
**"HYPOCHOLESTEROLEMIA (<151mg/dL) &
HYPOALBUMINEMIA (3.5g/dL) AS PREDICTORS OF
SURGICAL SITE INFECTIONS IN ELECTIVE GENERAL
SURGICAL PROCEDURES: A PROSPECTIVE
OBSERVATIONAL STUDY FOR PERIOD OF 1 YEAR AT
KAHER'S DR. PRABHAKAR KORE HOSPITAL AND MEDICAL
RESEARCH CENTRE, BELAGAVI"**

**BY
REG NO. BH0120014**

Dissertation

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**MASTER OF SURGERY (M.S.)
in
GENERAL SURGERY**

**JAWAHARLAL NEHRU MEDICAL COLLEGE
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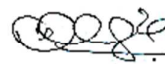
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ABSTRACT

Background: Since the beginning of the term "Surgery," Surgical site infections have been a fundamental barrier to the practice of surgery and continue to have an impact today on the outcomes and all the aspects of Surgical practice in 21st Century.

Objectives: This Study focuses on the role of Serum Albumin (Hypoalbuminemia <3.5g/dl) and Serum Total Cholesterol (Hypocholesterolemia <151mg/dl) on incidence of SSI (Surgical Site Infection) in elective general surgeries.

Methodology: This Study was conducted in department of General Surgery, in KLE's Dr. Prabhakar Kore Hospital and Medical Research Centre. In this Study 77 patients were included who were >12 years, all genders, and underwent elective general surgery procedures for the period - January 2021 to December 2021. Patient data recorded post operatively for SSI and analysis was done with Serum Albumin and Serum Total Cholesterol.

Results: Hypocholesterolemia(<151mg/dl) and Hypoalbuminemia(<3.5g/dl) were found in association with SSI in our study. Majority infections were treated for the same.

Conclusion: Surgical Site Infections hampers the patient care and is one of the significant factor for morbidity and mortality among the patients. Hypocholesterolemia and Hypoalbuminemia has significant association with SSI and can be used as screening tools for the same

Keywords: Surgical Site Infections, Serum Total Cholesterol, Serum Albumin, Elective Surgeries.

LIST OF ABBREVIATIONS

SSI	Surgical Site Infection
HRS	Hours
FGD 2	Fibroblast Growth Factor-2
ECM	Extracellular matrix
PDGF	Platelet-derived growth factor
TGF	Transforming Growth Factor
EGF	Epidermal Growth Factor
IL-1	Interleukin-1
TNF	Tumour Necrosis Factor
KGF	Keratinocyte Growth Factor
IGF-1	Insulin like Growth Factor-1
UV	Ultraviolet
DOCA	Deoxycorticosterone acetate
-ve	Negative
PIC	Picture
+ve	Positive

SIRS	Systemic Inflammatory response Syndrome.
MODS	Multiple Organ Dysfunction Syndrome
FNAC	Fine Needle Aspiration Cytology
CT scan	Computed Tomography scan
CDC	Centers for Disease Control and Prevention
PBP- 2a	penicillin-binding protein 2a
MRSA	Methicillin Resistant Staphylococcus aureus
CECT	Contrast Enhanced Computed Tomography
OPD	Out Patient Department
NSAID	Non-Steroidal Anti-Inflammatory Drugs

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INTRODUCTION

A Surgical site infection (SSI) can occur after any Surgical Procedure, Sometimes, superficial skin infections (SSI) affect simply the skin ; other times, they affect organs, implanted material, or structures beneath the surface within 30days of the procedure or within 1 year if a prosthesis is implanted ⁽¹⁾ One of the most frequent surgical complications is SSI, which is the 2nd most prevalent form of adverse events happening in a hospitalised patient following surgery. It accounts for **15-20%** of all nosocomial infections. SSI contribute to a greater financial burden on health care systems, including longer postoperative hospital stays and higher costs.⁽²⁾ An additional **91613** re admissions for the treatment of SSI has been evaluated in US hospitals.

WHO Programme: Clean care is Safer care shows that Surgical site infection are the most surveyed and frequent type of **HAI** (Hospital Acquired Infections) in low and middle income countries and affects upto **1/3rd Patients**.

SSI is reported to be one of the major causes of morbidity and mortality among the hospitalized patients.

Several elements contribute to this. In order to predict post-operative SSI, factors such as surgical wound type, blood transfusion, ostomy construction, operation type, usage of drainage, sex, and surgeons were crucial.⁽³⁾

Since cholesterol is the precursor to five major classes of steroid hormones, its function in the human body cannot be disregarded. The transport forms of cholesterol, Additionally serving as carriers for poisons, drugs, fat-soluble vitamins, and antioxidants are lipoproteins. Cholesterol influences gluconeogenesis and immunological function. In the gonads and adrenal glands, these hormones are mostly produced from cholesterol in response to trophic hormones that are particular to

different tissues. These steroidogenic tissues are unique in that they require cholesterol for the biogenesis of membranes, the maintenance of membrane fluidity, and cell signalling in addition to serving as a precursor to the generation of steroid hormones and a crucial component of cell membranes.⁽⁴⁾

Malnutrition is a significant secondary cause of hypocholesterolemia and is present in the majority of patients visiting India, in addition to the various causes of hypocholesterolemia.

Preoperative (patient-related), perioperative (procedure-related), and postoperative (procedure-related) categories are typically used to classify risk factors for the development of SSI.

A few examples of procedure-related risk factors are the type of wound, the organ being operated on, and the length of the procedure. Wound care, postoperative blood transfusions, and hyperglycemia in patients with and without diabetes are examples of postoperative risk factors⁽⁵⁾

Hypoalbuminemia has been identified as an independent risk factor for Infections. Hypocholesterolemia has been evaluated as a valid predictor of surgical outcome after GI surgeries. Thus warrant to study the impact of Hypocholesterolemia and Hypoalbuminemia on SSI in other procedures(elective).

AIMS & OBJECTIVES

The Objectives of the study are:

1. To Assess Hypocholesterolemia(<151mg/dl) and Hypoalbuminemia (<3.5g/dl) as Predictors of SSI involving Elective general Surgical Procedures.
2. Study Serum Cholesterol and Serum Albumin as Screening indicators of SSI.

REVIEW OF LITERATURE

Historical Background

The development of germ theory and antisepsis contributed to the body of knowledge that gave rise to the modern field of surgical infectious disease. An essential component of the surgeon's practise has been the presence of microorganisms in host tissue or the bloodstream. However, up until recently, infections connected to surgical wounds were more common than uncommon.

Ignaz Semmelweis discovered in **1846** that the teaching ward's puerperal fever death rate was approximately three times greater than the delivery ward's. He noticed that his friend's pathology abnormalities matched those of women who died from this postpartum condition. and advised washing hands with chlorine.⁽⁸⁾

According to **Louis Pasteur's** germ theory, particular bacteria that are foreign to the diseased organism are what cause communicable diseases.⁽⁸⁾

Twelve patients with compound fractures were treated with carbolic acid-soaked dressings by **Joseph Lister** in **1867**; ten of them recovered without the need for amputation.⁽⁸⁾

Robert Koch created his four postulates between **1878** and **1880** to clarify how particular diseases are related to particular species.⁽⁹⁾

Appendectomy was the first intra-abdominal procedure to treat infection using "source control" developed by **Charles McBurney**.⁽¹⁰⁾

William Osler - 1904 - Aside from a few rare cases, the patient appears to pass away as a result of the body's reaction to the infection rather than the infection itself.⁽⁸⁾

Penicillin notatum and sulfonamide antibiotics, developed in **1928** by **Sir Alexander Fleming**, were the first effective antimicrobials.⁽⁸⁾

Penicillin was first used therapeutically by **Howard Florey** in **1940**.

William Altemeier and **Frank Meleney** discovered that anaerobic and aerobic host bacteria might collaborate to create severe intra abdominal and soft tissue infections.

One of the biggest issues in contemporary critical care and surgical infectious disease is preventing and managing the process of multiple organ dysfunction after infection.^(11,12)

Classification of Surgical wound :⁽¹³⁾

- 1. Clean:** A surgical wound that has not been infected, has little inflammation, and the colonised visceral organs are not accessible (2% rate).
- 2.Clean - Contaminated:** Organs that have been colonised are inserted into controlled environments with a 30% rate of atypical contamination.
- 3. Contaminated:** Significant gastrointestinal leakage or sterile method interruptions, acute wounds with nonpurulent inflammation, or both. At the surgical site, more contamination has happened at a 60% rate.
- 4. Dirty:** Traumatic wounds with lingering devitalized tissue, tissue infections, or burst viscera have a >60% rate.

WOUND HEALING

Wound healing is a continuation of intricately interrelated physiological processes at the molecular level. divided into three phases: remodelling, proliferation, and inflammation. ⁽¹⁴⁾

INFLAMMATORY PHASE/ HEMOSTASIS:

Platelets can access the collagen in the sub endothelial after an acute tissue injury. Vasodilatation and increased vascular permeability follow vasoconstriction and happen in that order. Hemostasis first occurs. Serotonin and other cytokines are released when platelets degranulate at the site of damage (1st to arrive).⁽¹⁵⁾

Mast cell-produced histamine and serotonin cause the endothelium to temporarily separate. The monocytes and neutrophils arrive at the site of the injury. Platelet-released cytokines and chemotactic cytokines from macrophages enable this movement. First to arrive are neutrophils, but they vanish within 24 hours. The majority of the cells after 24 to 48 hours are macrophages.⁽¹⁵⁾

PROLIFERATIVE PHASE

The proliferation of the cells that have reached the damage site characterises this phase. Endothelial cells and fibroblasts are examples of cells. The development of granulation tissue is a part of this phase. FGF-2, a cytokine, is concerned.⁽¹⁶⁾

In 48 hours, epithelialization (keratinocytes moving to resurface the wound) takes place, and collagen is developed.

Additionally, angiogenesis (the development of new blood vessels) takes place.⁽¹⁷⁾

FIBROPLASIA: Dormant Fibroblasts are sparse and chemoattracted to inflammatory site - create ECM components.⁽¹⁵⁾

ECM (Extra Cellular Matrix): Acts as Supportive framework for tissues.

PHASE OF MATURATION

Throughout the maturation phase, collagen is the most noticeable property. The thick bundle of collagen fibres that makes up the scar makes up the majority of it. In secondary intention wound healing, wound contraction is more valued. Cells called myofibroblasts are in charge of this contraction. In an effort to take on the shape it had before the injury, the wound is continuously rebuilt. The wound still has 70-80% of its initial tensile strength 3–4 months after surgery.⁽¹⁶⁾ Figure. ⁽¹⁸⁾

SECONDARY INTENTION

The reparative process is more difficult when there has been a greater loss of cells or when there have been surface wounds that have left significant deformities. To finish the repair, granulation tissue protrudes inward from the edges. An unsightly scar forms as these wounds heal. Healing through secondary intention is the term used to describe this. In various ways, secondary healing is different from main healing, such as:

- The inflammatory response is stronger.
- The formation of granulation tissue is much greater.
- Contraction of the wound is substantially more.⁽¹⁹⁾

FACTORS AFFECTING WOUND HEALING

Growth factors

Released from damage wound site plays an important role by mitigating the cells and proliferation of cells and help in collagen synthesis.⁽²⁰⁾

Factors :

- a. PDGF
- b. TGF
- c. EGF
- d. IL-1 & TNF alpha
- e. KGF 1, KGF 2
- f. IGF - 1

FACTORS INFLUENCING WOUND HEALING:

1. LOCAL FACTORS

1. Oxygenation: Stasis, vasculitis, smoking, ischemia, anaemia, and problems with the cardiopulmonary system can all have an impact on oxygenation.⁽²¹⁾
2. In order to avoid tissue destruction during surgery, it is crucial to maintain adequate hemostasis, eliminate dead space, and avoid utilising ligatures that could strangulate the patient.
3. Intraabdominal sepsis may result from peritonitis or an intestinal leak.
4. Local wound dehiscence may result from an infection or a hematoma that has gathered.
5. While other irradiations slow wound healing and prevent its contraction, UV radiation speeds it up.
6. A good blood supply to the wound, together with dependable suture methods and materials, is crucial.⁽²²⁾

2. GENERAL FACTORS

1. Use of steroids (glucocorticoids) prevents the growth of new blood vessels, prolongs the healing process, and stops the production of collagen. The use of DOCA and anabolic steroids helps with wound healing.⁽²⁰⁾
2. Old age increases the risk of wound failure due to malnutrition, changes in metabolism, a decrease in skin elasticity, loss of muscular tone, and altered metabolism.
3. Wound dehiscence is a result of protein and vitamin deficiencies, such as a lack of methionine cysteine in the former, which prevents collagen cross-linking, and vitamin

C in the latter, which is critical for helix formation through intracellular hydroxylation. ⁽²¹⁾

4. Wound healing is inhibited by chronic illnesses, carcinomas, and dehydration that causes hypovolemia. ⁽²²⁾

5. Obesity with increased adipose tissue over the area of the wound prevents accurate approximation, reduces blood flow to the area, and widens the wound as suitable culture media for growth.

30-day Surveillance			
Category	Operative Procedure	Category	Operative Procedure
AAA	Abdominal aortic aneurysm repair	LAM	Laminectomy
AMP	Limb amputation	LTP	Liver transplant
APPY	Appendix surgery	NECK	Neck surgery
AVSD	Shunt for dialysis	NEPH	Kidney surgery
BILI	Bile duct, liver or pancreatic surgery	OVRY	Ovarian surgery
CEA	Carotid endarterectomy	PRST	Prostate surgery
CHOL	Gallbladder surgery	REC	Rectal surgery
COLO	Colon surgery	SB	Small bowel surgery
CSEC	Cesarean section	SPLE	Spleen surgery
GAST	Gastric surgery	THOR	Thoracic surgery
HTP	Heart transplant	THYR	Thyroid and/or parathyroid surgery
HYST	Abdominal hysterectomy	VHYS	Vaginal hysterectomy
KTP	Kidney transplant	XLAP	Exploratory laparotomy

90-day Surveillance	
Category	Operative Procedure
BRST	Breast surgery
CARD	Cardiac surgery
CBGB	Coronary artery bypass graft with both chest and donor site incisions
CBGC	Coronary artery bypass graft with chest incision only
CRAN	Craniotomy
FUSN	Spinal fusion
FX	Open reduction of fracture
HER	Herniorrhaphy
HPRO	Hip prosthesis
KPRO	Knee prosthesis
PACE	Pacemaker surgery
PVBY	Peripheral vascular bypass surgery
VSHN	Ventricular shunt

Figure 1: Surveillance

**RISK FACTORS FOR SSI CAN BE DIVIDED ACCORDING TO THE
FOLLOWING :⁽²³⁾**

- 1) Patient related
- 2) Environmental related
- 3) Type of abdominal surgery
- 4) Type of pathogen

PATIENT FACTORS

- 1) Malnutrition
- 2) Obesity
- 3) Old age
- 4) Diabetes mellitus
- 5) Hypercholesterolemia
- 6) Chronic inflammation
- 7) Postoperative anaemia
- 8) Recent surgery in the past
- 9) Immunosuppression

ENVIRONMENTAL FACTORS INCLUDE ⁽²³⁻²⁵⁾

- 1) Inadequate use of antisepsis
- 2) Insufficient disinfectant and sterilization
- 3) Decreased ventilation leading to increase moisture and humidity
- 4) Existence of foreign body
- 5) Contaminated medication.

TREATMENT FACTORS INCLUDE ⁽²⁶⁾

- 1) Increase preoperative hospitalization
- 2) Under coverage of antibiotics
- 3) In case of an emergency procedure
- 4) Postoperative prolonged hospital stay
- 5) In presence of prolonged postoperative drains.

TYPE OF PATHOGENS ⁽²⁷⁾

1) BACTERIA

Before the development of the human race, bacteria have existed on earth for millions of years. Combating these infections is a crucial emerging need of the hour in order to avoid sepsis.

Gram staining is crucial for selecting the necessary antibiotic.

Based on the staining of the bacteria's cell wall, the gramme is either -ve or +ve.

A) Gram negative is called if red

B) They are known as gramme positives if they are blue.

The following are examples of gram-negative bacteria: *E. coli* and *klebsiella pneumoniae*. *Pseudomonas aeruginosa*, *proteus vulgaris*, and several *Enterobacter* species. The different Gram-Positive organisms include skin commensals, which are those that are found on the skin. These bacteria turn pathogenic when the skin's integrity is compromised by any type of cut or incision. These include, *Staphylococcus aureus*, *staphylococcus epidermidis* and *streptococcus pyogenes*.^(28,29) Some GI commensals include, *Enterococci faecalis* and *faecium*, they can cause nosocomial infections.

ANAEROBIC ORGANISMS

These organisms mostly colonise the rectum and oropharynx and lack catalase. These organisms reproduce by using the air in the atmosphere. These include *C. bacteroides*, *C. perfringes*, *C. difficile*, and *C. tetani*. Few *Mycobacterium* species and *Nocardia* are among the other significant bacteria. These bacilli grow slowly and are acid fast. They take several weeks to months to fully develop.⁽³⁰⁾

VIRUSES⁽³¹⁾

Hepatitis B, Herpes simplex, herpes zoster, Epstein Barr virus, hepatitis C and cytomegalovirus.

FUNGI OF IMPORTANCE

They are identified by KOH mount, Giemsa and methamine silver. The various forms include yeast, budding forms with numerous branches with septations. Certain fungi can cause SSI in immunocompromised individuals. These include, *C. albicans*, *mucor*, *Aspergillus fumigatus* and *Niger*, *Rhizopus*, *Cryptococcus neoformans*.⁽³⁰⁾

SURGICAL SITE INFECTION

DEFINITION ⁽³²⁾

Infection that develops subsequently after surgery, in the part of the body where surgical procedure was done.⁽³³⁾

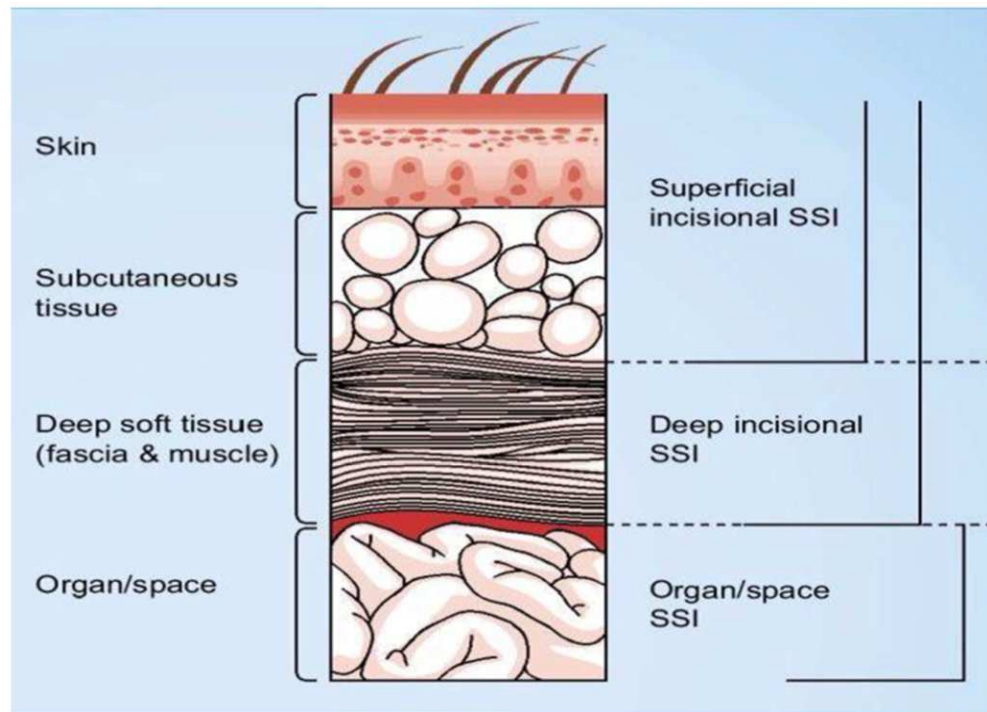


Figure 2: Classification of Surgical Site Infection

Classification :⁽³²⁾

CRITERIA :

SUPERFICIAL SSI:

Occurs within 30 days Post operative. Involving skin or subcutaneous tissue.

And >1 of the following :

- 1. Purulent discharge.**
- 2. Isolation of an organism microbiologically.**

3. Superficial incision that is deliberately opened and at least 1 sign of inflammation is present.
4. Surgeon or physician declares it to be a SSI

TABLE 5.1 Southampton wound grading system.

Grade	Appearance
0	Normal healing
I	Normal healing with mild bruising or erythema
Ia	Some bruising
Ib	Considerable bruising
Ic	Mild erythema
II	Erythema plus other signs of inflammation
IIa	At one point
IIb	Around sutures
IIc	Along wound
IId	Around wound
III	Clear or haemoserous discharge
IIIa	At one point only (≤ 2 cm)
IIIb	Along wound (> 2 cm)
IIIc	Large volume
IIId	Prolonged (> 3 days)
Major complication	
IV	Pus
IVa	At one point only (≤ 2 cm)
IVb	Along wound (> 2 cm)
V	Deep or severe wound infection with or without tissue breakdown; haematoma requiring aspiration

Figure 3: Southampton Grade

DEEP INCISIONAL SURGICAL SITE INFECTION :⁽³²⁾

Occurs within 30 day or 90 day post operatively.

And

Involving muscle, fascial layers.

And

Has one of the following:

- a) Pus discharge from deep incision.
- b) Spontaneous dehiscence of a deep incision or deliberate separation or aspiration by surgeon

And

Organisms are isolated from the depth of tissue

And

Presence of at least one of the signs and symptoms-fever, local pain or pain on examination.

- c) Abscess / infection in deep incision detected by pathological or radiological examination.

ORGAN SPACE SSI : ⁽³²⁾

Involves tissues deeper to fascial/muscle layers manipulated during surgery.

And

One of the following :

- a) Pus discharge from a drain placed into the space or organ
- b) micro-organisms identified by microbiological tests.
- c) abscess / infection in organ or deep located space in abdominal cavity detected by pathological tests or radiological investigations.

And

Has at least a criterion fulfilled for organ space infections.

Classification as per severity:⁽³⁴⁾

Minor : Pus/Discharge without deep tissue involvement.

Major : Pus/Discharge with partial or total dehiscence of the deep fascial layers of the wound or if systemic illness present.

Scoring Systems :

Southampton Wound Grading System

Asepsis Wound Score System

TABLE 5.2 The ASEPSIS wound score.	
Criterion	Points
Additional treatment	0
Antibiotics for wound infection	10
Drainage of pus under local anaesthesia	5
Debridement of wound under general anaesthesia	10
Serous discharge^a	Daily 0–5
Erythema^a	Daily 0–5
Purulent exudate^a	Daily 0–10
Separation of deep tissues^a	Daily 0–10
Isolation of bacteria from wound	10
Stay as inpatient prolonged over 14 days as result of wound infection	5
^a Scored for 5 of the first 7 days only, the remainder being scored if present in the first 2 months.	

Figure 4: ASEPSIS Score

ROLE OF CHOLESTEROL AND ALBUMIN :

Since the time of Hippocrates, doctors have recognized the significance of nutrition in the dynamic and complex biological process of wound healing.

Cholesterol is a sterol produced by animal cells with the primary purpose of preserving the integrity and fluidity of cell membranes as well as acting as a precursor for the production of chemicals essential for the survival of the organism. Gluconeogenesis and immunological function are affected, and its transport forms, or lipoproteins, act as carriers for poisons, medicines, and fat-soluble vitamins. One that appears significant has to do with how lipids and lipoproteins can bind to and neutralise the bacterial endotoxin LPS (lipopolysaccharide). Blood LPS binds to LPS binding protein, activating the CD14 receptor on the cell surface. This encourages cytokine release (IL1, TNF, IL6). LPS reduces cytokine release when it attaches to lipoproteins. It has been demonstrated that HDL and LPS binding protein compete for binding to LPS. In addition to being essential for cell signaling, membrane fluidity maintenance, and membrane biogenesis, cholesterol is the precursor to five main classes of steroid hormones. In response to tissue-specific trophic hormones, the adrenal gland and gonads primarily synthesise hormones from cholesterol.

An increase in serum lipid levels may lead to improved lipid delivery to immune system-activated cells and cells involved in tissue healing. It has been demonstrated that hypocholesterolemia makes animals more susceptible to endotoxic shock syndrome.⁽⁴⁰⁾(victor)

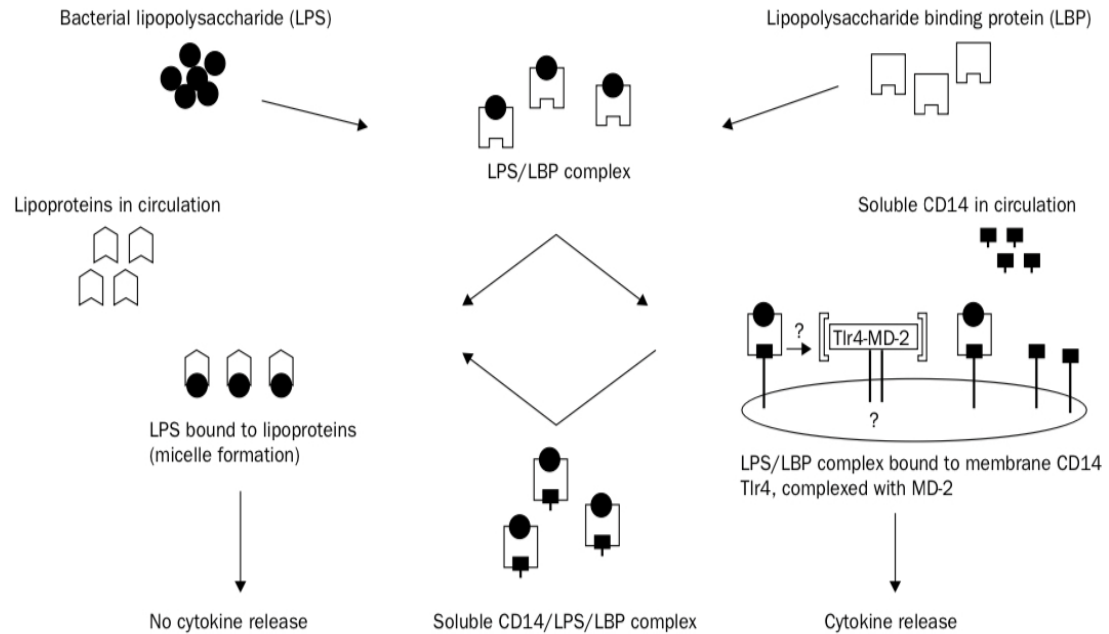


Figure 5: Interactions of endotoxins with serum lipoproteins

ALBUMIN

Serum Albumin is a liver-produced protein with a negative acute phase. In surgical wounds, hypoalbuminemia is linked to delayed tissue healing, reduced collagen production, and granuloma formation. When these elements come together, a wound may not heal as quickly, have more dead tissue, and be more susceptible to infection. The innate immune system is also known to be compromised by hypoalbuminemia, which is likewise known to inhibit macrophage activation and trigger macrophage death. Low serum albumin is also known to contribute to tissue edema by lowering plasma colloid osmotic pressure and allowing interstitial fluid to leak into the wound as a result. This liquid might serve as a medium for bacterial growth. Together, these elements may help the patient with hypoalbuminemia develop SSI.⁴⁰

OPERATIVE PROCEDURES:

Compared to elective operations, emergency operations had a noticeably greater rate of infection. 37 But are they the more soiled wounds?

In other studies, the infection rates following elective procedures were not noticeably greater. 38 supporting the idea that other factors contribute to surgical site infections. Patients with SSI had estimated hospitalisation costs that were considerably greater than patients who are not SSI (29 000 vs. 16 000 rupees, p 0.001). The authors came to the conclusion that in India, where it is estimated that 72% of healthcare expenses are out-of-pocket, the additional cost associated with SSI (treatment, loss of capacity to work) represents a sizable burden for patients and their families. The rise in hospital stays burdens a healthcare system already strapped for resources.³⁸

The incidence of SSI following a scheduled open cholecystectomy and a laparoscopic cholecystectomy that was modified to an open operation were same. Although only 28 surgeries were converted in that study, Bogdanic et al findings showed a greater SSI rate following laparoscopic to open conversion compared with open surgery. Although neither study included scheduled open operations, two studies found a considerably higher incidence of SSI following conversion from a laparoscopic to an open procedure as compared to a laparoscopic cholecystectomy. Our findings imply that the risk of SSI for simple individuals undergoing planned or converted open cholecystectomy is comparable in the modern period.³⁹ Acute cholecystitis or obstruction when compared to open (planned or converted) cholecystectomy, laparoscopic surgery is associated with a higher risk of operative site infection. Laparoscopy had a lower overall infection rate than open cholecystectomy, and its site-specific infection rate was also much lower.

The confirmed presence of the pathogens in the bile and the incidental rupture of the gallbladder during surgery were also independent of postoperative sepsis sequelae because these uncommon cases were sustained by bacteria other than those discovered in the bile. Only in patients experiencing episodes of colic within 30 days after operation and in individuals with diabetes does antibiotic prophylaxis seem reasonable in elective laparoscopic cholecystectomy. Antibiotic prophylaxis does not appear to have an impact on the frequency of postoperative infections in any other circumstances.⁴¹ Despite identical postoperative metabolic changes, the study shows significant disparities in cellular immune function in open and laparoscopic surgery. Instead of wound-related causes, this separation may be related to endotoxin exposure. This assumption would have substantial consequences in the development of preventative measures.⁴²

McBurney's first open Appendectomy was more than a century ago.

First Laparoscopic Appendectomy by Semm in 1983. Superiority of laparoscopic over open approach has been a topic of debate. Studies have been in favor or not in favor due to marginal or no clinical benefit and higher surgical costs. Trend towards laparoscopic appendectomy has been seen in the recent past.⁽⁴⁵⁾ Infection rate after laparoscopic appendectomy vs open appendectomy is significantly lower which is consistent with the other published studies.

There is increased utilization of laparoscopic appendectomy due to an increase preference of laparoscopic approach by surgeons.⁽⁴⁶⁾ The most important determinant of infection is degree of operative contamination of the wound.⁽⁴⁷⁾

Elective, non reconstructive breast operations (BCS : Breast conserving Surgery) - more common surgery performed and MRM(modified radical mastectomy) is often performed in conjunction with a reconstructive procedure.⁽⁴⁸⁾ The wound

classification for most breast surgeries is - clean. The reported rate of SSIs is greater than anticipated.⁽⁴⁸⁾ The dissection performed with a mastectomy creates a larger dead space and tissue flaps creating increased risk of Seroma formation, wound complications, and SSIs. Woman with implants were more likely to have an another SSI after secondary procedure.⁽⁴⁹⁾ Incidence is higher in women with bilateral compared unilateral mastectomy.⁽⁵⁰⁾

MANAGEMENT OF SSI(SURGICAL SITE INFECTIONS):

Preventative measures, thorough diagnosis, appropriate treatment, and follow-up are compromised by SSI management.

S. Aureus is one of the pathogens that causes SSI the most frequently.⁽⁵¹⁾ Decolonization might be a sound preventative approach. The employment of surveillance as a preventative measure is followed by wise data analysis.⁽⁵⁰⁾ The ability to target specific patients for preventative measures is made possible by procedure specific risk-adjusted rates. Antibiotic prophylaxis reduces the incidence of SSI. In elective procedures, intraoperative antibiotic prophylaxis has no discernible impact on SSI incidence.⁽⁵⁰⁾ In SSI, symptom-driven diagnosis might be challenging.

An acceptable care strategy for SSIs includes antibiotic medication, wound drainage, and wound debridement. The type and location of the infection determine the specific wound care.⁽⁵⁰⁾ Before beginning wide spectrum treatment when systemic symptoms are lacking, culture data should be gathered. It has been demonstrated that maintaining a wet atmosphere aids in wound healing.⁽⁵²⁾ Follow-up is required.

Antibiotic sensitivity testing⁽⁵³⁾

It is a laboratory test that evaluates how well antibiotic medication works to treat bacterial infections.

The use of antibiotics in clinical settings can be managed with the aid of antibiotic sensitivity testing. The testing will assist physicians in making pharmacological treatment decisions for infections.

Uses

1. Pathogen detection in bodily fluids and exudates.
2. Sensitivity tests are carried out to assess the level of sensitivity or resistance of patient-isolated bacteria to an appropriate spectrum of antimicrobial drugs.
3. measurement of a medication's content in blood or other bodily fluids for the purpose of controlling the dose schedule.

Antibiotic-impregnated chips are employed in the Kirby-Bauer procedure with disc diffusion.

Antibiotic discs are layered on top of the bacteria on agar after swabbing. The antibiotic diffuses into the agar at a diminishing quantity as one moves away from the disc.

There won't be any growth in the immediate vicinity of the disc if the antibiotic concentration kills or inhibits the organism; this region is known as the inhibition zone.

MATERIALS AND METHODS

Source of data were patients undergoing elective general surgery procedures admitted under department of general surgery at KLES Dr Prabhakar Kore Hospital and Medical Research Centre, Nehru Nagar, Belagavi 2021 between January to December.

Study design: Prospective Observational Study

Duration of Data Collection: 1 year

Duration for which the study was conducted: January 2021 - December 2021

Study Population: Patients undergoing elective General surgery procedures, admitted in department of general surgery.

Selection criteria

Inclusion criteria

Elective surgeries

laparoscopic Appendicectomy

open Appendicectomy

laparoscopic cholecystectomy

open cholecystectomy

breast surgeries

Informed consent taken/willing to give consent

Exclusion criteria

immunocompromised

Diabetics

Connective Tissue Disorder

Patients without follow up

Patients admitted <1day

Emergency Surgeries

Sample size = 77

Sample size calculation

The minimum sample size formula based

on two proportions is $n = Z^2 pq / d^2$ $Z_{\alpha} = 1.96$

p = prevalence

$q = 1 - p$ = allowed error

Taking allowed error $d = 10\%$ of $p = 24\%$ $n = 70.068 \sim 70$

So Minimum sample size is 70. Attrition = 1.1

SAMPLE SIZE = $70 \times 1.1 = 77$.

5. Sampling Procedure Cochran's formula for observational study is used that is $4pq/d^2$.

Here P is the prevalence of SSI which is 24% taking references.

If p is 24% than $q = 1 - p$ which came out to 70 and d is the allowed error for which I've taken $d = 10\%$

PPV(Positive Predictive Value) will be calculated using 2×2 table that is : $TP / (TP + FP) \times 100$.

NPV(Negative Predictive Value) will be calculated using 2×2 table that is: $TN / (TN + FN) \times 100$.

Instruments used for data collection

Data is collected using a data gathering tool. All patients who have surgery and meet the inclusion requirements are the study's subjects. After receiving written and informed consent, the patients are then enrolled in the study.

A pre-designed proforma includes notes on demographic information.

The patient's full medical history will be obtained.

Pre-op Assessment of Total Serum Cholesterol and Serum Albumin investigated.

Investigations

Serum Albumin

Serum Cholesterol

Liver function test

Culture and sensitivity

Outcome

Observation of the Surgical site infection will be done in terms of Signs of Inflammation, Discharge from the site, delayed healing, increased hospital stay.

Patients will be followed up for a period of 30 days. Scoring system used:

SSI Southampton Scoring

Statistical methods:

Frequency of all variables will be derived to check completeness of the data.

Magnitude will be expressed in %.

Relative risk will be calculated for parameters to test the association of SSI with predictor variables. RR >1 with 95% CI will be taken as significant.

P value <0.05 will be considered significant.

PPV (Positive predictive value)

NPV (Negative predictive value)

Univariate / Multivariate logistic regression.

Statistical Analysis:

Descriptive analysis was carried out by mean and standard deviation for quantitative variables, frequency, and proportion for categorical variables. Normally distributed quantitative variables were summarized by median and interquartile range (IQR). Data was also represented using appropriate diagrams like bar diagram, pie diagram.

Categorical outcomes were compared between study groups using Chi square test / Fisher's Exact test (If the overall sample size was < 20 or if the expected number in any one of the cells is < 5, Fisher's exact test was used).

Diagnostic test:

SSI was considered as gold standard. **Sr Cholesterol & Sr Albumin** were considered as screening test. The sensitivity, specificity, predictive values, and diagnostic accuracy of the screening test along with their 95% CI were presented.

P value < 0.05 was considered statistically significant. IBM SPSS version 22 was used for statistical analysis. ⁽¹⁾ IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp

RESULTS

A total of 77 subjects were included in the final analysis.

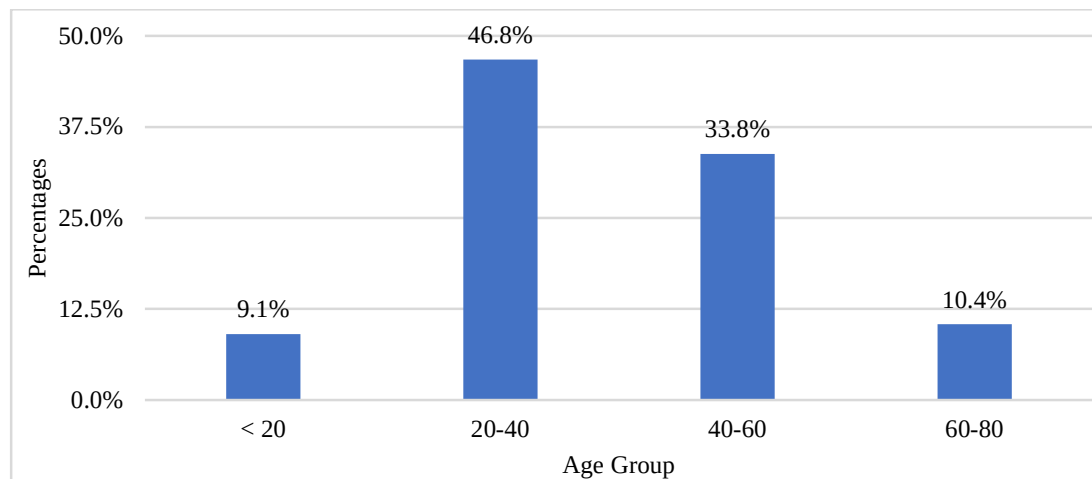
Table 1: AGE - Descriptive analysis of Age in the study population (N=77)

Parameter	Mean $\pm$ SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
Age	40.99 $\pm$ 14.71	39.0	14.0	77.0	37.7	44.3

Table 2: Descriptive analysis of Age group in the study population (N=77)

Age Group	Frequency	Percentages
< 20	7	9.09%
20-40	36	46.75%
40-60	26	33.77%
60-80	8	10.39%
Total	77	100%

Chart 1: Bar Chart of Age group in study population (N=77)



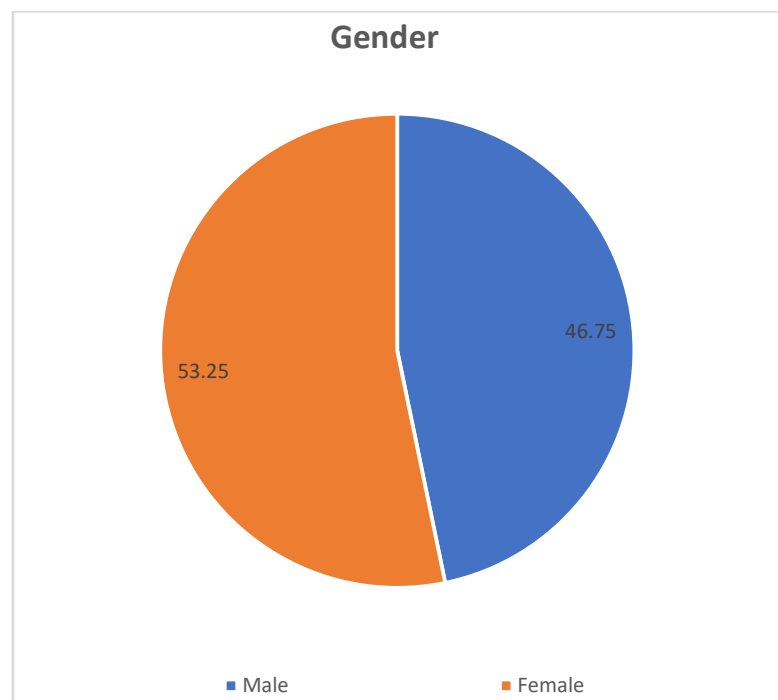
- Age group distribution - <20 = 9.1%, 20-40 = 46.8%, 40-60 = 33.8%, 60-80 = 10.4%.
- Majority of the Patients fell into 20-60 years of age group.

Table 3: GENDER - Descriptive analysis of Gender in the study population (N=77)

Gender	Frequency	Percentage
Male	36	46.75%
Female	41	53.25%

- Majority of the Patients were Females > Males = 53.25% vs 46.75%.

Chart 2: Pie chart of gender in the study population (N=77)



- Pie chart demonstrating the gender the distribution.

Table 4: COMORBIDITIES - Descriptive analysis of comorbidities in the study population (N=77)

Comorbidities	Frequency	Percentage
Hypertension		
Yes	15	19.48%
No	62	80.52%
TB		
Yes	2	2.60%
No	75	97.40%
Malignancy		
No	77	100.00%
Smoking		
Yes	3	3.90%
No	74	96.10%
Alcohol		
Yes	7	9.09%
No	70	90.91%
Obesity		
Yes	2	2.60%
No	75	97.40%
Connective Tissue Ds		
No	77	100.00%

- 15 patients had Hypertension/ 2 patients were old cases of TB/ 3 cases were smokers/ 7 were alcoholics / 2 patients had obesity.
- No connective tissue disorder/ malignancy.

Table 5: INVESTIGATIONS - Descriptive analysis of Sr Albumin & Sr Cholesterol in study population (N=77)

Parameter	Mean $\pm$ SD	Median	Minimum	Maximum	95% C.I	
					Lower	Upper
Sr Cholesterol	143.14 $\pm$ 30.3	152.0	77.0	212.0	136.3	150.0
Sr Albumin	3.77 $\pm$ 0.47	3.8	2.6	4.6	3.7	3.9

Table 6: Descriptive analysis of Investigations in the study population (N=77)

Investigations	Frequency	Percentages
Sr Cholesterol		
Hypocholesterolaemia	35	45.45%
Normal	42	54.55%
Sr Albumin		
Hypoalbuminemia	20	25.97%
Normal	57	74.03%
Sr Cholesterol and Sr Albumin		
Both (Hypocholesterolaemia & Hypoalbuminemia)	15	19.48%
Normal	62	80.52%

- Range of Sr Cholesterol was 77 - 212.
- Range of Sr Albumin was 2.6 - 4.6.
- 45.45% patients had Hypocholesterolemia.
- 25.97% had Hypoalbuminemia.
- Only 19.48% had Hypocholesterolemia & Hypoalbuminemia.

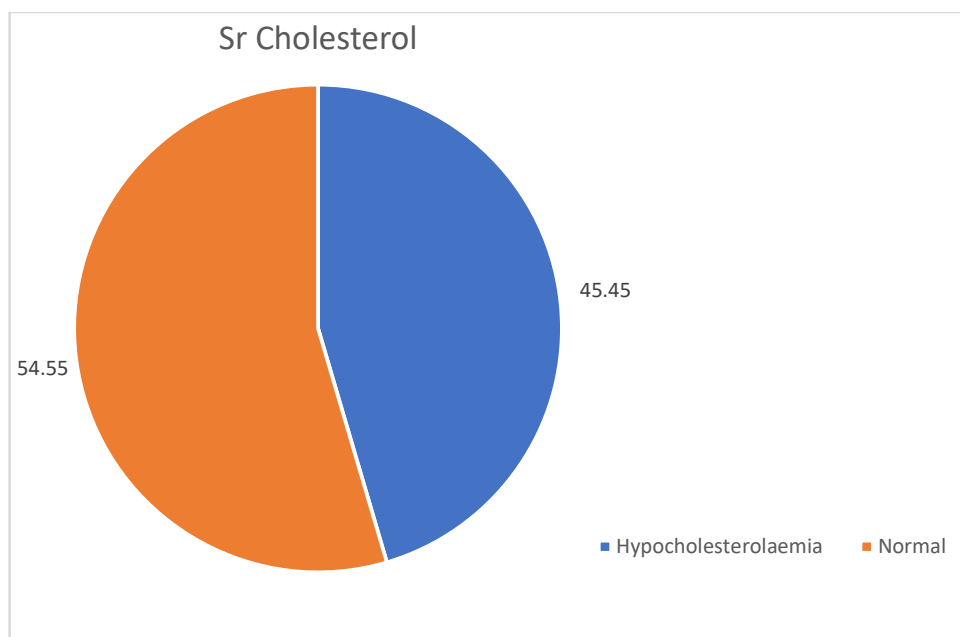
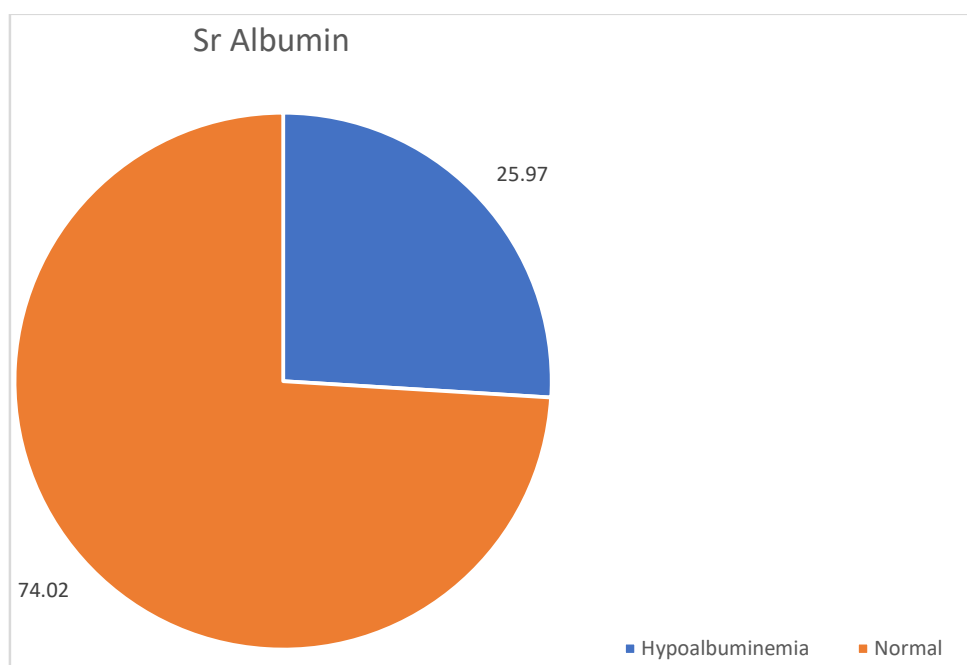
Chart 3: Pie chart of Sr. cholesterol in the study population (N=77)**Chart 4: Pie chart of Sr Albumin in the study population (N=77)**

Chart 5: Pie chart of Sr Cholesterol and Sr Albumin in the study population (N=77)

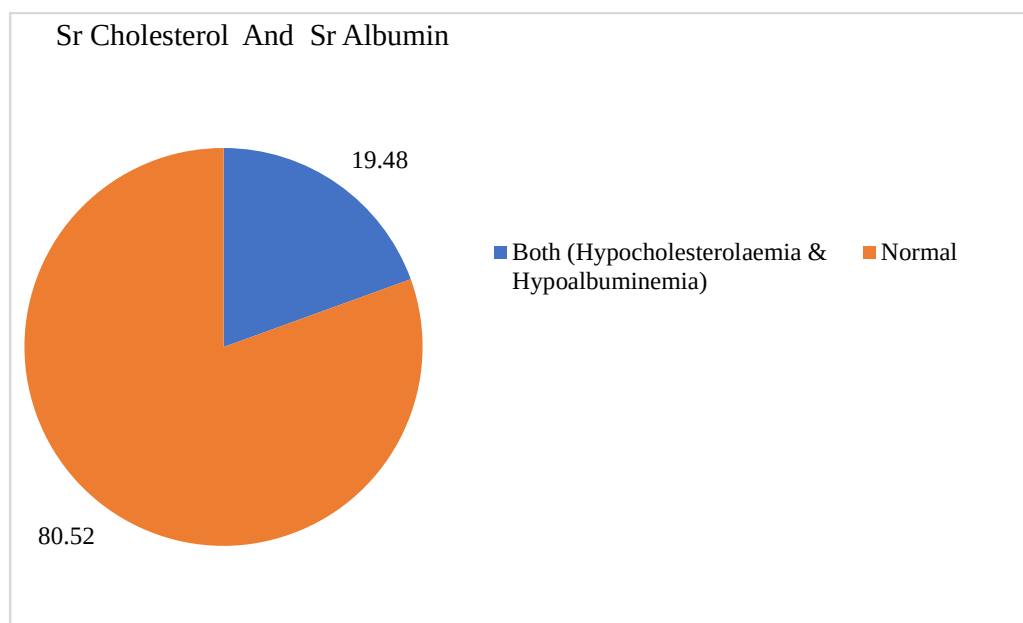


Table 7: SURGERY TYPE Descriptive analysis of Type of Surgery in the study population (N=77)

Type of Surgery	Frequency	Percentage
Laparoscopic	65	84.42%
Open	12	15.58%

- 84.42% procedures were laparoscopic, 15.58% were Open procedures.

Chart 6: Pie chart of Type of Surgery in the study population (N=77)

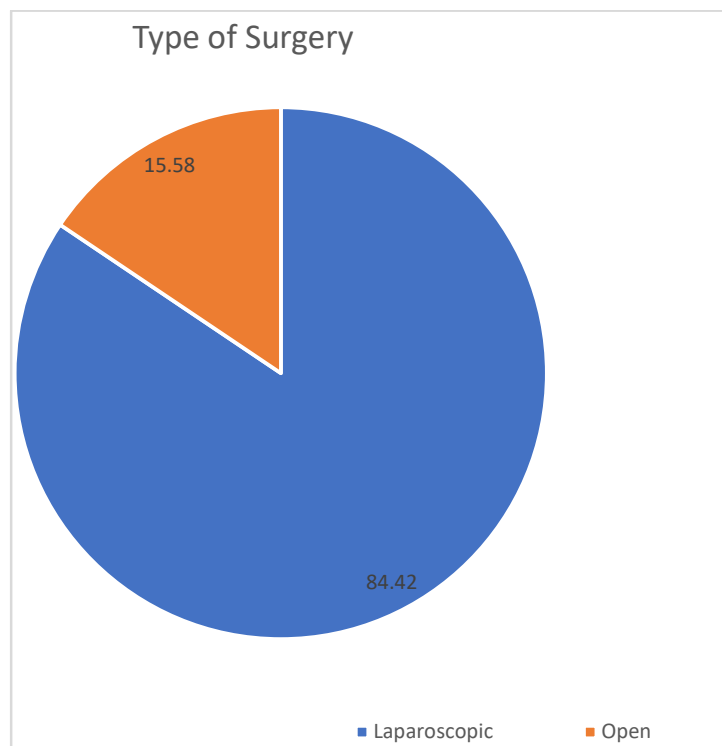
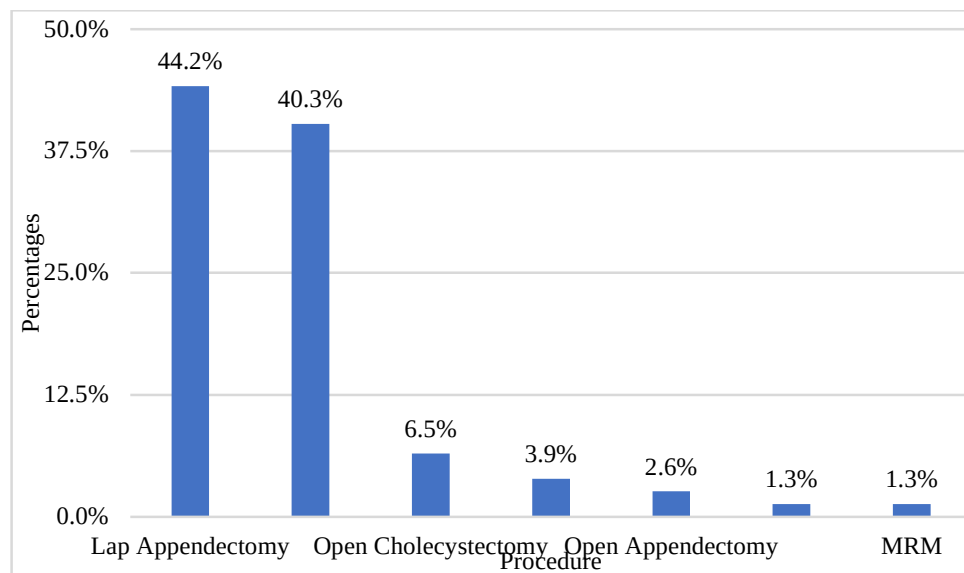


Table 8: PROCEDURE - Descriptive analysis of Procedure in the study population (N=77)

Procedure	Frequency	Percentages
Lap Appendectomy	34	44.16%
Lap Cholecystectomy	31	40.26%
Open Cholecystectomy	5	6.49%
Breast Excision	3	3.90%
Open Appendectomy	2	2.60%
Fibroadenoma Excision	1	1.30%
MRM	1	1.30%

- Among the included surgeries laparoscopic Appendectomy and laparoscopic cholecystectomy were performed in majority patients followed by Open and Breast Procedures.
- All the above mentioned procedures were elective surgeries.

Chart 7: Bar chart of Procedure in the study population (N=77)



- Laparoscopic Cholecystectomy and Appendectomy have become the new standard for treatment of Cholelithiasis and appendicitis as depicted in the above Bar Graph also.
- Laparoscopic vs Open Procedures in terms of SSI rates have been in debate studies favoring the one and other are done.

Table 9: ANTIBIOTICS - Descriptive analysis of Antibiotics prophylaxis in the study population (N=77)

Post operative	Frequency	Percentage
Pre op Antibiotics		
Yes	1	1.30%
No	76	98.70%
Antibiotics intra-op		
Yes	77	100.00%
Post op Antibiotics		
Yes	20	25.97%
No	57	74.02%

- Antibiotic prophylaxis i.e in peri operative period one single dose of antibiotic was administered to all the patients.
- Post operatively antibiotics were given to patients with SSI.

Table 10: SOUTHAMPTON SCORE- Descriptive analysis of Southampton grade in the study population (N=77)

Southampton grade	Frequency	Percentage
1	51	66.23%
2	18	23.33%
3	8	10.38%

- Majority patients i.e 66.23% had Southampton grade of 1 i.e no SSI.
- 23.33% had Grade 2 with Grade 3 in 10.38%.
- Indicating in elective surgeries severity of the SSI is less compared to emergency procedures.

Chart 8: Bar Chart of Southampton grade in the study population (N=77)

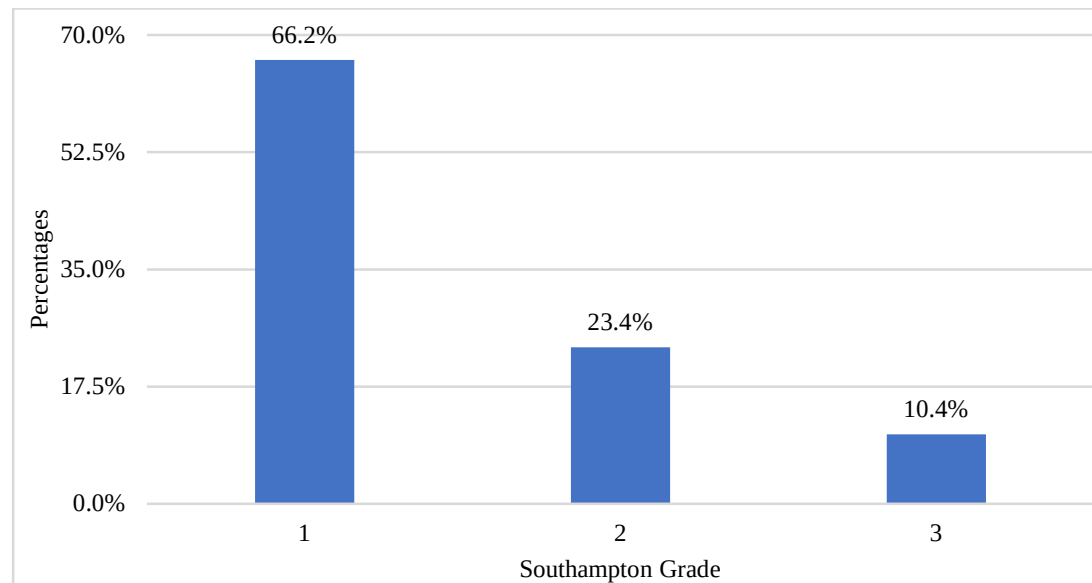


Table 11: Antibiotic sensitivity spectrum

Antibiotic	E.Coli	S. Aureus	Klebsiella
Amikacin	5/9	4/9	1/4
Imipenem	3/9	5/9	1/4
Meropenem	6/9	5/9	1/4
Colistin	4/9	6/9	2/4
Ertapenem	2/9		
Tetracycline	1/9	2/9	1/4
Amoxy-clav	2/9	1/9	
Cefuroxime	1/9	1/9	
Piperacillin + tazobactam	1/9	3/9	
Fosfomycin	6/9		
Linezolid	4/9	4/9	
Levofloxacin	1/9		
Gentamycin	3/9	4/9	
Ciprofloxacin	1/9	2/9	

- E. Coli was the m/c organism grown > Staph Aureus > klebsiella.

Table 12: Descriptive analysis of Day of SSI in the study population (N=20)

Day of SSI	Frequency	Percentage
Three	10	50.00%
Five	8	40.00%
Seven	2	10.00%

- Maximum number of SSIs were seen on POD 3 vs POD 5 vs POD 7.
- No SSI was noted after POD 7 till POD 30 f/u.

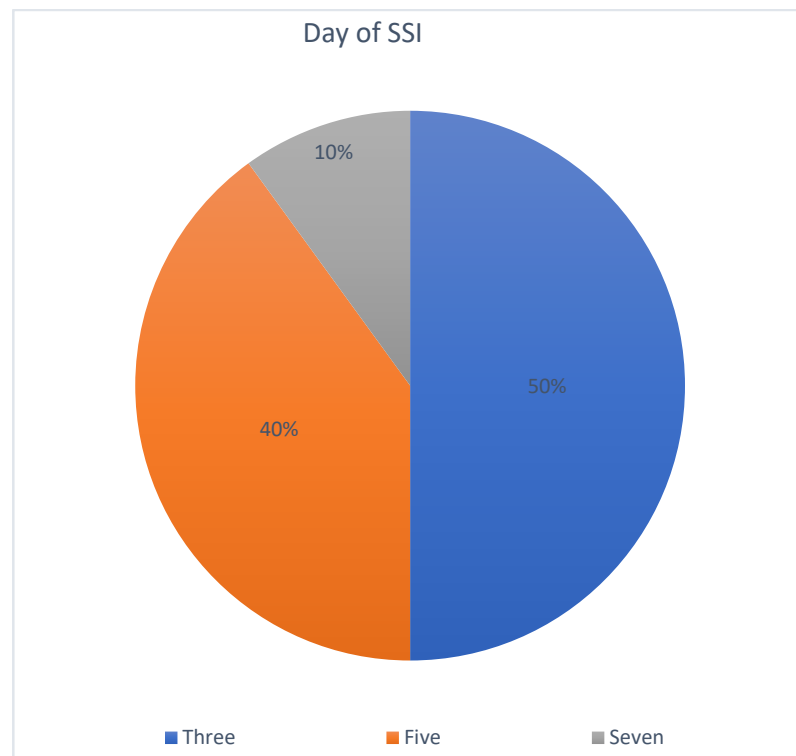
Chart 9: Pie Chart of Day of SSI in the study population (N=20)

Table 13: SSI - Descriptive analysis of SSI in the study population (N=77)

SSI	Frequency	Percentage
Yes	20	25.97%
No	57	74.03%

- 20/77 patients developed SSI in the current study i.e 25.97%.
- Warrants to study the effect of the said parameters on the SSI in elective surgeries.

- **Chart 10: Pie Chart of SSI in the study population (N=77)**

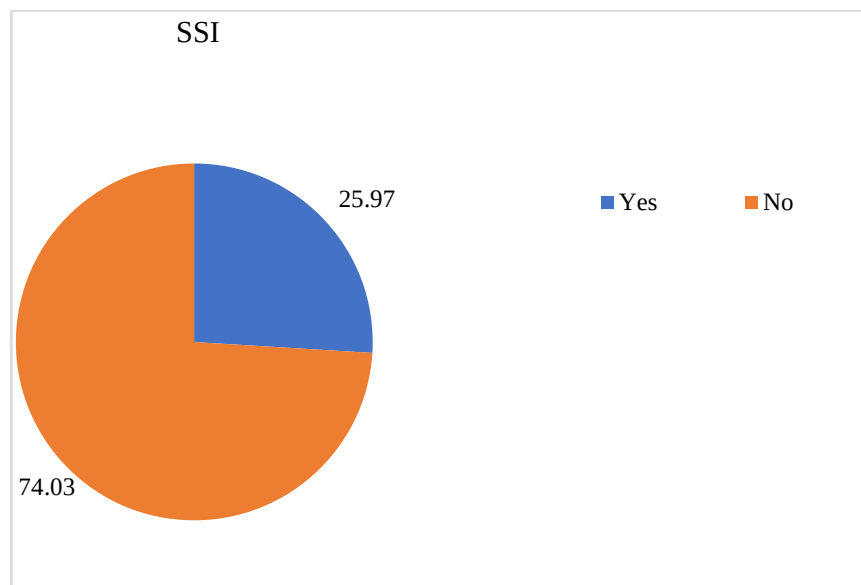


Table 14: Comparison between Age group with SSI in the study population (N=77)

Age Group	SSI		Chi square	P value
	Yes (N=20)	No (N=57)		
< 20	2 (10%)	5 (8.77%)	3.237	0.357
20-40	7 (35%)	29 (50.88%)		
40-60	7 (35%)	19 (33.33%)		
60-80	4 (20%)	4 (7.02%)		

- There's insignificant correlation between SSI and Age groups.

Chart 11: Cluster bar chart of comparison of age group between SSI (N=77)

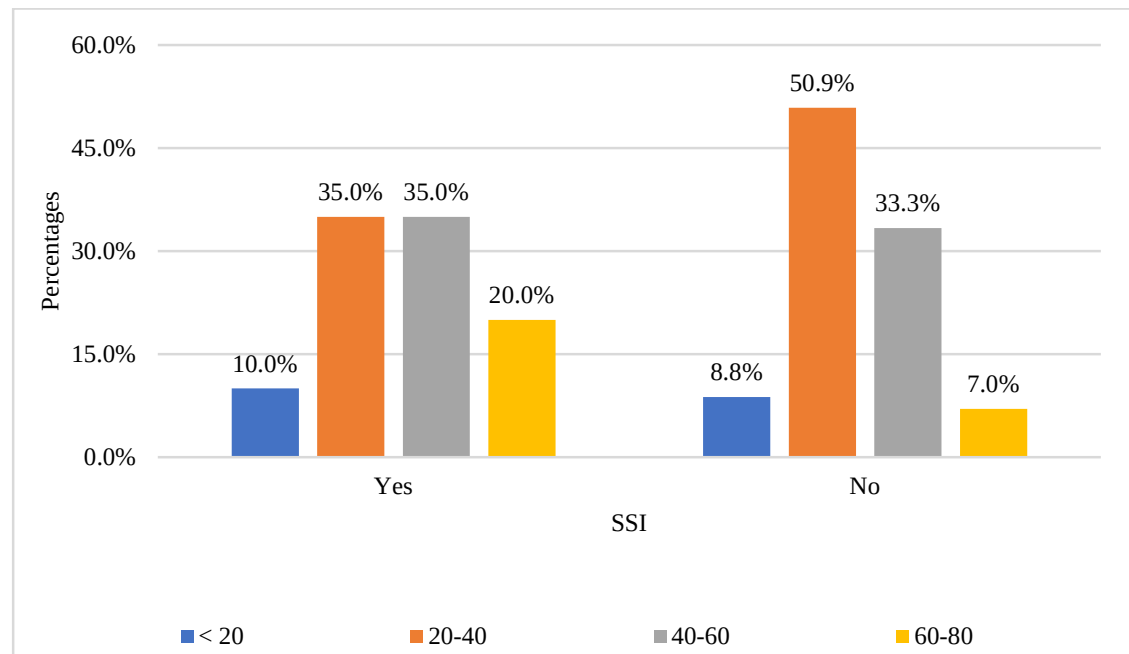


Table 15: Comparison between Gender with SSI in the study population (N=77)

Gender	SSI		Chi square	P value
	Yes (N=20)	No (N=57)		
Male	10 (50.00%)	26 (45.61%)	0.11	0.7352*
Female	10 (50.00%)	31 (54.39%)		

- There was no significant difference noted in terms of SSI development in Males vs females.

Chart 12: Cluster bar chart of comparison of Gender between SSI (N=77)

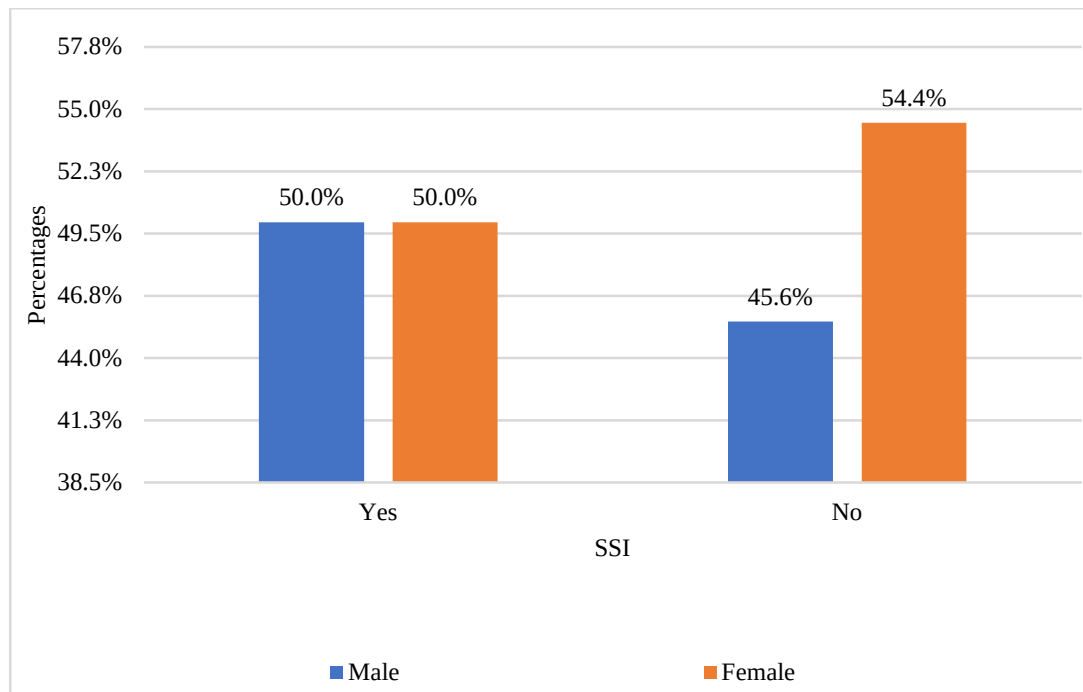


Table 16: Comparison between Comorbidities with SSI in the study population (N=77)

Comorbidities	SSI		Chi square value	P value
	Yes (N=20)	No (N=57)		
Hypertension				
Yes	6 (30.00%)	9 (15.79%)	1.91	0.1964*
No	14 (70.00%)	48 (84.21%)		
TB				
Yes	1 (5.00%)	1 (1.75%)	0.62	0.4545*
No	19 (95.00%)	56 (98.25%)		
Malignancy				
No	20 (100.00%)	57 (100.00%)	*	*
Smoking				
Yes	2 (10.00%)	1 (1.75%)	2.69	0.1636*
No	18 (90.00%)	56 (98.25%)		
Alcohol				
Yes	4 (20.00%)	3 (5.26%)	3.89	0.0702*
No	16 (80.00%)	54 (94.74%)		
Obesity				
Yes	0 (0.00%)	2 (3.51%)	0.720	0.396
No	20 (100.00%)	55 (96.49%)		
Connective Tissue Ds				
No	20 (100.00%)	57 (100.00%)	-	*

**No statistical test applied due nature of the data (Single category parameters)*

Table 17: Comparison between Type of Surgery with SSI in the study population (N=77)

Type Of Surgery	SSI		Chi square	Fisher exact P value
	Yes (N=20)	No (N=57)		
Laparoscopic	17 (85%)	48 (84.21%)	0.007	1.000
Open	3 (15%)	9 (15.79%)		

Chart 13: Cluster bar chart of comparison of type of surgery between SSI (N=77)

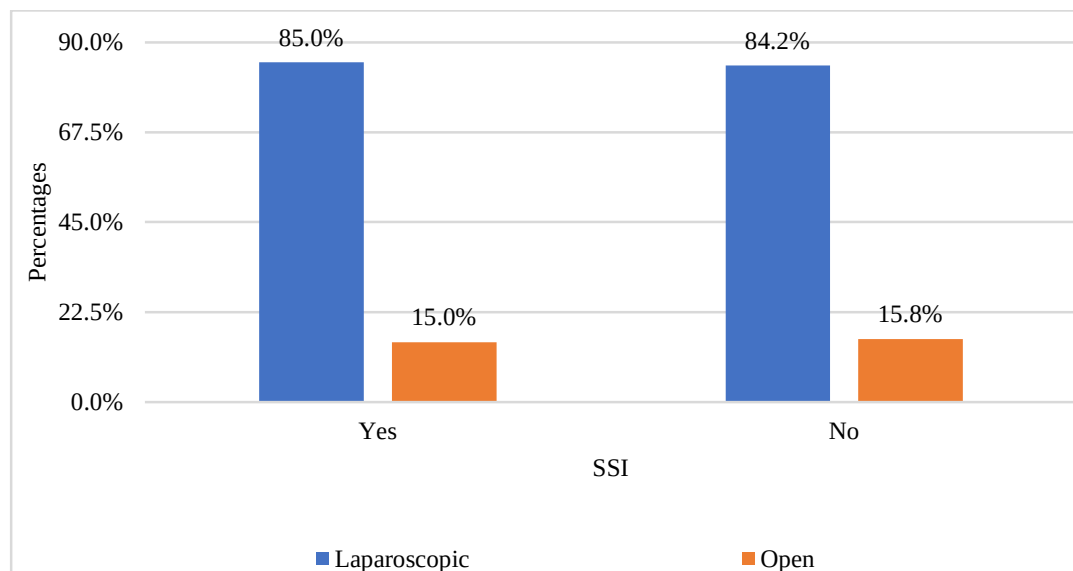
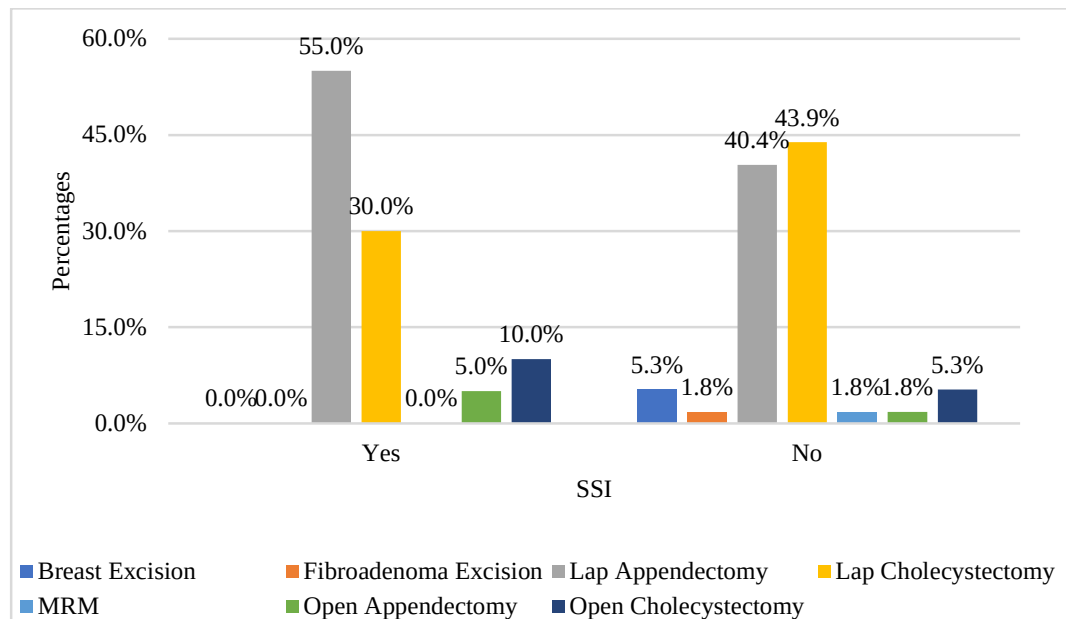


Table 18: Comparison between Procedure with SSI in the study population (N=77)

Procedure	SSI		Chi square	P value
	Yes (N=20)	No (N=57)		
Breast Excision	0 (0%)	3 (5.26%)	4.28	0.637
Fibroadenoma Excision	0 (0%)	1 (1.75%)		
Lap Appendectomy	11 (55%)	23 (40.35%)		
Lap Cholecystectomy	6 (30%)	25 (43.86%)		
MRM	0 (0%)	1 (1.75%)		
Open Appendectomy	1 (5%)	1 (1.75%)		
Open Cholecystectomy	2 (10%)	3 (5.26%)		

Chart 14: Cluster bar chart of comparison of procedure between SSI (N=77)



- Above tables shows the types of procedures included in the study in correlation with SSI rates.
- Non significant relation was seen in procedures.

Table 19: Comparison of Sr cholesterol between SSI (N=77)

Sr Cholesterol	SSI		Chi square	P value
	Yes (N=20)	No (N=57)		
Hypocholesterolaemia	17 (85%)	18 (31.58%)	17.041	<0.001
Normal	3 (15%)	39 (68.42%)		

- Significant relation was noted between SSI and Hypocholesterolemia.
- Shows that patients with Hypocholesterolemia may be at higher risk of developing SSI vs those with normal values.

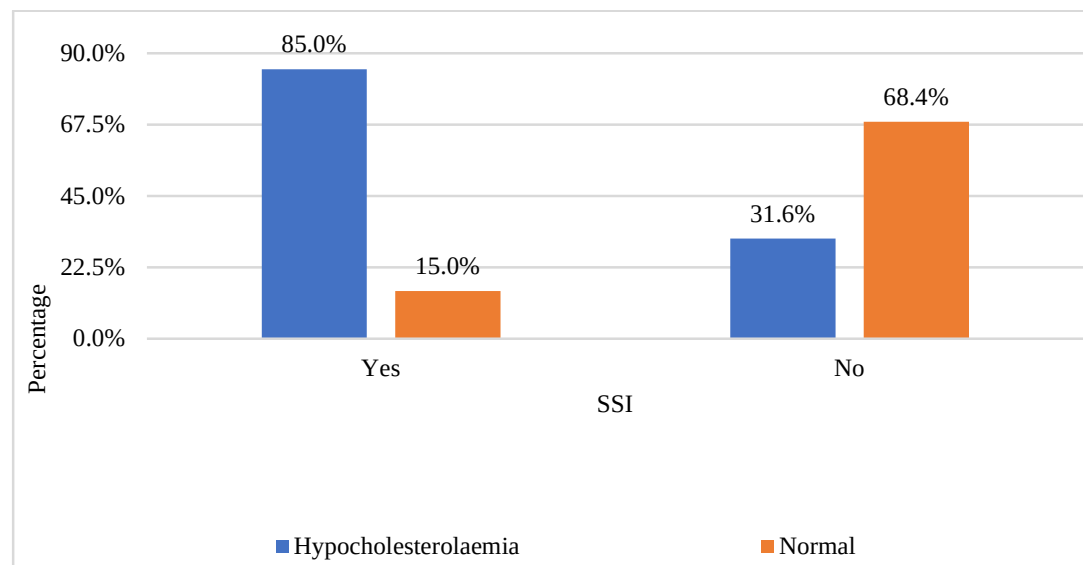
Chart 15: Cluster bar chart of comparison of Sr cholesterol between SSI (N=77)

Table 20: Predictive validity of Sr Cholesterol in predicting SSI (N=77)

Parameter	Value	95% CI	
		Lower	Upper
Sensitivity	85.00%	62.11%	96.79%
Specificity	68.42%	54.76%	80.09%
False positive rate	31.58%	19.91%	45.24%
False negative rate	15.00%	3.21%	37.89%
Positive predictive value	48.57%	31.38%	66.01%
Negative predictive value	92.86%	80.52%	98.50%
Diagnostic accuracy	72.73%	61.38%	82.26%

- Sensitivity of Hypocholesterolemia for SSI = 85% with Upper value reaching upto 96%.
- Though Specificity is the low in comparison with Diagnostic accuracy of >70%.

Table 21: Comparison of Sr Albumin between SSI (N=77)

Sr Albumin	SSI		Chi square	P value
	Yes (N=20)	No (N=57)		
Hypoalbuminemia	14 (70%)	6 (10.53%)	27.236	<0.001
Normal	6 (30%)	51 (89.47%)		

- Hypoalbuminemia has significant correlation with SSI incidence.
- Patients with Hypoalbuminemia is at higher risk of developing SSI vs those with normal values.

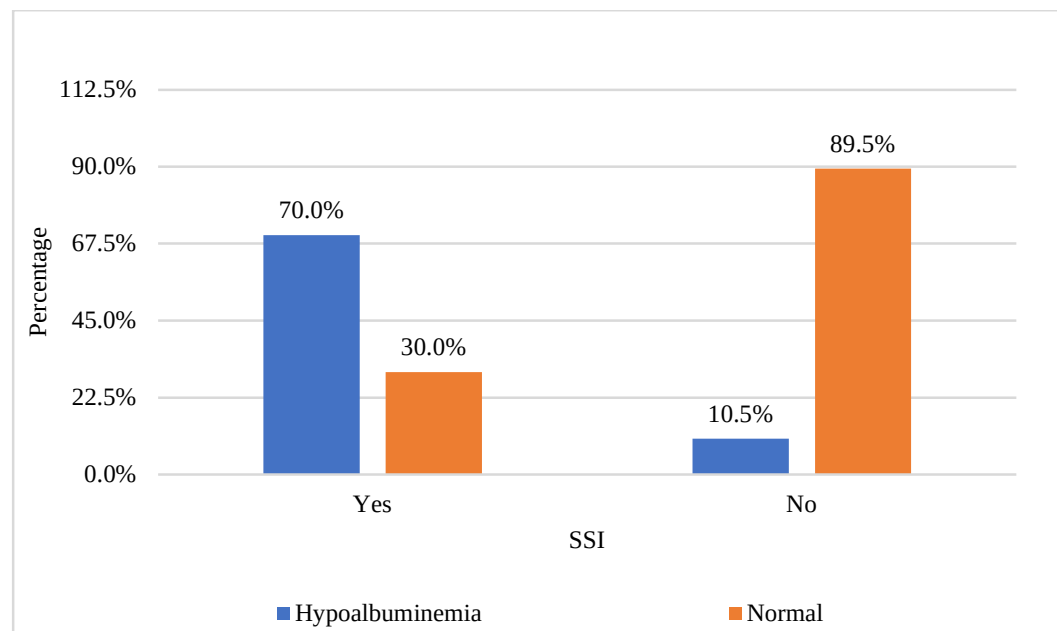
Chart 16: Cluster bar chart of comparison of Sr Albumin between SSI (N=77)

Table 22: Predictive validity of Sr Albumin in predicting SSI (N=77)

Parameter	Value	95% CI	
		Lower	Upper
Sensitivity	70.00%	45.72%	88.11%
Specificity	89.47%	78.48%	96.04%
False positive rate	10.53%	3.96%	21.52%
False negative rate	30.00%	11.89%	54.28%
Positive predictive value	70.00%	45.72%	88.11%
Negative predictive value	89.47%	78.48%	96.04%
Diagnostic accuracy	84.42%	74.36%	91.68%

Table 23: Comparison of Sr Cholesterol & Sr Albumin between SSI (N=77)

Sr Cholesterol & Sr Albumin	SSI		Chi square	Fisher exact P value
	Yes (N=20)	No (N=57)		
Both (Hypocholesterolaemia & Hypoalbuminemia)	12 (60%)	3 (5.26%)	28.280	<0.001
Normal	8 (40%)	54 (94.74%)		

Chart 17: Cluster bar chart of comparison of Sr Cholesterol & Sr Albumin between SSI (N=77)

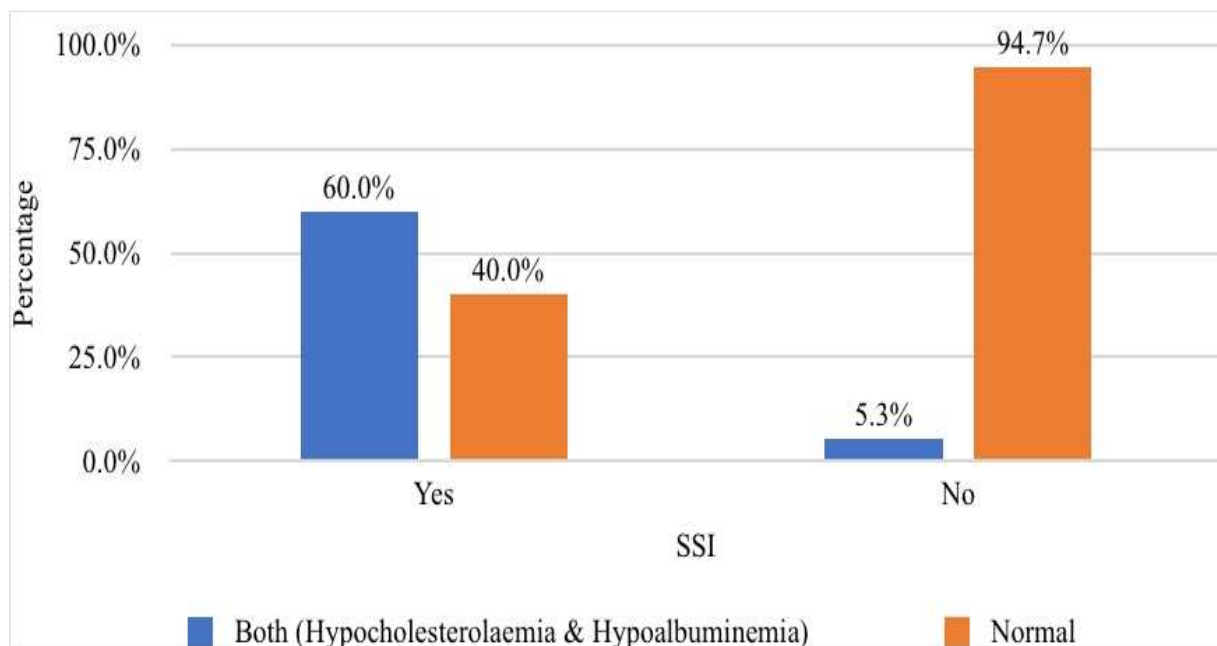


Table 24: Predictive validity of Both (Sr Cholesterol and Sr Albumin) in predicting SSI (N=77)

Parameter	Value	95% CI	
		Lower	Upper
Sensitivity	60.00%	36.05%	80.88%
Specificity	94.74%	85.38%	98.90%
False positive rate	5.26%	1.10%	14.62%
False negative rate	40.00%	19.12%	63.95%
Positive predictive value	80.00%	51.91%	95.67%
Negative predictive value	87.10%	76.15%	94.26%
Diagnostic accuracy	85.71%	75.87%	92.65%

- Hypocholesterolemia with Hypoalbuminemia has specificity of >90% in terms of development of SSI in such patients.
- With overall diagnostic accuracy >85% either of the two or in combination can be utilized as screening tools in patients undergoing Elective General surgery procedures.

SI PICTURES



**Figure 6 SSI IN LAP
CHOLECYSTECTOMY**

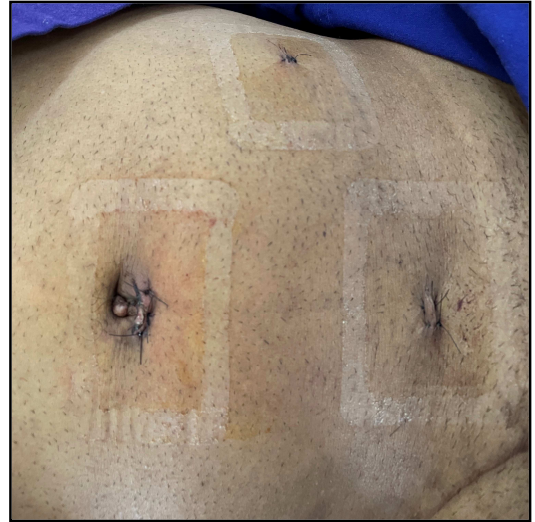


**Figure 7: SSI IN LAP
APPENDECTOMY**



Figure 8: SSI IN LAP CHOLECYSTECTOMY



Figure 9: SSI IN LAP APPENDECTOMY



Figure 10: NO SSI



Figure 11: NO SSI

DISCUSSION

This study was conducted at KLE's Dr. Prabhakar Kore Hospital and MRC, Belgaum and included a total of 77 patients who underwent elective General surgeries in view of the related pathology.

One of the major leading causes of morbidity is Surgical site infections and its incidence varies greatly from one hospital to another hospital. Varied differences have been noted in developing and developed nations.

Surgical Site Infection incidence in present study was 25.97%.⁵⁴

Age: Study population of this study ranges from 14 yrs to 77 yrs of age with the Mean age of 40 with Median of 39. Maximum incidence seen in age group 20-60yrs.

Incidence of SSI has been linked with age with studies showing inclination towards and away showing variability stating age as not an independent risk factor.^{55,56}

Sex: 46.75% females vs 53.25% males were recorded in this study with positive relation of sex distribution in relation to SSI with equal incidence seen in this study. Males are being more susceptible to develop SSI.^{57,58}

Comorbid conditions and Habits and their effect on rates of SSI is in association with conditions like smoking, hypertension, diabetes mellitus, obesity, alcohol, immunocompromised state.^{59,60}

Incidence of SSI has been noted in elective as well as emergency procedure with higher values seen in cases of emergency procedures. Studies suggest incidence difference not to be done between elective vs emergency but between contamination and non contamination during the procedure.^{61,62,63}

Type of surgery **65** laparoscopic v/s **12** Open procedures were done in this study for incidence of SSI with 17 laparoscopic cases developing SSIs(No deep space

Discussion

infection) v/s 3 open cases but this value is not significant similar to other studies concluding laparoscopic procedures have reduced incidence of deep space infection in comparison to open procedures.^{64,65}

In accordance with Southampton score grade 1,2 & 3 were seen distributed as 66%,23%,10% with no deep infection noted.

Maximum number of SSIs noted POD 3>5>7 in accordance with similar studies. E.coli > klebsiella >S. Aureus was noted with Antibiotic spectrum done stating sensitivity to higher antibiotics in response to the management of the SSI. Hypoalbuminemia association with SSI is deemed significant in this study with 20 patients v/s 42 patients having normal albumin as similar to the studies concluding albumin as independent risk factor for SSI.^{66,67} 14 patients with Hypoalbuminemia developed SSI with $p<0.001$.

Sensitivity at 70% with 90% specificity of albumin, it has PPV: 70%, NPV: 90% with Diagnostic accuracy of 84%.

Hypocholesterolemia association with SSI significantly associated with incidence of SSI in this study with 35 patients v/s 42 normal cholesterol patients. Similar findings have been noted concluding cholesterol as a forgotten risk factor for SSI.^{68,69} 17 patients with SSI had been noted in this Study with $p<0.001$. Sensitivity of 85% with 68% specificity and NPV: 93%, diagnostic accuracy of Hypocholesterolemia is deemed 72%.

Patients with Hypoalbuminemia as well as Hypocholesterolemia were significantly associated with incidence of SSI with p value of <0.001 .

Specificity increasing 95%, NPV of 87% with combined Diagnostic accuracy of 86% has been noted in the study.

Commented [ps1]:

Discussion

Present Study shows the diagnostic as well as screening attributes of Hypoalbuminemia and Hypocholesterolemia as independent tools as well as when combined and their usefulness as screening indicators for SSI. As SSI since the dawn of surgery has been a major morbidity post procedures and measures to reduce or to identify patients more susceptible to SSI is the need of the hour for SSIs prevention as well as management.

Table 25: Comparison of Association of Sr Albumin & Sr Cholesterol with SSI with other studies.^{3,1}

Hypoalbuminemia	Current Study	Dr Kiran et al	Manjunath B.D et al	Ji Shan Ahmed et al
SSI +	70%	44.6%	31.1%	21/56
SSI -	30%	55.4%	68.9%	35
Hypocholesterolemia				
SSI +	48.6%	41.8%	32.8%	-
SSI -	51.4%	58.2%	67.2%	-

CONCLUSION

Incidence of SSI was found is 25.97% in elective general surgery procedures in the Said Study done in KLEs Dr Prabhakar Kore Hospital and Medical Research Center, Belagavi.

Present Study shows the diagnostic as well screening attributes of Hypoalbuminemia and Hypcholesterolemia as independent tools as well as when combined and their usefulness as screening indicators for SSI. As SSI since the dawn of surgery has been a major morbidity post procedure, and measures to reduce or to identify patients more susceptible to SSI is the need of the hour for SSIs prevention as well as management.

Superficial SSI formed the majority cases with no incidence of deep space SSI. Majority of the procedures were Laparoscopic in comparison to Open Surgeries. Thus Confirming that incidence of deep SSI is lesser in Laparoscopic vs Open procedures.

Most common organisms grown was E.coli.

Higher antibiotics are able to tackle most of the SSI post operatively.

Recommendations:

Preoperative Sr Albumin analysis and correction if required.

Preoperative Sr Cholesterol analysis and correction if required.

Surveillance.

Postoperative wound care in SSI prone case

SUMMARY

- Incidence of Surgical Site Infection among the elective general surgery procedures operated in KLES Dr. Prabhakar Kore Hospital and MRC is 25.97%.
- Incidence of Surgical Site Infection noted in Age group 20-40: 35%, 40-60: 35%.
- Incidence of Surgical Site Infection showed equal distribution among Males & females.
- Immunocompromised patients or patients susceptible to SSI were excluded from the study such as known Diabetics, post chemotherapy, malignancies, anemia.
- No incidence of deep space infections seen with Southampton grade upto 3.
- 84.42% elective procedures done were laparoscopic v/s 15.58% open procedures with incidence of SSI 17(laparoscopic) v/s 3 (open).
- Hypertension was seen in 15 patients, smoking in 3 patients, 7 patients were alcoholics, 2 obese patients with no malignant and connective tissue disorders.
- Hypocholesterolemia seen in 45.45%.
- Hypoalbuminemia seen in 25.97%.
- Both Hypocholesterolemia as well as Hypoalbuminemia seen in 19.48%.
- All Patients received one course of intraoperative antibiotics, with postoperative antibiotics given to patients with SSIs.
- Organisms isolated were sensitive to higher antibiotic spectrum.
- 50% SSIs seen on Day 3 followed by 40% on Day 5 and 10% Day 7. Patients follow up was done POD 30.
- Predictive validity of Sr Cholesterol in predicting SSI - 85% sensitivity, 68% specificity, NPV 92.86%, Diagnostic accuracy of 72.73% with $p < 0.001$.

- Predictive validity of Sr Albumin in predicting SSI - 70% sensitivity, 89.47% specificity, NPV 89.47% with diagnostic accuracy of 84.42% with $p < 0.001$.
- Predictive validity of Sr Cholesterol and Sr Albumin- sensitivity 60%, specificity 94.74%, NPV 87.10% with Diagnostic accuracy of 85.71%.

BIBLIOGRAPHY

1. Kirankumar B. Sodavadiya,Sunita Singh,BK Agrawal.Role of Preoperative assessment of Serum Cholesterol and Albumin in Surgical Site Infections,Int J of Medical and Biomedical Studies, 2019;3(7):114-118.
2. Schwartz SI,Comshire G,Spencer FC,Dally GN,Fischer J,Galloway AC:Principles of Surgery,Surgical Infections.NY:McGraw Hill Companies.2010;1(11):157-182.
3. Manjunath B.D,Harindranath H.R,Abdul Ryazan et al.A forgotten risk factor for Surgical site Infection:Hypocholesterolemia,Int Surgery J.2018;5(7):2482-2486.
4. Ballus J, Lopez-Delgado JC, Sabater-Riera J, Perez-Fernandez XL, Betbese AJ, Roncal JA. Surgical site infection in critically ill patients with secondary and tertiary peritonitis: epidemiology, microbiology and influence in outcomes. BMC Infectious Diseases
5. Krizek TJ, Robson MC. Evolution of quantitative bacteriology in wound management. Am J Surg. 1975 Nov;130(5):579-84. doi: 10.1016/0002-9610(75)90516-4. PMID: 1106243.
6. Robert G. Sawyer, Timothy L. Pruett,Wound Infections,Surgical Clinics of North America,Volume 74, Issue 3,1994,Pages 519-536.
7. Frank Lamont meleney, Bacterial synergism in disease process. Annals of surgery1931;XCIV:6.
8. Manual on Control of Infection in Surgical Patients, 2nd Edition. William A. Altemeier, John F. Burke, BasilA. Pruit, Jr., and William R. Sandusky.
9. W Y John Chen, Alan A Rogers, Michael J Lydon,Characterization of Biologic Properties of Wound Fluid Collected During Early Stages of Wound Healing,Journal of Investigative Dermatology,Volume 99, Issue 5,1992,Pages 559-564

10. Phillips SJ. Physiology of wound healing and surgical wound care. *ASAIO J.* 2000 Nov-Dec;46(6):S2-5. doi: 10.1097/00002480-200011000-00029. PMID: 11110286.
11. Altemeier WA. *Manual of Control of Infection in Surgical Patients*. Chicago: American College of Surgeons Press: 1976:1. 6. Bartlett JG. Intra-abdominal sepsis. *Med Clin North Am.* 1995;79:599-617. 7. Dunn DL, Simmons RL. The role of anaerobic bacteria in intra- abdominal infections.
12. B'erard F. Postoperative wound infections: the influence of ultraviolet irradiation of the operating room and of various other factors. *Ann Surg.* 1964;160(1):1-92.
13. Hart D, Postlethwait RW, Brown IW Jr, Smith WW, Johnson PA. Postoperative wound infections: a further report on ultraviolet irradiation with comments on the recent (1964) national research council cooperative study report. *Ann Surg.* 1968 May;167(5):728-43. doi: 10.1097/00000658-196805000-00011. PMID: 5646294; PMCID: PMC1387124.
14. W Y John Chen, Alan A Rogers, Michael J Lydon, Characterization of Biologic Properties of Wound Fluid Collected During Early Stages of Wound Healing, *Journal of Investigative Dermatology*, Volume 99, Issue 5, 1992, Pages 559-564.
15. Stuart Enoch, David John Leaper, Basic science of wound healing, *Surgery (Oxford)*, Volume 26, Issue 2, 2008, Pages 31-37
16. Phillips SJ. Physiology of wound healing and surgical wound care. *ASAIO J.* 2000 Nov-Dec;46(6):S2-5. doi: 10.1097/00002480-200011000-00029. PMID: 11110286.
17. Pakyari M, Farrokhi A, Maharlooei MK, Ghahary A. Critical Role of Transforming Growth Factor Beta in Different Phases of Wound Healing. *Adv*

- Wound Care (New Rochelle). 2013 Jun;2(5):215-224. doi: 10.1089/wound.2012.0406. PMID: 24527344; PMCID: PMC3857353.
18. Beldon P. Basic science of wound healing. Surgery (Oxford). 2010 Sep 1;28(9):409-12.
19. Tissue Renewal and Repair: Regeneration, Healing and Fibrosis. 9th ed. In: Robbins and Cotran Pathologic Basis of Disease, Kumar V, Abbas KA, Fausto N (ed). Pennsylvania: Saunders; 2015. pp. 111-14.
20. Cheadle WG. Risk factors for surgical site infection. Surg Infect (Larchmt). 2006;7 Suppl 1:S7-11. doi: 10.1089/sur.2006.7.s1-7. PMID: 16834549.
21. Lobley SN. Factors affecting the risk surgical site infection and methods of reducing. J Perioper Pract. 2013 Apr;23(4):77-81. doi: 10.1177/175045891302300403. PMID: 23691883.
22. American Academy of Orthopaedic Surgeons Patient Safety Committee, Evans RP. Surgical site infection prevention and control: an emerging paradigm. J Bone Joint Surg Am. 2009 Nov;91 Suppl 6:2-9. doi: 10.2106/JBJS.I.00549. PMID: 19884406.
23. Alfonso-Sanchez JL, Martinez IM, Martín-Moreno JM, González RS, Botía F. Analyzing the risk factors influencing surgical site infections: the site of environmental factors. Can J Surg. 2017 Jun;60(3):155-161. doi: 10.1503/cjs.017916. PMID: 28234221; PMCID: PMC5453757.
24. Gould D. Causes, prevention and management of surgical site infection. Nurs Stand. 2012 Jul 25-31;26(47):47-56; quiz 58. doi: 10.7748/ns2012.07.26.47.47.c9226. PMID: 22913092.

25. Owens CD, Stoessel K. Surgical site infections: epidemiology, microbiology and prevention. *J Hosp Infect.* 2008 Nov;70 Suppl 2:3-10. doi: 10.1016/S0195-6701(08)60017-1. PMID: 19022115.
26. McHugh SM, Hill AD, Humphreys H. Intraoperative technique as a factor in the prevention of surgical site infection. *J Hosp Infect.* 2011 May;78(1):1-4. doi: 10.1016/j.jhin.2011.01.011. Epub 2011 Mar 1. PMID: 21367488.
27. Lilani SP, Jangale N, Chowdhary A, Daver GB. Surgical site infection in clean and clean-contaminated cases. *Indian J Med Microbiol.* 2005 Oct;23(4):249-52. PMID: 16327121.
28. Anderson DJ, Sexton DJ, Kanafani ZA, Auten G, Kaye KS. Severe surgical site infection in community hospitals: epidemiology, key procedures, and the changing prevalence of methicillin-resistant *Staphylococcus aureus*. *Infect Control Hosp Epidemiol.* 2007 Sep;28(9):1047-53. doi: 10.1086/520731. Epub 2007 Jul 12. PMID: 17932825.
29. Engemann JJ, Carmeli Y, Cosgrove SE, Fowler VG, Bronstein MZ, Trivette SL, Briggs JP, Sexton DJ, Kaye KS. Adverse clinical and economic outcomes attributable to methicillin resistance among patients with *Staphylococcus aureus* surgical site infection. *Clin Infect Dis.* 2003 Mar 1;36(5):592-8. doi: 10.1086/367653. Epub 2003 Feb 7. PMID: 12594640.
30. Weigelt JA, Lipsky BA, Tabak YP, Derby KG, Kim M, Gupta V. Surgical site infections: Causative pathogens and associated outcomes. *Am J Infect Control.* 2010 Mar;38(2):112-20. doi: 10.1016/j.ajic.2009.06.010. Epub 2009 Nov 3. PMID: 19889474.
31. Ballus J, Lopez-Delgado JC, Sabater-Riera J, Perez-Fernandez XL, Betbese AJ, Roncal JA. Surgical site infection in critically ill patients with secondary and

- tertiary peritonitis: epidemiology, microbiology and influence in outcomes. *BMC Infect Dis.* 2015 Jul 30;15:304. doi: 10.1186/s12879-015-1050-5. PMID: 26223477; PMCID: PMC4520265.
32. National healthcare safety network, Procedure-associated Module SSI Events, January 2022.
33. Kirby JP, Mazuski JE. Prevention of surgical site infection. *Surg Clin North Am.* 2009 Apr;89(2):365-89, viii. doi: 10.1016/j.suc.2009.01.001. PMID: 19281889.
34. Pauli EM, Krpata DM, Novitsky YW, Rosen MJ. Negative pressure therapy for high-risk abdominal wall reconstruction incisions. *Surg Infect (Larchmt).* 2013 Jun;14(3):270-4. doi: 10.1089/sur.2012.059. Epub 2013 Apr 16. PMID: 23590852.
35. Campwala I, Unsell K, Gupta S. A Comparative Analysis of Surgical Wound Infection Methods: Predictive Values of the CDC, ASEPSIS, and Southampton Scoring Systems in Evaluating Breast Reconstruction Surgical Site Infections. *Plast Surg (Oakv).* 2019 May;27(2):93-99. doi: 10.1177/2292550319826095. Epub 2019 Mar 13. PMID: 31106164; PMCID: PMC6505358.
36. Misha G, Chelkeba L, Melaku T. Incidence, risk factors and outcomes of surgical site infections among patients admitted to Jimma Medical Center, South West Ethiopia: Prospective cohort study. *Ann Med Surg (Lond).* 2021 Mar 29;65:102247. doi: 10.1016/j.amsu.2021.102247. PMID: 33898031; PMCID: PMC8058519.
37. Abbas M, Holmes A, Price J. Surgical site infections following elective surgery. *Lancet Infect Dis.* 2020 Aug;20(8):898-899. doi: 10.1016/S1473-3099(20)30524-7. Epub 2020 Jul 29. PMID: 32738233.

38. Curcio D, Cane A, Fernández F, Correa J. Surgical site infection in elective clean and clean-contaminated surgeries in developing countries. *Int J Infect Dis.* 2019 Mar;80:34-45. doi: 10.1016/j.ijid.2018.12.013. Epub 2019 Jan 9. PMID: 30639405.
39. Warren DK, Nickel KB, Wallace AE, Mines D, Tian F, Symons WJ, Fraser VJ, Olsen MA. Risk Factors for Surgical Site Infection After Cholecystectomy. *Open Forum Infect Dis.* 2017 Feb 22;4(2):ofx036. doi: 10.1093/ofid/ofx036. PMID: 28491887; PMCID: PMC5419069.
40. Sulaiman H, Gabella G, Davis C, Mutsaers SE, Boulos P, Laurent GJ, Herrick SE. Presence and distribution of sensory nerve fibers in human peritoneal adhesions. *Annals of surgery.* 2001 Aug;234(2):256.
41. Tocchi A, Lepre L, Costa G, Liotta G, Mazzoni G, Maggiolini F. The need for antibiotic prophylaxis in elective laparoscopic cholecystectomy: a prospective randomized study. *Arch Surg.* 2000 Jan;135(1):67-70; discussion 70. doi: 10.1001/archsurg.135.1.67. PMID: 10636350.
42. Redmond HP, Watson RW, Houghton T, Condrón C, Watson RG, Bouchier-Hayes D. Immune function in patients undergoing open vs laparoscopic cholecystectomy. *Arch Surg.* 1994 Dec;129(12):1240-6. doi: 10.1001/archsurg.1994.01420360030003. PMID: 7986152.
43. Giesen LJ, van den Boom AL, van Rossem CC, den Hoed PT, Wijnhoven BP. Retrospective Multicenter Study on Risk Factors for Surgical Site Infections after Appendectomy for Acute Appendicitis. *Dig Surg.* 2017;34(2):103-107. doi: 10.1159/000447647. Epub 2016 Sep 16. PMID: 27631081; PMCID: PMC5296882.

44. Xiao Y, Shi G, Zhang J, Cao JG, Liu LJ, Chen TH, Li ZZ, Wang H, Zhang H, Lin ZF, Lu JH, Yang T. Surgical site infection after laparoscopic and open appendectomy: a multicenter large consecutive cohort study. *Surg Endosc*. 2015 Jun;29(6):1384-93. doi: 10.1007/s00464-014-3809-y. Epub 2014 Oct 11. PMID: 25303904.
45. Kehagias I, Karamanakos SN, Panagiotopoulos S, Panagopoulos K, Kalfarentzos F. Laparoscopic versus open appendectomy: which way to go? *World J Gastroenterol*. 2008 Aug 21;14(31):4909-14. doi: 10.3748/wjg.14.4909. PMID: 18756599; PMCID: PMC2739944.
46. Nguyen NT, Zainabadi K, Mavandadi S, Paya M, Stevens CM, Root J, Wilson SE. Trends in utilization and outcomes of laparoscopic versus open appendectomy. *Am J Surg*. 2004 Dec;188(6):813-20. doi: 10.1016/j.amjsurg.2004.08.047. PMID: 15619505.
47. Raahave D, Friis-Msller A, Bjerre-Jepsen B, Thiis-Knudsen J, Rasmussen LB. The infective dose of aerobic and anaerobic bacteria in postoperative wound sepsis. *Arch Surg* 1986; 121: 924-9.
48. Crawford CB, Clay JA, Seydel AS, Wernberg JA. Surgical Site Infections in Breast Surgery: The Use of Preoperative Antibiotics for Elective, Nonreconstructive Procedures. *Int J Breast Cancer*. 2016;2016:1645192. doi: 10.1155/2016/1645192. Epub 2016 Oct 5. PMID: 27800185; PMCID: PMC5069355.
49. Olsen MA, Nickel KB, Fox IK, Margenthaler JA, Wallace AE, Fraser VJ. Comparison of Wound Complications After Immediate, Delayed, and Secondary Breast Reconstruction Procedures. *JAMA Surg*. 2017 Sep 20;152(9):e172338.

- doi: 10.1001/jamasurg.2017.2338. Epub 2017 Sep 20. PMID: 28724125; PMCID: PMC5831445.
50. Olsen MA, Nickel KB, Fox IK, Margenthaler JA, Ball KE, Mines D, Wallace AE, Fraser VJ. Incidence of Surgical Site Infection Following Mastectomy With and Without Immediate Reconstruction Using Private Insurer Claims Data. *Infect Control Hosp Epidemiol*. 2015 Aug;36(8):907-14. doi: 10.1017/ice.2015.108. Epub 2015 Jun 3. PMID: 26036877; PMCID: PMC4693606.
51. Mellinghoff SC, Otto C, Cornely OA. Surgical site infections: current management and role of new antibiotics. *Curr Opin Infect Dis*. 2019 Oct;32(5):517-522. doi: 10.1097/QCO.0000000000000589. PMID: 31369418.
52. van Till JO, Van Veen SQ, van Ruler O, Lamme B, Gouma DJ, Boermeester MA. The innate immune response to secondary peritonitis. *Shock*. 2007 Nov;28(5):504-17.
53. Devriese LA, Dutta GN. Antibiotic sensitivity testing: correlations between in vitro tests in vivo situations. *Ann Rech Vet*. 1981;12(1):41-6. PMID: 7044256.
54. Lakoh, S., Yi, L., Sevalie, S. et al. Incidence and risk factors of surgical site infections and related antibiotic resistance in Freetown, Sierra Leone: a prospective cohort study. *Antimicrob Resist Infect Control* 11, 39
55. Agodi A, Quattrocchi A, Barchitta M, Adornetto V, Cocuzza A, Latino R, Li Destri G, Di Cataldo A. Risk of surgical site infection in older patients in a cohort survey: targets for quality improvement in antibiotic prophylaxis. *Int Surg*. 2015 Mar;100(3):473-9. doi: 10.9738/INTSURG-D-14-00042.1. PMID: 25785330; PMCID: PMC4370538.

56. Minutolo, M & Blandino, Giovanna & Lanteri, Raffaele & Puleo, Stefano & Vincenzo, Minutolo. (2011). Surgical site infection in elderly patients. *BMC Geriatrics*. 11. 10.1186/1471-2318-11-S1-A37.
57. Langelotz C, Mueller-Rau C, Terziyski S, Rau B, Krannich A, Gastmeier P, Geffers C. Gender-Specific Differences in Surgical Site Infections: An Analysis of 438,050 Surgical Procedures from the German National Nosocomial Infections Surveillance System. *Viszeralmedizin*. 2014 Apr;30(2):114-7. doi: 10.1159/000362100. PMID: 26288585; PMCID: PMC4513817.
58. Aghdassi SJS, Schröder C, Gastmeier P. Gender-related risk factors for surgical site infections. Results from 10 years of surveillance in Germany. *Antimicrob Resist Infect Control*. 2019 Jun 3;8:95. doi: 10.1186/s13756-019-0547-x. PMID: 31171966; PMCID: PMC6547551.
59. Durand F, Berthelot P, Cazorla C, Farizon F, Lucht F. Smoking is a risk factor of organ/space surgical site infection in orthopaedic surgery with implant materials. *Int Orthop*. 2013 Apr;37(4):723-7. doi: 10.1007/s00264-013-1814-8. Epub 2013 Feb 27. PMID: 23443979; PMCID: PMC3609989.
60. Nolan MB, Martin DP, Thompson R, Schroeder DR, Hanson AC, Warner DO. Association Between Smoking Status, Preoperative Exhaled Carbon Monoxide Levels, and Postoperative Surgical Site Infection in Patients Undergoing Elective Surgery. *JAMA Surg*. 2017 May 1;152(5):476-483. doi: 10.1001/jamasurg.2016.5704. Erratum in: *JAMA Surg*. 2017 May 1;152(5):508. PMID: 28199450; PMCID: PMC5831446.
61. National healthcare safety network, Procedure-associated Module SSI Events, January 2022.

62. Tan & Shiang, Foong & Wong, Jia & Azmah, Tuan & Tuan Mat, Tuan & Gandhi, Anil. (2019). A Prospective Study of Surgical Site Infection in Elective and Emergency General Surgery in a Tertiary Public Hospital in Malaysia - A Preliminary Report. 52-58. 10.18689/mjs-1000113.
63. Hoffman T, Shitrit P, Chowders M. Risk factors for surgical site infections following open versus laparoscopic colectomies: a cohort study. BMC Surg. 2021 Oct 25;21(1):376. doi: 10.1186/s12893-021-01379-w. PMID: 34696743; PMCID: PMC8543409.
64. Alkaaki A, Al-Radi OO, Khoja A, Alnawawi A, Alnawawi A, Maghrabi A, Altaf A, Aljiffry M. Surgical site infection following abdominal surgery: a prospective cohort study. Can J Surg. 2019 Apr 1;62(2):111-117. doi: 10.1503/cjs.004818. PMID: 30907567; PMCID: PMC6440888.
65. Robin Kaushik. General Principles in Operative Management of Secondary Peritonitis:Emergency Surgery for Peritonitis Made Easy. 2009. 23–30.
66. V., Sharath & Prakash, Dhruva & Pottendla, Venkatasiva. (2019). Preoperative serum albumin level as a predictor of surgical complications after emergency abdominal surgery. International Surgery Journal. 6. 361. 10.18203/2349-2902.isj20190383.
67. Morimoto M, Nakamura Y, Yasuda Y, Lefor AT, Nagaie T, Sata N, Hosoya Y, Horie H, Koinuma K. Serum Total Cholesterol Levels Would Predict Nosocomial Infections After Gastrointestinal Surgery. Indian J Surg. 2015 Aug;77(4):283-9. doi: 10.1007/s12262-015-1296-6. Epub 2015 Jun 5. PMID: 26702235; PMCID: PMC4688261.

ANNEXURE I
INFORMED CONSENT

Purpose of the Study

I have been informed by REG NO. BH0120014, Post Graduate in M.S General Surgery under the Guidance of Dr. _____, Professor Department of General Surgery, J.N Medical College, KAHER University, Belagavi is conducting a study about **Hypocholesterolemia (<151mg/Dl)& Hypoalbuminemia (<3.5g/Dl) As Predictors Of Surgical Site Infections In Elective General Surgical Procedures** : A Prospective Observational Study For Period Of 1 Year At Kaher's Dr Prabhakar Kore Hospital And Medical Research Centre, Belagavi-590010

Surgical Site Infections continues to be one of the major causes of nosocomial infections accounting for 15-20%. Surgical Site Infections are consistently associated with significant morbidity and mortality, prolonged hospitalization, increased intensive care unit admissions and more frequent re admissions' can be Superficial and Deep or organ space's is also important from economic point of view. This study aims at determining the relationship between Pre Operative Cholesterol and Albumin and the development of SSI.

Study Procedure

Once you have signed the informed consent, necessary personal information and detailed medical history will be taken by the investigator. Serum Cholesterol and Serum Albumin will be measured and post operative outcome for SSI will be monitored with SOUTHAMPTON GRADING will be done for the same. Follow Up @ 3rd,5th,7th,15th and 30th days will be observed.

Potential Risk

This is purely observational study and no risks are expected.

Benefits

This will help understand the relationship between Serum Cholesterol and Albumin and development of SSI thus help in Steps to prevent the same.

Financial incentives for participation

You will not receive any payment for taking part in this study.

Alternatives

Your participation in this study is entirely voluntary. You are free to refuse to participate or withdraw from the study at any time. You will still receive standard medical care from the hospital.

Privacy

To Protect your privacy, all collected information will be given a number rather than using your name. Any information collected during the study will remain confidential. Your medical files will be reviewed only at the hospital (or study doctor's office) to check the information and verify the results without breaking confidentiality.

Authorization to Publish Results

The information about you will be analyzed together with other study participants. Results of this study will be published and presented to scientific groups for scientific purposes, but you will never be individually identified in the presentation of the study results.

Institutional Policy

In case you have any questions related to the study, in future or in case of study related inquiry, you can contact **REG NO. BH0120014**, Department of General Surgery, KAHER'S

J.N Medical College Ph. No. _____ or _____ or Dr _____,

Professor Department of General Surgery, KAHER'S J.N Medical College, Belagavi.

Voluntary Participation

Your participation in this study is Voluntary. In case you need any further information regarding your right as study participant you may contact Dr. Harsha Hegde, Chairperson, JNMC, Ph.No. 0831-2473777 ext-1527 at J.N Medical College, Belagavi.

CONSENT FORM

Study Title: "HYPOCHOLESTEROLEMIA (<151mg/dl) AND HYPOALBUMINEMIA (<3.5g/dl) AS PREDICTORS OF SURGICAL SITE INFECTIONS IN ELECTIVE GENERAL SURGICAL PROCEDURES. A ONE YEAR PROSPECTIVE OBSERVATIONAL STUDY AT KAHER'S DR. PRABHAKAR KORE HOSPITAL AND MRC, BELAGAVI"

1. I confirm that I have read and understood the information sheet for the above study and have had the opportunity to ask questions.
2. I understood that my participation in the study is voluntary and that I am free to Withdraw any time, without giving any reason, without my medical care or legal rights being affected.
3. I understood that sponsor and others working on the sponsor's behalf, The Ethics Committee and the regulatory authorities will not need my permission to look at my health records both in respect of current study and at any further research that may be conducted in relation to it, even if I withdraw from the trial. I agree to this. However I understood that my identity will not be revealed in any information released to third parties or published.
4. I agree to restrict the use of any data or results that arise from this study provided such a use for scientific purposes.
5. I agree to take part in the above study.

Subject's Name:

Signature/Left thumb impression:

Date

Name of Person obtaining Informed Consent:

Signature:

[If patient has limited ability to read and write, an impartial witness should be present during the entire informed consent discussion and patient's legally acceptable representative should sign on the patient's behalf.] In these instances the patient's thumb impression taken in place of signature.

Patients legally acceptable representative name:

I, as the patient's legally acceptable representative was present during the consenting and understand the preceding information describing this study. All of the questions regarding the study and the patient's participation in it have been answered to my satisfaction. I state that all the aspects of the study were clearly presented during the consent procedure. The patient is willing to participate in this study and I sign below on his/her behalf testifying to this effect.

Name of Patient:

Name and Signature of Representative:

Impartial Witness Declaration

By signing the consent form I attest that the information was accurately explained to and apparently understood by the patient and the representative (if applicable) and that the informed consent was freely given by the patient.

Name of Impartial Witness:

Date:

Signature:

ತಿಳುವಳಿಕೆಯ ಸಮ್ಮತಿ

ಅಧ್ಯಯನದ ಉದ್ದೇಶ :

ಜನರಲ್ ಸರ್ಜರಿಯ ಪ್ರಾಧ್ಯಾಪಕ ಡಾ. _____ ಅವರ ಮಾರ್ಗದರ್ಶನದಲ್ಲಿ ಎಂ.ಎಸ್. ಜನರಲ್ ಸರ್ಜರಿಯಲ್ಲಿ ಸ್ನಾತಕೋತ್ತರ ಪದವೀಧರರಾದ REG NO. BH0120014 ಅವರು ನನಗೆ ಮಾಹಿತಿ ನೀಡಿದ್ದಾರೆ. ಬೆಳಗಾವಿಯ ಕಾಹರ್ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೈದ್ಯಕೀಯ ಕಾಲೇಜು, ಬೆಳಗಾವಿ. ಚುನಾಯಿತ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಗಳಲ್ಲಿ ಸರ್ಜಿಕಲ್ ಸೈಟ್ ಸೋಂಕುಗಳಲ್ಲಿ ಸೀರಮ್ ಕೊಲೆಸ್ಟ್ರಾಲ್ ಮತ್ತು ಸೀರಮ್ ಅಲ್ಬುಮಿನ್ ಬಗ್ಗೆ ಒಂದು ಅಧ್ಯಯನ ಬೆಳಗಾವಿಯ ಡಾ.ಪ್ರಭಾಕರ್ ಚಾರಿಟೇಬಲ್ ಆಸ್ಪತ್ರೆ ಕೇಂದ್ರದಲ್ಲಿ ನಡೆಸುತ್ತಿದೆ .

ಶಸ್ತ್ರಚಿಕಿತ್ಸಾ ತಾಣದ ಸೋಂಕುಗಳು 15-20% ನೊಸೊಕೊಮಿಯಲ್ ಸೋಂಕಿನ ಪ್ರಮುಖ ಕಾರಣಗಳಲ್ಲಿ ಒಂದಾಗಿದೆ. ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಯ ತಾಣದ ಸೋಂಕುಗಳು ಗಮನಾರ್ಹವಾದ ಕಾಯಿಲೆ ಮತ್ತು ಮರಣ, ದೀರ್ಘಕಾಲದ ಆಸ್ಪತ್ರೆಗೆ ದಾಖಲು, ಹೆಚ್ಚಿದ ತೀವ್ರ ನಿಗಾ ಘಟಕದ ಪ್ರವೇಶ ಮತ್ತು ಹೆಚ್ಚು ಬಾರಿ ಮರು ಪ್ರವೇಶದೊಂದಿಗೆ ನಿರಂತರವಾಗಿ ಸಂಬಂಧ ಹೊಂದಿವೆ. ಎಸ್‌ಎಸ್‌ಐ ಮೇಲ್ಮೈ ಮತ್ತು ಆಳವಾದ ಅಥವಾ ಅಂಗದ ಸ್ಥಳವಾಗಬಹುದು. ಆರ್ಥಿಕ ದೃಷ್ಟಿಕೋನದಿಂದ ಎಸ್‌ಎಸ್‌ಐ ಸಹ ಮುಖ್ಯವಾಗಿದೆ. ಈ ಅಧ್ಯಯನವು ಗುರಿ ಹೊಂದಿದೆ ಪೂರ್ವ ಆಪರೇಟಿವ್ ಕೊಲೆಸ್ಟ್ರಾಲ್ ಮತ್ತು ಅಲ್ಬುಮಿನ್ ಮತ್ತು ಎಸ್‌ಎಸ್‌ಐ ಅಭಿವೃದ್ಧಿಯ ನಡುವಿನ ಸಂಬಂಧವನ್ನು ನಿರ್ಧರಿಸುವುದು .

ಅಧ್ಯಯನ ವಿಧಾನ :

ಒಮ್ಮೆ ನೀವು ತಿಳುವಳಿಕೆಯುಳ್ಳ ಒಪ್ಪಿಗೆಗೆ ಸಹಿ ಹಾಕಿದ ನಂತರ, ಅಗತ್ಯವಾದ ವೈಯಕ್ತಿಕ ಮಾಹಿತಿ ಮತ್ತು ವಿವರವಾದ ವೈದ್ಯಕೀಯ ಇತಿಹಾಸವನ್ನು ತನಿಖಾಧಿಕಾರಿ ತೆಗೆದುಕೊಳ್ಳುತ್ತಾರೆ. ಸೀರಮ್ ಕೊಲೆಸ್ಟ್ರಾಲ್ ಮತ್ತು ಸೀರಮ್ ಅಲ್ಬುಮಿನ್ ಅನ್ನು ಅಳೆಯಲಾಗುತ್ತದೆ ಮತ್ತು ಎಸ್‌ಎಸ್‌ಐಗಾಗಿ ಆಪರೇಟಿವ್ ನಂತರದ ಫಲಿತಾಂಶಗಳನ್ನು ಸೌತಾಂಪ್ಪನ್ ಗ್ರೇಡಿಂಗ್‌ನೊಂದಿಗೆ ಮೇಲ್ವಿಚಾರಣೆ ಮಾಡಲಾಗುತ್ತದೆ. ಫಾಲೋ ಅಪ್ @ 3 ನೇ, 5 ನೇ, 7 ನೇ, 12 ಮತ್ತು 30 ನೇ ದಿನಗಳನ್ನು ಆಚರಿಸಲಾಗುತ್ತದೆ.

ಸಂಭಾವ್ಯ ಅಪಾಯ :

ಇದು ಸಂಪೂರ್ಣವಾಗಿ ವೀಕ್ಷಣಾ ಅಧ್ಯಯನವಾಗಿದೆ ಮತ್ತು ಯಾವುದೇ ಅಪಾಯಗಳನ್ನು ನಿರೀಕ್ಷಿಸಲಾಗುವುದಿಲ್ಲ .

ಪ್ರಯೋಜನಗಳು

ಇದು ಸೀರಮ್ ಕೊಲೆಸ್ಟ್ರಾಲ್ ಮತ್ತು ಅಲ್ಬುಮಿನ್ ನಡುವಿನ ಸಂಬಂಧವನ್ನು ಅರ್ಥಮಾಡಿಕೊಳ್ಳಲು ಸಹಾಯ ಮಾಡುತ್ತದೆ ಮತ್ತು ಎಸ್‌ಎಸ್‌ಐನ ಅಭಿವೃದ್ಧಿ ಹೀಗೆ ತಡೆಯಲು ಹಂತಗಳಲ್ಲಿ ಸಹಾಯ ಮಾಡುತ್ತದೆ .

ಭಾಗವಹಿಸುವಿಕೆಗೆ ಆರ್ಥಿಕ ಪ್ರೋತ್ಸಾಹ

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ನೀವು ಯಾವುದೇ ಪಾವತಿಯನ್ನು ಸ್ವೀಕರಿಸುವುದಿಲ್ಲ .

ಪರ್ಯಾಯಗಳು

ಈ ಅಧ್ಯಯನದಲ್ಲಿ ನಿಮ್ಮ ಭಾಗವಹಿಸುವಿಕೆ ಸಂಪೂರ್ಣವಾಗಿ ಸ್ವಯಂಪ್ರೇರಿತವಾಗಿದೆ. ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಭಾಗವಹಿಸಲು ಅಥವಾ ಅಧ್ಯಯನದಿಂದ ಹಿಂದೆ ಸರಿಯಲು ನೀವು ಮುಕ್ತರಾಗಿದ್ದೀರಿ. ನೀವು ಇನ್ನೂ ಆಸ್ಪತ್ರೆಯಿಂದ ಗುಣಮಟ್ಟದ ವೈದ್ಯಕೀಯ ಆರೈಕೆಯನ್ನು ಸ್ವೀಕರಿಸುತ್ತೀರಿ .

ಗೋಪ್ಯತೆ :

ನಿಮ್ಮ ಗೌಪ್ಯತೆಯನ್ನು ರಕ್ಷಿಸಲು, ಸಂಗ್ರಹಿಸಿದ ಎಲ್ಲಾ ಮಾಹಿತಿಗಳಿಗೆ ನಿಮ್ಮ ಹೆಸರನ್ನು ಬಳಸುವ ಬದಲು ಸಂಖ್ಯೆಯನ್ನು ನೀಡಲಾಗುತ್ತದೆ. ಅಧ್ಯಯನದ ಸಮಯದಲ್ಲಿ ಸಂಗ್ರಹಿಸಿದ ಯಾವುದೇ ಮಾಹಿತಿಯು ಗೌಪ್ಯವಾಗಿ ಉಳಿಯುತ್ತದೆ. ಮಾಹಿತಿಯನ್ನು ಪರೀಕ್ಷಿಸಲು ಮತ್ತು ಗೌಪ್ಯತೆಯನ್ನು ಮುರಿಯದೆ ಫಲಿತಾಂಶಗಳನ್ನು ಪರಿಶೀಲಿಸಲು ನಿಮ್ಮ ವೈದ್ಯಕೀಯ ಫೈಲ್‌ಗಳನ್ನು ಆಸ್ಪತ್ರೆಯಲ್ಲಿ (ಅಥವಾ ಅಧ್ಯಯನ ವೈದ್ಯರ ಕಚೇರಿ) ಮಾತ್ರ ಪರಿಶೀಲಿಸಲಾಗುತ್ತದೆ.

ಫಲಿತಾಂಶಗಳನ್ನು ಪ್ರಕಟಿಸಲು ಅಧಿಕಾರ

ನಿಮ್ಮ ಬಗ್ಗೆ ಮಾಹಿತಿಯನ್ನು ಇತರ ಅಧ್ಯಯನ ಭಾಗವಹಿಸುವವರೊಂದಿಗೆ ವಿಶ್ಲೇಷಿಸಲಾಗುತ್ತದೆ.

ಈ ಅಧ್ಯಯನದ ಫಲಿತಾಂಶಗಳನ್ನು ವೈಜ್ಞಾನಿಕ ಉದ್ದೇಶಗಳಿಗಾಗಿ ವೈಜ್ಞಾನಿಕ ಗುಂಪುಗಳಿಗೆ ಪ್ರಕಟಿಸಲಾಗುತ್ತದೆ ಮತ್ತು ಪ್ರಸ್ತುತಪಡಿಸಲಾಗುತ್ತದೆ, ಆದರೆ ಅಧ್ಯಯನದ ಫಲಿತಾಂಶಗಳ ಪ್ರಸ್ತುತಿಯಲ್ಲಿ ನಿಮ್ಮನ್ನು ಎಂದಿಗೂ ಪ್ರತ್ಯೇಕವಾಗಿ ಗುರುತಿಸಲಾಗುವುದಿಲ್ಲ.

ಸಾಂಸ್ಥಿಕ ನೀತಿ :

ಒಂದು ವೇಳೆ ನೀವು ಅಧ್ಯಯನಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ಯಾವುದೇ ಪ್ರಶ್ನೆಗಳನ್ನು ಹೊಂದಿದ್ದರೆ, ಭವಿಷ್ಯದಲ್ಲಿ ಅಥವಾ ಅಧ್ಯಯನಕ್ಕೆ ಸಂಬಂಧಿಸಿದ ವಿಚಾರಣೆಯ ಸಂದರ್ಭದಲ್ಲಿ, ನೀವು ಸಾಮಾನ್ಯ ಶಸ್ತ್ರಚಿಕಿತ್ಸಾ ವಿಭಾಗದ REG NO. BH0120014 ಅವರನ್ನು ಸಂಪರ್ಕಿಸಬಹುದು, ಕಾಹೇರ್ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಜೆ. ಎನ್ ವೈದ್ಯಕೀಯ ಕಾಲೇಜು ಡಾ. _____, ಜನರಲ್ ಸರ್ಜರಿ ವಿಭಾಗದ ಪ್ರಾಧ್ಯಾಪಕರು, ಕಾಹೇರ್ ವಿಶ್ವವಿದ್ಯಾಲಯದ ಜೆ. ಎನ್ ವೈದ್ಯಕೀಯ ಕಾಲೇಜು, ಬೆಳಗಾವಿ.

ಅಧ್ಯಯನದಲ್ಲಿ ನಿಮ್ಮ ಭಾಗವಹಿಸುವಿಕೆ ಸ್ವಯಂಪ್ರೇರಿತವಾಗಿದೆ. ಅಧ್ಯಯನದ ಪಾಲ್ಗೊಳ್ಳುವವರಾಗಿ ನಿಮ್ಮ ಹಕ್ಕುಗಳ ಬಗ್ಗೆ ನಿಮಗೆ ಹೆಚ್ಚಿನ ಮಾಹಿತಿ ಬೇಕಾದರೆ, ನೀವು ಸಂಪರ್ಕಿಸಬಹುದು ಡಾ. ರೂಪಾ ಎಂ. ಬೆಲ್ಲದ ನೈತಿಕ ಸಮಿತಿಯ ಮುಖ್ಯಸ್ಥ, ಪೀಡಿಯಾಟ್ರಿಕ್ಸ್ ವಿಭಾಗ, ಜೆ.ಎನ್. ವೈದ್ಯಕೀಯ ಕಾಲೇಜು, ಕಾಹೇರ್, ಬೆಳಗಾವಿ 590010 ಮೊಬೈಲ್ - 0831

2473777

ಒಪ್ಪಿಗೆ ಪತ್ರ

ಅಧ್ಯಯನದ ಶೀರ್ಷಿಕೆ: ಚುನಾಯಿತ ಶಸ್ತ್ರಚಿಕಿತ್ಸೆಗಳಲ್ಲಿ ಸರ್ಜಿಕಲ್ ಸೈಟ್ ಸೋಂಕುಗಳಲ್ಲಿ ಸೀರಮ್ ಕೊಲೆಸ್ಟ್ರಾಲ್ ಮತ್ತು ಸೀರಮ್ ಅಲ್ಬುಮಿನ್ ಬಗ್ಗೆ ಒಂದು ಅಧ್ಯಯನ - ಕಾಹರ್ ಡಾ. ಪ್ರಭಾಕರ್ ಕೋರೆ ಚಾರಿಟೇಬಲ್ ಆಸ್ಪತ್ರೆ ಮತ್ತು ವೈದ್ಯಕೀಯ ಸಂಶೋಧನಾ ಕೇಂದ್ರದಲ್ಲಿ ಒಂದು ವರ್ಷದ ಅವಧಿಯ ನಿರೀಕ್ಷಿತ, ವೀಕ್ಷಣಾ ಅಧ್ಯಯನ, ಬೆಳಗಾವಿ.

1.ನಾನು ಮಾಹಿತಿ ಹಾಳೆಯನ್ನು ಓದಿದ್ದೇನೆ ಮತ್ತು ಅರ್ಥಮಾಡಿಕೊಂಡಿದ್ದೇನೆ ಎಂದು ನಾನು ಖಚಿತಪಡಿಸುತ್ತೇನೆ

2.ಮೇಲಿನ ಅಧ್ಯಯನ ಮತ್ತು ಪ್ರಶ್ನೆಗಳನ್ನು ಕೇಳುವ ಅವಕಾಶವಿದೆ.

ಥೆಸ್ಕೂಡಿಯಲ್ಲಿ ನನ್ನ ಭಾಗವಹಿಸುವಿಕೆ ಸ್ವಯಂಪ್ರೇರಿತವಾಗಿದೆ ಮತ್ತು ಐಯಾಮ್ ಎಂದು ಅರ್ಥೈಸಲಾಗಿದೆ

3.ಫ್ರೀಟೊ ಯಾವುದೇ ಸಮಯದಲ್ಲಿ ಹಿಂತೆಗೆದುಕೊಳ್ಳಿ, ಯಾವುದೇ ಕಾರಣವನ್ನು ನೀಡದೆ, ಹೊರತಾಗಿ

ವೈದ್ಯಕೀಯ ಆರೈಕೆ ಕಾನೂನು ಹಕ್ಕುಗಳ ಮೇಲೆ ಪರಿಣಾಮ ಬೀರುತ್ತಿದೆ.ತಾಂತ್ರಿಕ ಪ್ರಯೋಗದ ಪ್ರಾಯೋಜಕರು, ಪ್ರಾಯೋಜಕರ ಪರವಾಗಿ ಕೆಲಸ ಮಾಡುವ ಇತರರು, ಎಥಿಕ್ಸ್ ಕಮಿಟಿ ಮತ್ತು ಅಲ್ಲಿನ ಅಧಿಕಾರಿಗಳು ನನ್ನ ಆರೋಗ್ಯ ದಾಖಲೆಗಳನ್ನು ನೋಡಲು ನನ್ನ ಅನುಮತಿಯನ್ನು ಗಮನಿಸಿಲ್ಲ, ಪ್ರಸ್ತುತ ಅಧ್ಯಯನದ ಗೌರವ ಮತ್ತು ಯಾವುದೇ ಹೆಚ್ಚಿನ ಸಂಶೋಧನೆಗಳು, ಅದಕ್ಕೆ ಸಂಬಂಧಿಸಿದಂತೆ ನಡೆಸಬಹುದು, ಐವಿತ್‌ಡ್ರಾಫ್ರೊಮ್ ಥಿಯೇಟ್ರಿಯಲ್ ಆಗಿದ್ದರೂ ಸಹ.

4.ನಾನು ಈ ಪ್ರವೇಶವನ್ನು ಒಪ್ಪುತ್ತೇನೆ. ಆದಾಗ್ಯೂ, ಅದನ್ನು ಅರ್ಥಮಾಡಿಕೊಂಡಿದ್ದೇನೆ

ಮೂರನೇ ವ್ಯಕ್ತಿಗಳಿಗೆ ಪ್ರಕಟವಾದ ಯಾವುದೇ ಮಾಹಿತಿಯಲ್ಲಿ ನನ್ನ ಗುರುತನ್ನು ಬಹಿರಂಗಪಡಿಸುವುದಿಲ್ಲ.

5.ಈ ಅಧ್ಯಯನವು ಉದ್ದವಿಸುವ ಯಾವುದೇ ಡೇಟಾ ಅಥವಾ ಫಲಿತಾಂಶಗಳ ಬಳಕೆಯನ್ನು ನಿರ್ಬಂಧಿಸದಿರಲು ನಾನು ಒಪ್ಪುತ್ತೇನೆ, ಅಂತಹ ಬಳಕೆ ವೈಜ್ಞಾನಿಕ ಉದ್ದೇಶಗಳಿಗಾಗಿ ಮಾತ್ರ.

ಮೇಲಿನ ಅಧ್ಯಯನದಲ್ಲಿ ಭಾಗವಹಿಸಲು ನಾನು ಒಪ್ಪುತ್ತೇನೆ.

माहितीपूर्ण संमती

अभ्यासाचा उद्देश

REG NO. BH0120014, पोस्ट ग्रॅज्युएट इन एम. एस. जनरल सर्जरी, डॉ. _____, प्रोफेसर ऑफ जनरल सर्जरी विभाग, जे.एन. मेडिकल कॉलेज, काहेर युनिव्हर्सिटी, बेलागावी अल्ट्रासोनोग्राफी निष्कर्ष □ णि डॉ. प्रभाकर चॅरिटेबल हॉस्पिटल □ णि वैद्यकीय संशोधन केंद्र, बेलागावी येथे निवडक शस्त्रक्रियांमध्ये सर्जिकल साइट संक्रमणांमधील सीरम कोलेस्टेरॉल □ णि सीरम अल्बमिन विषयी

सर्जिकल साइट इन्फेक्शन हे नोसोकोमियल इन्फेक्शनचे प्रमुख कारण □ हे जे 15-20% □ हे. सर्जिकल साइट इन्फेक्शन्स सातत्याने लक्षणीय विकृती □ णि मृत्यूशी संबंधित असतात, दीर्घकाळ हॉस्पिटलायझेशन, गहन काळजी घेणारी युनिट प्रवेश □ णि जास्त वारंवार प्रवेश प्री ऑपरेटिव्ह कोलेस्ट्रॉल □ णि अल्बमिन □ णि एसएस□ यच्या विकासामधील संबंध निश्चित करणे.

अभ्यास प्रक्रिया

एकदा □ पण सूचित संमतीवर स्वाक्षरी केल्यानंतर, □ वश्यक ती वैयक्तिक माहिती □ णि तपशीलवार वैद्यकीय इतिहास तपासनीस घेईल. सीरम कोलेस्टेरॉल □ णि सीरम अल्बमिनचे मोजमाप केले जाईल □ णि एसएस□ यच्या पोस्ट ऑपरेटिव्ह निकालाचे परीक्षण साऊथॅम्प्टन ग्रेडिंगद्वारे केले जाईल. पाठपुरावा @ 3 रा, 5 वा, 7 वा, 12 व 30 दिवस साजरा केला जाईल.

संभाव्य धोका

हा पूर्णपणे निरीक्षण अभ्यास □ हे, कोणत्याही जोखमीची अपेक्षा केली जात नाही.

फायदे

यामुळे सीरम कोलेस्टेरॉल □ णि अल्बमिनमधील संबंध समजून घेण्यास □ णि एसएस□ यच्या विकासास मदत होईल □ णि हे टाळण्यासाठी चरणांमध्ये मदत करेल.

सहभागासाठी □ र्थिक प्रोत्साहन

या अभ्यासामध्ये भाग घेण्यासाठी □ पल्याला कोणतेही देय प्राप्त होणार नाही.

विकल्प

या अभ्यासामध्ये □ पला सहभाग पूर्णपणे ऐच्छिक □ हे. □ पण कधीही अभ्यासास भाग घेण्यास किंवा माघार घेण्यास मोकळे □ हात. □ पणास अद्याप रुग्णालयातून प्रमाणित वैद्यकीय सेवा मिळेल.

गोपनीयता :

माझ्या गोपनीयतेचे रक्षण करण्यासाठी, संकलित केलेल्या सर्व माहितीस एक नंबर दिला जाईल

त्याऐवजी माझे नाव वापरण्यापेक्षा. अभ्यासादरम्यान गोळा केलेली कोणतीही माहिती गोपनीय राहील. माझ्या वैयकीय फायलीचे पुनरावलोकन फक्त रुग्णालयात केले जाईल (किंवा

माहिती तपासण्यासाठी ः णि माझी गोपनीयता न तोडता परीणाम तपासण्यासाठी डॉक्टरच्या कार्यालयाचा अभ्यास करा).

निकाल प्रकाशित करण्यासाठी प्राधिकृत

इतर अभ्यासासह तिला मिळविण्यासाठी माझ्याबद्दलच्या माहितीचे विश्लेषण केले जाईल सहभागी .

या अभ्यासाचे निकाल वैज्ञानिक उद्देशाने प्रकाशित केले जातील ः णि वैज्ञानिक गटांसमोर सादर केले जातील, परंतु अभ्यासाच्या निकालांच्या सादरीकरणात मला वैयक्तिकरित्या कधीच ओळखले जाणार नाही.

संस्थात्मक धोरण:

अभ्यासाशी संबंधित काही प्रश्न असल्यास, भविष्यात किंवा अभ्यासाशी संबंधित दुखापत किंवा ः जारपणाच्या बाबतीत, ः पण REG NO. BH0120014, जनरल सर्जरी विभाग, काहेर विद्यापीठाचे जे. एन मेडिकल कॉलेज, पीएच. किंवा डॉ. _____, प्रोफेसर सामान्य शस्त्रक्रिया विभाग, काहेर विद्यापीठाचे जे. एन मेडिकल कॉलेज, बेलागावी किंवा .

ऐच्छिक सहभाग

अभ्यासामध्ये ः पला सहभाग ऐच्छिक ः हे. जर ः पल्याला अभ्यास सहभागी म्हणून ः पल्या हक्कासंबंधी अधिक माहिती हवी असेल तर ः पण संपर्क साधू शकता डॉ. रूपा एम. बेल्लद नैतिक समितीचे अध्यक्ष बाल रोग विभाग, जे. एन. मेडिकल कॉलेज, काहेर, बेळगवी -590010 फोन नंबर : 0831 2473777

संमती पत्र

अभ्यासाचे शीर्षक: निवडक शस्त्रक्रियांमध्ये सर्जिकल साइट संक्रमणांमधील सीरम कोलेस्टेरॉल □ नि सीरम अल्बमिन विषयी - काहेर. डॉ. प्रभाकर कोरे चॅरिटेबल हॉस्पिटल □ नि वैद्यकीय संशोधन केंद्र, बेलागावी .

1. मी पुष्टी करतो की मी माहितीचे पत्रक वाचले □ नि समजले □ हे वरील अभ्यास □ नि प्रश्न विचारण्याची संधी मिळाली □ हे .

2. माझा गैरसमज □ हे की माझा अभ्यासात सहभाग हा ऐच्छिक □ हे □ नि तो □ हे फ्रेटो कोणत्याही वेळी विनाकारण, कोणत्याही कारणाशिवाय, माघार घेऊ शकते वैद्यकीय देखभाल अधिकारांवर परिणाम होत □ हे .

3. ते म्हणजे क्लिनिकल चाचणीचा प्रायोजक, प्रायोजकांच्या वतीने काम करणारे इतर, नैतिक समिती □ नि त्या संबंधित अधिकारी प्राधान्य दिले असतील □ तापर्यंतच्या अभ्यासाचा □ नि त्यासंबंधीचा इन्फॉर्मेशन थिअट्रियलचा संबंध असला तरीही पुढील संशोधनाबद्दलच्या माझ्या □ रोग्याच्या नोंदी पाहण्याची माझी परवानगी लक्षात घेतली. मी हा प्रवेश तथापि, मी ते समजले तृतीय पक्षांना प्रकाशित केलेल्या कोणत्याही माहितीमध्ये माझी ओळख उघडली जाणार नाही.

4. या अभ्यासामुळे उद्भवलेल्या कोणत्याही डेटाचा किंवा परिणामाचा वापर मर्यादित न ठेवण्यासाठी मी सहमत □ हे परंतु अशा प्रकारच्या वापराचा उपयोग केवळ वैज्ञानिक हेतूसाठी केला गेला □ हे .

5. मी वरील अभ्यासामध्ये भाग घेण्यास सहमत □ हे.

ANNEXURE II

PROFORMA

SCREENING FORM

Screening No.
 Enrollment No.
 Date of Screening

First Name
 Middle Name
 Last Name
 Age(Years)

Address

H No.
 Street
 Taluka
 District

Phone No.1
 Phone No.2

Eligibility

YES : 1

NO: 2

Admitted >1 day	☐
Laparoscopic Surgery	☐
Laparoscopic Appendicectomy	☐
Laparoscopic Cholecystectomy	☐
Open Surgery	☐
Open Appendicectomy	☐
Open Cholecystectomy	☐
Breast Surgery	☐
Immunocompromised	☐

Diabetes Mellitus	☐
Connective Tissue Disorder	☐
Follow Up	☐
Emergency Surgery	☐
H/O Smoking	☐
Eligible	☐
Consent:	☐
Does Patient Consent to Participate	☐
Has the Consent being Signed	☐
Enrollment	☐

Signature:

PRO-FORMA

1. SCREENING. ID
2. UNIT/WARD
3. DATE OF ADMISSION
4. DATE OF SURGERY
5. DATE OF DISCHARGE
 - > YES- 1
 - > NO- 2

CHIEF COMPLAINTS

1. PAIN/TENDERNESS ☐
2. DISTENSION ☐
3. VOMITING ☐
4. CONSTIPATION ☐
5. FEVER ☐
6. SHOCK ☐

1. TIME TAKEN TO REACH HOSPITAL FROM SYMPTOMS ONSET

- 1.<24 HOURS ☐
- 2.>24HOURS ☐

1. PAST HISTORY

COMORBID CONDITIONS

- 1.NSAID INTAKE. ☐
- 2.HYPERTENSION ☐
- 3.TB ☐
- 4.DIABETES ☐
- 5.MALIGNANCY ☐
- 6.SMOKING ☐
- 7.ALCOHOL INTAKE ☐
- 8.OBESITY ☐

1. GENERAL PHYSICAL CONDITIONS

1. HEIGHT (cm) ☐
2. WEIGHT (kg) ☐
3. BMI (kg/m²) ☐
4. PALLOR ☐
5. EDEMA ☐
6. PULSE (bpm) ☐
7. BP (mm of hg) ☐
8. TEMPERATURE (F) ☐

1. INVESTIGATIONS

1. SERUM CHOLESTEROL ☐
2. SERUM ALBUMIN ☐

1. ADMISSION TO OPERATION TIME

- <12 hrs ☐
>12 hrs ☐

2. OPERATION DETAILS

1. ELECTIVE : 1
2. EMERGENCY : 2

1. PROCEDURE ☐

2. OPERATIVE FINDINGS ☐

3. OPERATIVE DIAGNOSIS ☐

4. IF ADDITIONAL ANTIBIOTIC GIVEN DURING OP ☐

SOUTHAMPTON WOUND GRADING SYSTEM

Grade	Appearance	Day 3	Day 5	Day 7	Day 15
0	Normal Healing				
1	Normal Healing with mild bruising or erythema.				
1a	Some bruising				
1b	Considerable bruising				
1c	Mild erythema				
2	Erythema plus other signs of inflammation				
2a	At one point				
2b	Around sutures				
2c	Along wound				
2d	Around wound				
3	Clear or haemoserous discharge				
3a	At one point (<=2cm)				
3b	Along wound(>2 cm)				
3c	Large volume				
3d	Prolonged(>3 days)				
4	Pus				
4a	At one point(<=2cm)				
4b	Along wound(>2cm)				
5	Deep or severe wound infection with or without tissue breakdown; hematoma requiring aspiration.				

SSI ☐

POST OPERATIVE

1. ANTIBIOTICS ☐
2. SIGNS OF WOUND INFECTION AS PER SOUTHAMPTON WOUND GRADING SYSTEM. ☐
3. DAY OF WOUND INFECTION ☐
4. MANAGEMENT OF WOUND INFECTION ☐
1. WOUND CULTURE AND SWAB GROWTH SENSITIVITY ☐
1. FOLLOW UP AFTER DISCHARGE @ 30th Day. ☐

PHOTOGRAPHS



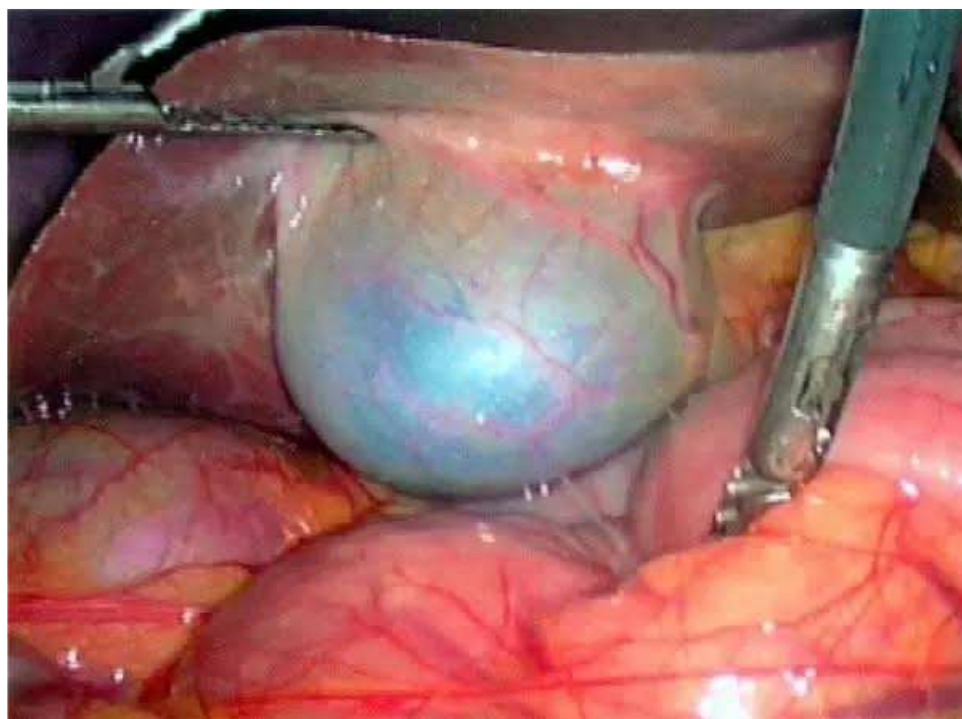
PIC 1 GALLBLADDER



PIC 2 APPENDIX



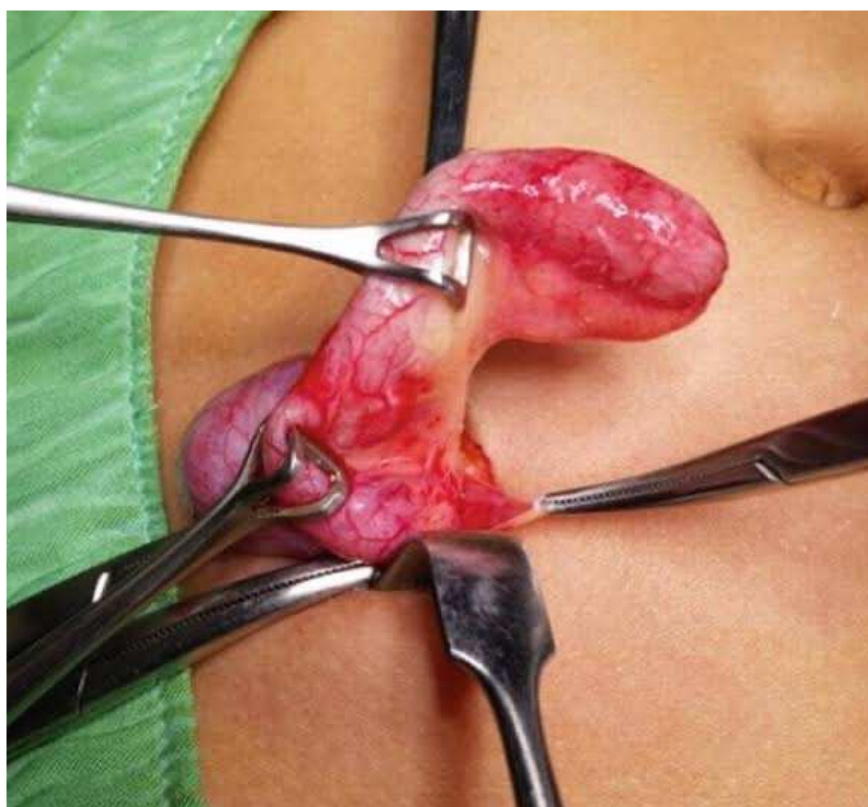
PIC 3 INTRA OP GALLBLADDER



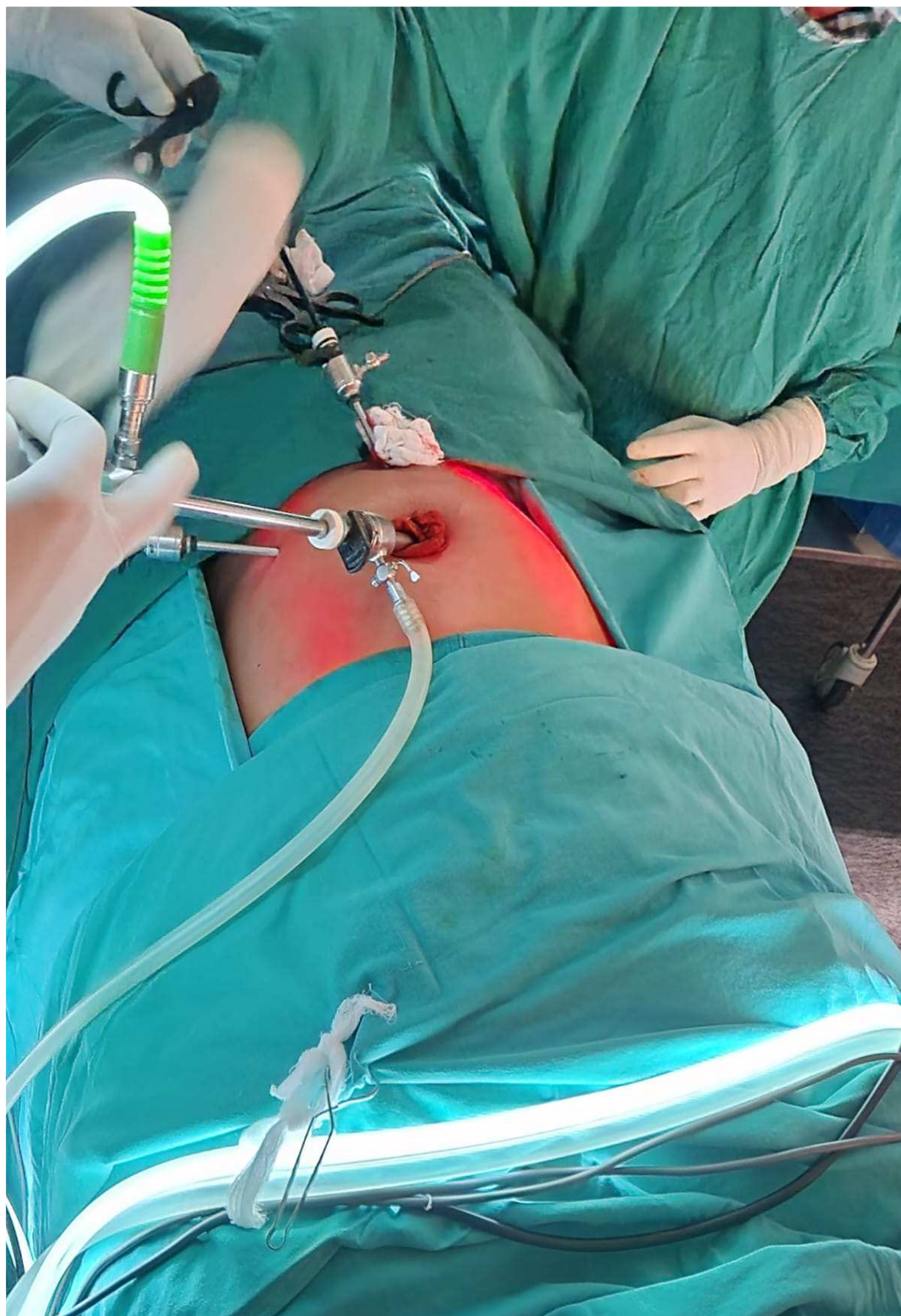
PIC 4 INTRA OP GALLBLADDER



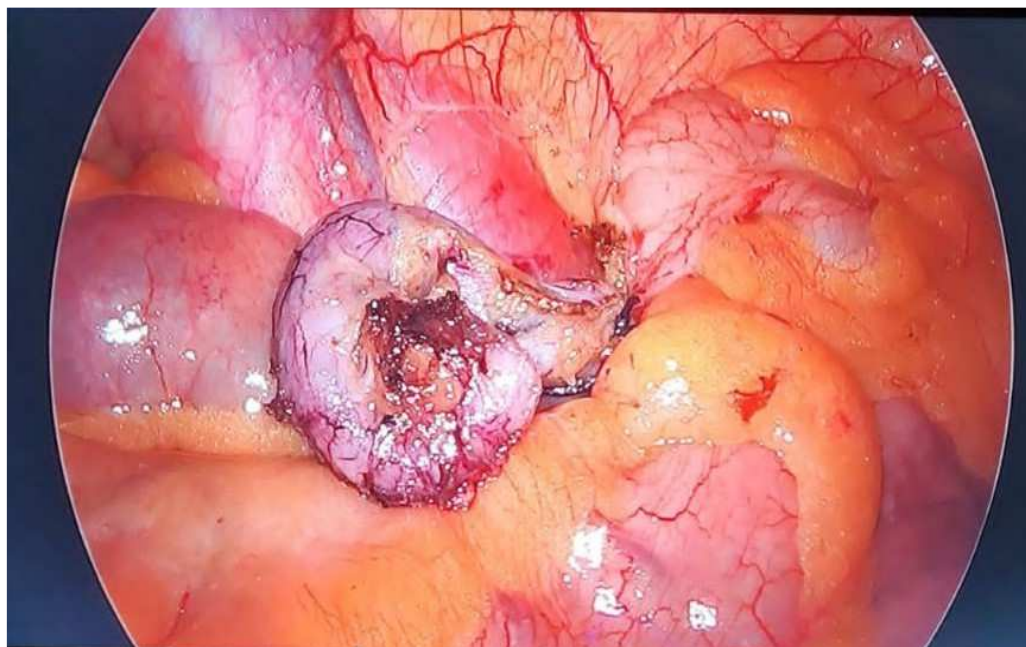
PIC 5 INTRA OP APPENDIX



PIC 6 OPEN APPENDIX



PIC 7 PORT POSITION IN LAPAROSCOPIC APPENDICECTOMY



PIC 8 INTRA-OPERATIVE IMAGE OF ACUTE APPENDICITIS

KEY TO MASTER CHART

1	Yes
2	No
3	Laparoscopic Surgery
4	Open Surgery
IP	In Patient
Lap	Laparoscopic
SSI	Surgical Site Infection
BP	Blood Pressure
TB	Tuberculosis
Hrs	Hours
DOA	Date of Admission
DOS	Date of Surgery
DOD	Date of Discharge
Op	Operative

S I NO.	IP NO.	AGE	SEX	DOA	DOS	DOD	SYMPTOMS				Time taken to reach Hospital		Comorbidities						GENERAL EXAMINATION						INVESTIGATIONS		ADMISSION TO OPERATION		OPERATION DETAILS				POST OPERATIVE										Follow up				SSI					
							Pain	Fever	Vomitin g	Guardin g/rigidit y	<24hr s	>24HR S	Hypertensio n	TB	Malignan cy	Smokin g	Alcohol	Obesity	Connective Tissue Ds	Pulse	BP	Febrile	Pallor	Edema	Sr Cholester ol	Sr Albumin	<12hrs	>12 hrs	Type of Surgery	Procedure	Pre op Antibiotic s	Antibiotic s intraop	Post op Antibiotic s	Managemen t of Infection	Wound C&S	Southampton grade							Day of infectio n	D7	D1 0	D1 5	D3 0					
																																				1a	1b	1c	2a	2b	2c	2d	3									
1	1077184	38	M	0026/10/21	0027/10/21	0031/10/21	1	1	2	2	2	1	2	2	2	2	2	2	2	2	90	120;70	2	2	2	160	4.3	2	1	3	Lap cholecystectomy	2	1	2	2	2	2	1	1b									1	1	1	1	2
2	1076537	38	F	0022/10/21	0023/10/21	11-04-2021	1	1	2	2	2	1	2	2	2	2	2	2	2	88	110;72	1	2	2	168	3.9	2	1	3	Lap Appendectomy	2	1	2	2	2	2	1									1	1	1	1	2		
3	1088477	66	F	0030/12/21	0031/12/21	01-10-2022	1	2	1	2	2	1	1	2	2	2	2	2	2	98	140;80	2	2	2	152	3.6	2	1	4	Open cholecystectomy	2	1	1	2	2	2	1									1	1	1	1	2		
4	1088240	29	M	0028/12/21	0030/12/21	01-06-2022	1	2	1	2	2	1	2	2	2		2	2	2	88	130;80	2	2	2	151	2.9	2	1	3	Lap appendectomy	2	1	2	1	1	1						1	3	1	1	1	1	1				
5	1088805	22	M	0030/11/21	12-04-2021	12-07-2021	1	1	2	2	2	1	2	2	2	2	1	2	2	92	120;74	2	2	2	108	3.8	2	1	3	Lap appendectomy	2	1	2	2	2	2		1							1	1	1	1	2			
6	1088955	14	M	12-01-2021	12-05-2021	12-08-2021	1	2	1	2	2	1	2	2	2	2	2	2	2	100	118;66	2	2	2	154	3.8	2	1	3	Lap appendectomy	2	1	2	2	2	2		1							1	1	1	1	2			
7	1088483	34	M	0030/12/21	0031/12/21	01-08-2022	1	2	2	2	2	1	2	2	2	2	2	2	2	90	124;68	2	2	2	157	3.7	2	1	3	Lap cholecystectomy	2	1	2	2	2	2	1	1								1	1	1	1	2		
8	1084230	45	M	12-06-2021	12-10-2021	0015/12/21	1	1	2	2	2	1	1	2	2	1	1	2	2	82	112;76	2	2	2	107	4.2	2	1	3	Lap appendectomy	2	1	2	2	2	2	1								1	1	1	1	2			
9	1084264	62	M	12-06-2021	12-08-2021	0013/12/21	1	1	1	2	2	1	1	2	2	2	1	2	2	88	130;90	2	2	2	121	3.1	2	1	3	Lap appendectomy	2	1	1	1	1	1						1	5	1	1	1	1	1				
10	1085096	58	F	12-10-2021	0015/12/21	0020/12/21	1	1	2	2	2	1	1	2	2	2	2	1	2	92	134;92	2	1	2	212	3.4	2	1	3	Lap cholecystectomy	2	1	2	2	2	2		1							1	1	1	1	2			
11	1083601	30	F	12-02-2021	12-06-2021	12-11-2021	1	2	1	2	2	1	2	2	2	2	2	2	2	86	120;70	2	1	2	158	4.4	2	1	3	Lap appendectomy	2	1	2	2	2	2	1								1	1	1	1	2			
12	1083614	70	M	12-02-2021	12-04-2021	12-11-2021	1	2	1	2	2	1	1	2	2	2	1	2	2	96	110;70	2	1	2	113	3.8	2	1	3	Lap cholecystectomy	2	1	1	1	1	2						1		3	1	1	1	1	1			
13	1082728	40	F	0027/11/21	0029/11/21	2/12/21	1	1	1	2	2	1	2	2	2	2	2	2	2	88	120;70	2	2	2	157	4.2	2	1	3	Lap appendectomy	2	1	2	2	2	2		1								1	1	1	1	2		
14	1083263	48	F	0030/11/21	12-02-2021	12-06-2021	1	2	1	2	2	1	2	2	2	2	2	1	2	92	130;70	2	1	2	199	4.2	2	1	3	Lap cholecystectomy	2	1	2	2	2	2		1								1	1	1	1	2		
15	1080560	49	M	0016/11/21	0017/11/21	0018/11/21	1	2	2	2	2	1	2	2	2	2	2	2	2	86	120;70	2	1	2	160	4.3	2	1	3	Lap cholecystectomy	2	1	2	2	2	2	1									1	1	1	1	2		
16	1080509	40	F	0015/11/21	0017/11/21	0022/11/21	1	2	1	2	2	1	2	2	2	2	2	2	2	90	110;70	2	2	2	147	2.8	2	1	3	Lap appendectomy	2	1	1	1	1	2						1		5	1	1	1	1	1			
17	1080469	54	F	0015/11/21	0017/11/21	0019/11/21	1	1	2	2	2	1	1	2	2	2	2	2	2	78	120;70	1	2	2	155	3.8	2	1	3	Lap cholecystectomy	2	1	2	2	2	2	1									1	1	1	1	2		
18	1080378	77	M	0015/11/21	0017/11/21	0030/11/21	1	2	1	2	2	1	1	2	2	2	1	2	2	92	140;90	2	2	2	85	3.8	2	1	3	Lap cholecystectomy	2	1	1	1	1	1						1		3	1	1	1	1	1			
19	1080864	18	M	0017/11/21	0019/11/21	0024/11/21	1	2	1	2	2	1	2	2	2	2	2	2	2	98	130;80	1	2	2	192	4.1	2	1	3	Lap appendectomy	2	1	2	2	2	2	1									1	1	1	1	2		
20	6260123	38	F	0026/10/21	0028/10/21	11-02-2021	1	1	2	2	2	1	2	2	2	2	1	2	2	94	120;70	2	2	2	168	3.9	2	1	3	Lap appendectomy	2	1	2	2	2	2		1								1	1	1	1	2		
21	1061676	19	M	0028/7/21	0029/7/21	0030/7/21	1	2	1	2	2	1	2	2	2	2	2	2	2	90	110;70	2	2	2	93	3	2	1	3	Lap appendectomy	2	1	2	1	2	2						1				1	1	1	1	1		
22	1059603	45	F	0014/7/21	0016/7/21	0019/7/21	1	1	2	2	2	1	2	2	2	2	2	2	2	88	120;70	2	2	2	122	3.9	2	1	3	Lap appendectomy	2	1	1	1	1	2						1				1	1	1	1	1		
23	1058384	42	F	07-06-2021	07-07-2021	0013/7/21	1	1	2	2	2	1	2	2	2	2	2	2	2	92	130;70	2	2	2	116	3	2	1	3	Lap appendectomy	2	1	1	1	1	1							1		5	1	1	1	1	1		
24	1067130	24	M	09-01-2021	09-03-2021	09-11-2021	1	1	2	2	2	1	2	2	2	2	2	2	2	96	130;80	2	2	2	114	3.7	2	1	3	Lap appendectomy	2	1	1	1	1	2						1		5	1	1	1	1	1			
25	1063638	27	F	08-10-2021	08-12-2021	0028/8/21	1	2	1	2	2	1	2	2	2	2	2	2	2	92	120;70	2	1	2	131	4.2	2	1	3	Lap appendectomy	2	1	2	2	2	2		1								1	1	1	1	2		
26	1063071	41	F	08-06-2021	08-09-2021	0020/8/21	1	1	2	2	2	1	2	2	2	2	2	2	2	90	110;70	2	1	2	85	4.2	2	1	3	Lap appendectomy	2	1	1	1	1	1						1		5	1	1	1	1	1			
27	1054764	54	F	06-07-2021	06-08-2021	06-10-2021	1	2	1	2	2	1	1	2	2	2	2	2	2	92	120;70	2	2	2	180	3.8	2	1	3	Lap appendectomy	2	1	2	2	2	2	1				</											

28	1042081	17	M	03-02-2021	03-08-2021	0015/3/21	1	1	2	2	2	1	2	2	2	2	2	2	2	96	130;80	2	2	2	152	4	2	1	4	Open appendectomy	2	1	2	2	2			1							1	1	1	1	2
29	1048545	27	M	04-08-2021	04-09-2021	0015/4/21	1	2	1	2	2	1	2	2	2	1	1	2	2	94	120;70	2	2	2	159	3.1	2	1	3	Lap appendectomy	2	1	2	1	2						1		3	1	1	1	1	1	
30	1056214	21	F	0021/6/21	0022/6/21	0024/6/21	1	1	2	2	2	1	2	2	2	2	2	2	100	130;70	2	2	2	140	3.8	2	1	3	Lap appendectomy	2	1	2	2	2			1							1	1	1	1	2	
31	1048435	28	F	04-08-2021	04-09-2021	04-10-2021	1	2	1	2	2	1	2	2	2	2	2	2	96	114;68	2	2	2	155	3.4	2	1	3	Lap appendectomy	2	1	2	2	2			1							1	1	1	1	2	
32	1034679	20	M	01-11-2021	0013/1/21	0016/1/21	1	1	2	2	2	1	2	2	2	1	2	2	98	120;70	2	2	2	112	3.1	2	1	4	Open appendectomy	2	1	1	1	2					1			3	1	1	1	1	1		
33	1033191	53	F	01-01-2021	01-02-2021	01-04-2021	1	1	2	2	2	1	1	2	2	2	2	2	96	110;66	2	2	2	178	4.6	2	1	3	Lap appendectomy	2	1	2	2	2			1							1	1	1	1	2	
34	6024497	39	F	0023/6/21	0025/6/21	07-03-2021	1	2	2	2	2	1	2	2	2	2	2	2	92	120;70	2	2	2	128	3.4	2	1	3	Lap cholecystectomy	2	1	1	1	2					1			3	1	1	1	1	1		
35	1056790	33	F	0025/6/21	0026/6/21	0028/6/21	1	2	1	2	2	1	2	2	2	2	2	2	88	110;68	2	2	2	159	4.2	2	1	3	Lap appendectomy	2	1	2	2	2			1							1	1	1	1	2	
36	1036777	30	F	0027/1/21	0028/1/21	02-02-2021	1	2	1	2	2	1	1	2	2	2	2	2	90	120;74	2	2	2	180	4.4	2	1	3	Lap appendectomy	2	1	2	2	2			1							1	1	1	1	2	
37	1036781	35	M	0027/1/21	0028/1/21	02-04-2021	1	1	2	2	2	1	2	2	2	2	2	2	96	118;72	2	2	2	192	4.3	2	1	3	Lap appendectomy	2	1	2	2	2			1							1	1	1	1	2	
38	1043566	23	F	03-10-2021	0013/3/21	0017/3/21	1	2	1	2	2	1	2	2	2	2	2	2	92	116;74	2	2	2	93	3.1	2	1	3	Lap appendectomy	2	1	1	1	1							1		3	1	1	1	1	1	
39	1076328	60	M	0021/10/21	0022/10/21	11-11-2021	1	2	1	2	2	1	1	2	2	2	2	2	94	110;66	2	2	2	104	3.2	2	1	4	Open cholecystectomy	2	1	1	1	2						1			5	1	1	1	1	1	
40	1076219	34	F	0021/10/21	0023/10/21	0029/11/21	1	2	1	2	2	1	2	2	2	2	2	2	88	124;76	2	2	2	102	4.1	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
41	1077184	38	M	0026/10/21	0027/10/21	0031/10/21	1	2	2	2	2	1	2	2	2	2	2	2	92	138;84	2	2	2	160	4.3	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
42	1033119	70	F	2030-12-20	01-01-2021	01-05-2021	1	2	1	2	2	1	2	2	2	2	2	2	80	114;68	2	2	2	140	3.2	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
43	1065552	38	F	0023/8/21	0025/8/21	0030/8/21	1	2	2	2	2	1	2	2	2	2	2	2	82	130;78	2	2	2	156	4.4	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
44	1066505	60	M	0029/8/21	09-01-2021	09-09-2021	1	2	1	2	2	1	2	2	2	2	2	2	88	122;72	2	2	2	186	3.6	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
45	1065850	47	M	0025/8/21	0026/8/21	0030/8/21	1	2	2	2	2	1	1	2	2	2	2	2	90	126;76	2	2	2	158	3.8	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
46	1064910	37	F	0018/8/21	24/8/21	09-01-2021	1	2	1	2	2	1	2	2	2	2	2	2	84	130;78	2	2	2	157	3.7	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
47	1055436	38	M	0014/6/21	0015/6/21	0017/6/21	1	2	1	2	2	1	2	2	2	2	2	2	86	128;88	2	2	2	158	4.5	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
48	1056533	17	M	0023/6/21	0025/6/21	07-03-2021	1	1	1	2	2	1	2	2	2	2	2	2	90	130;80	2	2	2	117	4.2	2	1	3	Lap appendectomy	2	1	2	2	2			1							1	1	1	1	2	
49	1042885	50	M	0017/3/21	0019/3/21	0022/3/21	1	1	2	2	2	1	2	2	2	2	2	2	92	126;86	2	2	2	77	4	2	1	3	Lap appendectomy	2	1	2	2	2			1							1	1	1	1	2	
50	1055614	42	F	0015/6/21	0017/6/21	0021/6/21	1	2	2	2	2	1	2	2	2	2	2	2	86	128;76	2	2	2	113	3	2	1	3	Lap cholecystectomy	2	1	1	1	1							1		5	1	1	1	1	1	
51	1037728	50	M	2-2-21	4-2-21	5-2-21	1	2	2	2	2	1	2	2	2	2	2	2	84	124;68	2	2	2	112	4.2	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
52	1064716	48	M	0017/8/21	0019/8/21	09-09-2021	1	1	2	2	2	1	2	2	2	2	2	2	94	130;80	2	2	2	106	4	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
53	1062422	56	M	08-12-2021	0014/8/21	0018/8/21	1	2	1	2	2	1	1	2	2	2	2	2	88	126;66	2	2	2	155	4	2	1	4	Open cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
54	1061470	61	F	0027/7/21	0029/7/21	08-02-2021	1	1	2	2	2	1	2	2	2	2	2	2	90	116;68	2	2	2	155	3.1	2	1	4	Open cholecystectomy	2	1	2	2	2				1						1	1	1	1	2	
55	1062341	65	M	08-02-2021	08-03-2021	08-05-2021	1	2	1	2	2	1	2	2	2	2	2	2	92	134;78	2	2	2	126	4.6	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
56	1059788	55	F	0015/7/21	0017/7/21	0030/7/21	1	2	2	2	2	1	2	2	2	2	2	2	88	128;74	2	2	2	160	3.5	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
57	1066851	37	F	0031/8/21	09-02-2021	09-04-2021	1	2	2	2	2	1	2	2	2	2	2	2	90	122;72	2	2	2	156	4.1	2	1	4	Fibroadenoma excision	2	1	2	2	2				1						1	1	1	1	2	
58	1059827	33	F	07-07-2021	07-08-2021	07-09-2021	1	2	2	2	2	1	2	2	2	2	2	2	86	130;80	2	2	2	152	4.1	2	1	4	Accessory breast exci.	2	1	2	2	2			1							1	1	1	1	2	
59	1057158	55	F	07-06-2021	07-07-2021	0013/7/21	1	2	2	2	2	1	2	2	2	2	2	2	88	126;74	2	2	2	177	4	2	1	4	MRM	2	1	2	2	2			1							1	1	1	1	2	
60	1058489	36	F	0015/3/21	0018/3/21	0020/3/21	1	2	2	2	2	1	2	2	2	2	2	2	80	120;84	2	2	2	140	3.8	2	1	4	Breast excision	2	1	2	2	2				1						1	1	1	1	2	
61	1060350	21	F	0019/7/21	08-01-2021	08-05-2021	1	2	2	2	2	1	2	2	2	2	2	2	88	124;86	2	2	2	136	3.9	2	1	4	Breast excision	2	1	2	2	2			1							1	1	1	1	2	
62	<u>1062914</u>	24	M	08-05-2021	08-07-2021	08-09-2021	1	2	2	2	2	1	2	2	2	2	2	2	78	126;76	2	2	2	156	4.2	2	1	3	Lap cholecystectomy	2	1	2	2	2			1							1	1	1	1	2	
63	6090908	50	F	0020/8/21	0022/8/21	0026/8/21	1	1	2	2	2	1	2	2	2	2	2	2	82	118;88	2	2	2	136	4	2	1	3	Lap appendectomy	2	1	2	2	2			1							1	1	1	1	2	
64	<u>1066097</u>	28	F	0026/8/21	09-02-2021	0027/9/21	1	2	1	2	2	1	2	2	2	2	2	2	94	118;72	2	2	2	109	3.3	2	1	4	Open cholecystectomy	2	1	1	1	2					1			3	1	1	1	1	1		
65	<u>1066401</u>	40	F	0028/8/21	09-06-2021	0016/9/21	1	2	1	2	2	1	2	2	2	2	2	2	92	142;82																													

69	1059190	48	M	07-12-2021	0016/7/21	0020/7/21	1	2	2	2	2	1	2	2	2	2	2	2	90	128;76	2	2	2	153	3.8	2	1	3	Lap appendectomy	2	1	2	2	1						1				1	1	1	1	2
70	1060636	31	F	0021/7/21	0023/7/21	0028/7/21	1	1	2	2	2	1	2	2	2	2	2	2	80	118;74	2	2	2	170	3.6	2	1	3	Lap appendectomy	2	1	2	2	2		1							1	1	1	1	2	
71	1059624	57	M	0014/7/21	0016/7/21	0019/7/21	1	2	2	2	2	1	2	2	2	2	2	2	76	126;82	2	2	2	121	3.1	2	1	3	Lap cholecystectomy	2	1	2	2	2		1							1	1	1	1	2	
72	1064095	33	M	0013/8/21	0014/8/21	09-09-2021	1	1	2	2	2	1	2	2	2	2	2	2	96	130;80	2	2	2	94	3.8	2	1	3	Lap appendectomy	1	1	2	2	2			1						1	1	1	1	2	
73	1066528	46	F	0029/8/21	09-01-2021	09-07-2021	1	2	2	2	2	1	2	2	2	2	2	2	88	124;74	2	2	2	117	3.6	2	1	3	Lap cholecystectomy	2	1	2	2	2		1							1	1	1	1	2	
74	1057861	63	F	07-02-2021	07-07-2021	07-12-2021	1	1	2	2	2	1	2	1	2	2	2	2	92	142;90	2	2	2	98	2.6	2	1	3	Lap cholecystectomy	2	1	1	1	1						1	3	1	1	1	1	1		
75	1068616	36	F	09-11-2021	0013/9/21	0017/9/21	1	2	1	2	2	1	2	2	2	2	2	2	78	130;74	2	2	2	195	3.9	2	1	3	Lap cholecystectomy	2	1	2	2	2		1							1	1	1	1	2	
76	1069151	60	M	0015/9/21	0017/9/21	0020/9/21	1	2	2	2	2	1	2	1	2	2	2	2	90	140;88	2	2	2	136	3.2	2	1	3	Lap cholecystectomy	2	1	2	2	2		1							1	1	1	1	2	
77	1068682	38	M	09-12-2021	0014/9/21	0027/9/21	1	2	1	2	2	1	2	2	2	2	2	2	88	120;76	2	2	2	188	3.8	2	1	3	Lap cholecystectomy	2	1	2	2	2		1							1	1	1	1	2	