

**FACTORS AFFECTING MORBIDITY IN PATIENTS
UNDERGOING EMERGENCY ABDOMINAL
SURGERY**

By

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Dissertation submitted to

B. L. D. E. UNIVERSITY BIJAPUR, KARNATAKA



In the partial fulfilment of the requirement for the degree of

MASTER OF SURGERY

IN

GENERAL SURGERY

Under the guidance of

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ACKNOWLEDGEMENT

With great pleasure I attribute the success of my dissertation to the guidance and support of many to whom I am very grateful.

At the outset, I would like to express my deep sense of gratitude and heartfelt thanks to my guide and mentor **Dr. Aravind V Patil**, Professor, Dept. of General Surgery, His encouragement, timely advice, valuable suggestions and undying optimism have been a source of constant strength to me. I thank him for the freedom of thought & expression granted and for his trust, which was generously bestowed upon me.

I express my gratitude to **Dr Tejaswini Vallabha**, Vice-Principal and HOD, department of general surgery, who is well known for her professionalism, commitments and value added practices. Who with her critic care, support, encouragement and necessary facilities made this task come true.

I earnestly thanks **Dr Manjunath S Kotenavar**, Professor, Dept. of General surgery for his help throughout the study.

I feel blessed to have a teacher and friend like **Dr. Hemanth Kumar M** Associate professor who has given me unequivocal and selfless support throughout, as always, for which my mere expression of thanks likewise does not suffice.

I am grateful to **Dr. M. S. BIRADAR**, Principal of B.L.D.E.U'S Shri B.M.PATIL Medical college hospital and Research Centre, Bijapur, for allowing me do this work, to access medical records, utilize clinical material and facilities in this institution.

My heartfelt thanks to beloved teachers in the department **Prof. Dr B B Metan, Prof. Dr M B Patil, Dr Vijaya Patil**, Associate professors **Dr S N Khairatkar, Dr B M Nyamannavar, Dr Ramakanth Ballorkar**, and Assistant Professors **Dr Prasad Sasnur Dr Gururaj Padasalagi, Dr G K Kullolli, Dr Deepak Chavan, Dr Vikram Sindagikar, Dr Basavaraj Badadal, Dr Ravi Pattar, Dr Sanjay Namadar, Dr Y D Badiger, Dr Dayanand Biradar , Dr Ravindra Nidoni.**

I thank my seniors **Dr. AMIT M and Dr. ROHAN KHAIRATKAR** who helped me in all aspects since from beginning of my course.

I thank my friends, **Dr Rajahemed Mulla, Dr. Shailesh Kannur, Dr. Harshagopal Deshpande, Dr. Vikram Nagathan, Dr Suprit Ballur, And Dr Harikrishna Nair and** PGs in Department of General Surgery who rendered immense help and support during my postgraduate course.

I am thankful to statistician Dr. Madgi for his crucial help.

Last, but not the least, I thank my father **SHIVAPUTRAPPA** , my mother **MADHUMALA**, my brother **PRAVEEN** ,my brother in law **DR J S PATIL**, my sisters **Pratibha, Prema and Jyoti**, for their constant love, support and faith in me. It is their sacrifice and compromise what made me to be at this place.

Finally I would like to dedicate this dissertation to my parents, my teachers of past and present without whom I could not have come this far.

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ABBREVIATIONS

DM	–	Diabets mellitus
HTN	–	Hypertension
cm	–	Centimeter
CT	–	Computed Tomography
eg.	–	Example
Ht	–	Hieght
Wt	-	Weight
LFT	–	Liver function test
CBC	–	Complete blood count
Hb	–	Heamoglobin
Mm	–	Millimeter
no.	–	Number
OPD	–	Out patient department
S cr.	–	Serum creatinine
B.U	–	Blood Urea
USG	–	Ultrasonography
SSI	–	Surgical site infecction
MODS	–	Multiple organ dysfunction syndrome
ARDS	–	Acute Respiratory Distress Syndrome
MI	–	Myocardial Infarction
ARF	–	Acute Renal Failure
RS	–	Respiratory System
yr	–	Year
i.e.	–	That is

ABSTRACT

Background :- Emergency abdominal surgery adversely affects surgical outcomes. Predictors of increased morbidity and mortality of emergency abdominal surgery are known. We determined the predictors of post-operative complications of emergency abdominal surgery. Age, sex, blood urea, serum creatinine, total protein, serum albumin, surgery duration and smoking were independent predictors of morbidity.

Methods :- We conducted prospective study at Shri B M Patil Medical college, Bijapur, patients who had an emergency abdominal surgery procedure from October 2011 to May 2013. Our primary outcome was post-operative complications within 30 days.

Results : Of 77 cases 33% had one or more complications with 6% mortality within 30 days. Common complications are surgical site infections and respiratory.

Conclusion :- Emergency abdominal surgery patients with post-operative complications are likely to be older, male, smokers, have increased blood glucose and creatinine levels, lower serum albumin levels and longer surgical times. Fluid resuscitation and experienced surgical teams are putative targets to improve outcomes.

Key words : Emergency, Abdominal Surgery, Factors, Morbidity, Post-operative, Complications.

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INTRODUCTION

Emergency surgery is defined as non elective surgery that is performed with the aim to prevent morbid or fatal health consequences of a surgically treatable disease.^{1, 6}

Emergency surgical presentation is one such situation where surgeon is faced with therapeutic dilemma. On the one hand, it is clear that most of these patients may have a limited life expectancy, while on the other surgical intervention appears to be unavoidable in these circumstances.

Over past decade, there has been significant focus on reducing postoperative complications.

Despite the focus on quality improvement in surgery, studies continue to show that emergency status contributes significantly to morbidity and mortality in patients undergoing abdominal surgery.^{7, 8}

The most common emergency abdominal surgical presentation is bowel obstruction, appendicitis, perforative peritonitis and bleeding.

Emergency abdominal surgery patients who develop post-operative complications are more likely to be older, male, smokers, have increased peri-operative blood glucose, creatinine levels and lower serum albumin levels.¹⁰

Those patients with complications also incur longer surgical times.⁹

Pre-operative intravenous fluid administration to adequately resuscitate patients, tighter glucose control and experienced surgical teams to decrease surgical times are putative targets to improve outcomes in patients undergoing emergency abdominal surgery.

AIM OF THE STUDY

- To determine the factors that contribute to morbidity associated with patients undergoing emergency abdominal surgery.

OBJECTIVES OF THE STUDY

- To determine the factors that contribute to morbidity associated with patients undergoing emergency abdominal surgery.
- To identify the risk factors that are potentially modifiable, which reduce post operative complications of emergency abdominal surgery.

REVIEW OF LITERATURE

Akinbami *et al.*, studied on **Factors affecting morbidity in emergency general surgery**, on 819 emergency general surgery cases at Brigham and Womens hospital, USA over a period of 3 year between Jan 1, 2007 to Dec 31,2009. Shows post operative complications were identified in 202(24.7%) cases within 30 days of the procedure. 30 day mortality was recorded in 73 (8.9%) cases. They were concluded that emergency general surgery patients who develop post operative complications are more likely to be older, male, smokers and have increased perioperative blood glucose, serum creatinine levels and lower serum albumin levels. Those patients with complications also incur longer surgical times. Preoperative intravenous fluid administration to adequately resuscitate patients, tighter glucose control and experienced surgical teams to decrease surgical times are putative targets to improve outcomes in general surgery patients.¹

Ramos *et al.*, studied on **Relationship of perioperative hyperglycemia and postoperative infections in patients who undergone general and vascular surgery in 2006**. They were concluded that increased risk of post operative infection and length of hospitalization posed by post operative hyperglycemia is independent of diabetic status and needs further evaluation to assess for possible benefits of post-operative glycemic control.²

Gibbs *et al.*, studied on **Preoperative Serum Albumin Level as a Predictor of Operative Mortality and Morbidity in 1999**. They were concluded that serum albumin concentration is a better predictor of surgical outcomes than many other

preoperative patient characteristics. It is a relatively low-cost test that should be used more frequently as a prognostic tool to detect malnutrition and risk of adverse surgical outcomes, particularly in populations in whom co-morbid conditions are relatively frequent.³

Costa *et al.*, Studied on **Emergency colonic surgery: analysis of risk factors predicting morbidity and mortality**, on 157 patients between 1997-2008. They concluded that univariate analysis showed that advanced age, neoplastic disease, advanced stage of cancer and associated medical diseases prior to surgery play role as risk factors for morbidity and mortality.⁴

Lebeau *et al.*, studied on **Non-traumatic abdominal surgical emergencies in elderly patients-aetiology and outcome**. They concluded that most non-traumatic abdominal surgical emergencies in elderly patients were related to complications of neglected or undiagnosed pre-existing disease. Prognosis was related to the stage of the disorder, initial surgical management and deterioration of the coexisting medical problems.²³

Catena *et al.*, studied on **Emergency surgery for recurrent intra-abdominal cancer**, on 81 patients between 1995 to 2004 at St. Orsola Malpighi university hospital, Bologna, Italy. In their study shows 27.1% morbidity & 11.1% of mortality. They concluded that pre-operative Apache II score was found to be single most important predictor of post-operative mortality and morbidity.⁵

Earley *et al.*, examined the effects of this model on acute outcomes in patients undergoing appendicectomies and found a decrease in time of surgery, complication rates and length of stay.¹³

Britt *et al.*, developed an acute care surgery model to decrease time delays to surgery by using day time operating rooms and the experience of surgeons to improve decision making.¹⁴

Ageing and surgery

Over the past 2 decades alone, the percentage of operations in which the patient is older than age 65 increased from 19% of all operations to 37%. When obstetric procedure excluded, this portion rises to 43%. In 2000, the rate of surgery for persons older than age 65 was over two and half times the rate of persons age 45 to 64 years. Discharge data from short stay hospitals in 2000 show that 36% of cholecystectomy, 52% of Hernia repairs, 55% of coronary artery bypass grafts and 57% of bowel resections were performed on patients older than age 65. It is now estimated that 50% of patients in most general surgical practiced are older than age65.

This increases in the percentage of operation of operations in which the patient is older than age 65 is not entirely due to the increase in the number of older patients, its due to reflection of a greater willingness to offer surgical treatment to the elderly. Over the past several decades, advances in surgical and anaesthetic techniques have allowed us to operate with much greater control and safety. Operative mortality in older patients has declined sharply.

The likelihood of receiving surgery for cancers of the breast, ovary, Uterus, Colon and rectum has increased more rapidly among patients older than age 75 than in those younger than 55.

The pattern of symptoms and the natural history of the surgical disease in older patients may not be identical to that seen in their younger counterparts. The

absence of typical signs and symptoms often leads to error in diagnosis and delays in treatment. As a result it is not unusual for an acute complication to be first indication of disease. This is unfortunate because emergency operative mortality is 3 to 10 times higher than in compare to elective cases.

No doubt that increasing age appears to have a significant effect on the outcome of surgery. However most studies indicate that chronological age alone has little effect on outcome.¹⁵

Physiologic Decline:

With aging there is decline in physiologic function in all organs systems although the magnitude of this decline is variable among organs and among individuals. In the resting state this decline usually has minimal functional consequence, although physiologic reserves may be utilized just to maintain homeostasis. However when physiologic reserves are requires are required to meet the additional challenges of surgery or acute illness, overall performance may deteriorate. This progressive age- related decline in organ system homeostatic reserves, known as “homeostenosis” was first described by the physiologist Walter Cannon in 1940s. With increased age there is an increased utilization of physiologic reserves just to maintain normal homeostasis. Therefore when reserves are stressed there are fewer available to met the challenge and overall function may be pushed over the ‘precipice’ of organ failure or death.

Over the past several decades an enormous amount of research has been conducted to define the specific changes in organ function that are directly attributable to aging. It is often difficult to determine whether an observed decline in

function is secondary to aging per se or to disease associated with aging. Understanding the changes in organ function can minimize these errors.¹⁵

Cardiovascular:

With increasing age there are morphologic changes are found in myocardium, conducting pathways, valves and vasculature of the heart and great vessels. The number of myocytes declines as the collagen and elastin content increases, resulting in fibrotic areas throughout the myocardium and an overall decline in ventricular compliance. Nearly 90% of the autonomic tissue in the sinus node is replaced by fat and connective tissue and fibrotic interface with conduction in the intermodal tracts and bundle of His. These changes contribute to the high incidence of sick sinus syndrome, atrial arrhythmias and bundle branch block. Sclerosis and calcification of the aortic valve is common but usually of no functional significance.

Progressive dilation of all four valvular annuli is probably responsible for the multivalvular regurgitation demonstrated in healthy older persons. Finally there is a progressive increase in rigidity and decrease in distensibility of both the coronary arteries and great vessels. Changes in the peripheral vasculature contribute to increased systolic blood pressure, increased resistance to ventricular emptying and compensatory loss of myocytes with ventricular hypertrophy.

The direct functional implication of these changes are difficult to accurately assess because age related changes in body composition, metabolic rate, general state of fitness and underlying disease all influence cardiac performance. It is now generally accepted that systolic function is well preserved with increasing age. Cardiac output and ejection fraction are maintained in spite of the increase in after load imposed by the softening of the outflow tract. The mechanism by which cardiac

output maintained during exercise, however is somewhat different. In younger person output is maintained by increasing heart rate in response to β adrenergic stimulation. With aging there is relative “hyposympathetic state” in which the heart becomes less responsive to catecholamines, possible secondary to declining receptor function. The aging heart therefore maintains cardiac output not by increasing rate but by increasing ventricular filling (preload). Because of the dependence on preload, even minor hypovolemia can result in significant compromise in cardiac function.¹⁵

Diastolic function however which depends on relaxation rather than contraction is affected by ageing. Diastolic dysfunction is responsible for upto 50% of the cases of heart failure in patients older than age 80 years. Myocardial relaxation is more energy dependent therefore requires more oxygen than does contraction. With ageing there is progressive decrease in the partial pressure of oxygen. As a result even in mild hypoxemia can result in prolonged relaxation, higher diastolic blood pressure and pulmonary congestion. Because early diastolic filling is impaired, maintenance of preload becomes even more reliant on the atrial kick. Loss of the atrial contraction to preload can result in further impairment of cardiac function.

It is important remember that the manifestation of cardiac diseases in the elderly may be nonspecific and atypical. While chest pain is still the most common symptom of myocardial infarction as many as 40% of older patients will present in a nonclassic manner with symptoms such as shortness of breath, syncope, acute confusion or stroke.¹⁵

Respiratory System

With ageing there is a decline in respiratory function that is attributable to changes in both the chest wall and the lung. Chest wall compliance decreases secondary to changes in structure caused by kyphosis and exaggerated by vertebral collapse. Calcification of the costal cartilage and contractures of the intercostals muscles results in a decline in rib mobility. Maximum inspiratory and expiratory force decreases by as much as 50% secondary to progressive decrease in the strength of respiratory muscles.

In the lung there is a loss of elasticity which leads to increased alveolar compliance with collapse of small airways and subsequent uneven alveolar ventilation with air trapping. Uneven alveolar ventilation leads to ventilation perfusion mismatches which in turn cause a decline in arterial oxygen tension of 0.3 or 0.4mmHg per year.

The PCO_2 does not change, inspite of an increase in dead space. This may be due in part to the decline in the production of CO_2 that accompanies the falling basal metabolic rates. Air trapping is also responsible for an increase in the residual volume or the volume remaining after maximal expiration.

The loss of support of the small airways also leads to collapse forced expiration, which limits dynamic lung volumes and flow rates. Forced vital capacity decrease by 14 to 30ml/yr. The overall effect of loss of elastic inward recoil of lung is balanced somewhat by the decline in chest wall outward force. Total lung capacity therefore remains unchanged and there is only a mild increase in resting lung volume

or functional residual capacity. Because total lung capacity remains same, the increase in respiratory volume results in a decrease in vital capacity.

The control of ventilation is also affected by ageing. Ventilatory responses to hypoxia and hypercapnia fall by 50% and 40% respectively. The exact mechanism of this decline has not been well defined but may be the result of declining chemoreceptor function either at the peripheral or central nervous system level.

In addition to these intrinsic changes pulmonary function is affected by alterations in the ability of the respiratory system to protect against environmental injury and infection. There is progressive decrease in T-cell function, a decline in mucociliary clearance and a decrease in several components of swallowing function. The loss of cough reflex secondary to neurological disorders, combined with swallowing dysfunction may predispose to aspiration. The increased frequency and to an increased and severity of pneumonia in older persons has been attributed to these factors and to an increased incidence of oropharyngeal colonization with gram-negative organisms. This colonization correlates closely with comorbidity and with the ability of older patients to perform activities of daily living. This fact tends to support the idea that functional capacity is crucial factor in assessing the risk of pneumonia.¹⁵

Renal:

Between the ages of 25 and 85 there is a progressive decrease in the renal cortex in which approximately 40% of the nephrons become sclerotic. The remaining functional units hypertrophy in a compensatory manner. Sclerosis of the glomeruli is accompanied by atrophy of the afferent and efferent arterioles and by a decrease in renal tubular cell number. Renal blood flow also falls by approximately 50%.

Functionally there is a decline in glomerular filtration rate of approximately 45% by age 80years. This decrease is reflected in a decline in creatinine clearance of 0.75ml/min/yr in healthy older men. The serum creatinine value however remains unchanged because there is a concomitant decrease in lean body mass and thus a decrease in creatinine production. Estimates of creatinine in the healthy aged can be made from the serum creatinine by using the formula derived by Cockcroft and Gault.

$$(140 - \text{age in years}) \times (\text{weight in kg}) / [72 \times (\text{serum creatinine in mg/dl})]$$

Caution must be exercised when applying this formula to critically ill patients or those on medications that directly affect renal function.

Renal tubular function also declines with advancing age. The ability to conserve sodium and excrete hydrogen ion falls, resulting in a diminished capacity to regulate fluid and acid-base balance. Dehydration becomes a particular problem because losses of sodium and water from nonrenal causes are not compensated for by the usual mechanisms of increased renal sodium retention, increased urinary concentration and increased thirst. The inability to retain sodium is believed to be due to a decline in the activity of the rennin-angiotensin system. The increasing inability to concentrate the urine is related to a decline in end organ responsiveness to antidiuretic hormone. The marked decline in the subjective feeling of thirst is also well documented but not well understood. Alteration of osmoreceptors function in the hypothalamus may be responsible for the failure to recognize thirst inspite of significant elevations in serum osmolality.

Alterations in renal function also have important implications for the type and dosage of drugs used in older patients. Although drugs are handled by the kidney in

several different ways, most changes in renal drug processing parallel the decline in glomerular filtration rate. Therefore creatinine clearance can be used to determine the appropriate clearance of most agents processed by the kidney.

The lower urinary tract also changes with increasing age. In the bladder increased collagen leads to limited distensibility and impaired emptying. Over activity of the detrusor secondary to neurological disorders or idiopathic causes has also been identified. In women decreased circulating levels of estrogen and decreased tissue responsiveness to this hormone cause changes in the urethral sphincter that predispose to urinary incontinence. In males prostatic hypertrophy impairs bladder emptying. Together these factors lead to urinary incontinence in 10% to 15% of elderly persons living in the community and 50% of those in nursing homes.

There is also an increased prevalence of asymptomatic with age which varies from 10-50% depending on gender, level of activity, underlying disorders and place of residence. Urinary tract infections alone are responsible for 30-50% of all cases of bacteremia in older patients. Alterations in the local environment and declining host defences are thought to be responsible. Because of the lack of symptoms in elderly patients with bacteriuria, preoperative urine analysis becomes increasingly important.¹⁵

Hepatobiliary:

Morphologic changes in the liver with age include a decrease in the number of hepatocytes and overall weight and size. This is however a compensatory increase in cell size and proliferation of bile ducts. Functionally hepatic blood flow falls by 0.3-1.5% per year to 40-45% of earlier values after age 65.

The synthetic capacity of the liver as measured by the standard test of liver function remains unchanged. However the metabolism and sensitivity to certain kinds of drugs is altered. Drugs requiring microsomal oxidation(phase I reactions) before conjugation(phase II reactions) may be metabolised more slowly where as those requiring only conjugation may be cleared at a normal rate. Drugs that act directly on hepatocytes such as warfarin(Coumadin) may produce the desired therapeutic effects at lower doses in the elderly owing to an increased sensitivity of cells to these agents.

The lost significant correlate of altered hepatobiliary function in the aged is the increased incidence of gallstones and gall stone- related complications. Gallstone prevalence rises steadily with age although there is variability in the absolute percentage depending on the population. Stones have been demonstrated in as many as 80% of nursing home residents older than age 90 years. Biliary tract disease in the single most common indication for abdominal surgery in the elderly population.¹⁵

Immune Function:

Immune competence like other physiologic parameters declines with advancing age. This immunosenescence is characterised by an increased susceptibility to infections, increase in autoantibodies and monoclonal immunoglobulin and an increase in tumorigenesis. Also like other physiologic systems, this decline may not be apparent in the nonchallenged state. For example there is not decline in neutrophil count with age but the ability of the bone marrow to increase neutrophil production in response to infection may be impaired. Elderly patients with major infections frequently have normal white blood cell counts but the differential count will show a profound shift to the left with a large proportion of immature forms.

With aging there is an involution of the thymus gland and a decline in the production of thymic polypeptide factors such as thymosin a-1. This and other thymic hormones control the differentiation and proliferation of thymocytes into mature T lymphocytes. The resulting alterations in T-cell populations, products and response to stimuli best describe the changes in immune function that accompany ageing. Although other factors may be involved, the decline in T-cell responsiveness, to a variety of antigens is demonstrated by the high incidence of angry to delayed hypersensitivity skin tests seen in progress older than age 60.

Some B-cell defects have been identified, although it is thought that the functional deficits in antibody production are related to altered T-cell regulation rather than to intrinsic B-cell changes. In-vitro there is an increased helper T-cell activity for nonspecific antibody production and there is a decreased ability of suppressor T-cells from old mice to recognized and suppress specific antigens from self. This reflected in an increase in the prevalence of autoantibodies to more than 10% by age 80years. The mix of immunoglobulins also changes. IgM levels decrease while IgG and IgA increase slightly.

The clinical implications of these changes are difficulty to determine. When superimposed on the known immunosuppression caused by the physical and psychological stress of surgery, insufficient immunologic responses in the elderly should be expected. Increased susceptibility to many infectious agents in the post operative period, however is more likely a result of a stress and comorbid disease rather than physiologic decline.¹⁵

Nutritional Status

Surgeons recognize the value of optimal nutritional status to minimize perioperative mortality and morbidity. However, older patients are at particular risk for malnutrition and therefore at increased risk for adverse perioperative events. It remains imperative for surgeons to continue to assess nutritional status and attempt to correct malnutrition to achieve optimal results. Although this may be difficult in any patient, detection plus correction of malnutrition in older patients is crucial.

The impact of poor nutrition as a risk factor for perioperative mortality and morbidity such as pneumonia and poor wound healing has long been appreciated. Malnutrition is estimated to occur in approximately 0% to 15% of community-dwelling older persons, 35% to 65% of older patients in acute care hospitals, and 25% to 60% of institutionalized older adults. Factors that lead to inadequate intake and uptake of nutrients in this population include the ability to obtain food (e.g., financial constraints, availability of food, limited mobility), desire to eat food (e.g., living situation, mental status, chronic illness), ability to eat and absorb food (e.g., poor dentition, chronic gastrointestinal disorders such as GERD or diarrhea), and medications that interfere with appetite or nutrient metabolism.

In the frail older adult, a number of factors contribute to neuroendocrine dysregulation of the signals that control appetite and satiety and lead to what is termed *the anorexia of aging*. Although the anorexia of aging is a complex interaction of many interrelated events and systems, the result is chronic undernutrition and loss of muscle mass (sarcopenia). Malnutrition has also been associated with increased risk of falls and hospital admission.¹⁵

ALBUMIN:

Albumin is a major protein in serum. The total body content of albumin is approximately 350g. It is a globular protein with a molecular weight of 69000kD. It is synthesized in the liver at the rate of 1.5g per day and is catabolized by all metabolically active tissues. Albumin makes a large contribution to plasma colloid osmotic pressure due to its small size and abundance (35-50% of total plasma proteins by weight). It also serves as a carrier protein for many insoluble organic substances. In experimental starvation serum albumin levels may not decrease for several weeks because although synthesis decreases only 30 % of total exchangeable albumin is in the intravascular space with the remainder being in the extravascular compartment. In addition albumin has a relatively long half life of 21 days. It has been suggested that the extravascular compartment replenishes the intravascular pool.¹⁸

Low serum albumin was associated with increased rate of post operative complications in postoperative period as stated by Ryan et al in their study.²⁴

In retrospective study by Kudsk et al of 526 surgical patients who had preoperative serum albumin levels measured and were undergoing elective esophageal, gastric, pancreaticoduodenal or colon surgery a serum albumin level below 3.25g/dl correlate inversely with complications, length of stay, postoperative stay and mortality.²²

Golub et al studied the effect of hypoalbuminemia (serum albumin <3g/dl) upon admission of patients to surgical ICU due to vascular insufficiency, hip fracture, gastrointestinal bleeding, cancer, perforated viscus, intra-abdominal infection or bowel obstruction. Complication were higher in hypoalbuminemia.²⁷

Complications were higher when serum albumin level was lower 2.5g/dl in critically ill adult patients in a study Foley et al.²⁵

Increased incidence of wound infection and dehiscence was reported by Brown et al in their study in patients with serum albumin levels less than 3 g/dl.²⁶

Blood urea:

Urea is the major excretory product of protein metabolism. It is formed in the liver from amino groups and free ammonia generated during protein catabolism. Measurement urea is used to evaluate renal function, to assess hydration status, to determine nitrogen balance, to aid in the diagnosis of renal disease, and to verify adequacy of dialysis. An elevated concentration of urea in the blood is called azotemia. Conditions causing increased plasma urea are classified into three main categories: pre-renal, renal and post-renal.²¹

Pre-renal azotemia is caused by reduced renal blood flow. Less blood is delivered to the kidney, consequently less urea is filtered. Causative factors include congestive cardiac failure, shock, hemorrhage, dehydration. It also occurs in increased protein catabolism occurs in stress, fever, corticosteroid therapy and gastrointestinal hemorrhage.²¹

Renal azotemia includes acute and chronic renal failure, glomerular nephritis, tubular necrosis. Post-renal azotemia due to obstruction of urine flow anywhere in the urinary tract by renal calculi tumors of the bladder or prostate or severe infection.

Renal insufficiency strongly correlates with poor perioperative outcomes, identifying patients with occult renal disease are essential. No consensus exists on the indications for such testing, but it has been suggested that a Blood urea and serum creatinine should be obtained in patients over 50 years of age scheduled for

intermediate or high risk surgery or when hypotension is considered likely or when nephrotoxic medications are planned.²⁶

Serum Creatinine :

Creatinine is formed from creatine and creatine phosphate in muscle and is excreted into the plasma at a constant rate related to muscle mass. Creatine is synthesized primarily in the liver from arginine, glycine and methionine. It is then transported to other tissues, such as muscle, where it is converted to creatine phosphate, which serves as a high-energy source. Creatine phosphate loses phosphoric acid and creatine loses water to form the cyclic compound, creatinine, which diffuses into plasma and is excreted in the urine.²¹

Plasma creatinine is inversely related to glomerular filtration rate(GFR). Elevated creatinine concentration is associated with abnormal renal function, especially as it relates to glomerular function.²¹

Hyperglycemia:-

Hyperglycemia has several deleterious effects upon host immune function, most notably impaired function of neutrophils and mononuclear phagocytes. Hyperglycemia may also be marker of the catabolism and insulin resistance associated with surgical stress response and that exogenous insulin administration may ameliorate the catabolic state¹⁷.

Poor control of blood glucose during surgery and in peri-operative period increases the risk of infection and worsens outcome from sepsis. Tight control of blood glucose during surgery decreases the risk. Moderate hypoglycaemia (>200mg/dl) at any time on the postoperative period day increased risk of surgical site

infection fourfold after non cardiac surgery. In a large randomised trial of critically ill postoperative patients, exogenous insulin administration to keep blood glucose <110mg/dl was associated with a 40% decrease in mortality, fewer nosocomial infection and less organ dysfunction.¹⁷

Smoking :

The effect of smoking on wound infection rates has high. The concept of smoking as a risk of wound infection should be heeded because it is a potentially alterable behaviour in the preoperative period.^{1, 19}

Smoking causes peripheral tissue hypoxia which ultimately causes increased incidence of surgical site infection. Smoking also causes reduce collagen synthesis and oxidative killing mechanism of neutrophils.²⁰

Duration of the procedure :

Risk of wound infection has repeatedly been shown to be proportional to the length of the operative procedure. Wound infections with longer procedures, roughly doubling with every hour of the procedures.³⁰

SENIC report also found duration of procedure of greater than 2 hours to be the second greatest independent predictor of risk after multivariate analysis with a regression coefficient of 1.04. it is unclear from these studies however, how frequently a prolonged duration of operation was secondary to a case's inherent complexity versus a simple case taking an unusually long time to complete.¹¹

This question partly addressed by Culver et al 1991 modification of the SENIC index. Rather than taking orbitary time (eg 2hours) over which an operation

was designated as prolonged, he considered a procedure lengthy if its length fell above 75 percentile for the other similar procedures. Therefore an appendectomy was considered prolonged unless it required more than 5 hours. Using this index operative time was still one of three variables along with wound class and ASA the independently predicted infection. Prolongation of an operation whether from an complicated procedure increased likelihood of normal wound contamination, must be considered a significant risk factor for wound infection.²⁹

Emergency Procedure :

Several studies have shown emergency procedure to be particularly prone to wound infection. Of these 4465 wound studied by GikEgea et al 623 were made under emergent situation and the wound infection rate for these was 5.1% versus 3842 elective wounds with an infection rate of 2.9%²⁰. Garibaldi et al reported a wound infection odds ratio of 7.6(95% confidence interval, 3.2 to 18.2) for emergency versus elective operations, but after multivariate analysis.³¹

Although ample time may be available before elective surgery to evaluate operative indications and comorbid conditions, this is not the case in emergency surgery. Therefore, complications and mortality rates following emergency surgery are higher compared to elective surgery. Lyon reported mortality rates of between 15% and 34% following emergency abdominal surgery. Juan established the mortality rate to be 22%. Post-operative pneumonia, cardiac complications and sepsis are known to account for a large part of deaths. The presence of an underlying chronic condition has an adverse effect on the prognosis in patients undergoing emergency surgery, and it increases the mortality rate was 15.21% in the present study.³²

According to the ASA classification, which is a subjective system, it is known that mortality and morbidity rates are significant higher in patients with ASA scores of IV or V.

Considerable progress has been made in surgical techniques, anesthesia procedures and post-operative patients care in terms of the results of surgical operation in the geriatric population, surgery remains a major cause of morbidity and mortality in elderly people due to their depleted physiologic reserves.³⁴

It is an effort to decrease mortality rates, precautions should be taken beforehand particularly to avoid complications observed in geriatric patients considering the high mortality rates observed in late stage complications. For instance, elderly patients with common conditions, such as acute cholecystitis incarcerated hernia, can be offered elective surgery to avoid emergency intervention. Keeping systematic disease under control will render surgical operations safer.³³

METHODOLOGY

SOURCE OF DATA:

- All patients coming to B.L.D.E.U.'s Sri B M Patil Medical College, Hospital and Research Centre and admitted in whom, emergency abdominal surgery will be done within 12 hours of admission.
- Study period from: October 2011 to May 2013.

METHOD OF COLLECTION OF DATA:

- Patients undergoing emergency abdominal surgery in B.L.D.E.U's Sri B M Patil Medical College, Hospital and Research Centre, Bijapur from October 2011 to May 2013.
- Histories of patients were noted.
- Post operative complications were noted which include bleeding, Surgical site infection (superficial, deep, organ space), sepsis, urinary (acute renal failure, urinary tract infection), cardiac, respiratory(pulmonary embolism, pneumonia), DVT.
- Broadly divided into two category i.e., patient with complications and without complications with factors which are sex, transfer(from home or other hospital), wound class, ASA class, DVT prophylaxis, antibiotic administration, sepsis, diabetes mellitus, steroid use, COPD, smoker.

INCLUSION CRITERIA:

All patients undergoing emergency abdominal surgery within 12 hours of admission in B.L.D.E.U's Sri B M Patil Medical College, Hospital and Research Centre, Bijapur.

EXCLUSION CRITERIA:

- Trauma cases.
- Prior surgery within 30 days.
- Those patients who will leave the study in between, due to any reason.
- Age below 12 years.
- Immunocompromised patients.

RESEARCH HYPOTHESIS:

- Detecting the factors which are likely to cause postoperative complications in case of emergency abdominal surgery will help to improve the surgical outcome.

SAMPLING:

Study period from: October 2011 to May 2013.

All the patients admitted during this period, who will fulfill the inclusion criteria, will be included in this study.

Sample size is calculating using the formula,

$$n = \frac{Z_{\alpha}^2 pq}{E^2}$$

Where, n=sample size,

$$Z_{\alpha}=1.96,$$

$$p = \text{Prevalence rate} = 25\% ^1$$

$$q = 100 - p,$$

$$E = \text{allowable error} = 10\%.$$

Minimum sample size is 75 patients.

For our study it is planned to conduct study on at least 75 patients, as our study is a prospective type.

Following statistical tests will be used to compare the results:

- Wilcoxon signed rank sum test or 't' test for continuous variables.
- Chi-square test or the Fisher exact test.
- Multivariate analysis using logistic regression.
- Mean+/- Standard deviation.

INVESTIGATIONS / INTERVENTIONS:

Investigations or interventions required in this study are routine standardized procedures.

There are no animal experiments involved in this study.

These routine investigations are done and for routine postoperative follow-up:

1. Complete blood count.
2. Urine – sugar, albumin and microscopy.
3. Random blood sugar, Blood urea, Serum creatinine, Serum albumin, Serum electrolytes.
4. Electro-cardio-gram and Chest X-ray (when age of patient is >35yrs, or if necessary).
5. X-ray erect abdomen – to look for free gas under diaphragm/multiple air fluid levels
6. Ultrasonography /CT Scan of abdomen, if required.
7. Arterial blood gas analysis, if required.
8. Tests to detect infection with Human Immunodeficiency Virus and Hepatitis B Virus (in accordance to Universal Safety Precautions).

Estimation of haemoglobin percentage, blood sugar, serum albumin and creatinine in the serum will be repeated on the postoperative days.

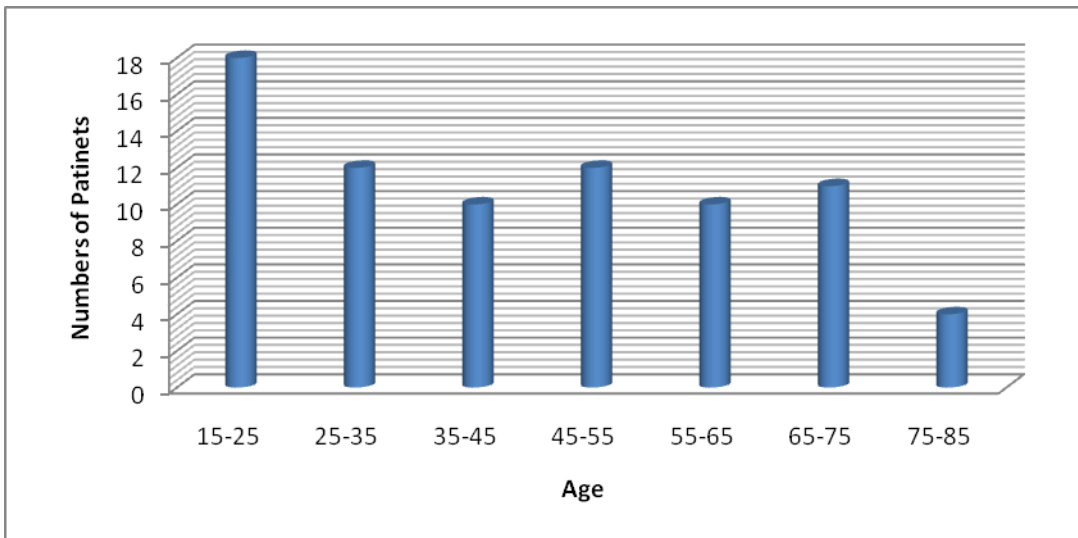
OBSERVATION AND RESULTS

The observations made in the conducted study as it is prospective study and inference were drawn and highlighted in the following pages.

Table 1:Age distribution of cases in years.

Age (In years)	No	Cumulative freq.	%
15-25	18	18	23.3%
25-35	12	30	38%
35-45	10	40	51%
45-55	12	52	67%
55-65	10	62	80.5%
65-75	11	73	94.8%
75-85	4	77	100%
Total	77		

Distribution of patients in age group from 16 to 80 years. 25 patients are more than age of 55 years.



Graph :1 Distribution of cases by Age.

Graph : 2 Distribution of cases by Age and sex

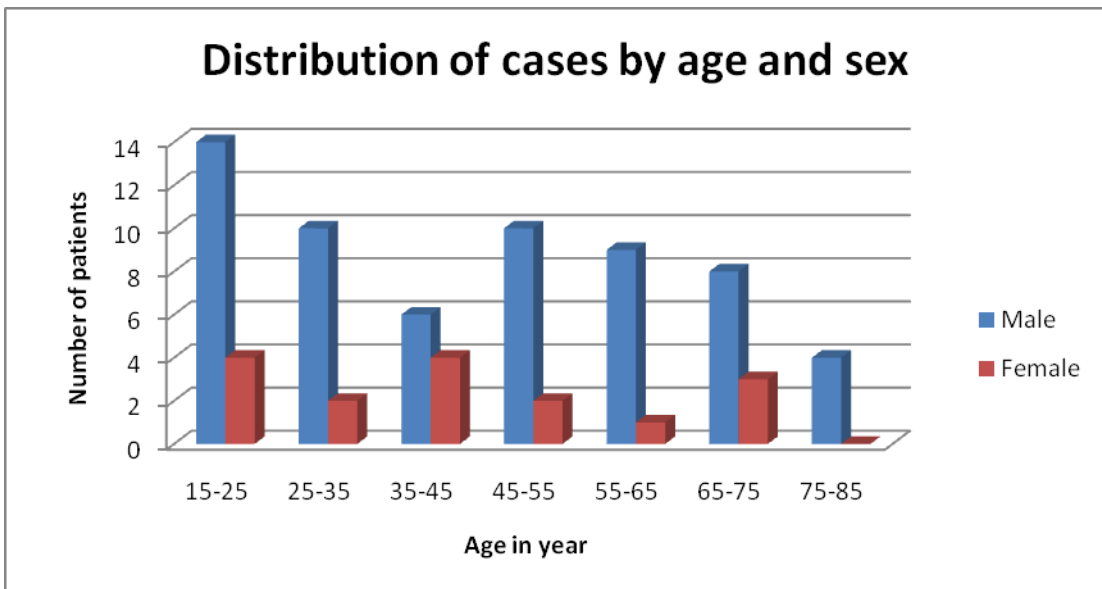


Table 2:Sex Distribution of cases.

Sex	No	%
Male	61	79.22%
Female	16	20.77%
Total	77	100%

The number of male patients are high compare to female. 61(79%) are male and 16(21%) are female. In Akinbami et al 42% were male and 58% were female.

Graph 3: Distribution of cases by

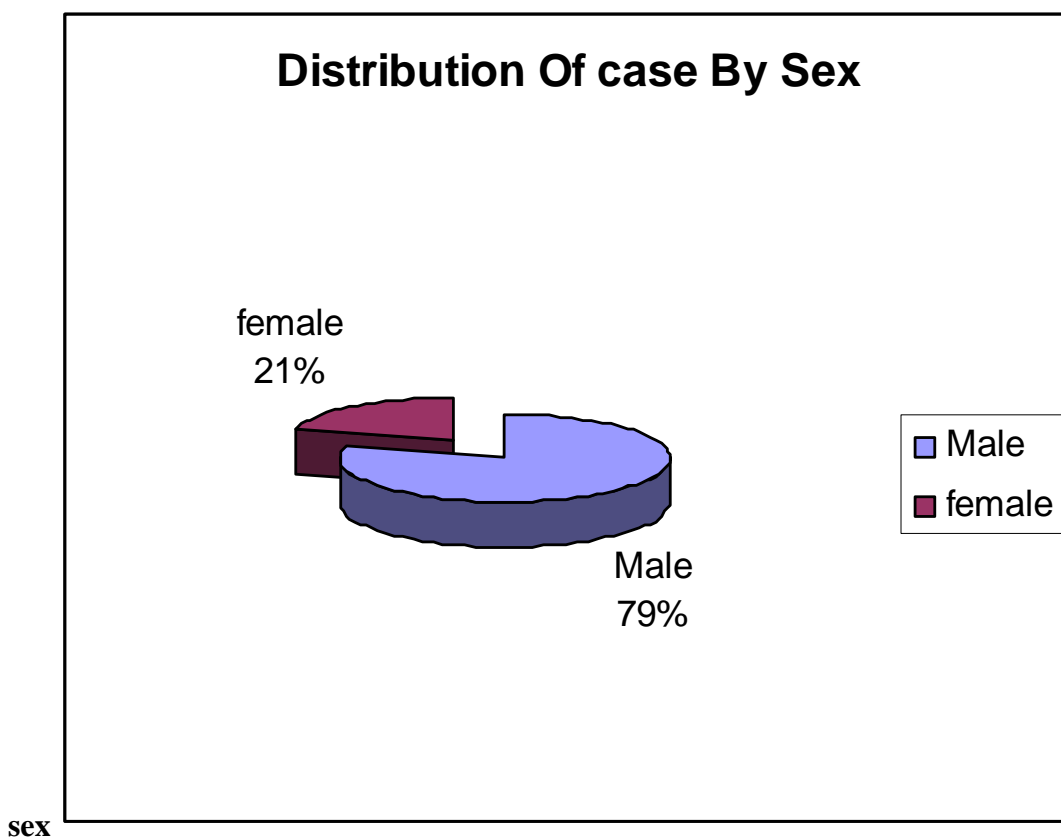


Table 3: Smokers

Smoking Status	Numbers	%
Smokers	12	15.5%
Non-Smokers	65	84.4%
Total	77	100%

12 patients are smokers and 65 patients are non-smokers. In Akinbami et al smokers were 18%(144 cases). In our study 15.5%.

Graph 4: Distribution of cases by smoking

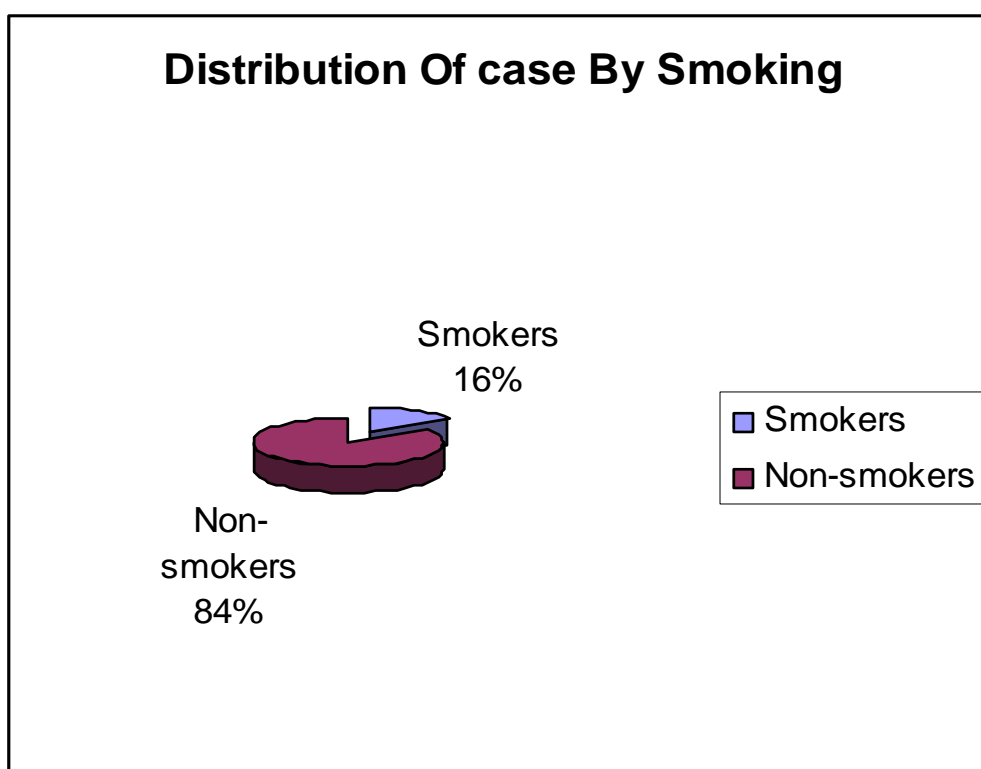


Table:4 Distribution of cases with procedure

Diagnosis	Operation	Numbers
Acute Appendicitis	Appendectomy	30
Intestinal Obstruction due to adhesions	Adhesiolysis	3
Gastro-Duodenal ulcer perforation	Gastro-DU perforation Closure	29
Ileal perforation	Ileal Perforation closure	1
Gangrenous Ileum-4 Ileal perforation-4	Resection anastomosis ileum	8
Strangulated Inguinal hernia	Herniorrhaphy	4
Gangrene of jejunum	Resection Anastomosis Jejunum	2
	Total	77

Two patients underwent resection anastomosis due to both patients have gangrene of Jejunum.

Eight patients underwent resection anastomosis of Ileum due to 4 patients were Ileal perforation and other 4 patients were gangrene of Ileum.

Graph 5 : Distribution of cases with procedure

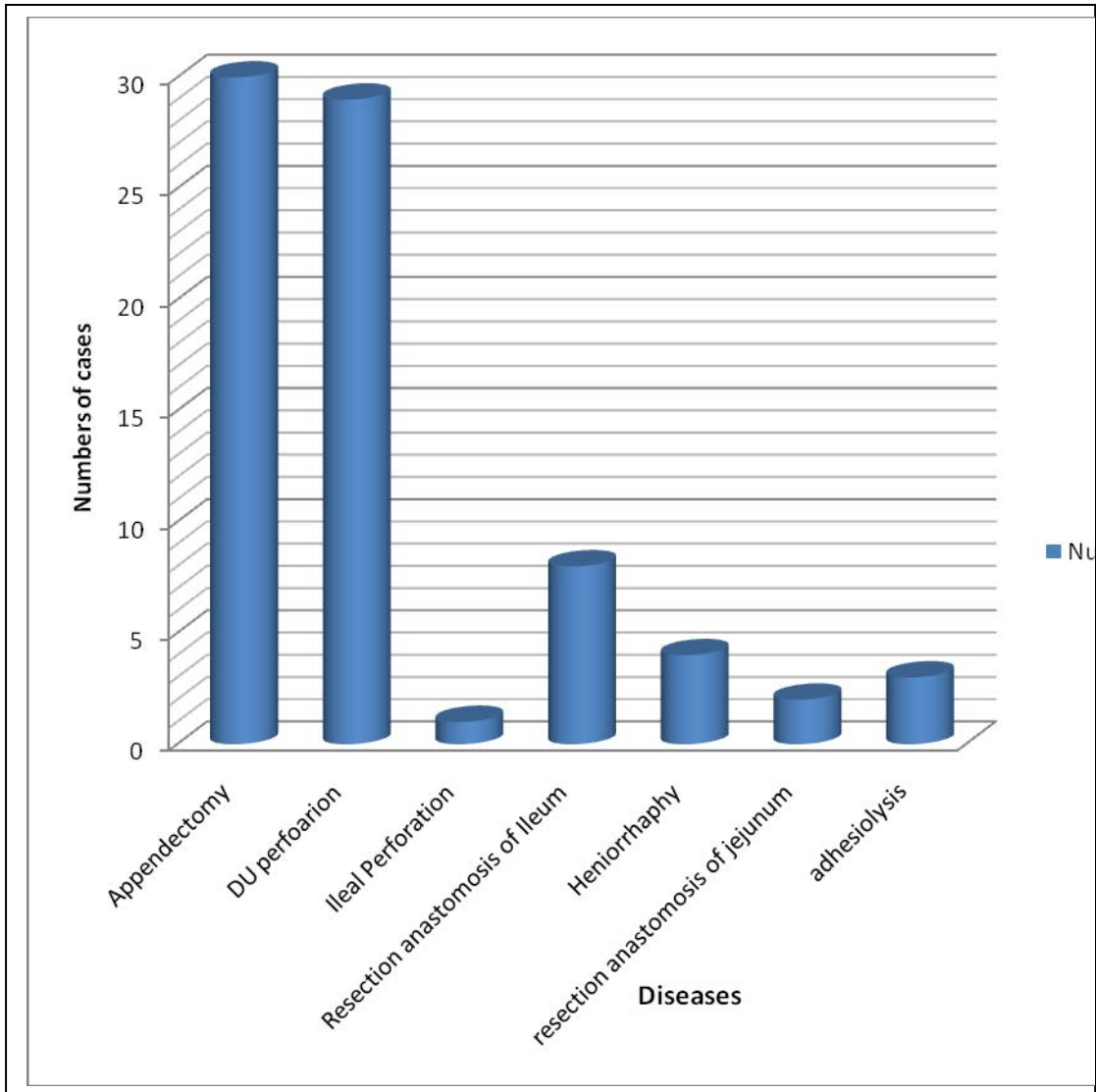


Table 5 : HB & Postoperative Complications.

Level of HB(gram/dl)	No	%	Complications		Chi Square Value	P-Value
			Yes	No		
<11g	16	19.35%	9(56%)	7(44%)	4.565	0.05
>11g	61	80.64%	17(27%)	44(73%)		

This table shows association between haemoglobin percentage and post-operative complications. Anemia defined as Haemoglobin percentage less than 11gm/dl.¹ Chi-square value is 4.565 and P-value is 0.05 i.e higher association between haemoglobin percentage and post-operative complication. Further from the table lower the haemoglobin percentage has higher the post-operative complications.

Table 6:RBS and Post operative complications

Level of RBS(mg/dl)	No	%	Complications		Chi Square Value	P-Value
			Yes	No		
<180	73	94.8%	23(28%)	50(72%)	3.85	0.05
>180	4	30.64%	3(75%)	1(25%)		

Normal level of RBS is less than 180mg/dl. RBS more than 180mg/dl called as hyperglycemia.¹

In this table, 4 patients are hyperglycemia, in which 3 patients have post-operative complications. Chi square value is 3.85 and P-value is 0.05 i,e there is higher association between higher level of RBS and post-operative complications.

Table 7: Blood urea and Post operative complications

Level of Blood Urea (mg/dl)	No	%	Complications		Chi Square Value	P-Value
			Yes	No		
<45	58	75.3%	11(18%)	47(72%)	23.02	0.0001
>45	19	24.6%	15(78%)	4(22%)		

Blood Urea level more than 45mg/dl called as increased blood urea level.¹ In this table 19 patients are increased level of blood urea of which 15 patients have post-operative complications. Chi-square value is 23.02 and p-value is 0.0001 i,e there is higher association between increased blood urea and post-operative complications.

Table 8: Serum creatinine level & Post operative complications

Serum Creatinine level (in mg/dl)	No	%	Complications		Chi Square Value	P-Value
			Yes	No		
<1.4	56	72.7%	11(19%)	45(81%)	18.31	0.001
>1.4	21	27.3%	15(71%)	6(29%)		

Serum creatinine level more than 1.4mg/dl is called as increased level of creatinine¹. In this table 21 patients are increased level of creatinine of which 15 patients have post-operative complications. Chi square value is 18.31 and p-value is 0.001 i.e there is higher association between increased level of creatinine and post-operative complications.

Table 9: Total protein and post-operative complications

Total Protein (in gm/dl)	No	%	Complications		Chi Square Value	P-Value
			Yes	No		
<6	22	64%	17(77%)	5(23%)	29.45	0.001
>6	12	36%	2(17%)	10(83%)		

Total protein level less than 6gram/dl called as lower level of total protein.¹ In this table out of 34 patients 22 are lower level of total protein of which 17 patients have post-operative complications. Chi square value is 29.45 and p-value is 0.001 i,e there is higher association between lower level total protein and post-operative complications.

Table 10: Serum albumin and post-operative complications

Level of Serum Albumin (in gram/dl)	No	%	Complications		Chi Square Value	P-Value
			Yes	No		
<3	21	61%	17(80%)	4(20%)	12.64	0.001
>3	13	39%	2(16%)	11(84%)		

According to Golub et al Serum Albumin level less than 3gram/dl is called as hypoalbuminemia.²⁷ Out of 34 patients, 21 patients are hypoalbuminaemia of which 17 patients have post-operative complications. Chi square vaue is 12.46 and p-value is 0.001 i,e there is higher association between hypoalbuminemia and post-operative complications.

Table 11: Sex and Post operative complications

Complications	Male	Female	Total
Yes	20(76%)	6(24%)	26

In this table shows more numbers of males have complications compare to female. Out of 26, 20 patients are male and 6 patients are female. So, Post-operative complications more in male compare to female.

Graph 6: % Distribution of Post operative complication among male and female

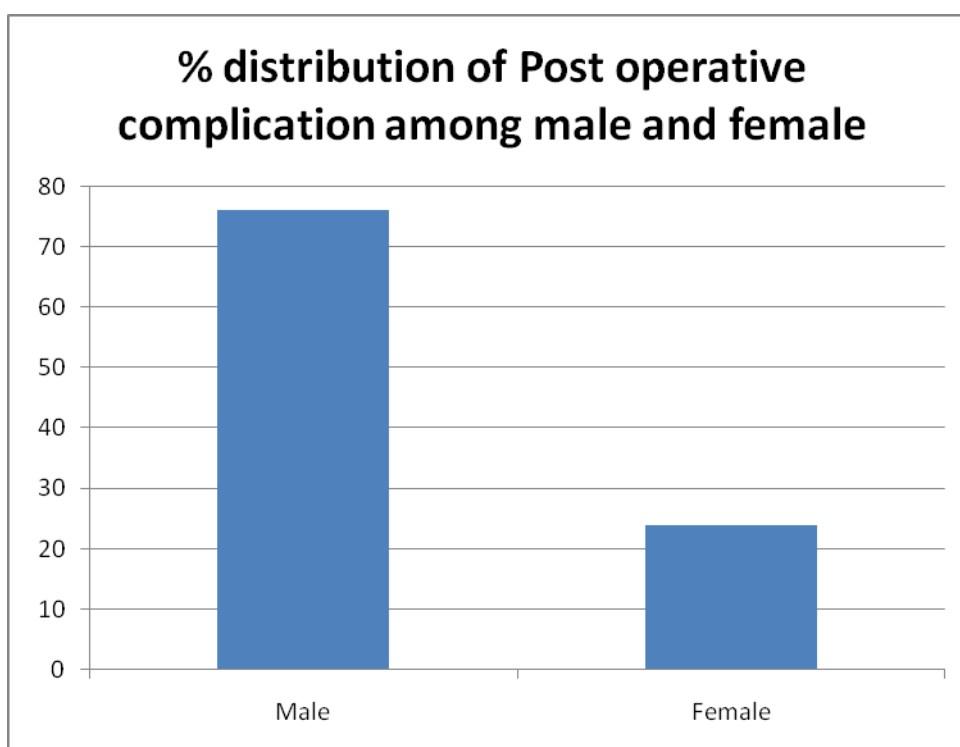


Table 12:Types of complications and duration of stay.

S .NO	Complications type	No	%	Hospital stay
1	ARDS	1	3.8	15 days
2	ARF	1	3.8	03 days
3	MI	1	3.8	03 days
4	MODS	2	7.6	06 days
5	SSI	19	73.07	12 days
6	SSI&RS	2	7.6	15 days

In this table shows distribution of post-operative complications. 19 patients have surgical site infections, 2 are SSI & Pneumonia, 1 ARDS, 1 ARF, 1 MI and 2 MODS.

Graph 7 : Post-operative complications

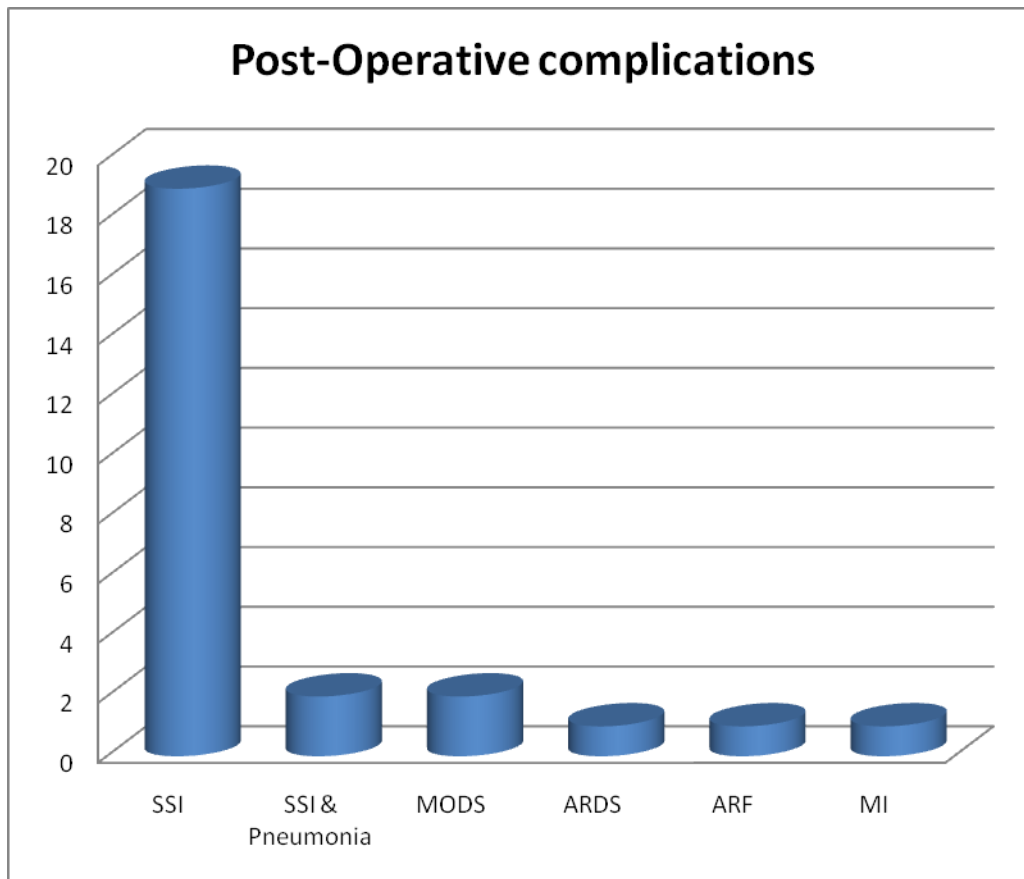


Table 13 Duration of procedure and complications

Duration of procedure (in min)	No	Cumulative freq.	% of CF	Complications	
				Yes	No
40-60	25	25	(19%)	2(16.6%)	23(83.3%)
60-80	11	36	(37%)	2(22.2%)	9(81.8%)
80-100	9	45	(51%)	3(33%)	6(66%)
100-120	6	51	(58%)	2(33%)	4(66%)
120-140	20	71	(90%)	11(55%)	9(45%)
140-160-	6	77	(100%)	4(66%)	2(33%)
Total	77				

Chi-square value= 17.595, P value= 0.001 i.e there is high association between duration of procedure and complications. Further from the table is clear that greater the duration of procedure more is the complications.

Graph 8: Duration of procedure and % of complications

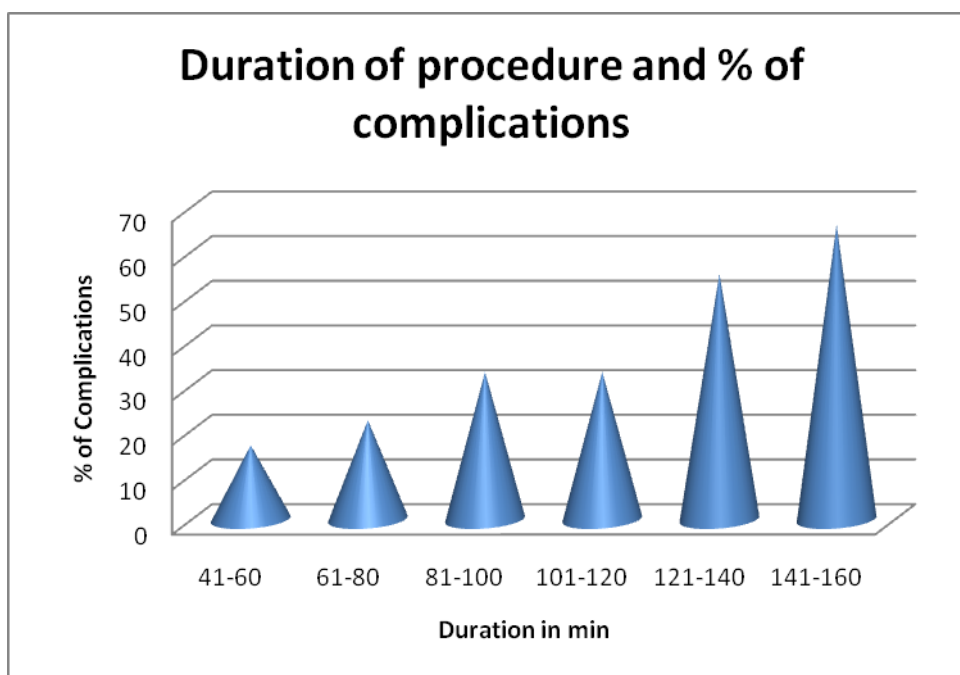


FIG. 1 : ACUTE APPENDICITIS



FIG 2: SHOWS DUODENAL ULCER PERFORATION

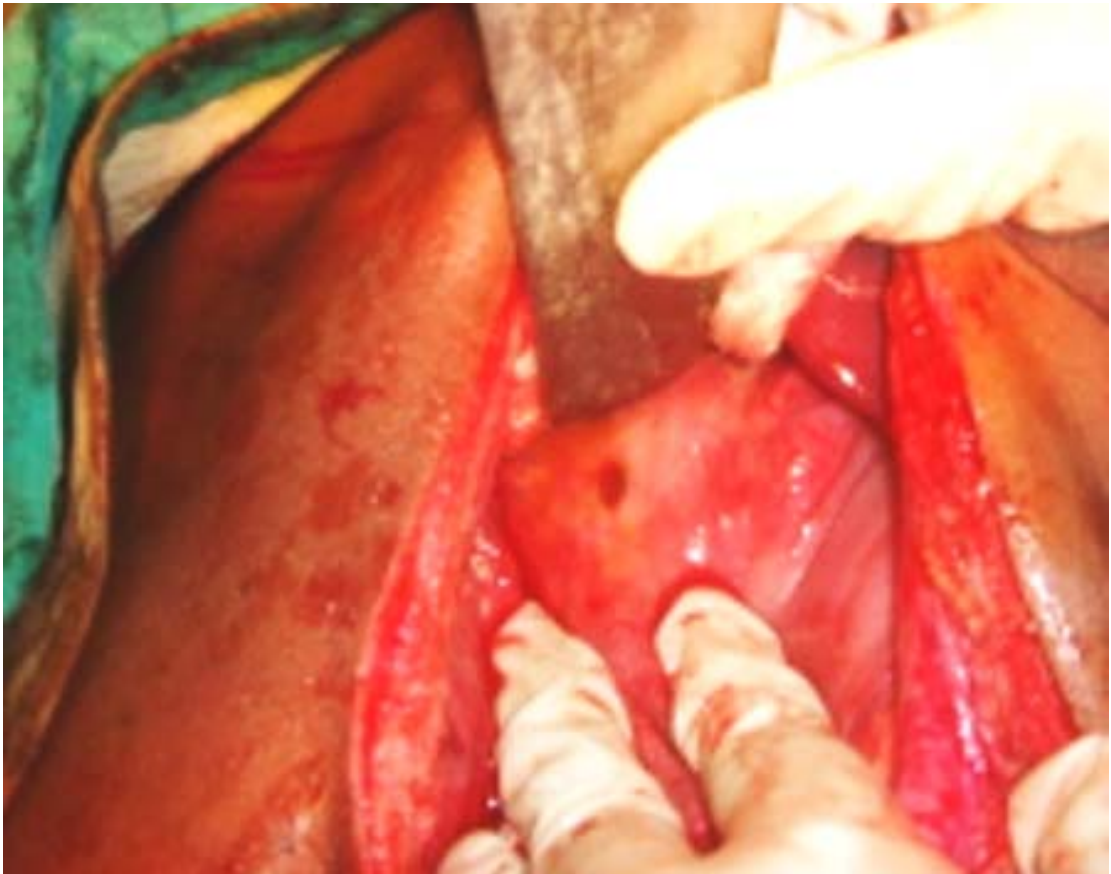


FIG 3: INTESTINAL OBSTRUCTION DUE TO ADHESIONS

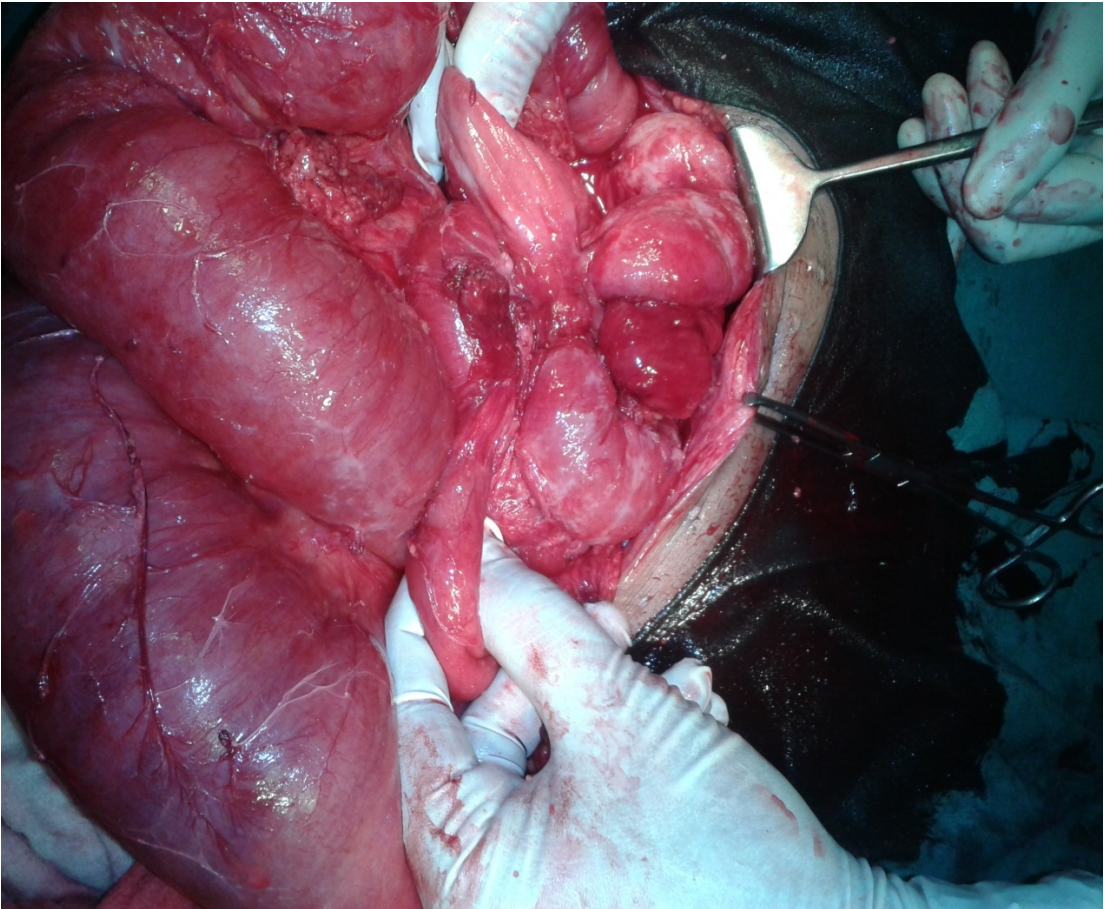


FIG. 4 : ILEAL PERFORATION

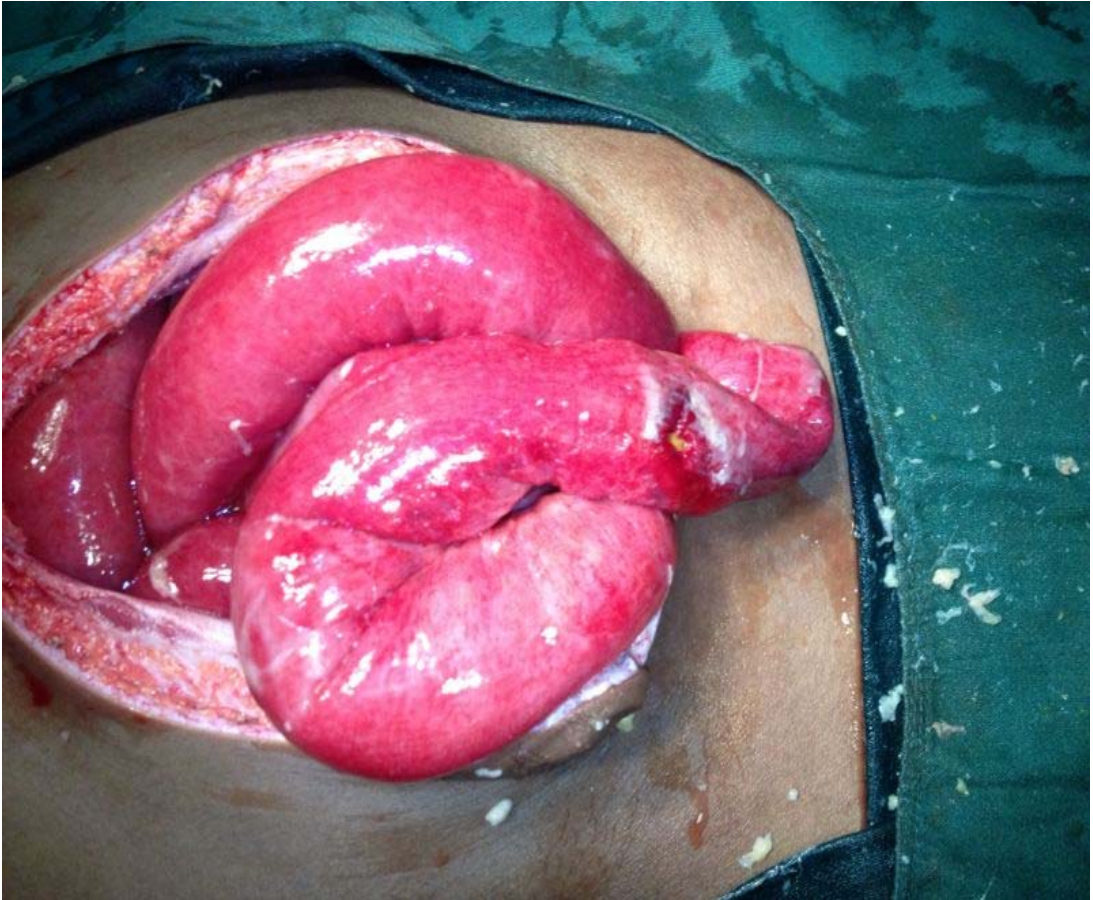


FIG. 5 : GANGRENE OF ILEUM



**FIG. 6 : GANGRENE OF ILEUM DUE TO STRANGULATED
HERNIA**



DISCUSSION

In our study 77 patients analysed of which 61(79%) patients were male and 17(21%) patients were female. In Akinbami et al 42% were male and 58% were female.

The patients in our study underwent emergency abdominal surgery were Appendectomy(30), Gastro-Duodenal ulcer perforation closure(29), Ileal Perforation closure(1), Resection anastomosis of Ileum(8), Resection anastomosis of Jejunum(2), Hernia surgery(4), Adhesiolysis(3). Most of patients were Appendectomy and Gastro-Duodenal ulcer perforation.

Post operative complications in our study were identified in 26 patients (33%), in Akinbami et al 202(24.7%) cases were post operative complications within 30 days of procedure. 30 day mortality in our study were 5(6.4%) compare to Akinbami et al 73(8.9%). Most common post-operative complications are surgical site infection and followed by respiratory complications. Mortality due to Multiple organ dysfunction syndrome, Acute renal failure, Myocardial infarction, Acute respiratory distress syndrome.

Most of patients who underwent emergency surgery were 52(67%) patients less than 55 years and more than 55 years were 25(33%) patients. In out of 25 patients who more than 55 years, 16 patients have post operative complications and 4(80%) mortality in this patients. As increasing the age there is increased post-operative morbidity.

Patients who underwent emergency abdominal surgery, post operative complications 76% were male and 24% were female, so morbidity is seen in our study more in male. The cause is still unknown.¹⁸

12 patients were smokers of which 7 patients have post-operative complications. Smoking causes reduce collagen synthesis and decreases oxidative killing mechanism of neutrophils. So smokers are increased susceptible for post operative complications.^{20, 19}

Hyperglycemia is known to have deleterious effect on wound healing. In our study only 4 patients had hyperglycemia and of which 3 patients have post-operative complications. So good glycemetic control reduce the post-operative complications.

Increased blood urea when blood urea level more than 45mg/dl, 19 patients had increased blood urea level, 15 patients had post-operative complications. P value is 0.0001 and chi square value is 23.02. So level there is higher association with post-operative complications. Increased blood urea level found in our study possibly due to hypovolemic, so patients may benefited by adequate intravenous fluid resuscitation. Which reduce the post-operative complications.

Serum creatinine level more than 1.4mg/dl is called increased serum creatinene level. 21 patients had increased serum creatinine level, 15 patients had post-operative complications . Chi square value is 18.31 and p-value is 0.0001. So there is higher association between increased serum creatinine level and post-operative complications.

Decreased serum albumin and total protein there is higher association with post operative complications(p-value =0.001). In Golub's et al serum albumin level less than 3 have higher the post-operative complications. Post-operatively by giving intravenous supplementation of albumin or oral supplementation of protein will improve post-opearatively.²⁷

Duration of procedure also increases the post-operative complications. Finally composition of surgical team, that is taking care of emergency abdominal surgery may be modified¹. Recent support for acute care surgeons who address both trauma and emergent general surgery is an avenue that needs to be explored more rigorously. Such acute care surgeons may be able to potentially decrease the length of surgery and delays to surgery through their expertise.¹³

Considerable progress has been made in surgical techniques, anesthesia procedures and post-operative patients care in terms of the results of surgical operation in the geriatric population, surgery remains a major cause of morbidity and mortality in elderly people due to their depleted physiologic reserves.

It is an effort to decrease mortality rates, precautions should be taken beforehand particularly to avoid complications observed in geriatric patients considering the high mortality rates observed in late stage complications. For instance, elderly patients with common conditions, such as acute cholecystitis incarcerated hernia, can be offered elective surgery to avoid emergency intervention. Keeping systematic disease under control will render surgical operations safer.

Britt et al developed an acute care surgery model to decrease time delays to surgery by using daytime operating rooms and the experience of the surgeons to improve medical decision making.¹⁴

Earley et al examined effects of this model on outcomes of patients undergoing appendectomies and found in decrease time to surgery , complication rate and length of stay.¹³

CONCLUSIONS

Concluded that emergency abdominal surgery patients who develop post operative complications are more likely to be older, male, smokers and have increased peri-operative serum creatinine and blood urea levels, and lower serum albumin levels.

Those patients who had post operative complications also have longer duration of staying in hospital. This is financial burden to the patients.

Preoperative intravenous fluid administration to adequately resuscitate patients, adequate glucose control and experienced surgical teams to decrease surgical times are putative targets to improve outcomes in emergency abdominal surgery.

It is an effort to decrease mortality rates, precautions should be taken beforehand particularly to avoid complications observed in geriatric patients considering the high mortality rates observed in late stage complications. For instance, elderly patients with common conditions, such as acute cholecystitis incarcerated hernia, can be offered elective surgery to avoid emergency intervention. Keeping systematic disease under control will render surgical operations safer.

Patient-related risk factors should be assessed before surgery, and should be rectified immediately. High risk patients should be operated on by an experienced surgeon, and with proper timing. Postoperative patient care is extremely important. If the risk factors can be predicted early, their number can be decreased, and obviously, the incidence of post-operative complications would be lowered.

SUMMARY

This study was conducted to analyze the factors predicting morbidity in patients undergoing emergency abdominal surgery.

Study was conducted on 77 patients admitted in Shri B M Patil Medical College, Bijapur from Oct-2011 to May-2013. Who underwent emergency abdominal surgery within 12 hours of admission.

Study includes age, sex, smoker, hemoglobin level, blood urea, serum creatinine, total protein serum albumin, blood sugar level, duration of procedure, post operative complications and length of staying in hospital.

Out of 77 patients 26(33%) patients had post-operative complications. Most of complications are surgical site infections. There is significant statistical association with the post operative complications and age, sex, smokers, increased random blood sugar level, blood urea, serum creatinine level, hypoalbumineamia lastly duration of procedure

Emergency abdominal surgery patients who develop post operative complications are more in older, male, smokers and have increased serum creatinine and blood urea levels, and lower serum albumin levels.

By giving adequate intravenous fluid pre-operatively and post-operatively with tighter blood glucose and protein supplementation post-operatively will reduce post-operative complication so reduce the financial burden to the patients and hospital stay.

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ANNEXURES

SAMPLE INFORMED CONSENT FORM

B.L.D.E.U.'s SHRI B.M. PATIL MEDICAL COLLEGE HOSPITAL
AND RESEARCH CENTRE, BIJAPUR – 586103, KARNATAKA

TITLE OF THE PROJECT:

**FACTORS AFFECTING
MORBIDITY IN PATIENTS
UNDERGOING EMERGENCY
ABDOMINAL SURGERY.**

PRINCIPAL INVESTIGATOR:

Dr. Pramoda Sangolgi.
Department of General Surgery
Email: drpramodsangolgi@gmail.com

PG GUIDE:

Dr. Aravind V Patil,
Professor of Surgery
B.L.D.E. University's
Shri B.M. Patil Medical College,Hospital
& Research Centre, Sholapur Road,
Bijapur – 586103.

PURPOSE OF RESEARCH:

I have been informed that this study will analyse the factors that affecting morbidity in emergency abdominal surgery.

I have been explained about the reason for doing this study and selecting me/my ward as a subject for this study. I have also been given free choice for either being included or not in the study.

PROCEDURE:

Patient will be explained about the need of the surgery and posted for emergency abdominal surgery and patient will also be explained about the required investigations as per standard protocol.

RISKS AND DISCOMFORTS:

I understand that I/my ward may experience some nausea or vomiting due to the feeds, may run temperature, there may be pain at the operated site, there may be leak from the wound, that I/my ward may loose some weight and that these are expected complications of any exploratory laparotomy and I understand that necessary measures will be taken to reduce these complications as and when they arise.

BENEFITS:

Prevention of post operative complications and to improve quality of life.

CONFIDENTIALITY:

I understand that medical information produced by this study will become a part of this hospital records and will be subjected to the confidentiality and privacy regulation of this hospital. Information of a sensitive, personal nature will not be a part of the medical records, but will be stored in the investigator's research file and identified only by a code number. The code key connecting name to numbers will be kept in a separate secure location.

If the data are used for publication in the medical literature or for teaching purpose, no names will be used and other identifiers such as photographs and audio or video tapes will be used only with my special written permission. I understand that I

may see the photograph and videotapes and hear audiotapes before giving this permission.

REQUEST FOR MORE INFORMATION:

I understand that I may ask more questions about the study at any time. Dr. Pramoda Sangolagi is available to answer my questions or concerns. I understand that I will be informed of any significant new findings discovered during the course of this study, which might influence my continued participation.

If during this study, or later, I wish to discuss my participation in or concerns regarding this study with a person not directly involved, I am aware that the social worker of the hospital is available to talk with me.

And that a copy of this consent form will be given to me to keep it and for careful reading.

REFUSAL OR WITHDRAWAL OF PARTICIPATION:

I understand that my participation is voluntary and I may refuse to participate or may withdraw consent and discontinue participation in the study at any time without prejudice to my present or future care at this hospital.

I also understand that Dr. Pramoda Sangolagi will terminate my participation in this study at any time after he has explained the reasons for doing so and has helped arrange for my continued care by my own physician or therapist, if this is appropriate.

INJURY STATEMENT:

I understand that in the unlikely event of injury to me/my ward, resulting directly to my participation in this study, if such injury were reported promptly, then medical treatment would be available to me, but no further compensation will be provided.

I understand that by my agreement to participate in this study, I am not waiving any of my legal rights.

I have explained to _____ the purpose of this research, the procedures required and the possible risks and benefits, to the best of my ability in patient's own language.

Date:

Dr. Aravind V Patil
(Guide)

Dr. Pramoda Sangolagi
(Investigator)

STUDY SUBJECT CONSENT STATEMENT:

I confirm that Dr. Pramoda Sangolagi has explained to me the purpose of this research, the study procedure that I will undergo and the possible discomforts and benefits that I may experience, in my own language.

I have been explained all the above in detail in my own language and I understand the same. Therefore I agree to give my consent to participate as a subject in this research project.

(Participant)

Date

(Witness to above signature)

Date

PROFORMA

SL NO

NAME

AGE

IP NO

SEX

UNIT

RELIGION

DOA

OCCUPATION

DOO

ADDRESS

DOD

SOCIO-ECONOMIC STATUS

Complaints:

HISTORY OF PRESENT ILLNESS

A.HISTORY OF PAIN:

1. MODE OF ONSET
2. SITE OF PAIN
3. HOW LONG IS THE HISTORY OF PRESENTING COMPLAINT OF PAIN
4. DOES PAIN RADIATES
5. CHARACTER OF PAIN
6. RELIEF OF PAIN
7. NUMBER OF HOURS SINCE ACUTE PAIN STARTED.

B. VOMITING

1. PROJECTILE/ NON-PROJECTILE
2. NATURE OF VOMITUS
3. NO. OF TIMES
4. HAEMATEMESIS

C. FEVER:

D.DISTENSION OF ABDOMEN:

E. CONSTIPATION:

PAST HISTORY:

PERSONAL HISTORY: SMOKER/ALCOHOLIC

GENERAL PHYSICAL EXAMINATION

BUILT: WELL/MODERATE/POOR

NOURISHMENT: WELL/MODERATE/POOR

PALLOR

ICTERUS

FEBRILE

PEDAL EDEMA

GENERAL LYMPHADENOPATHY

NUTRITIONAL STATUS:

a. GENERAL APPEARANCE: NORAMAL/THIN

b. ANTHROPOMETRY: HT

WT

VITAL DATA:

TEMPERATURE:

PULSE

RESPIRATORY RATE

BLOOD PRESSURE:

SYSTEMIC EXAMINATION:

PER ABDOMEN:

INSPECTION:

CONTOUR OF ABDOMEN

MOVEMENTS WITH RESPIRATION

UMBILICUS

VISIBLE PERISTALSIS

VISIBLE PULSATION

SKIN OVER ABDOMEN

HERNIAL ORIFICES

PALPATION

LOCAL RAISE OF TEMPERATURE

HYPERAESTHESIA

TENDERNESS

RIGIDITY/GAURDING

LUMP

PALPATION OF HERNIAL SITES

ABDOMIN GIRTH

PERCUSSION

SHIFTING DULLNESS

FLUID THRILL

OBLITERATION OF LIVER DULLNESS

AUSCULTATION

BOWEL SOUNDS

PER RECTAL:

RESPIRATORY SYSTEM

CARDIOVASCULAR SYSTEM

CENTRAL NERVOUS SYSTEM

CLINICAL DIAGNOSIS:

LABORATORY TESTS

HB%

TOTAL COUNT

DIFFERENTIAL COUNT

N/L/E/B/M:

PT

APTT

INR

URINE ROUTINE:

RBS

FBS

PPBS

B.UREA

S.CREATININE

TOTAL PROTEIN

S.ALBUMIN

SERUM ELECTROLYTES

Na

K

Cl

Ca

PERITONIAL ASPIRATION

PERITONIAL FLUID ANALYSIS AND CULTURE SENSITIVITY

BLOOD CULTURE

BLOOD GROUPING

HIV

HBsAg

CHEST X RAY:

ERECT ABDOMEN X-RAY:

ULTRASONOGRAPHY OF ABDOMEN AND PELVIS:

CT SCAN OF ABDOMEN:

ARTERIAL BLOOD GAS ANALYSIS:

OTHERS:

OPERATIVE PROCEDURE (DATE AND TIME):

INTRA-OPERATIVE DIAGNOSIS:

DURATION OF PROCEDURE:

POST OPERATIVE INVESTIGATIONS:

LENGTH OF STAY IN HOSPITAL AFTER PROCEDURE:

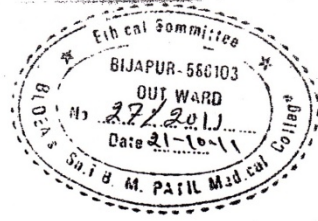
POST OPERATIVE COMPLICATIONS

1. BLEEDING.
2. POST OPERATIVE SURGICAL SITE INFECTIONS.
3. SEPTIC COMPLICATIONS. a) WOUND INFECTION.
b) INTRA-ABDOMINAL INFECTION.
4. URINARY COMPLICATIONS.
5. CARDIAC.
6. RESPIRATORY COMPLICATIONS.
7. GLYCEMIC CONTROL.
8. OTHERS

ETHICAL CLEARANCE CERTIFICATE



B.L.D.E. UNIVERSITY'S
SHRI.B.M.PATIL MEDICAL COLLEGE, BIJAPUR-586 103
INSTITUTIONAL ETHICAL COMMITTEE




INSTITUTIONAL ETHICAL CLEARANCE CERTIFICATE

The Ethical Committee of this college met on 20-10-2011 at 10-30 am to scrutinize the Synopsis/Research projects of postgraduate/undergraduate student/Faculty members of this college from Ethical Clearance point of view. After scrutiny the following original/corrected & revised version synopsis of the Thesis/Research project has been accorded Ethical Clearance.

Title Factors affecting Morbidity in patients undergoing emergency abdominal surgery

Name of P.G./U.G. student/Faculty member Dr. Pramoda Sangolagi
Dept of Surgery

Name of Guide/Co-investigator Dr. Aravind V. Patil Dept of Surgery


DR.M.S.BIRADAR,
CHAIRMAN

INSTITUTIONAL ETHICAL COMMITTEE
BLDEU'S, SHRI.B.M.PATIL
MEDICAL COLLEGE, BIJAPUR.
Chairman

Ethical Committee
BLDEU'S Shri. B.M. Patil
Medical College
Bijapur-586103

Following documents were placed before E.C. for Scrutinization

- 1) Copy of Synopsis/Research project.
- 2) Copy of informed consent form
- 3) Any other relevant documents.

KEY TO MASTER CHART

M - Male

F - Female

Sl.no - Serial Number

NR - Not Recordable

SSI -Surgical site infection

MI - Myocardial Infarction

ARDS - Acute respiratory distress syndrome

MODS - Multiple organ Dysfunction syndrome

ARF - Acute renal failure.

P - Pneumonia

Sl no	Name	Ip No	Age (years)	Sex	Occupation	Smoker	Referred from other hospital	Pulse Rate(beats/min)	Blood Pressure(mm of HG)	Temperature (degree celcius)	Respiratory Rate(Cycles/min)	Hieght(Centi meter)	Weight(kilo gram)	Heamoglobin(in gm/dl)	Random blood sugar(mg/dl)	Blood Urea (mg/dl)	Serum Creatinine (mg/dl)
1	Shreeshail Hadpad	20725	40	M	Farmer	Yes	Yes	100	108/64	37.8	24	160	51	10	91	40	1
2	Bhimappa	21311	70	M	Farmer	No	No	102	110/70	37.6	20	162	65	15.5	110	41	1
3	Gangabai	24869	51	F	HW	No	No	80	120/70	37.8	24	152	56	10.9	80	26	1
4	Basappa	25163	56	M	Farmer	Yes	No	102	106/70	37.6	20	162	80	18	166	66	1.6
5	Hanumantraya	25366	40	M	Farmer	Yes	No	84	122/70	37.4	22	158	48	14	142	45	1.3
6	Bhimappa	25684	62	M	Farmer	Yes	No	92	136/86	37.8	22	164	55	14.2	92	87	1.7
7	Thavaru	27419	67	M	Farmer	Yes	Yes	84	132/82	37.2	22	162	56	13.2	160		1
8	Ishwara Chavana	27512	52	M	Farmer	Yes	No	NR	NR	37.8	28	162	68	13.3	200	35	1.4
9	Mallikartjun	27813	23	M	Student	No	No	82	122/78	37.2	22	160	50	10.1	133	30	1.5
10	Umabai	2331	18	F	Housewife	No	No	100	96/70	37.4	22	152	54	7.5	86	15	0.8

Sl no	Name	Ip No	Age (years)	Sex	Occupation	Smoker	Referred from other hospital	Pulse Rate(beats/min)	Blood Pressure(mm of HG)	Temperature (degree celcius)	Respiratory Rate(Cycles/min)	Hieght(Centi meter)	Weight(kilo gram)	Heamoglobin(in gm/dl)	Random blood sugar(mg/dl)	Blood Urea (mg/dl)	Serum Creatinine (mg/dl)
11	Hanamanth	2642	65	M	Farmer	No	No	102	150/90	36.8	24	163	62	11.5	80	76	2.1
12	Hanumantraya	2557	44	M	Farmer	Yes	No	98	122/70	37.2	22	168	65	13.9	70	31	1
13	Jattappa	3121	24	M	Businessmen	No	No	130	NR	37.4	24	164	54	15.2	94	71	2.9
14	Bharathi	4576	20	M	Housewife	No	No	90	122/70	37.2	20	162	62	15.9	88	33	1.2
15	Neelappa	4598	60	M	Farmer	Yes	No	NR	NR	37.6	24	160	64	15.6	191	55	2.5
16	Mallanna	5008	45	M	Farmer	No	No	84	130/90	37.2	18	158	64	12.5	93	15	0.8
17	Praveen	5033	19	M	Student	No	No	90	124/80	37	18	152	48	12.4	105	31	0.7
18	Ratnamma	6056	70	F	Housewife	No	No	90	168/80	36	22	148	46	11.6	162	62	0.8
19	Gangabai	4552	65	M	Housewife	No	No	110	NR	37	22	158	70	15.7	102	53	2.1
20	Ramanagouda Patil	6236	21	M	Student	No	No	88	122/78	36.2	20	162	72	14	81	14	1

Sl no	Name	Ip No	Age (years)	Sex	Occupation	Smoker	Referred from other hospital	Pulse Rate(beats/min)	Blood Pressure(mm of HG)	Temperature (degree celcius)	Respiratory Rate(Cycles/min)	Hieght(Centi meter)	Weight(kilo gram)	Heamoglobin(in gm/dl)	Random blood sugar(mg/dl)	Blood Urea (mg/dl)	Serum Creatinine (mg/dl)
21	Yallappa	7481	30	M	Farmer	No	No	80	140/70	36.2	20	164	68	14.9	96	24	0.9
22	Uttam Prakash	6650	45	M	Farmer	No	No	96	126/82	36.4	20	168	60	12.5	86	31	0.7
23	Kalavati	8455	38	F	Housewife	No	No	72	100/70	36.8	20	148	66	11.3	140	17	1
24	Laxmibai	8986	25	F	Housewife	No	No	72	150/90	36.2	20	150	62	10.3	123	44	0.9
25	Husain	11295	30	M	Coolie	No	No	80	120/70	36.8	20	162	68	13.9	77	31	0.8
26	Suraeshgouda	12718	38	M	Farmer	No	No	92	142/90	36.8	20	164	72	11.9	98	26	0.9
27	Kuppanna	10816	26	M	Farmer	No	No	84	110/70	37.4	22	162	60	15.6	111	23	1.5
28	Nagu Kokur	11035	50	M	Farmer	No	No	100	110/70	36.6	22	164	70	14.4	145	40	0.9
29	Aravind Natikar	12907	22	M	Student	No	No	88	140/70	37.8	22	163	72	11.6	71	35	0.9
30	Anil Kalal	13642	17	M	Student	No	No	60	122/78	36.6	20	162	52	13.6	127	31	1.7
31	Gurappa J	14219	55	M	Farmer	No	No	90	130/80	36.8	22	156	64	15.6	111	23	1.2

Sl no	Name	Ip No	Age (years)	Sex	Occupation	Smoker	Referred from other hospital	Pulse Rate(beats/min)	Blood Pressure(mm of HG)	Temperature (degree celcius)	Respiratory Rate(Cycles/min)	Hieght(Centi meter)	Weight(kilo gram)	Heamoglobin(in gm/dl)	Random blood sugar(mg/dl)	Blood Urea (mg/dl)	Serum Creatinine (mg/dl)
32	Channappa	15589	45	M	Farmer	No	No	106	210/110	36.4	22	163	72	13.1	106	32	0.6
33	Siddaram	15756	76	M	Farmer	No	No	92	110/60	36.2	22	164	64	14.4	117	58	1.4
34	Pandu	24339	58	M	Farmer	No	No	90	90/60	36.8	22	160	50	10.6	74	54	1.6
35	Nagamma	24706	38	F	Housewife	No	No	94	90/60	36.6	20	153	54	7.6	78	18	1.2
36	Siddanna	25750	50	M	Farmer	No	No	98	130/80	36.8	22	156	60	14	92	48	0.9
37	Maruti Navi	25334	70	M	Farmer	No	No	86	120/70	36.8	20	158	54	11.9	220	135	0.2
38	Shreemanth Y	28397	80	M	Farmer	No	No	112	140/80	37.8	24	158	56	11	145	104	2.8
39	Mahaboobi	28774	65	F	Housewife	No	No	88	118/70	36.8	20	154	58	8.6	165		1.1
40	Kuppanna	2196	29	M	Farmer	No	No	110	140/90	36.4	22	158	50	13.7	105	38	0.8
41	Pundalik	30349	58	M	Farmer	No	No	86	118/70	36.4	20	155	59	11.5	86	45	1.4
42	Siddappa	4548	60	M	Farmer	No	No	96	130/80	36.8	20	164	72	11.4	86	31	0.8
43	Shashikala	4518	38	F	Housewife	No	No	64	130/84	36.6	18	158	90	11.3	68	15	0.8

Sl no	Name	Ip No	Age (years)	Sex	Occupation	Smoker	Referred from other hospital	Pulse Rate(beats/min)	Blood Pressure(mm of HG)	Temperature (degree celcius)	Respiratory Rate(Cycles/min)	Hieght(Centi meter)	Weight(kilo gram)	Heamoglobin(in gm/dl)	Random blood sugar(mg/dl)	Blood Urea (mg/dl)	Serum Creatinine (mg/dl)
44	Channabasappa	3934	55	M	Farmer	Yes	No	96	122/70	36.4	22	162	70	13.4	110	32	1.4
45	Gurappa J	9438	65	M	Farmer	Yes	No	94	112/70	37.6	18	160	55	10.7	90	54	1.3
46	Mallappa	10113	21	M	Student	No	No	68	130/70	36.8	18	162	66	13.9	107	25	1.1
47	Kiran	10406	43	M	Businessmen	No	No	92	130/80	37.6	18	158	66	12.1	85	25	1
48	Bhagyashree	11104	19	F	Student	No	No	94	114/70	36.2	18	156	54	10.1	91	20	1
49	Amit	11954	20	M	Student	No	No	102	80/50	37.2	22	164	54	11.8	124		1.3
50	Somu Rathod	1722	65	M	Farmer	No	No	100	130/80	36.8	20	162	66	12.1	130	22	0.8
51	Basavaraj	11404	32	M	Farmer	No	No	84	122/80	36.6	18	160	65	12.2	92	16	0.9
52	Janaki	12992	48	F	Housewife	No	No	106	110/70	38.2	18	156	60	11.7	91	18	1
53	Malakari	10358	54	M	Farmer	No	No	80	122/72	36.8	20	162	68	12.1	126	33	0.99
54	Isvarappa	9161	80	M	Farmer	No	No	110	106/60	37.8	22	158	54	9.3	192	50	1.5

Sl no	Name	Ip No	Age (years)	Sex	Occupation	Smoker	Referred from other hospital	Pulse Rate(beats/min)	Blood Pressure(mm of Hg)	Temperature (degree celcius)	Respiratory Rate(Cycles/min)	Hieght(Centi meter)	Weight(kilo gram)	Heamoglobin(in gm/dl)	Random blood sugar(mg/dl)	Blood Urea (mg/dl)	Serum Creatinine (mg/dl)
55	Lalsab	3998	70	M	Farmer	No	No	96	130/80	36.2	20	160	56	14.9	104	34	1
56	Iranna	2520	45	M	Farmer	No	No	100	130/80	36.6	20	162	64	11.1	85	26	1
57	Keerthi	5151	16	F	Student	No	No	98	100/70	36.8	20	154	61	7.7	72	21	0.9
58	Savita	14896	28	F	Housewife	No	No	102	116/70	36.4	18	156	54	11.5	134	27	0.8
59	Prabhugouda B	22226	32	M	Farmer	Yes	No	90	120/82	36.6	22	156	62	12.2	84	30	1.2
60	Basavaraj	22745	16	M	Student	No	No	60	100/64	36.4	22	154	50	12.7	77	19	0.9
61	Prashant T	22728	17	M	Student	No	No	72	110/70	37.4	20	152	52	11	74	23	1
62	Yallaling	23100	19	M	Student	No	No	84	122/70	37.2	22	158	58	14.6	108	28	1.2
63	Suresh Rajput	4005	36	M	Farmer	No	No	90	100/68	36.4	20	161	57	13	92	16	1.1
64	Shanta Wadekar	10836	58	F	Housewife	No	No	98	106/68	37.2	22	158	62	12.2	113	16	0.9
65	Nazirsaab Jamakhandi	15938	25	M	Student	No	No	98	116/70	37.4	22	166	72	10.8	79	22	0.9

Sl no	Name	Ip No	Age (years)	Sex	Occupation	Smoker	Referred from other hospital	Pulse Rate(beats/min)	Blood Pressure(mm of Hg)	Temperature (degree celcius)	Respiratory Rate(Cycles/min)	Hieght(Centi meter)	Weight(kilo gram)	Heamoglobin(in gm/dl)	Random blood sugar(mg/dl)	Blood Urea (mg/dl)	Serum Creatinine (mg/dl)
66	Bhimaraya Makanapur	13358	28	M	Farmer	No	No	96	108/70	36.2	20	159	61	12.3	106	17	1
67	Gourabai Nekar	16918	35	F	Housewife	No	No	92	108/72	36.4	20	160	56	11.2	78	16	1
68	Channappa Banni	16903	48	M	Farmer	No	No	88	106/68	36.2	24	163	64	14	109	26	1.4
69	Bouramma Bommmatagi	2181	20	F	Hoesewife	No	No	86	110/70	36.8	22	154	50	11.9	118	21	0.7
70	Pradeep Hiremath	18741	18	M	Student	No	No	94	130/80	37.8	24	156	52	14.3	70	23	0.9
71	Annasaab Gote	18852	28	M	Draama Actor	Yes	No	96	110/70	36.8	20	160	64	10.1	88	120	3.4
72	Bhagyavanti Mathapti	9817	72	f	Housewife	No	No	104	100/70	37.2	24	154	42	8.8	136	97	3.5
73	Babu tadavalga	18992	60	M	Farmer	No	No	96	110/70	36.2	20	163	68	12	125	35	1.2

Sl no	Name	Ip No	Age (years)	Sex	Occupation	Smoker	Referred from other hospital	Pulse Rate(beats/min)	Blood Pressure(mm of Hg)	Temperature (degree celcius)	Respiratory Rate(Cycles/min)	Hieght(Centi meter)	Weight(kilo gram)	Heamoglobin(in gm/dl)	Random blood sugar(mg/dl)	Blood Urea (mg/dl)	Serum Creatinine (mg/dl)
74	Ramesh Pirga	6370	30	M	Farmer	No	No	98	110/70	36.4	22	165	58	13.2	113	21	0.9
75	Shantappa Biradar	11920	50	M	Farmer	No	No	94	104/68	36.2	20	165	66	14.1	106	16	0.8
76	Omkar Pujari	17251	78	M	Farmer	No	No	94	124/78	36	18	159	52	12.8	153	38	1.4
77	Ashok lamani	17788	24	M	Farmer	No	No	84	110/70	36.2	18	162	61	10.8	80	23	0.9

Total Protein(gram/dl)	Serum Albumin(gram/dl)	K/c/o DM	Diagnosis	Procedure	Duration of Procedure(in minutes)	Post Operative complication	Duration of length of staying in hospital (in days)	Complications	Outcome
5.1	2.6	No	Peritonitis DU perforation	DU perforation Closure	120	yes	14 days	SSI	
5.9	3.7	No	Peritonitis DU perforation	DU perforation Closure	120	NO	13		
		No	Peritonitis DU perforation		140	No	10		
4.1	1.5	No	Ileal Perforation	Resection anastomosis ileum	135	yes	6	MODS	D
		No	Intestinal Obstruction	Rection Anastomosis Jejunum	120	yes	19	SSI	
		No	Peritonitis DU perforation	Closure of perforation	120	yes	18	SSI	
		No	gangrenous Appendicitis	Open Appendectomy	75	NO	13		
4.5	2	No	Pre-pyloric perforation	Closure of perforation	120	yes	4	MODS	D
		No	Peritonitis DU perforation	Closure of perforation	120	yes	15	SSI	
		No	Ileal Perforation	Resection anastomosis ileum	130	yes	19	SSI	

Total Protein(gram/dl)	Serum Albumin(gram/dl)	K/c/o DM	Diagnosis	Procedure	Duration of Procedure(in minutes)	Post Operative complication	Duration of length of staying in hospital (in days)	Complications	Outcome
		No	Ileal Perforation	Resection anastomosis ileum	140	yes	1	MI	D
		No	Peritonitis DU perforation	Closure of perforation	120	NO	13		
		No	Ileal Perforation	Resection anastomosis ileum	120	yes	14	SSI	
		No	Peritonitis DU perforation	Closure of perforation	120	NO	11		
4.3	1.9	No	Peritonitis DU perforation	Closure of perforation	140	yes	13	SSI	
		No	Obstructed HERNIA	Herniorrhaphy with orchidectomy	120	NO	12		
		No	ACUTE APPENDICITIS	Open Appendectomy	80	NO	4		
3.4	1.6	No	Intestinal Obstruction	Adhesiolysis	140	yes	10		
4.5	1.8	No	Peritonitis DU perforation	Closure of perforation	120	yes	15	ARDS	D
		No	ACUTE APPENDICITIS	Open Appendectomy	60	NO	6		

Total Protein(gram/dl)	Serum Albumin(gram/dl)	K/c/o DM	Diagnosis	Procedure	Duration of Procedure(in minutes)	Post Operative complication	Duration of length of staying in hospital (in days)	Complications	Outcome
		No	Peritonitis DU perforation	Closure of perforation	75	NO	11		
		No	Peritonitis DU perforation	Closure of perforation	100	NO	6		
6.8	3.7	No	Peritonitis DU perforation	Closure of perforation	90	NO	11		
		No	Intestinal Obstruction	Adhesiolysis	120	NO	10		
		No	ACUTE APPENDICITIS	Open Appendectomy	60	NO	8		
		No	ACUTE APPENDICITIS	Open Appendectomy	50	NO	5		
		No	Peritonitis DU perforation	Closure of perforation	140	NO	10		
		No	Ileal Perforation	Closure of Ileal Perforation	120	NO	12		
		No	ACUTE APPENDICITIS	Open Appendectomy	90	NO	14		
		No	Rt Obstructed hernia	Herniorrhaphy with orchidectomy	70	NO	9		
6.3	3.1	No	Peritonitis DU perforation	Closure DU Perforation	90	NO	12		

Total Protein(gram/dl)	Serum Albumin(gram/dl)	K/c/o DM	Diagnosis	Procedure	Duration of Procedure(in minutes)	Post Operative complication	Duration of length of staying in hospital (in days)	Complications	Outcome
		No	Pre-pyloric perforation	Closure of perforation	120	NO	11		
		No	Pre-pyloric perforation	Closure of perforation	140	yes	15	SSI	
4.8	2.4	No	Peritonitis DU perforation	Closure of DU Perforation	60	yes	15	SSI & P	
4.1	1.9	No	Appendicular Abscess	Open Appendectomy	90	yes	22	SSI	
		No	Antral Perforation	Closure of perforation	100	NO	12		
4.4	2.2	No	Peritonitis DU perforation	Closure of DU Perforation	90	yes	34	SSI	
5.5	3	No	Ileal Perforation	Closure of perforation	120	yes	3	ARF	D
5.1	2.4	No	Pre-pyloric perforation	Closure of perforation	45	yes	12	SSI	
4.6	3	No	Acute intestinal obstruction	Adhesiolysis	110	NO	9		
6.2	3.2	No	Peritonitis DU perforation	Closure of perforation	60	NO	10		
6.2	3.2	No	Pre-pyloric perforation	Closure of perforation	60	NO	12		
6.9	3.9	No	ACUTE APPENDICITIS	Open Appendectomy	45	yes	9	SSI	

Total Protein(gram/dl)	Serum Albumin(gram/dl)	K/c/o DM	Diagnosis	Procedure	Duration of Procedure(in minutes)	Post Operative complication	Duration of length of staying in hospital (in days)	Complications	Outcome
4.8	2.9	No	ACUTE APPENDICITIS	Open Appendectomy	90	NO	14		
5.5	3	No	Pre-pyloric perforation	Closure	90	NO	10		
		No	ACUTE APPENDICITIS	Open Appendectomy	45	NO	9		
		No	ACUTE APPENDICITIS	Open Appendectomy	45	NO	6		
		No	ACUTE APPENDICITIS	Open Appendectomy	45	NO	8		
		No	ACUTE APPENDICITIS	Open Appendectomy	45	NO	6		
5	2.2	No	Peritonitis DU perforation	Closure of DU Perforation	90	yes	15	SSI	
		No	ACUTE APPENDICITIS	Open Appendectomy	45	NO	7		
6.2	3.2	No	ACUTE APPENDICITIS	Open Appendectomy	40	NO	8		
		No	Rt Obstructed hernia	Herniorrhaphy with orchiodectomy	120	NO	15		
5.8	3	No	Acute Intestinal Obstruction	Rection Of ileum	110	yes	13	SSI	

Total Protein(gram/dl)	Serum Albumin(gram/dl)	K/c/o DM	Diagnosis	Procedure	Duration of Procedure(in minutes)	Post Operative complication	Duration of length of staying in hospital (in days)	Complications	Outcome
4.6	2.8	No	Jejunal Stricture	Resection anastomosis ileum	120	yes	17	SSI	
5.1	2.8	No	Peritonitis DU perforation	Closure of DU Perforation	70	yes	10	SSI	
		No	ACUTE APPENDICITIS	Open Appendectomy	45	NO	8		
4.6	2.9	No	Intestinal Obstruction	Adhesiolysis	120	NO	8		
		No	ACUTE APPENDICITIS	Open Appendectomy	45	no	11		
6.8	3.6	No	ACUTE APPENDICITIS	Open Appendectomy	50	no	9		
6.7	3.2	No	ACUTE APPENDICITIS	Open Appendectomy	70	no	8		
6.2	3.4	No	ACUTE APPENDICITIS	Open Appendectomy	60	no	8		
		No	ACUTE APPENDICITIS	Open Appendectomy	45	No	7		
		No	ACUTE APPENDICITIS	Open Appendectomy	45	nO	11		
		No	ACUTE APPENDICITIS	Open Appendectomy	45	No	8		

Total Protein(gram/dl)	Serum Albumin(gram/dl)	K/c/o DM	Diagnosis	Procedure	Duration of Procedure(in minutes)	Post Operative complication	Duration of length of staying in hospital (in days)	Complications	Outcome
6.1	3.3	No	ACUTE APPENDICITIS	Open Appendectomy	50	nO	9		
		No	ACUTE APPENDICITIS	Open Appendectomy	45	No	7		
6.2	3.4	No	Peritonitis DU perforation	DU perforation Closure	120	No	10		
		No	ACUTE APPENDICITIS	Explaratory Laparotomy with appendectomy	120	No	10		
		No	ACUTE APPENDICITIS	Open Appendectomy	45	nO	5		
6.3	3.7	No	Acute intestinal obstruction	Resection anastomosis ileum	120	Yes	13	SSI	
4.5	2.1	No	Peritonitis secondary to gangrene of Jejunum	Rection Anastomosis Jejunum	120	yes	14	SSI & RS	
		No	Peritonitis secondary to DU perforation	DU perforation Closure	100	No	7		

Total Protein(gram/dl)	Serum Albumin(gram/dl)	K/c/o DM	Diagnosis	Procedure	Duration of Procedure(in minutes)	Post Operative complication	Duration of length of staying in hospital (in days)	Complications	Outcome
		No	ACUTE APPENDICITIS	Open Appendectomy	45	no	9		
		No	ACUTE APPENDICITIS	Open Appendectomy	50	no	8		
5.6	3	No	Acute intestinal obstruction	Resection anastomosis ileum	140	yes	21	SSI	
		No	ACUTE APPENDICITIS	Open Appendectomy	45	NO	9		