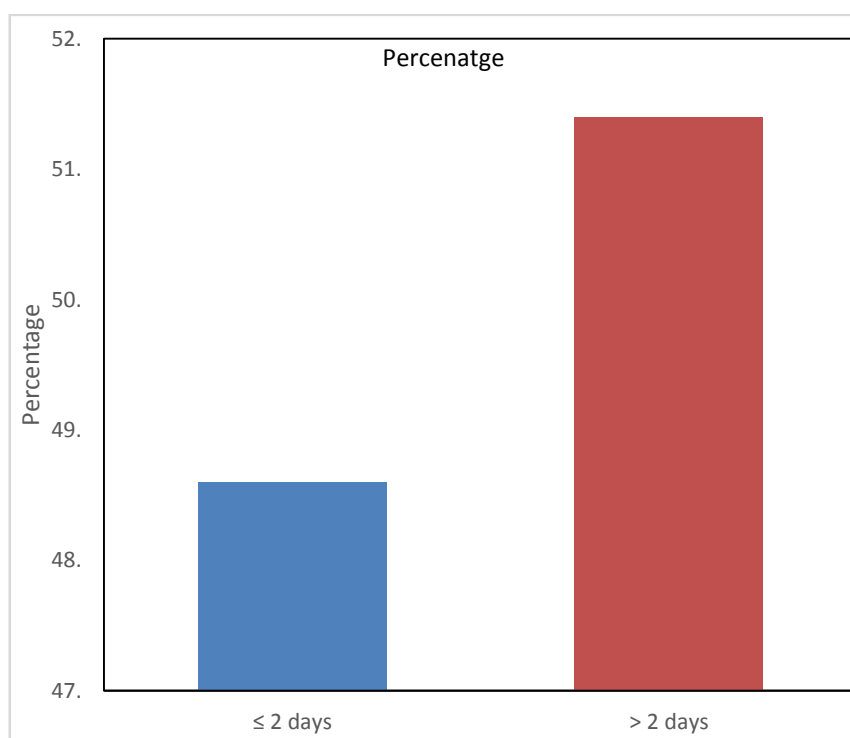
Based on the similar complaints in the past among all the participants 5.6% of the participants had past history of similar pain complaints.

Table 11: Proportion of cases based on similar complaints in the past

Similar c/o in past	Frequency	Percentage
Present	4	5.6
Absent	68	94.4
Total	72	100.0

Graph 11: Proportion of cases based on similar complaints in the past
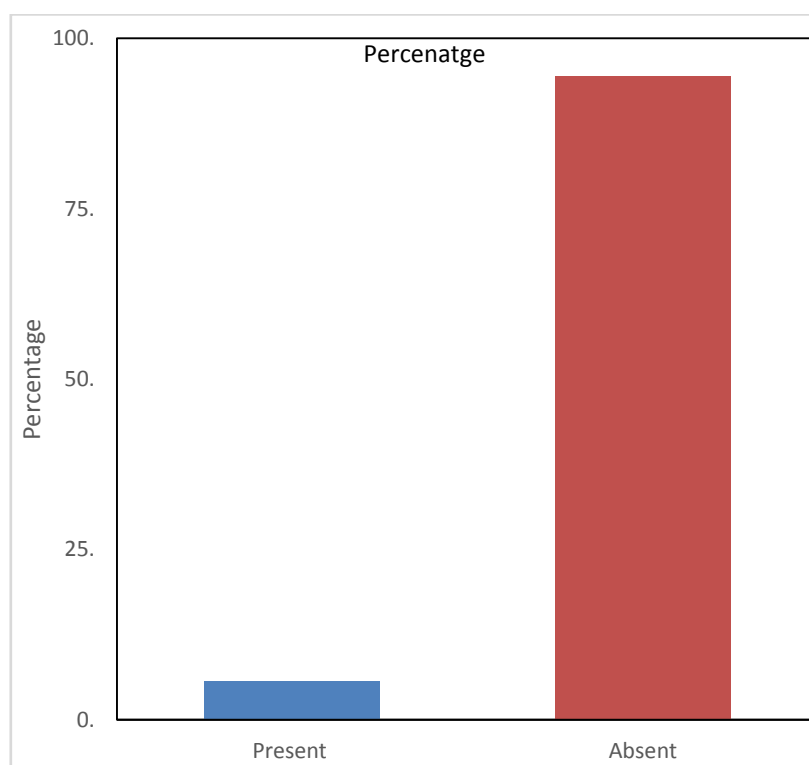
In this study RIF tenderness was noted among 97.2% of the cases while 2.8% of the cases had no RIF tenderness.

Table 12: RIF tenderness among the participants

RIF tenderness	Frequency	Percentage
Present	70	97.2
Absent	2	2.8
Total	72	100.0

Graph 12: RIF tenderness among the participants
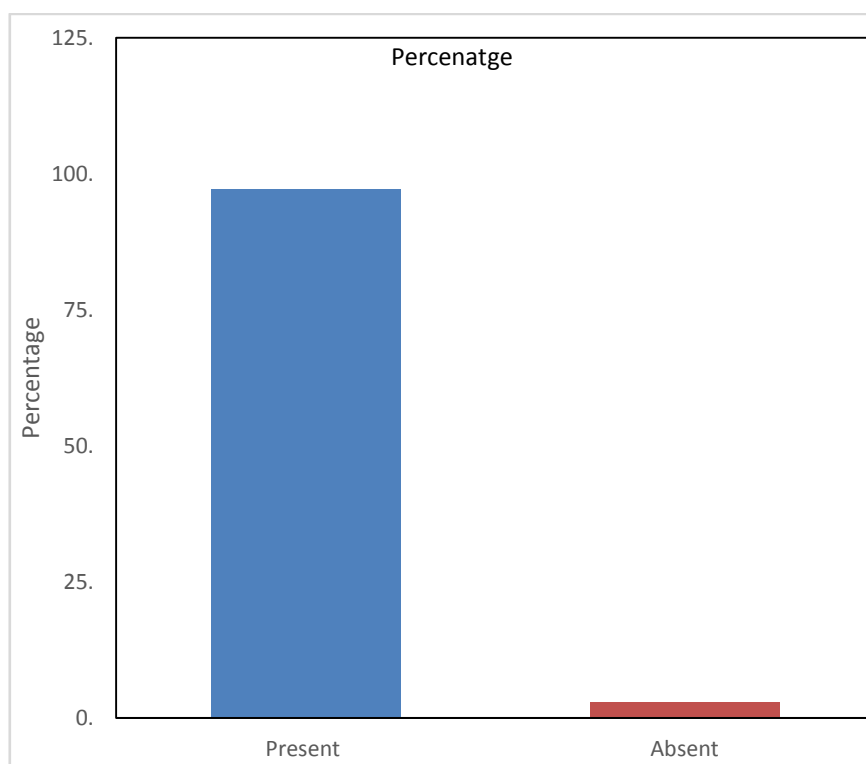
Similarly guarding was noted among 93.1% of the cases in our study whereas guarding was absent in 6.9% of the cases.

Table 13: Distribution of participants based on guarding

Guarding	Frequency	Percentage
Present	67	93.1
Absent	5	6.9
Total	72	100.0

Graph 13: Distribution of participants based on guarding
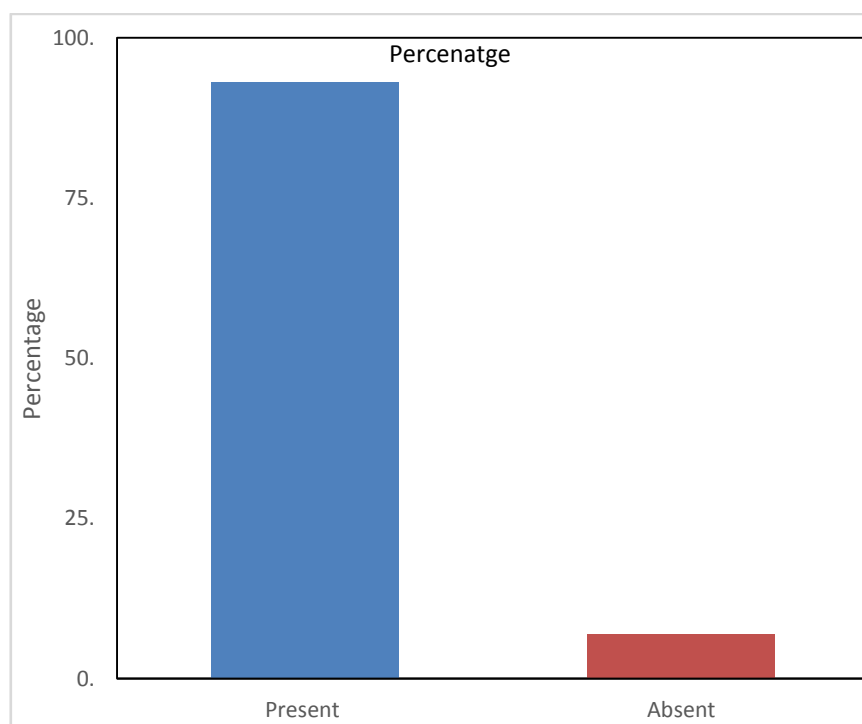
On assessing the presence of rebound tenderness, 86.1% of the cases had rebound tenderness in this current study.

Table 14: Proportion of patients-based on rebound tenderness

Rebound tenderness	Frequency	Percentage
Present	62	86.1
Absent	10	13.9
Total	72	100.0

Graph 14: Proportion of patients-based on rebound tenderness
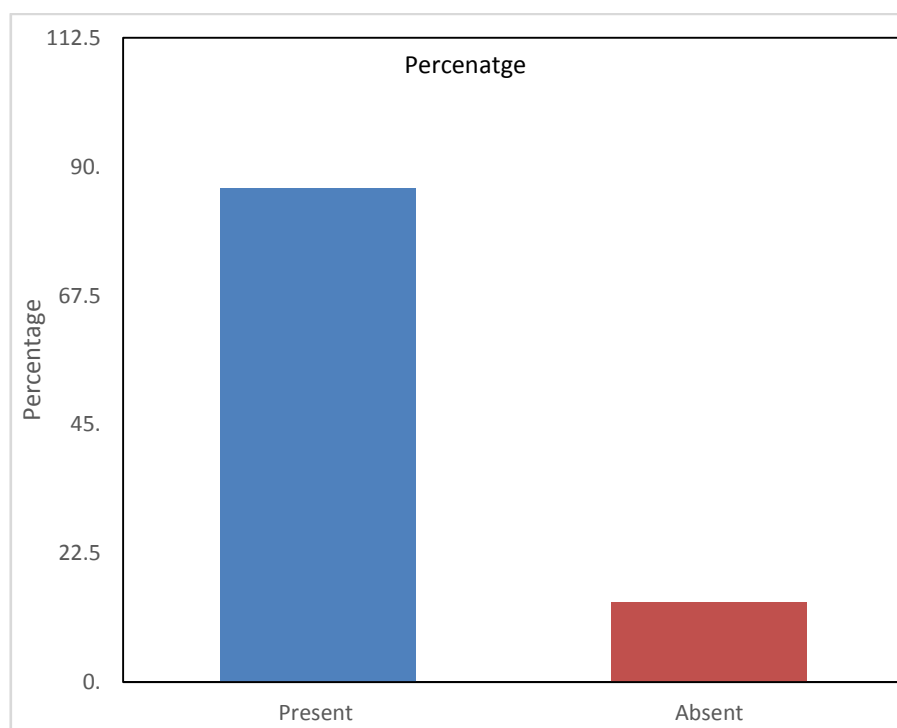
Rovsing test was found to be positive among 83.4% of cases & negative among 16.6% of cases.

Table 15: Rovsing test among the participants

Rovsing test	Frequency	Percentage
Positive	60	83.3
Negative	12	16.7
Total	72	100.0

Graph 15: Rovsing test among the participants
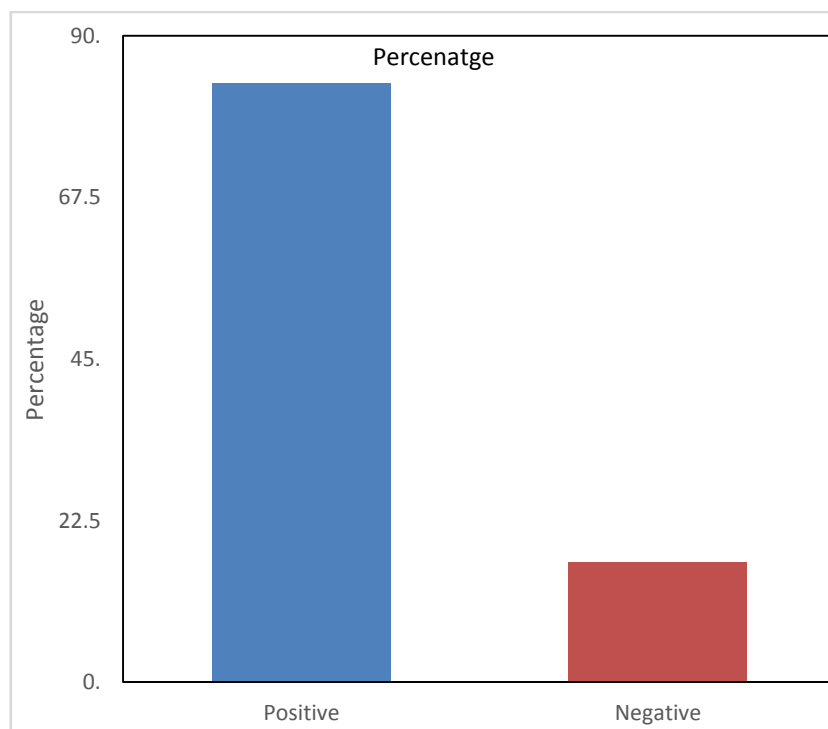
Likewise, Psoas test was positive among 84.7% of cases & negative among 15.3% of the cases in this study.

Table 16: Psoas test among the participants

Psoas test	Frequency	Percentage
Positive	61	84.7
Negative	11	15.3
Total	72	100.0

Graph 16: Psoas test among the participants
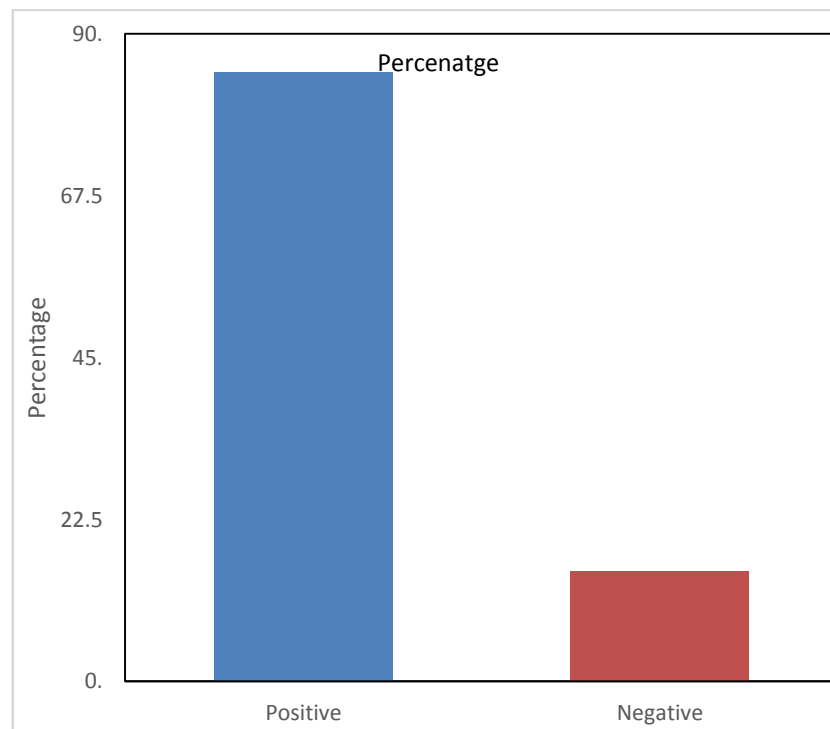
Obturator sign positive in 80.6% of the patients and 19.4% of the patients had negative obturator sign.

Table 17: Obturator sign among the study participants

Obturator sign	Frequency	Percentage
Positive	58	80.6
Negative	14	19.4
Total	72	100.0

Graph 17: Obturator sign among the study participants
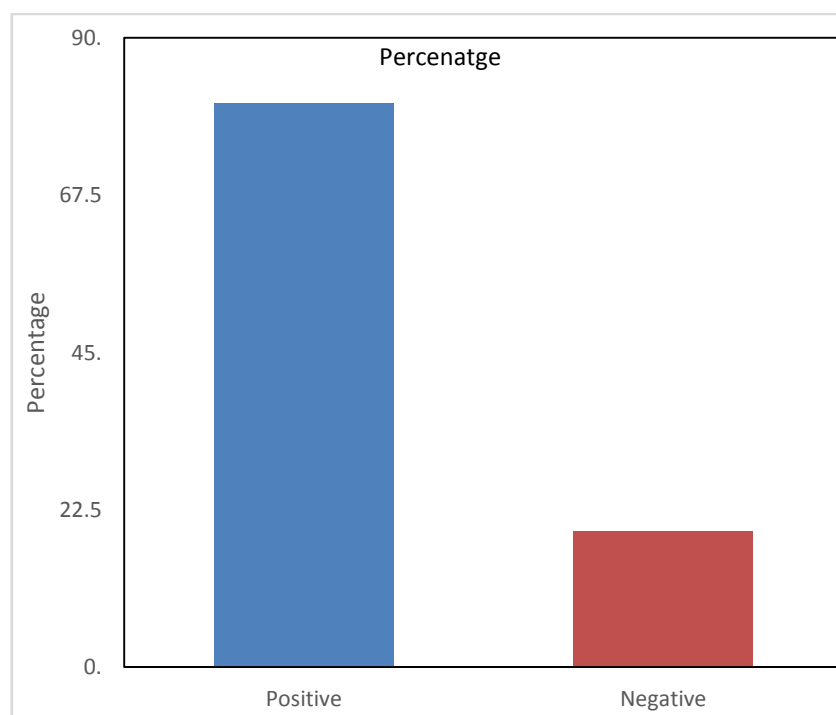
WBC count was found to be raised among 98.6% of the cases and normal among 1.4% of the cases.

Table 18: WBC count findings among the participants

WBC count	Frequency	Percentage
Abnormal	71	98.6
Normal	1	1.4
Total	72	100.0

Graph 18: WBC count findings among the participants
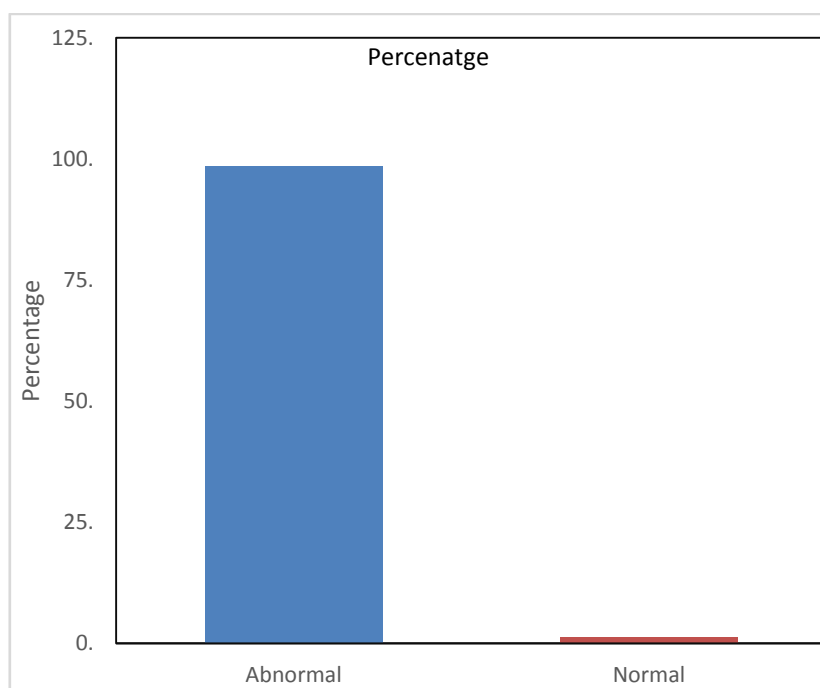
Neutrophil count was noted to be abnormal among 97.2% of the study participants and normal among 2.8% of the cases.

Table 19: Distribution of cases based on Neutrophil count

Neutrophil %	Frequency	Percentage
Abnormal	70	97.2
Normal	2	2.8
Total	72	100.0

Graph 19: Distribution of cases based on Neutrophil count
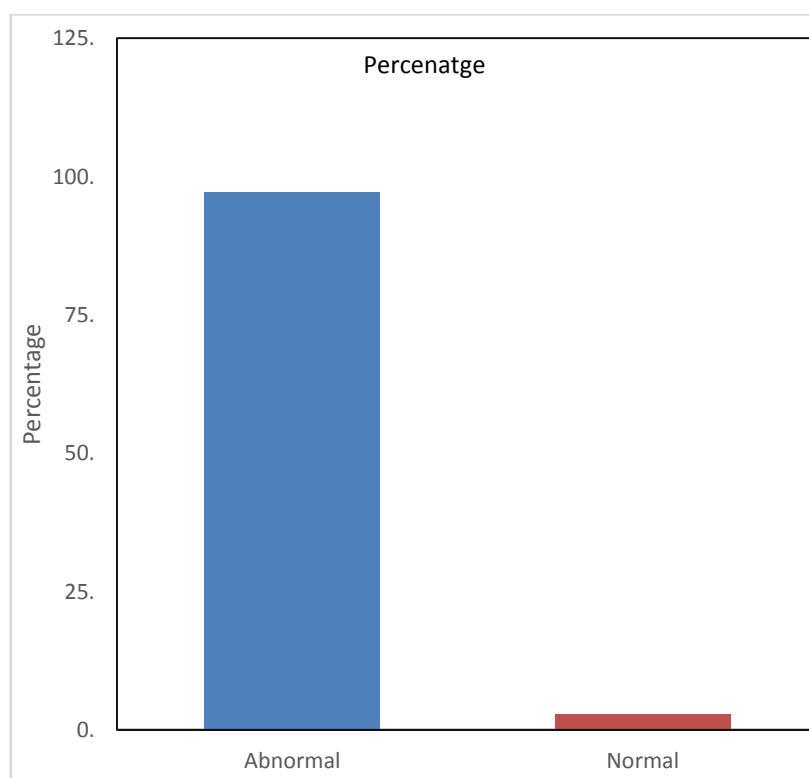
In this study appendicolith was noted as per USG present among 33.3% of the cases and absent among 66.7% of the cases in our study.

Table 20: Distribution of cases based on Appendicolith

Appendicolith	Frequency	Percentage
Present	24	33.3
Absent	48	66.7
Total	72	100.0

Graph 20: Distribution of cases based on Appendicolith
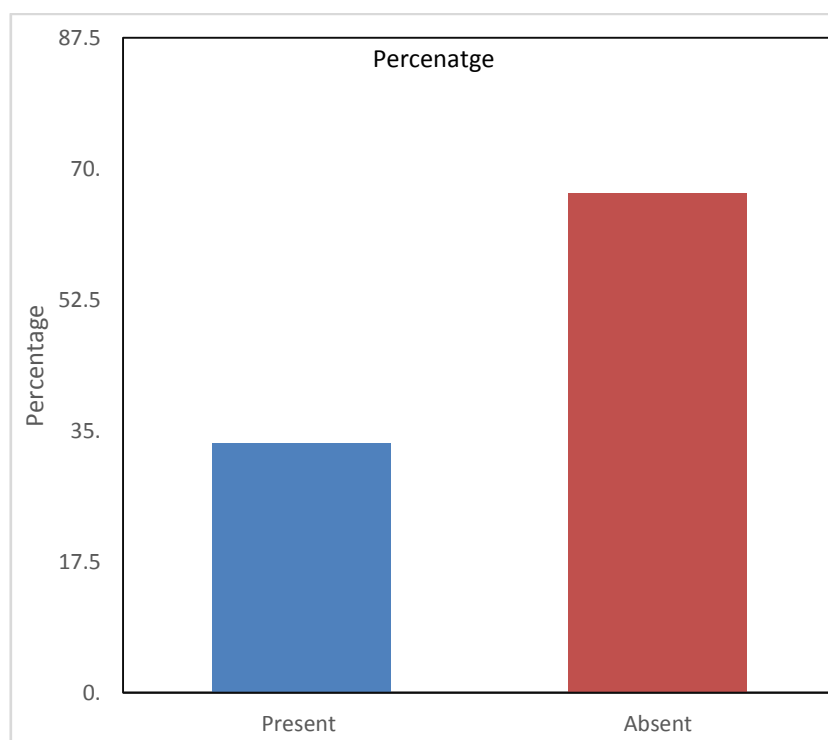
On assessment of appendix diameter abnormal appendix diameter was recorded in 97.2% of the cases and 2.8% of the cases had normal appendiceal diameter.

Table 21: Proportion of cases based on Appendix diameter

Appendix diameter	Frequency	Percentage
Abnormal	70	97.2
Normal	2	2.8
Total	72	100.0

Graph 21: Proportion of cases based on Appendix diameter
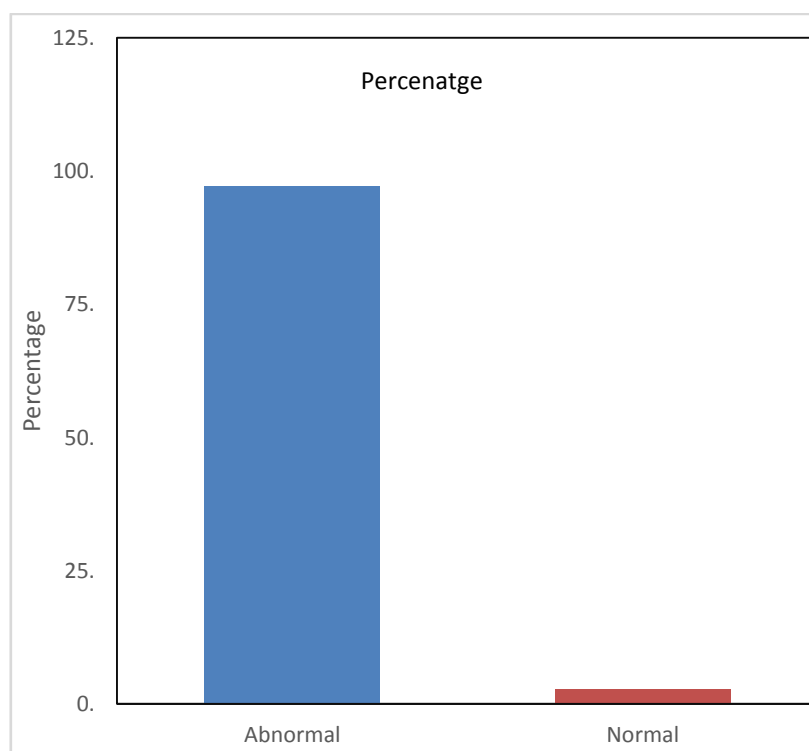
Among the subjects positive urine analysis was seen in 12.5% participants and negative urine analysis was noted in 87.5% of the cases.

Table 22: Distribution of cases based on urine analysis

Urine analysis	Frequency	Percentage
Positive	9	12.5
Negative	63	87.5
Total	72	100.0

Graph 22: Distribution of cases based on urine analysis
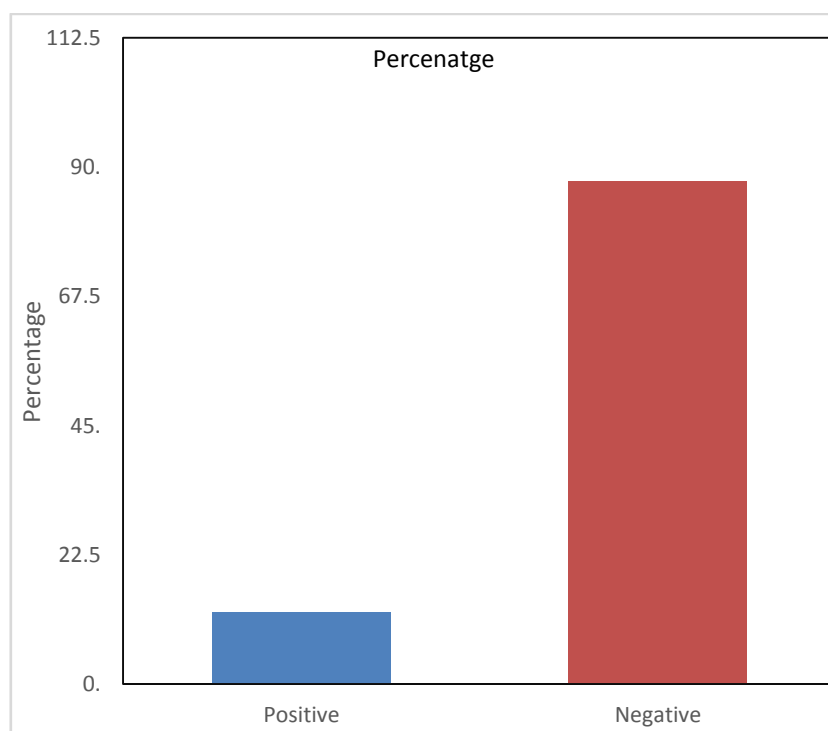
Based on operative findings complicated acute appendicitis defined as perforated appendicitis, periappendicular abscess, peritonitis, appendicular abscess and gangrenous appendicitis was noted among 43.1% of the cases and uncomplicated acute appendicitis in 56.9% of the cases.

Table 23:Operative findings among the study subjects

Operative findings	Frequency	Percentage
Complicated Acute Appendicitis	31	43.1
Uncomplicated Acute Appendicitis	41	56.9
Total	72	100.0

Graph 23: Operative findings among the study subjects
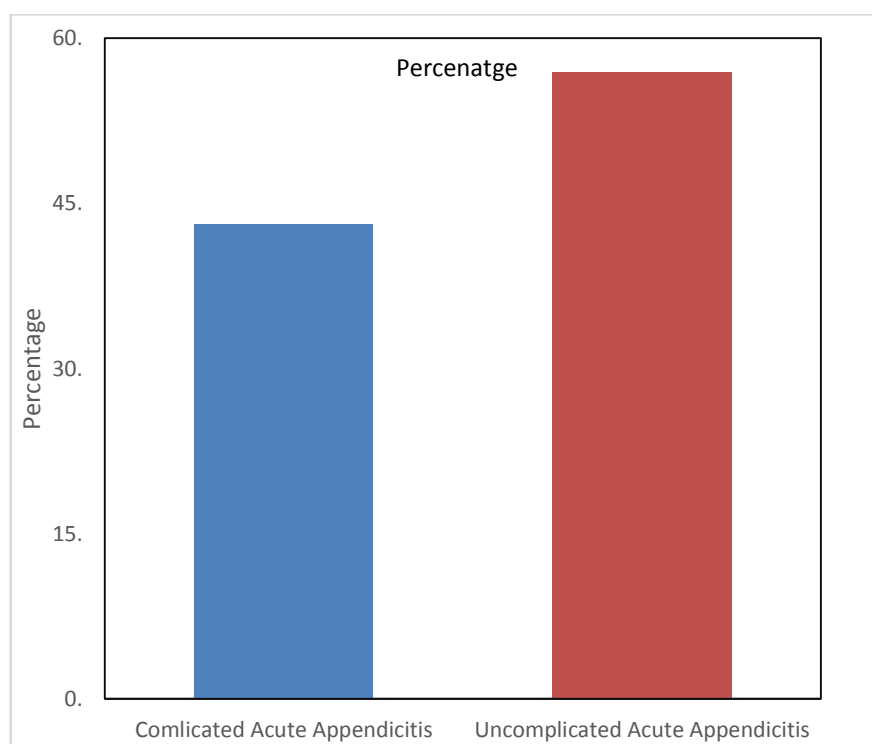
Acute suppurative appendix, Acute suppurative appendix with gangrenous changes, Acute suppurative appendix with perforation, Eosinophilic granulomatous appendicitis and Appendicular mucocele was noted in histopathological finding among 43.1%, 29.2%, 22.2%, 4.2% and 1.4% of the cases in this current study respectively.

Table 24: Histopathology findings of Acute appendicitis

Histopathology findings	Frequency	Percentage
Acute suppurative appendix	31	43.1
Acute suppurative appendix with gangrenous changes	21	29.2
Acute suppurative appendix with perforation	16	22.2
Eosinophilic granulomatous appendicitis	3	4.2
Appendicular mucocele	1	1.4
Total	72	100.0

Graph 24: Histopathology findings of Acute appendicitis
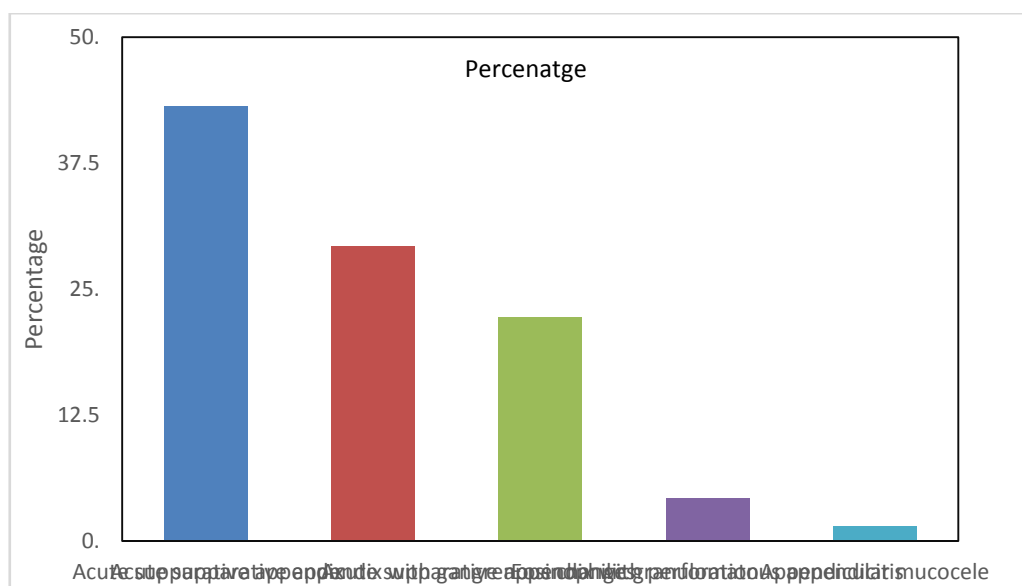
Duration of hospital stay was ≤ 4 days among 61.1% of the cases and >4 days among 38.9% of the cases.

Table 25: Duration of stay in the hospital

Duration of stay in the hospital	Frequency	Percentage
≤ 4 days	44	61.1
> 4 days	28	38.9
Total	72	100.0

Graph 25: Duration of hospital stay
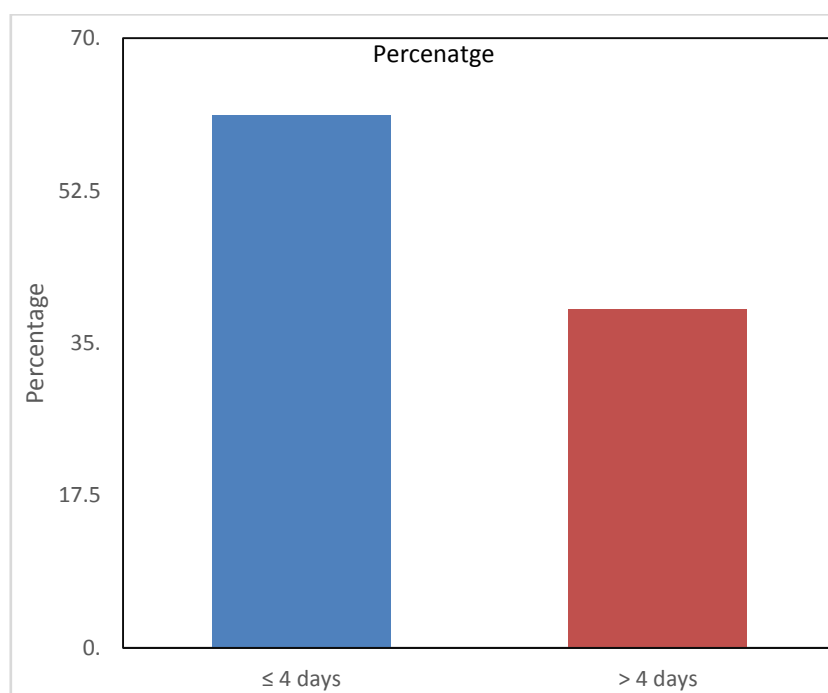
Among complicated acute appendicitis cases novel preoperative score was >4 40.3% (n=29)of the study participants and ≤ 4 is 2.8% (n=2) of the participants. In uncomplicated acute appendicitis cases "Novel Preoperative Score" was >4 among 5.6% (n=4) of the participants and ≤ 4 among 51.4% (n=37) participants. The association between complicated and uncomplicated cases was shown to be highly significant because of "Novel Preoperative Score" (p value =<0.0001).

Table 26:" Novel Preoperative Score" in Complicated & Uncomplicated Acute Appendicitis

Novel Preoperative score	Complicated Acute Appendicitis	Uncomplicated Acute Appendicitis	Total	P value
Score > 4	29 (40.3%) (n=29)	4 (5.6%) (n=4)	33 (45.8%)(n=33)	<0.0001*
Score ≤ 4	2 (2.8%) (n=2)	37 (51.4%) (n=33)	39 (54.2%) (n=39)	
Total	31 (43.1%) (n=31)	41 (56.9%) (n=31)	72 (100%) (n=72)	

*Significant

Graph 26: Novel Preoperative Score in complicated and uncomplicated Acute Appendicitis
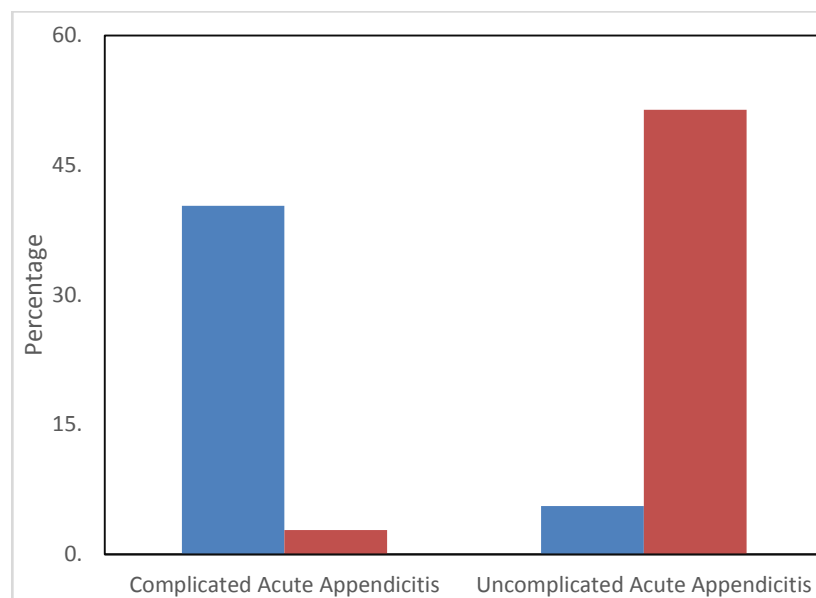
This study found that Novel Preoperative Scoring system has following characteristics: specificity, sensitivity, PPV, NPV, & diagnostic efficacy: 93.50%, 90.20%, 87.90%, 94.90%, and 94.90%, respectively..

Table 27: Diagnostic criteria of Novel Preoperative Scoring system

Parameters	Value	95% CI
Sensitivity	93.50%	78.6-99.2%
Specificity	90.20%	76.9-97.3%
PPV	87.90%	74.0-94.9%
NPV	94.90%	82.8-98.6%
Diagnostic efficacy	91.70%	82.7-96.9%

Graph 27: Diagnostic criteria of Novel Preoperative Scoring system
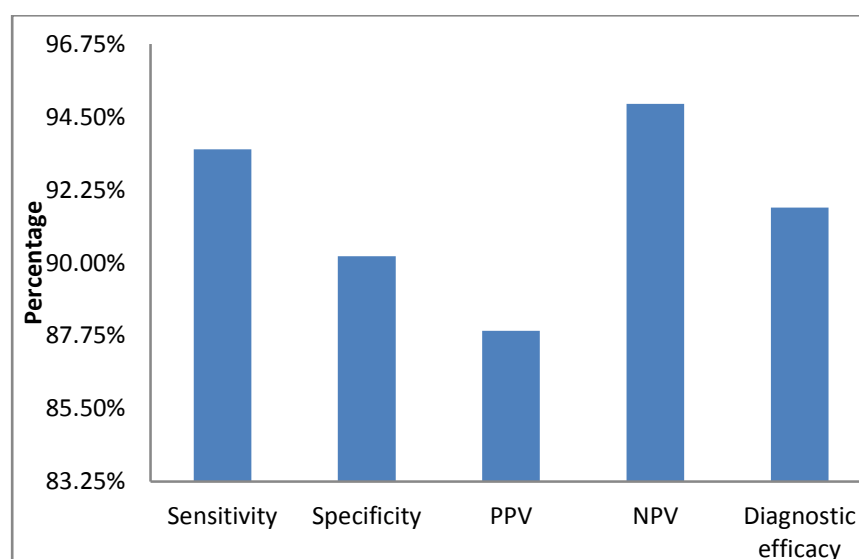
Similarly, among complicated acute appendicitis group RIPASA score was ≥ 7.5 among 36.1% of the cases and < 7.5 among 6.9% of the cases. However, RIPASA score was ≥ 7.5 and < 7.5 among 12.5% and 44.4% of the cases in uncomplicated acute appendicitis cases respectively. The association between complicated and uncomplicated cases with RIPASA scoring was highly significant (p value =<0.0001).

Table 28: RIPASA score in Complicated & Uncomplicated 'Acute Appendicitis'

RIPASA scoring system	'Complicated Acute Appendicitis'	'Uncomplicated Acute Appendicitis'	'Total'	p value
Score ≥ 7.5	26 (36.1)	9 (12.5)	35 (48.6)	<0.0001*
Score < 7.5	5 (6.9)	32 (44.4)	37 (51.4)	
Total	31 (43.1)	41 (56.9)	72 (100)	

*Significant

Graph 28: RIPASA score in Complicated and Uncomplicated 'Acute Appendicitis'
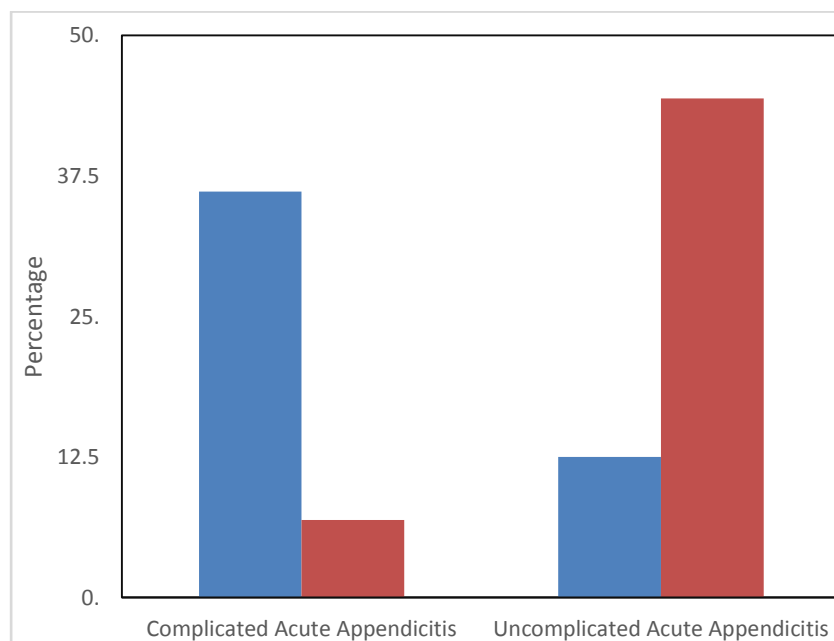
The novel preoperative scoring system's sensitivity, specificity, PPV, NPV & diagnostic efficacy in this investigation were 83.90%, 78.10%, 74.30%, 86.50%, and 86.50%, respectively..

Table 29: Diagnostic criteria of RIPASA scoring system

Parameters	Value	95% CI
Sensitivity	83.90%	66.3-94.6%
Specificity	78.10%	62.4-89.4%
PPV	74.30%	61.4-84.0%
NPV	86.50%	73.8-93.6%
Diagnostic efficacy	80.60%	69.5-88.9%

Graph 29: Diagnostic criteria of RIPASA scoring system
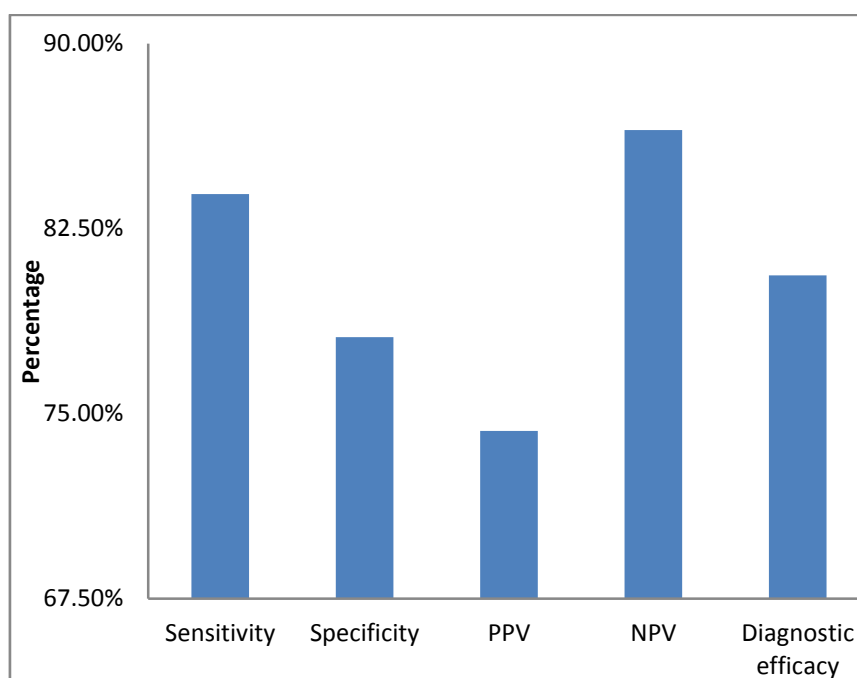
DISCUSSION

DISCUSSION

In this study among Acute appendicitis cases in age group of ≤ 30 years there were 26.4% participants, among 31- 40 years of age there were 31.9% participants, while in age group between forty-one to fifty years 29.2% of cases were noted. Age group of fifty one to sixty years ,12.5% of the cases were noted. Among study participants 47.2% of them were males while 52.8% of the participants were females. On assessing the occupational status of patients 91.7% of the cases were employed while 8.3% of the cases are unemployed in this study.

In the present study, 25% of the individuals had no widespread pain abdomen, while 75% of cases had diffuse pain abdomen. In this particular study RIF pain was observed among 68.1% of the study participants, however 31.9% of the participants had no RIF pain. On assessing the pain migrating to RIF, 86.1% of the cases had migrating pain while 13.9% of the cases had no migrating pain to RIF. In this current study among acute appendicitis cases nausea / vomiting was present among 45.8% of the cases. In this study fever was present among 34.7% of the patients, whereas 65.3% of the cases were afebrile. Anorexia was found among 29.2% of the cases in this current study while 70.8% of the cases had normal appetite.

Based on the duration of illness 48.6% of the cases had illness for ≤ 2 days while 51.4% of the cases had illness for > 2 days duration. Based on the similar complaints in the past among all the participants 5.6% of the participants had similar complaints.

In this study RIF tenderness was noted among 97.2% of the cases while 2.8% of the cases had no RIF tenderness. Similarly guarding was noted among 93.1% of the cases in our study whereas guarding was absent in 6.9% of the cases. On assessing the presence of

rebound tenderness 86.1% of the cases had rebound tenderness in this current study. In 83.4% of the cases, the roving test yielded positive results, and in 16.9% of the cases, negative results.

Likewise, Psoas test was positive among 84.7% of cases & negative among 15.3% of cases in this study. On assessing the Obturator sign 80.6% of the patients showed positive sign and 19.4% of the patients had negative sign.

WBC count was found to be abnormal among 98.6% of the cases and normal among 1.4% of the cases. Neutrophil count was noted to be raised among 97.2% of the study participants and normal among 2.8% of the cases. In this present study appendicolith was present among 33.3% of the cases and absent among 66.7% of the cases in our study. On assessment of appendix diameter abnormal appendix diameter was recorded in 97.2% of the cases and 2.8% of the cases had normal appendiceal diameter. Among the study cases positive urine analysis was seen in 12.5% participants and negative urine analysis was noted in 87.5% of the cases.

Based on the operative findings complicated acute appendicitis was noted among 43.1% of the cases and uncomplicated acute appendicitis in 56.9% of the cases. Acute suppurative appendix, Acute suppurative appendix with gangrenous changes, Acute suppurative appendix with perforation, Eosinophilic granulomatous appendicitis and Appendicular mucocele was noted in histopathological finding among 43.1%, 29.2%, 22.2%, 4.2% and 1.4% of the cases in this current study respectively.

Duration of hospital stay was ≤ 4 days among 61.1% of the cases and >4 days among 38.9% of the cases. Among complicated acute appendicitis cases Novel Preoperative Score was >4 among 40.3% of the study participants and ≤ 4 among 2.8% of the participants.

In uncomplicated acute appendicitis cases novel preoperative score was >4 among 5.6% of the participants and ≤ 4 among 51.4% participants. The association between complicated and uncomplicated cases with this Novel Preoperative Score was found to be highly significant .This study found that the novel preoperative scoring system has the following characteristics: specificity, sensitivity, NPV, PPV, and diagnostic efficacy: 93.50%, 90.20%, 87.90%, 94.90%, and 94.90%, respectively.

Similarly, among complicated acute appendicitis cases RIPASA score was ≥ 7.5 among 36.1% of the cases and < 7.5 among 6.9% of the cases. However, RIPASA score was ≥ 7.5 and < 7.5 among 12.5% and 44.4% of the cases of uncomplicated acute appendicitis cases respectively. The association between complicated and uncomplicated cases with RIPASA score was highly significant. The Novel preoperative scoring system's specificity, sensitivity, NPV, PPV, and diagnostic efficacy in this investigation were 83.90%, 78.10%, 74.30%, 86.50%, and 86.50%, respectively.

Findings of present study are comparable with findings of the below mentioned studies. Hannu L et al[46] developed and verified a prognostic scale for the identification of AA in children. According to their findings, 27% of children underwent needless appendicectomies based on clinical judgement, while 4% of children received incorrect diagnoses for appendicitis. By using the score, 11% of patients with appendicitis should have been released from the hospital and the number of needless appendicectomies would have dropped to 13%. According to their claims, the application of predictive mathematical models could make it easier to diagnose appendicitis and prevent needless procedures. Díaz BCZ et al[48] investigated the variations in 'RIPASA 'and 'Modified ALVARADO 'for patients diagnosed with 'Acute Appendicitis 'and abdominal discomfort. According to them, a RIPASA score of 8.5 is the ideal cutoff value, taking into accounts

receiver operating characteristic curve with value of area-0.59, Sensitivity with a value of 93.3%, Specificity with a value of 8.3% , 'Positive Predictive Value with a value of 91.7 %, and 'Negative Predictive Value 'with a value of 10.2%. Modified Alvarado score: Reciever Operating Characteristic curve with a value of 0.72, Sensitivity with a value of 75%, Specificity with a value of 41.6%, 'Positive Predictive Value' (93.8%), 'Negative Predictive Value '(12.4%), with 6 as the ideal cutoff value. When used in patients reporting with suspected AA, they concluded that RIPASA score did not provide any advantages when compared with the Modified Alvarado score.

Similarly, Frountzas M et al[49] comparision was made between the of 'RIPASA '& 'ALVARADO 'scoring systems for diagnostic - accuracy through a meta-analysis. Their meta-analysis comprised twelve trials with a total of 2161 patients. The RIPASA score had a Sn of 94% and a Sp of 55%. Additionally, the diagnostic OR was 24.7 and the Area under curve found to be 0.943. In this study ALVARADO score had a sn- 69% and a sp - 77%. Additionally, the diagnostic OR was 8.0 and the AUC was 0.794. Although they stated that RIPASA system had better sensitive then ALVARADO system, lower specificity means that a second mean is required in order to make an appropriate diagnosis. Celerino AR et al[50] showed that the ALVARADO score was less accurate in diagnosis than the RIPASA score. with a 90.7% specificity and a 64.3% sensitivity compared to 71.4% and 98.8%, respectively. ALVARADO scale was 0.8 and RIPASA score was 0.88 for area under 'ROC 'curve. They claimed that the 'RIPASA 'score was a more precise, practical, and targeted system for the Mexican people than the Alvarado score.

Also, Rohat A et al[51] claimed that 114 out of the 218 patients had surgery. AA was pathologically diagnosed in 107 of the 114 cases. With an accuracy of 0.88, RIPASA was shown to be the most valuable score. AIR and Alvarado scores were next, with AUC values

of 0.79 and 0.71, respectively. They stated that when it came to diagnosing AA, RIPASA had a greater accuracy rate than the remaining scores. When a patient presents with pain in RIF, the RIPASA cut-off from threshold of 7.5-point offers useful, not an invasive, quick reporting technique which improved the power of discrimination of AA, in the study conducted by them.

In consistent with this study, Chisthi MM et al[53] stated that 16% of cases involved negative appendicectomy. 'Sensitivity', specificity, 'negative predictive value', 'positive predictive value', and diagnostic accuracy for 'Modified ALVARADO 'were 64%, 59%, 89%, 24%, and 64% correspondingly; for AIR, they were 98%, 29%, 88%, 71%, and 87%; and for RIPASA, they were 88%, 77%, 95%, 54%, and 86%. Modified ALVARADO Area Under Curve was 0.727, Appendicitis inflammatory response is 0.947, and RIPASA's was 0.911. They concluded that 'AIR 'score is probably more favourable than Alvarado in pediatric population since it asks childrens age group to identify subjective symptoms that may or may not be genuine, whereas the attributes evaluated in 'ALVARADO 'are easy to apply to childrens age group. Modified Alvarado is not a good diagnostic grading system for AA; RIPASA and AIR are. Also, a complete history, a thorough examination, & fundamental laboratory tests could be used to simply determine both of these scores. Juan CMDO et al[54] evaluated the diagnostic performance of the most popular clinical prediction scales, such as RIPASA, AAS, AIR, Alvarado, and AIR. The Alvarado score proved to be the most effective diagnostic method out of the four scores that were tested. Anorexia, WBC count more than 8275 leukocytes/μL, neutrophilia more than 75%, stomach discomfort less than forty eight hours, migrating pain to the RIF & axillary temperature outside of the range of thirty seven to thirty nine degrees °C were, nevertheless, most decreased & predictive combination of examined values.

However, Johanna G et al[55] revealed that 47% of the 318 individuals who were included had appendicitis. The Acute Inflammatory Response score & pARC had lesser false positives compared with that of PAS & ALVARADO score across all age and gender categories. The ROC curve analysis, Sn, NPV, and missed appendicitis rates did not show any significant differences. At most threshold probabilities in decision curve analysis, 'AIR ' score and pARC outperformed 'PAS '& 'ALVARADO 'score. They concluded that the pARC and the AIR score are more accurate than the PAS and Alvarado score when diagnosing childrens age group with suspected appendicitis. Wei F et al[56] discovered that in children under five with AA, age, WBC count, and length of symptoms may be utilized to predict complicated appendicitis. A new but promising technique that helps distinguish between acute simple and complex appendicitis is the prediction model.

In addition, Awan S et al[57] established the RIPASA score's diagnostic accuracy in identifying AA. With around mean age of 27.1 years, the patients in the research. With regard to AA, RIPASA score has a 47.6% sensitivity, 85.7% specificity, 98.4% PPV, 8.3% NPV & diagnostic accuracy of 49.6%. They came to the conclusion that the RIPASA score was an unreliable diagnostic technique for identifying individuals with AA. Yang C et al[58] claimed that it would be easy to assess degree of appendicitis in young children and identify the best course of treatment in a timely manner by using their unique nomogram, which included weights for years of age, beginning time, admitting temperature, WBC count, neutrophils ratio, and total bilirubin.

Similarly, Ar-aishah D et al[59] sought to identify the reliable clinical predictors for diagnosis of paediatric appendicitis. In consistent with this study, Roby M et al[62] assessed the level of agreement in the diagnosis of AA between the RIPASA and PAS scores and the gold standard of histological examination. In this study, the age distribution was 10.1 years. 3.3% of instances of early AA, 20% of total cases was that of acute suppurative appendicitis,

73.3% of cases of acute form of gangrenous appendicitis, and 3.3% of other cases were found based on histology. With a cutoff point value of 9.5 for 'RIPASA 'and 7 for 'PAS', respectively, Sn, Sp, diagnostic accuracy was 82.8%, 100%, 80% for 'RIPASA 'and 75.8%, 100%, 73.4% for PAS. They claimed that the RIPASA score at the cut-off level of 9.5 has higher sensitivity and accuracy than PAS for detecting AA in pediatric patients. As such, it can be utilised as CSS to help in determining the presence of AA in children. Rishikesh G et al[63] claimed that while the Alvarado and RIPASA scores had poor Sp and true negative rates, they both have good Sn. Therefore, in the treatment of AA, both of these scores can be utilised as screening tools. Because RIPASA scoring is better score than ALVARADO scoring, it should be used

CONCLUSION

CONCLUSION

Notably, Novel Preoperative Complicated Appendicitis Score was found to have better diagnostic efficacy compared to RIPASA SCORING SYSTEM in finding cases of complicated appendicitis in subjects who had undergone surgery for acute appendicitis.

We infer that Novel Preoperative Complicated Appendicitis Score can be used in routine practice in order to predict complicated cases of acute form of appendicitis as compared with RIPASA scoring system

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ANNEXURE

ANNEXURE—I
PROFORMA

"A COMPARATIVE STUDY OF A NOVEL PREOPERATIVE COMPLICATED ACUTE APPENDICITIS SCORE AND RIPASA SCORING SYSTEM IN PREDICTION OF COMPLICATED ACUTE APPENDICITIS "

INVESTIGATOR: DR. ANURAG BHAVANAM

Name: Phone number:

Age: Address:

Sex: DOA:

Occupation: DOS:

UHID number: DOD:

Presenting complaints:

H/O present illness

> Pain duration
>
> Pain migration
>
> Nausea
>
> Vomiting
>
> Anorexia

Past history:

Family history:

Menstrual history:

Obstetric history:

Year of 1st and last child birth:

GENERAL PHYSICAL EXAMINATION

-General condition:

-Build and nutrition:

-Pallor/Cyanosis/Icterus/Clubbing/edema/Generalized lymphadenopathy

-Body weight:

<u>VITAL DATA</u>

-Pulse:

-Temperature:

-BP:

-Respiration rate:

<u>SYSTEMICEXAMINATION</u>

Per abdomen:

    -RIF tenderness

    -Guarding

    -Rebound tenderness

    -Rovsing test

    -Psoas test

    -Obturator sign

Respiratory system:

Cardio vascular system:

Central nervous system:

<u>Clinical diagnosis</u>

<u>Investigations</u>

    -Blood Hb

    -CBC

    -TLC

    -DLC

    -BT

    -CT

    -Urine routine and microscopy

    -RBS

    -Blood Urea

-Serum creatinine

-Chest X-Ray PA view

-ECG

-Abdominal USG

 Presence / abscence of appendicolith

Periappendicular abscess collection

-Appendix diameter

A NOVEL PREOPERATIVE COMPLICATED ACUTE APPENDICITS SCORE

Variable	Points	Patients score
Age >40	1	
Duration >48 hours	2	
Diffuse pain or Rovsing's pain + obturator+ psoas signs	3	
WBC (>13-21.9K)	1	
WBC (>22K)	3	
Neutrophil percentage >80%	1	
Appendicolith	1	
Appendix diameter >12mm	1	

-0-13 is the scoring system.

   -Any clinical case with score greater than 4 will be considered as complicated appendicitis.

RIPASA SCORING SYSTEM

Variables	Points	Patients score
Female	0.5	
Male	1	
Age <40y	1	
Age >40	0.5	
Right iliac fossa pain	0.5	
Pain migration to right iliac fossa	0.5	

Anorexia	1	
Nausea and vomiting	1	
Duration of symptoms <48 hours	1	
Duration of symptoms >48 hours	0.5	
Right iliac fossa tenderness	1	
Guarding	2	
Rebound tenderness	1	
Rovsing's sign	2	
Fever	1	
Raised WBC	1	
Negative urinalysis	1	
Total	16.5	

RIPASA score	Diagnosis of acute appendicitis
5.0>	Acute appendicitis is not possible
5-7.0	Low probability of acute appendicitis
7.5-11.5	High probability of acute appendicitis
12<	Absolutely acute appendicitis

ANNEXURE – II

PATIENT INFORMATION SHEET

Study title : **"A COMPARATIVE STUDY OF A NOVEL PREOPERATIVE COMPLICATED ACUTE APPENDICITS SCORE AND RIPASA SCORING SYSTEM IN PREDICTION OF COMPLICATED APPENDICITIS "**
GUIDE: DR PRAKASH DAVE

STUDY CONDUCTED BY DR. ANURAG B

Study location: R L Jalappa Hospital and Research Centre attached to Sri Devaraj Urs Medical College, Tamaka, Kolar.

The purpose of the study will be explained in detail to you and all information collected would be for study purpose only. The data collected would be submitted to the Department of Surgery, SDUMC, Kolar and confidentiality ensured.The merits and demerits would be explained briefly to you.

You would be participating in this study if you are diagnosed and admitted with features of acute appendicitis. Clinically evaluated after recording demographic data. You will undergo the indicated investigations and abdominal USG. Novel Preoperative complicated acute appendicitis Score and RIPASA scores would be evaluated depending on your demographic,clinical and abdominal ultrasound findings. Provide appendicectomy (removal of appendix by open or laparoscopic surgery) is decided and your agreed for the same.

You would be prepared for surgery (emergency appendectomy) and (peritoneal drainage would be done if necessary).Intra-operative findings will be recorded. A comparison would be done between The Novel Preoperative Score and RIPASA Score with intra operative findings and post operative course and a comparison would be made and accuracy of each scoring system would be determined using statistical methods.

Please read the following information and discuss with your family members. You can ask any question regarding the study. If you agree to participate in the study, we will collect above information (as per pro-forma) from you or a person responsible for you or both. Relevant history will be taken. This information collected will be used only for dissertation and publication.

All information collected from you will be kept confidential and will not be disclosed to any outsider. Your identity will not be revealed. This study has been reviewed by the Institutional Ethics Committee and you are free to contact the member of the Institutional Ethics Committee.

There is no compulsion to agree to this study. The care you will get will not change if you don't wish to participate. You are required to sign/ provide thumb impression only if you voluntarily agree to participate in this study.

For further information contact:

Dr. AnuragBhavanam [post graduate]

Department of General Surgery

SDUMC, Kolar

Phone number
7353190775.

Name of the participating
Patient

Signature of the participating patient or his/her left thumb impression

Date:
Place:

Name and signature of the witness or left thumb impression

Date:
Place:

INFORMED CONSENT

Title: **"A COMPARATIVE STUDY OF A NOVEL PREOPERATIVE COMPLICATED ACUTE APPENDICITIS SCORING SYSTEM AND RIPASA SCORING SYSTEM IN PREDICTION OF COMPLICATED ACUTE APPENDICITIS"**

Principal investigator: Dr. Anurag B

I, Shri/Smt. ……………….. have been explained in my own understandable language, that I will be included in a study which is "A COMPARATIVE STUDY OF A NOVEL PREOPERATIVE COMPLICATED ACUTE APPENDICITIS SCORING SYSTEM AND RIPASA SCORING SYSTEM IN PREDICTION OF COMPLICATEDAPPENDICITIS"

being conducted in RL JALAPPA HOSPITAL.KOLAR.

I have been explained that my demographic data, clinical findings, investigations, peroperative and post-operative findings will be assessed and documented for study purpose.

I have been explained that my participation in this study is entirely voluntary and I can withdraw from the study any time and this will not affect my relation with my doctor or treatment for my ailment.

I have been explained about the risk/benefit of the study such as allergic reactions to the dye, anaphylactic shock, staining of the breast tissue, need for ventilatory support.

I understand that the medical information produced by this study will become part of institutional records and will be kept confidential by my said institute.

I agree not to restrict the use of any data or result that arises from this study provided such a use is only for scientific purpose(s).

I have principal investigator's mobile number for enquiries.

I have been informed that standard of care will be maintained throughout the treatment period.

I in my sound mind give full consent to be participate in this study.

Investigator: Dr.Anurag B

Participant's signature/ thumb impression

Name:

Signature/thumb impression of the witness:

Name:

Relation to patient

Date:

Place:

ರೋಗಿಯ ಮಾಹಿತಿ ಹಾಳೆ

ಅಧ್ಯಯನದ ಶೀರ್ಷಿಕೆ:- "ಕಾದಂಬರಿ ಪೂರ್ವಭಾವಿ ಪ್ರೀ ಆಪರೇಟಿವ್ ಕಾಂಪ್ಲಿಕೇಟೆಡ್ ಅಕ್ಯೂಟ್ ಅಪೆಂಡಿಸೈಟಿಸ್ ಸ್ಕೋರ್ ಮತ್ತು ರಿಪಾಸ ಸ್ಕೋರಿಂಗ್ ಸಿಸ್ಟಂ ಇನ್ ಪ್ರೀಡಿಕ್ಷನ್ ಆಫ್ ಕಾಂಪ್ಲಿಕೇಟೆಡ್ ಅಪೆಂಡಿಸೈಟಿಸ್

ಗೈಡ್: ಡಾ. ಪ್ರಕಾಶ್‍ವೆ

ಅಧ್ಯಯನ ನಡೆಸಿದ ಡಾ.ಅನುರಾಗ್ಬಿ ಅಧ್ಯಯನ ಸ್ಥಳ: ಆರ್ ಎಲ್ ಜಾಲಪ್ಪ ಆಸ್ಪತ್ರೆ ಮತ್ತು ಸಂಶೋಧನಾ ಕೇಂದ್ರವು ಶ್ರೀ ದೇವರಾಜ್ ಅರಸ್ ವೈದ್ಯಕೀಯ ಕಾಲೇಜು, ಟಮಕ, ಕೋಲಾರ.

ಅಧ್ಯಯನದ ಉದ್ದೇಶವನ್ನು ನಿಮಗೆ ವಿವರವಾಗಿ ವಿವರಿಸಲಾಗುವುದು ಮತ್ತು ಸಂಗ್ರಹಿಸಲಾದ ಎಲ್ಲಾ ಮಾಹಿತಿಯು ಅಧ್ಯಯನ ಉದ್ದೇಶಕ್ಕಾಗಿ ಮಾತ್ರ. ಸಂಗ್ರಹಿಸಿದ ಡೇಟಾವನ್ನು ಶಸ್ತ್ರಚಿಕಿತ್ಸಾ ಇಲಾಖೆ, SDUMC, ಕೋಲಾರಕ್ಕೆ ಸಲ್ಲಿಸಲಾಗುತ್ತದೆ ಮತ್ತು ಗೌಪ್ಯತೆಯನ್ನು ಖಾತ್ರಿ ಪಡಿಸಲಾಗುತ್ತದೆ. ಅರ್ಹತೆ ಮತ್ತು ನ್ಯೂನತೆಗಳನ್ನು ನಿಮಗೆ ಸಂಕ್ಷಿಪ್ತವಾಗಿ ವಿವರಿಸಲಾಗುವುದು.

ನೀವು ತೀವ್ರವಾದ ಕರುಳು ನಾಳದ ಉರಿಯೂತ ಲಕ್ಷಣಗಳೊಂದಿಗೆ ರೋಗ ನಿರ್ಣಯ ಮತ್ತು ಪ್ರವೇಶವನ್ನು ಹೊಂದಿದ್ದರೆ ನೀವು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸುತ್ತೀರಿ. ಜನಸಂಖ್ಯಾ ಡೇಟಾವನ್ನು ರೆಕಾರ್ಡ್ ಮಾಡಿದ ನಂತರ ಪ್ರಾಯೋಗಿಕವಾಗಿ ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗಿದ್ದು, ನೀವು ಸೂಚಿಸಿದ ತನಿಖೆ ಮತ್ತು ಕಿಬ್ಬೊಟ್ಟೆಯ USG ಗೆ ಒಳಗಾಗುತ್ತೀರಿ. ನಿಮ್ಮ ಜನಸಂಖ್ಯಾಶಾಸ್ತ್ರ, ಕ್ಲಿನಿಕಲ್ ಮತ್ತು ಕಿಬ್ಬೊಟ್ಟೆಯ ಅಲ್ಟ್ರಾಸೌಂಡ್ ಆವಿಷ್ಕರಗಳನ್ನು ಅವಲಂಬಿಸಿ ಒಂದು ಕಾದಂಬರಿ ಪೂರ್ವಭಾವಿ ಸಂಕೀರ್ಣವಾದ ತೀವ್ರವಾದ ಕರುಳುವಾಳ ಸ್ಕೋರ್ ಮತ್ತು RIPASA ಸ್ಕೋರ್‍ಗಳನ್ನು ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುತ್ತದೆ. ಅಪೆಂಡಿಸೆಕ್ಟಮಿಯನ್ನು ಒದಗಿಸಿ (ತೆರೆದ ಅಥವಾ ಲ್ಯಾಪರೊಸ್ಕೋಪಿಕ್ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ಮೂಲಕ ಅಪೆಂಡಿಕ್ಸ್ ಅನ್ನು ತೆಗೆಯುವುದು) ಡಿ ಕೋಡ್ ಮಾಡಲಾಗಿದೆ ಮತ್ತು ನೀವು ಅದನ್ನು ಸ್ವೀಕರಿಸುತ್ತೀರಿ.

ನೀವು ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಗೆ ಸಿದ್ಧರಾಗಿರುತ್ತೀರಿ (ತುರ್ತುಅಪೆಂಡೆಕ್ಟಮಿ) ಮತ್ತು (ಅಗತ್ಯವಿದ್ದರೆ ಪೆರಿಟೋನಿಯಲ್ ಡ್ರೈನೇಜ್ ಮಾಡಲಾಗುವುದು). ಇಂಟ್ರಾ ಆಪರೇಟಿವ್ ಸಂಶೋಧನೆಗಳನ್ನು ದಾಖಲಿಸಲಾಗುತ್ತದೆ. ಇನ್ಫ್ರಾ ಆಪರೇಟಿವ್ ಆವಿಷ್ಕರಗಳು ಮತ್ತು ರೋಗಿಯ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ನಂತರದ ಕೋರ್ಸ್‍ಗಳೊಂದಿಗೆ ಕಾದಂಬರಿ ಪೂರ್ವಭಾವಿ ಸ್ಕೋರ್ ಮತ್ತು ರಿಪಾಸಾಸ್ಕೋರ್ ನಡುವೆ ಹೋಲಿಕೆಯನ್ನು ಮಾಡಲಾಗುತ್ತದೆ ಮತ್ತು ಹೋಲಿಕೆಯನ್ನು ಮಾಡಲಾಗುತ್ತದೆ ಮತ್ತು ಪ್ರತಿ ಸ್ಕೋರಿಂಗ್ ಸಿಸ್ಟಮ್‍ನ ನಿಖರತೆಯನ್ನು ಅಂಕಿಅಂಶಗಳ ವಿಧಾನಗಳನ್ನು ಬಳಸಿಕೊಂಡು ನಿರ್ಧರಿಸಲಾಗುತ್ತದೆ. ದಯವಿಟ್ಟು ಕೆಳಗಿನ ಮಾಹಿತಿಯನ್ನು ಓದಿ ಮತ್ತು ನಿಮ್ಮ ಕುಟುಂಬದ

ಸದಸ್ಯರೊಂದಿಗೆ ಚರ್ಚಿಸಿ. ಅಧ್ಯಯನಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ನೀವು ಯಾವುದೇ ಪ್ರಶ್ನೆಯನ್ನು ಕೇಳಬಹುದು. ನೀವು ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಸಮ್ಮತಿಸಿದರೆ, ನಾವು ನಿಮ್ಮಿಂದ ಅಥವಾ ನಿಮ್ಮಿಂದ ಅಥವಾ ಇಬ್ಬರಿಗೂ ಜವಾಬ್ದಾರರಾಗಿರುವ ವ್ಯಕ್ತಿಯಿಂದ ಮೇಲಿನ ಮಾಹಿತಿಯನ್ನು (ಪ್ರೊ-ಫಾರ್ಮಾಪ್ರಕಾರ) ಸಂಗ್ರಹಿಸುತ್ತೇವೆ. ಸಂಬಂಧಿತ ಇತಿಹಾಸವನ್ನು ತೆಗೆದುಕೊಳ್ಳಲಾಗುವುದು. ಸಂಗ್ರಹಿಸಿದ ಈ ಮಾಹಿತಿಯನ್ನು ಪ್ರಬಂಧ ಮತ್ತು ಪ್ರಕಟಣೆಗೆ ಮಾತ್ರ ಬಳಸಲಾಗುತ್ತದೆ. ನಿಮ್ಮಿಂದ ಸಂಗ್ರಹಿಸಲಾದ ಎಲ್ಲಾ ಮಾಹಿತಿಯನ್ನು ಗೌಪ್ಯವಾಗಿ ಇರಿಸಲಾಗುತ್ತದೆ ಮತ್ತು ಯಾವುದೇ ಹೊರಗಿನವರಿಗೆ ಬಹಿರಂಗಪಡಿಸಲಾಗುವುದಿಲ್ಲ. ನಿಮ್ಮ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸಲಾಗುವುದಿಲ್ಲ. ಈ ಅಧ್ಯಯನವನ್ನು ಸಾಂಸ್ಥಿಕ ನೀತಿಶಾಸ್ತ್ರ ಸಮಿತಿಯು ಪರಿಶೀಲಿಸಿದೆ ಮತ್ತು ನೀವು ಸಾಂಸ್ಥಿಕ ನೀತಿಶಾಸ್ತ್ರ ಸಮಿತಿಯ ಸದಸ್ಯರನ್ನು ಸಂಪರ್ಕಿಸಲು ಮುಕ್ತರಾಗಿದ್ದೀರಿ. ಈ ಅಧ್ಯಯನವನ್ನು ಒಪ್ಪಿಕೊಳ್ಳಲು ಯಾವುದೇ ಒತ್ತಾಯವಿಲ್ಲ. ನೀವು ಭಾಗವಹಿಸಲು ಬಯಸದಿದ್ದರೆ ನೀವು ಪಡೆಯುವ ಕಾಳಜಿಯು ಬದಲಾಗುವುದಿಲ್ಲ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ನೀವು ಸ್ವಯಂಪ್ರೇರಣೆಯಿಂದ ಸಮ್ಮತಿಸಿದರೆ ಮಾತ್ರ ನೀವು ಸಹಿ/ಹೆಬ್ಬೆರಳಿನ ಗುರುತನ್ನು ಒದಗಿಸಬೇಕಾಗುತ್ತದೆ.

ಹೆಚ್ಚಿನಮಾಹಿತಿಗಾಗಿಸಂಪರ್ಕಿಸಿ ಡಾ.ಅನುರಾಗ್ಬವನಂ
[ಸ್ನಾತಕೋತ್ತರಪದವಿ]ಜನರಲ್ ಸರ್ಜರಿವಿಭಾಗ
SDUMC, ಕೋಲಾರ
ದೂರವಾಣಿಸಂಖ್ಯೆ 7353190775.

ಭಾಗವಹಿಸುವವರ ಹೆಸರು ರೋಗಿ ಭಾಗವಹಿಸುವ ರೋಗಿಯ ಸಹಿ ಅಥವಾ ಅವನ/ಅವಳ ಎಡಹೆಬ್ಬೆರಳಿನಗುರುತು
ದಿನಾಂಕ:
ಸ್ಥಳ:

ಸಾಕ್ಷಿಯ ಹೆಸರು ಮತ್ತು ಸಹಿ ಅಥವಾ ಎಡಹೆಬ್ಬೆರಳಿನ ಗುರುತು
ದಿನಾಂಕ:
ಸ್ಥಳ:

ಒಪ್ಪಿಗೆ ಪತ್ರ

ಶೀರ್ಷಿಕೆ: "ಕಾದಂಬರಿ ಪೂರ್ವಭಾವಿ ಸಂಕೀರ್ಣವಾದ ತೀವ್ರ ಅಪೆಂಡಿಸಿಟಿ ಸ್ಕೋರ್ ಮತ್ತು ರಿಪಾಸ್ ಸ್ಕೋರಿಂಗ್ ಸಿಸ್ಟಂ ನ ತುಲನಾತ್ಮಕ ಅಧ್ಯಯನವು ಸಂಕೀರ್ಣವಾದ ತೀವ್ರ ಅಪೆಂಡಿಸಿಟಿಸ್ನ ಮುನ್ಸೂಚನೆಯಲ್ಲಿ"

ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿ: ಡಾ.ಅನುರಾಗ್ಬಿ

ನಾನು, ಶ್ರೀ/ಶ್ರೀಮತಿ. ……………………… ನನ್ನ ಸ್ವಂತ ಅರ್ಥವಾಗುವ ಭಾಷೆಯಲ್ಲಿ ವಿವರಿಸಲಾಗಿದೆ, ಇದು "ಕಾದಂಬರಿ ಪೂರ್ವಭಾವಿ ಸಂಕೀರ್ಣವಾದ ತೀವ್ರ ಅಪೆಂಡಿಸಿಟಿಸ್ ಸ್ಕೋರ್ ಮತ್ತು ರಿಪಾಸ್ ಸ್ಕೋರಿಂಗ್ ಸಿಸ್ಟಮ್ ನ ತುಲನಾತ್ಮಕ ಅಧ್ಯಯನದ ಒಂದು ಅಧ್ಯಯನದಲ್ಲಿ ಸೇರಿಸಲಾಗುವುದು. R L ಜಾಲಪ್ಪ ಆಸ್ಪತ್ರೆಯಲ್ಲಿ ನಡೆಸಲಾಗುತ್ತಿದೆ.

ನನ್ನ ಜನಸಂಖ್ಯಾ ಡೇಟಾ, ಕ್ಲಿನಿಕಲ್ ಸಂಶೋಧನೆಗಳು, ತನಿಖೆಗಳು, ಪೂರ್ವಭಾವಿ ಮತ್ತು ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ನಂತರದ ಸಂಶೋಧನೆಗಳನ್ನು ಮೌಲ್ಯಮಾಪನ ಮಾಡಲಾಗುತ್ತದೆ ಮತ್ತು ಅಧ್ಯಯನ ಉದ್ದೇಶಕ್ಕಾಗಿ ದಾಖಲಿಸಲಾಗುತ್ತದೆ ಎಂದು ನನಗೆ ವಿವರಿಸಲಾಗಿದೆ. ಈ ಅಧ್ಯಯನದಲ್ಲಿ ನನ್ನ ಭಾಗವಹಿಸುವಿಕೆಯು ಸಂಪೂರ್ಣವಾಗಿ ಸ್ವಯಂಪ್ರೇರಿತವಾಗಿದೆ ಮತ್ತು ನಾನು ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಅಧ್ಯಯನದಿಂದ ಹಿಂದೆ ಸರಿಯಬಹುದು ಮತ್ತು ಇದು ನನ್ನ ವೈದ್ಯರೊಂದಿಗಿನ ನನ್ನ ಸಂಬಂಧ ಅಥವಾ ನನ್ನ ಕಾಯಿಲೆಯ ಚಿಕಿತ್ಸೆಯ ಮೇಲೆ ಪರಿಣಾಮ ಬೀರುವುದಿಲ್ಲ ಎಂದು ನನಗೆ ವಿವರಿಸಲಾಗಿದೆ. ಡೈಗೆ ಅಲರ್ಜಿಯ ಪ್ರತಿಕ್ರಿಯೆಗಳು, ಅನಾಫಿಲ್ಯಾಕ್ಟಿಕ್ ಆಘಾತ, ಸ್ತನ ಅಂಗಾಂಶದ ಕಲೆಗಳು, ವಾತಾಯನ ಬೆಂಬಲದ ಅಗತ್ಯತೆಯಂತಹ ಅಧ್ಯಯನದ ಅಪಾಯ/ಪ್ರಯೋಜನದ ಕುರಿತು ನನಗೆ ವಿವರಿಸಲಾಗಿದೆ. ಈ ಅಧ್ಯಯನದಿಂದ ಉತ್ಪತ್ತಿಯಾಗುವ ವೈದ್ಯಕೀಯ ಮಾಹಿತಿಯು ಸಾಂಸ್ಥಿಕ ದಾಖಲೆಗಳ ಭಾಗವಾಗುತ್ತದೆ ಮತ್ತು ನಾನು ಹೇಳಿದ ಸಂಸ್ಥೆಯು ಗೌಪ್ಯವಾಗಿದುತ್ತದೆ ಎಂದು ನಾನು ಅರ್ಥಮಾಡಿಕೊಂಡಿದ್ದೇನೆ. ಈ ಅಧ್ಯಯನದಿಂದ ಉಂಟಾಗುವ ಯಾವುದೇ ಡೇಟಾ ಅಥವಾ ಫಲಿತಾಂಶದ ಬಳಕೆಯನ್ನು ನಿರ್ಬಂಧಿಸದಿರಲು ನಾನು ಸಮ್ಮತಿಸುತ್ತೇನೆ, ಅಂತಹ ಬಳಕೆಯನ್ನು ಕೇವಲ ವೈಜ್ಞಾನಿಕ ಉದ್ದೇಶ(ಗಳಿಗೆ) ವಿಚಾರಣೆಗಾಗಿ ನಾನು ಪ್ರಧಾನ ತನಿಖಾಧಿಕಾರಿಯ ಮೊಬೈಲ್ ಸಂಖ್ಯೆಯನ್ನು ಹೊಂದಿದ್ದೇನೆ.

ಚಿಕಿತ್ಸೆಯ ಅವಧಿಯುದ್ದಕ್ಕೂ ಆರೈಕೆಯ ಗುಣಮಟ್ಟವನ್ನು ನಿರ್ವಹಿಸಲಾಗುವುದು ಎಂದು ನನಗೆ ತಿಳಿಸಲಾಗಿದೆ.

ನನ್ನ ಮನಸ್ಸಿನಲ್ಲಿ ನಾನು ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಸಂಪೂರ್ಣ ಒಪ್ಪಿಗೆಯನ್ನು ನೀಡುತ್ತೇನೆ.

ತನಿಖಾಧಿಕಾರಿ: ಡಾ.ಅನುರಾಗ್ಬಿ

ಭಾಗವಹಿಸುವವರ ಸಹಿ/ಹೆಬ್ಬೆರಳಿನ ಗುರುತು ಹೆಸರು:

ಸಾಕ್ಷಿಯ ಸಹಿ/ಹೆಬ್ಬೆರಳಿನ ಗುರುತು:

ಹೆಸರು:

ರೋಗಿಗೆಸಂಬಂಧ

ದಿನಾಂಕ:

ಸ್ಥಳ:

MASTER CHART

Sl no	Age	Sex	Occupation	Diffuse Pain abdomen	RIF pain	pain mig to RIF	Nausea & vomiting	Fever	Anorexia	Duration of illness	Similar c/o in past	RIF tenderness	guarding	Rebound tenderness	Rovsing test	Psoas test	Obturator sign	WBC count	Neutrophil %	Appendicolith	Appendix diameter	Urine analysis	Operative findings	Histopath findings	Duration of hospital stay
	18-60	1-female 2-male	1-employed 2-unemployed	1-present 2-absent	1-present 2-absent	1-present 2-absent	1-present 2-absent	1-present 2-absent	1-present 2-absent		1-present 2-absent	1-present 2-absent	1-present 2-absent	1-present 2-absent	1-Positive 2-Negative	1-Positive 2-Negative	1-Positive 2-Negative	1-Normal 2-abnormal	1-Normal 2-abnormal	1-present 2-absent	1-Normal 2-abnormal	1-Positive 2-Negative			
1	24	M	1	1	1	1	1	2	1	1	2	1	1	1	1	2	1	7700	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	5
2	28	F	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	14600	2	1	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	6
3	18	M	1	1	1	1	1	1	2	4	2	1	1	1	2	1	1	15000	2	1	1	2	inflammed and perforated appendix	acute suppurative appendix with perforation near the tip	7
4	22	M	1	1	1	1	1	1	2	7	2	1	1	1	1	1	1	22000	2	2	2	2	inflammatory mass in the ileocaecal junction with abscess formation	-	5
5	37	M	1	1	1	1	2	1	2	4	2	1	1	1	1	1	1	19800	2	2	2	2	inflammed and gangrenous appendix	acute suppurative and gangrenous appendix	5
6	41	M	1	1	1	1	2	2	1	2	2	1	1	1	1	2	1	8900	1	1	2	1	inflammed appendix	acute suppurative appendix	4
7	25	F	2	1	1	1	1	1	2	6	2	1	1	1	1	1	1	15000	2	2	2	2	inflammed, elongated appendix	acute suppurative appendix with gangrenous changes, perforation at body	6
8	27	F	2	1	1	1	2	2	2	4	2	1	1	1	1	1	1	8500	1	2	2	2	inflammed, elongated and perforated appendix at body	acute suppurative appendix with gangrenous changes, perforation at tip	5
9	29	F	1	1	1	1	1	2	1	2	2	1	1	1	1	1	1	10800	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	5
10	33	M	1	1	1	1	1	1	1	2	2	1	1	1	1	1	1	17600	2	1	2	2	inflammed, elongated, good morning appendix	acute suppurative appendix	5
11	25	M	1	1	1	1	2	2	2	1	2	1	1	1	1	1	1	5700	1	1	2	2	inflammed appendix	acute suppurative appendix	7
12	23	F	1	1	1	2	2	2	2	2	2	1	1	1	1	1	2	9300	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	4
13	28	F	2	1	1	1	2	1	2	1	2	1	1	1	1	1	1	6500	1	2	2	2	inflammed, elongated, postileal appendix	acute suppurative appendix	5
14	32	F	1	1	1	1	1	2	1	3	2	1	1	1	2	1	1	12600	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	4
15	39	M	1	1	1	1	1	2	2	1	2	1	1	1	1	1	1	14100	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	5
16	43	M	2	1	1	1	1	2	2	3	2	1	1	1	1	1	1	13500	2	1	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	6
17	36	M	1	1	1	1	2	2	2	3	2	1	1	1	1	1	1	9200	1	2	2	2	appendix seen in subcaecal position, inflammed and edematous	acute suppurative appendix	5
18	40	M	1	1	1	1	2	2	2	2	2	1	1	1	1	2	1	11900	2	2	2	2	inflammed appendix	acute suppurative appendix	4
19	38	M	1	1	1	1	1	2	1	1	2	1	1	1	1	1	1	13000	2	2	2	2	retrocaecal appendix, inflammed appendix	acute suppurative appendix	5
20	42	F	1	1	1	1	2	2	1	2	2	1	1	1	1	1	1	9400	1	2	2	2	inflammed and perforated appendix	acute suppurative appendix	7
21	34	M	2	1	1	1	2	2	1	2	2	1	1	1	2	1	1	8700	2	2	2	2	retrocaecal appendix, inflammed appendix	acute suppurative appendix	7
22	29	M	1	1	1	1	2	2	1	1	2	1	1	1	1	2	2	13000	2	2	2	2	inflammed, elongated, good morning appendix	acute suppurative appendix	7
23	37	M	1	1	1	1	2	1	2	1	2	1	1	1	1	1	1	9500	1	1	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	6
24	21	M	1	1	1	1	2	2	1	2	2	1	1	1	1	2	1	12000	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	4
25	33	F	2	1	1	1	1	2	2	4	2	1	1	1	1	1	1	16600	2	2	2	1	inflammed, gangrenous and perforated appendix at body	acute suppurative appendix with gangrenous changes	5
26	53	F	1	1	1	1	1	1	2	8	2	1	1	1	1	2	1	21000	2	2	2	2	inflammed, bulky, appendix	appendicular mucocele	7
27	49	F	1	1	1	1	1	2	1	3	2	1	1	1	1	2	1	11600	2	1	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	6
28	29	M	1	1	1	1	2	2	2	2	2	1	1	1	2	1	1	6400	1	2	2	2	inflammed, elongated, retrocaecal appendix	eosinophilic granulomatous appendicitis	5
29	26	M	1	1	1	1	1	1	2	5	2	1	1	1	1	1	1	20200	2	2	2	2	inflammed, gangrenous and perforated appendix at tip	acute suppurative appendix with gangrenous changes with perforation at tip	6
30	28	F	2	1	1	1	1	2	1	2	2	1	1	1	2	2	2	14200	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	6
31	48	F	2	1	1	1	1	1	2	1	2	1	1	1	1	1	1	16900	2	1	2	1	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	5
32	52	F	2	1	1	1	1	2	2	3	2	1	1	1	1	1	1	7800	1	2	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	5
33	27	M	1	1	1	1	1	1	2	6	2	1	1	1	1	2	2	17500	2	2	2	2	inflammed, gangrenous and perforated appendix at base	acute suppurative appendix with gangrenous changes	6
34	31	M	1	1	1	1	1	1	2	5	2	1	1	1	1	1	1	15100	2	1	2	2	inflammed, gangrenous and perforated appendix at body	acute suppurative appendix with gangrenous changes with perforation at body	4
35	19	M	1	1	1	1	1	2	2	2	2	1	1	1	1	1	1	13400	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	6
36	30	M	1	1	1	1	1	2	2	2	2	1	1	1	1	1	1	11300	2	2	1	2	inflammed appendix	acute suppurative appendix	5
37	26	M	1	1	1	1	2	2	2	7	2	1	1	1	2	2	2	10500	2	1	2	2	apendicular mass	eosinophilic granulomatous appendicitis	4
38	28	F	1	1	1	1	1	2	2	3	2	1	1	1	1	1	1	12400	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative appendix	5
39	46	F	2	1	1	1	2	1	2	2	2	1	1	1	2	1	1	9800	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative	6
40	20	F	2	1	1	1	2	2	1	5	2	1	1	1	1	1	1	19200	2	2	2	2	inflammed and gangrenous appendix	acute suppurative appendix with gangrenous changes	5
41	46	M	1	1	1	1	2	2	2	1	2	1	1	1	1	2	1	12800	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute suppurative	6

Sl no	Age	Sex	Occupation	Diffuse Pain abdomen	RIF pain	pain mig to RIF	Nausea & vomiting	Fever	Anorexia	Duration of illness	Similar c/o in past	RIF tenderness	guarding	Rebound tenderness	Rovsing test	Psoas test	Obturator sign	WBC count	Neutrophil %	Appendicolith	Appendix diameter	Urine analysis	Operative findings	Histopath findings	Duration of hospital stay
42	24	M	1	1	1	1	1	1	2	4	2	1	1	1	1	1	1	2	8700	1	2	2	2	inflammed and ruputured appendix	inflammed and ruptured	3
43	26	F	2	1	1	1	1	1	1	3	2	1	1	1	1	1	1	15400	2	1	2	2	inflammed, gangrenous and perforated appendix at tip	acute supparative appendix with gangrenous changes with perforation at tip	2
44	22	F	2	1	1	1	1	2	2	2	2	1	1	1	2	1	1	13500	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	4
45	26	F	2	1	1	1	2	2	2	1	2	1	1	1	1	1	1	10600	2	2	1	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	5
46	22	M	1	1	1	1	1	2	1	2	2	1	1	1	1	1	1	13300	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	5
47	45	F	2	1	1	1	1	1	2	5	2	1	1	1	1	2	2	20200	2	2	2	2	inflammed, gangrenous and perforated appendix at tip	acute supparative appendix with gangrenous changes with perforation at tip	6
48	35	F	2	2	1	1	1	2	1	2	2	1	1	1	1	1	1	11900	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	6
49	43	M	1	1	1	1	1	2	2	1	2	1	1	1	2	1	1	14100	2	1	2	2	inflammed, elongated, good morning appendix	acute supparative appendix	7
50	35	F	1	1	1	1	2	2	1	3	2	1	1	1	1	1	1	13500	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	5
51	25	M	1	1	1	1	1	1	1	3	2	1	1	1	1	2	1	9200	2	2	1	2	inflammed, elongated, postileal appendix	acute supparative appendix	5
52	45	F	2	1	1	1	2	2	2	2	2	1	1	1	1	1	2	11900	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	6
53	20	M	1	1	1	1	1	1	2	5	2	1	1	1	1	1	1	13000	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	5
54	46	M	1	1	1	1	1	2	2	2	2	1	1	1	2	1	1	9400	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	4
55	24	M	1	1	1	1	1	1	2	1	2	1	1	1	1	1	1	8700	2	2	2	2	appendix seen in subcaecal position, inflammed and edematous	acute supparative appendix	5
56	26	M	1	1	1	1	1	1	1	3	2	1	1	1	1	1	1	13000	2	2	2	2	inflammed appendix	acute supparative appendix	7
57	22	M	1	1	1	1	1	2	2	6	2	1	1	1	1	1	1	9500	2	2	2	2	retrocaecal appendix, inflammed appendix	acute supparative appendix	7
58	26	M	1	1	1	1	1	2	2	5	2	1	1	1	1	1	2	12000	2	2	2	2	inflammed and perforated appendix	acute supparative appendix	7
59	22	M	1	1	1	1	2	2	1	2	2	1	1	1	1	1	1	16600	2	2	2	2	retrocaecal appendix, inflammed appendix	acute supparative appendix	6
60	45	M	1	1	1	1	1	2	1	2	2	1	1	1	1	1	1	21000	2	2	2	2	inflammed, elongated, postileal appendix	acute supparative appendix	4
61	35	M	1	1	1	1	2	2	2	3	2	1	1	1	1	1	1	11600	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	5
62	43	M	1	1	1	1	1	1	2	2	2	1	1	1	1	1	1	6400	1	2	2	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	7
63	35	M	1	1	1	1	1	2	2	5	2	1	1	1	1	1	2	20200	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	6
64	25	F	2	1	1	1	1	1	1	2	2	1	1	1	1	1	1	14200	2	2	2	2	appendix seen in subcaecal position, inflammed and edematous	acute supparative appendix	5
65	45	M	1	1	1	1	1	2	2	1	2	1	1	1	1	1	2	16900	2	2	2	2	inflammed appendix	acute supparative appendix	6
66	35	F	2	1	1	1	1	1	2	3	2	1	1	1	1	1	1	7800	1	2	2	2	retrocaecal appendix, inflammed appendix	acute supparative appendix	6
67	27	M	1	1	1	1	1	1	2	6	2	1	1	1	1	1	1	17500	2	2	2	2	inflammed and perforated appendix	acute supparative appendix	5
68	24	M	1	1	1	1	1	2	2	5	2	1	1	1	1	1	2	15100	2	2	2	2	retrocaecal appendix, inflammed appendix	acute supparative appendix	5
69	31	F	2	1	1	1	1	2	2	2	2	1	1	1	1	1	1	13400	2	2	2	2	inflammed, elongated, good morning appendix	acute supparative appendix	7
70	28	F	2	1	1	1	2	2	2	2	2	1	1	1	1	1	1	11300	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	7
71	34	F	2	1	1	1	1	2	2	7	2	1	1	1	1	1	1	10500	2	2	2	2	inflammed, elongated, retrocaecal appendix	acute supparative appendix	7
72	25	F	1	1	1	1	2	1	2	3	2	1	1	1	1	1	1	22000	2	2	2	2	inflammed, gangrenous and perforated appendix at body	acute supparative appendix with gangrenous changes	6