“MICROBIOLOGICAL PROFILE OF SURGICAL SITE INFECTIONS FOLLOWING SURGICAL PROCEDURES IN THE DEPARTMENT OF OBSTETRICS AND GYNAECOLOGY – A DESCRIPTIVE OBSERVATIONAL STUDY”

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LIST OF ABBREVIATIONS USED

SSI	Surgical site infection
LSCS	Lower segment caesarean section
TAH	Total abdominal hysterectomy
CS	Caesarean section
CoNS	Coagulase negative staphylococcus
MRSA	Methicillin resistant staphylococcus aureus
GDM	Gestational diabetes mellitus
PROM	Premature rupture of membranes
FTVD	Full term vaginal delivery
PCV	Packed cell volume
PDGF	Platelet derived growth factor
TGF-β	Transforming growth factor
FGF	Fibroblast growth factor
KGF	Keratinocyte growth factor
EGF	Epidermal growth factor
IGF-1	Insulin like growth factor
PMNs	Polymorphonuclear leucocytes

ABSTRACT

TITLE

Microbiological profile of surgical site infections following surgical procedures in the department of obstetrics and gynaecology – a descriptive observational study

INTRODUCTION

Surgical site infection is defined as an infection occurring within 30 days after a surgical operation and affecting either incision or deep tissues at the operation site. Post operative SSI is among the most common problems for patients who undergo surgical procedures. It is associated with increased morbidity, mortality, prolonged hospital stay, secondary infertility and increased economic costs for patient care. Complications of SSIs include prolonged wound healing, wound dehiscence, wound pain, burst abdomen, necrotising fasciitis and pelvic abscess, prolonged admission, a prolonged course of antibiotics, the possibility of re admission, secondary repair surgery, incisional hernia, disfiguring scar, and in rare condition can lead to severe sepsis and mortality. It also affects the physical, emotional, social and economic aspects of life. Therefore, a better understanding of the spectrum of pathogens causing SSI as well as their susceptibility pattern is important for prompt management of patients and provides evidenced-based sensitive antibiotics to be commenced initially.

OBJECTIVES

PRIMARY OBJECTIVE- To determine the microbiological profile of surgical site infections following surgical procedures in the department of obstetrics and gynaecology and their antimicrobial susceptibility pattern.

SECONDARY OBJECTIVE- To determine the risk factors for surgical site infections following surgical procedures in the department of obstetrics and gynaecology

METHODS

After taking approval from the ethical committee and taking informed consents from the women who meet the inclusion criteria, wound swabs for microbiological culture will be taken from the infection site using sterile swabs sticks before the wound is cleaned with an antiseptic solution without contaminating with skin commensals and will be sent to the microbiological laboratory immediately for microscopy and antibiotic sensitivity testing. Structured questionnaires will be used to extract data such as age, existing chronic disease (such as diabetes mellitus, hypertension), lack of prenatal care, history of previous caesarean section , past medical history, longer preoperative hospitalization ,emergency or labored deliveries ,current drug use such as steroid and smoking, weight, height and body mass index (BMI). Then biochemical studies are done for 18-24 hours for identification of bacteria and anti susceptibility testing is done with CSLI guidelines.

RESULTS

During the study period, 4,886 women underwent major obstetric and gynecological surgeries; out of which 186 were screened with SSI (3.8 %). A total of 120 patients were recruited in the study and 66 were not recruited. A total of 120 women had SSI following obstetric surgeries (81.7%) and 22 women following gynecological surgeries (18.3%). The number of emergency surgeries were 79 (65.8%), which included emergency lower segment cesarean section (LSCS) and the elective cases were 41 (34.2%), which comprised of elective LSCS, tubal ligation, and gynecological surgeries such as total abdominal hysterectomy, laparotomy, myomectomy.

CONCLUSION

In conclusion, the post-caesarean SSI rate is higher in our hospital. Wherein, emergency cases had higher rate of SSI than elective cases. The most common indications for obstetric surgeries developing SSI were previous LSCS and fetal distress, while fibroid uterus and abnormal uterine bleeding were the leading causes in gynaecological procedures. Gram-negative organisms, particularly Escherichia coli and Acinetobacter species, were more frequently isolated, with Carbapenems, Aminoglycosides, and Oxazolidinones being the most effective antibiotics. The use of pre- and postoperative antibiotics, timing of preoperative antibiotics, proper handling of sterile instruments, intra-op suturing techniques and materials, postoperatively proper wound care practices by doctors postoperatively are crucial in bringing down the overall number of SSI. Besides, preceding medical history such as diabetes and chronic hypertension should be supervised efficiently to prevent the development of SSI. This will improve patient safety and decrease the financial burden on individuals and healthcare facilities.

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INTRODUCTION

Worldwide, nosocomial infections are a significant public health concern that has to be addressed. Surgical wound and other soft tissue infections, urinary tract infections, respiratory infections, and blood stream infections are the most common types of nosocomial infections that could arise in a hospital setting. Other less common types include blood stream infections.[1] The Centre for Disease Control define an SSI as "an infection related to an operative procedure that occurs at or near the surgical incision within 30 days." [2] Postoperative infection is one of the most significant and leading causes of increased morbidity. This includes higher antibiotic administration, an increased number of reoperations, and prolonged hospital and intensive care unit (ICU) stays. As a result, treatment costs are increased, and resource utilisation is increased. [3]

A caesarean section and an abdominal hysterectomy are two examples of obstetric and gynaecological procedures that carry a substantial risk of secondary infection after the treatment. By a factor of two to twenty, the risk of infection is significantly higher for women who have undergone caesarean sections as opposed to those who have given birth vaginally. [4] The country of India has a wound sepsis incidence that ranges from 10 to 33 percent overall. On the other hand, incidences of wound complications in the obstetric population might range anywhere from 2.8% to 26.6%, depending on the specific circumstances.[5] The bacteria that are responsible for producing post-operative wound infection can either be endogenous, which means that the infection is produced by the patient's internal flora, or exogenous, which means that the infection is caused by germs that are obtained from the environment of the hospital. [5]

There is a significant amount of heterogeneity in the susceptibility pattern of bacteria that are accountable for contributing to the development of conditions. Before beginning empirical treatment, it will be beneficial to have knowledge of the organism that is most likely to be the culprit, as well as the overall pattern of antibiotic sensitivity and resistance. This will allow for the most effective treatment to be administered. The outcome is ultimately determined by a number of factors that are present within the patient and his environment, both in the immediate neighbourhood and in the wider environment. Some of these factors include microorganisms, but the majority of them are present in the patient's environment. The aetiology of postoperative wound infection comprises a variety of local variables, each of which plays a key role in the development of the infection. A few examples of them are haematomas, seromas, suture material, inadequate surgical skill, the degree of contamination, as well as age, food, hygiene, and other disorders that are related with the condition. [6]

Surgical site infections (SSI) are caused by a number of different factors, including demographic characteristics, peri-operative co-morbid diseases such as the presence of vaginal discharge, the presence of vaginal examinations up to 48 hours prior to surgery, and increased blood sugar levels (caused by either diabetic mellitus or gestational diabetes or both). These factors are categorised into several categories. Comorbidities include, but are not limited to, hypertension, severe anaemia, and the presence of any systemic disease that has been identified, such as renal, cardiac, or liver disease. Comorbidities are also known as co-morbidities. An investigation was conducted into the following intraoperative parameters: the classification of the wound, the existence of additional surgical procedures at the same time, the length of the operation, and whether or not the surgery was an emergency. Each of these criteria was explored. In order to make a comparison between patients who had surgical site infections (SSIs) and those who did not have SSIs, the length of time that patients spent in the hospital before and after surgery was measured in days.[7]

The need for the study is-

- Postoperative SSI is among the most common problems for patients who undergo surgical procedures. It is associated with increased morbidity, mortality, prolonged hospital stay, secondary infertility and increased economic costs for patient care .
- The incidence of postoperative SSI varies widely between procedure, hospitals, surgeons, patients and geographical locations. There has been advance in SSI control practices which include: improved operating room ventilation, sterilization methods, use of barriers, surgical techniques and availability of antimicrobial prophylaxis. Despite these, SSIs still occur.
- This is partly contributed by the emergence of antimicrobial resistant pathogenic bacteria. Reported risk factors for surgical site infection include emergency caesarean section, prolonged labour prior to caesarean section, prolonged rupture of membranes, multiple vaginal examinations, and prolonged obstructed labour . Other factors are inadequate skills or poor technique of the surgeon, prolonged operating time, prolonged obstructed labour, postoperative anemia, high body mass index, diabetes mellitus, immunosuppressive disorders and certain medications like steroids.
- Potential sources of infection identified include unfiltered air, antiseptic solutions, transporting of patients, surgical team, over-crowding in theatre, theatre gowns, inadequately sterilised equipment, contaminated environment and grossly contaminated surfaces.

- Complications of SSIs include prolonged wound healing, wound dehiscence, wound pain, burst abdomen, necrotising fasciitis and pelvic abscess. Others are prolonged admission, a prolonged course of antibiotics, the possibility of re- admission, secondary repair surgery, incisional hernia, disfiguring scar, and in rare condition can lead to severe sepsis and mortality.
- Surgical site infections also affects the physical, emotional, social and economic aspects of life.

Therefore, a better understanding of the spectrum of pathogens causing SSI as well as their susceptibility pattern is important for prompt management of patients and provides evidenced-based sensitive antibiotics to be commenced initially when wound infection is identified in our wards while awaiting the result of wound swab microscopy, culture and sensitivity in 48-72 hours. Having such data would help to establish guidelines for the prevention and management of SSIs and contribute to the planning of surveillance and control of this group of infections.

OBJECTIVES

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REVIEW OF LITERATURE

SSI is defined as an infection of the superficial or deep skin incision, or of an organ or space, occurring up to 30 days after surgery if no implant was left behind, or within 1 year if an implant was left in place.[8-10]

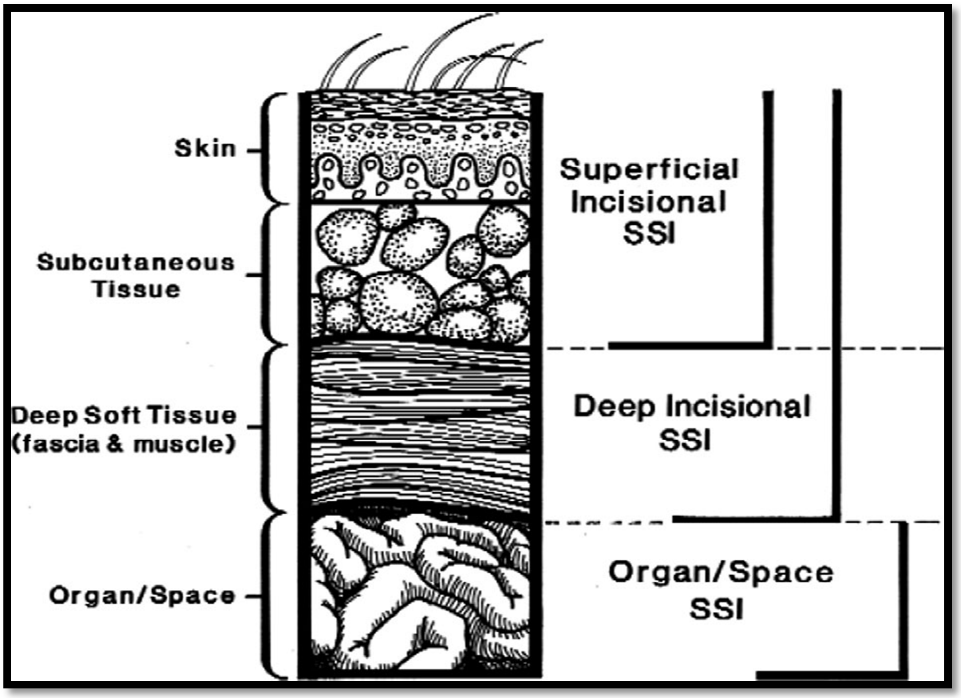


Figure 1. Cross-section of abdominal wall illustrating the classification of surgical site infection by the Centers for Disease Control (CDC). Adapted from Horan et al.,[11] with permission. SSI = surgical site infection

For superficial wound infection, at least one of the following:

- Purulent effluent or exudate with organisms identified
- Presence of one of the following: pain, redness, localized swelling, tenderness or heat
- Diagnosis of a superficial wound infection by a surgeon or an attending physician1

For deep wound infection, at least one of the following:

- Purulent exudate from a deep wound incision
- Spontaneous dehiscence of a deep incisional wound or a wound deliberately opened in the presence of pyrexia >38°C, localised pain, or tenderness
- Evidence of abscess or infection involving deep wound incisions found on direct examination of the wound, during re-operation, radiologically or on histology
- Diagnosis of a deep incisional wound infection by a surgeon or an attending physician[8]

For organ or space infection, at least one of the following:

- Purulent exudate from a drain placed in the organ or space via a stab wound
- Organism isolated from the organ or space
- Evidence of abscess or infection involving the organ or space found on direct examination of the wound, during re-operation, radiologically or on histology
- Diagnosis of an organ or space wound infection by a surgeon or an attending physician1

Wounds have traditionally been classified as clean, clean contaminated, contaminated, dirty or infected.[11-13]

PATHOGENESIS OF SSI

In the majority of patients, infection does not develop at the surgical site. This is due to the fact that the inherent defences of the host are extremely effective in removing pollutants from the surgical site.[14] Infections that can lead to surgical site infections can be acquired in one of two ways: either endogenously, from the patient's own flora that is present on the skin or from an opening viscus, or exogenously, from contact with staff in the operating room or the surroundings. Both of these methods are possible. On the other hand, the period of time that is believed to be the most dangerous is the one that takes place between the opening of the operational site and its closing down. [15] When processes are carried out over an extended period of time, there is a greater possibility that they will be contaminated by an external source. [16] Staphylococcus aureus (MRSA) is the most common bacterium that causes surgical site infections (SSI) and is associated with poor outcomes in clean procedures. These procedures include cardiothoracic surgeries, neurosurgeries, orthopaedic, ophthalmology, and breast surgeries. These procedures do not involve opening the abdominis or the genital tract. Since the emergence of methicillin-resistant strains of Staphylococcus aureus (MRSA), there has been a rise in the morbidity and mortality rates associated with wound infections. This is due to the fact that wound infections are more likely to cause death.

The development of SSIs depends on three factors -

<u>Virulence of bacteria</u>- It is proportional to the virulence of the bacterial contaminant that the likelihood of infection increases as the virulence of the bacterial contaminant increases. Staphylococcus aureus, Clostridium perfringens, and Streptococcus pyogenes can generate a severe necrotising infection at the surgical site with only a little inoculum. This is the only thing that is necessary. However, when Bacteroides fragilis and other species of Bacteroides are joined with other organisms that consume oxygen, the outcome is microbial synergism, which can lead to a very substantial infection after surgical procedures on the female genital tract or the colon. Generally speaking, Bacteroides fragilis and other species of Bacteroides are thought to be

relatively harmless disease-causing organisms when they are found in their natural environment.

Microenvironment around surgical site- There is an increased risk of infection at the surgical site if there is necrotic tissue, dead space, or foreign bodies present.

Innate and acquired host defences[17]- Whenever a surgical incision is made through the skin and the subcutaneous tissues that are located beneath the skin, the human body will produce an inflammatory response. "18" An acute surgical wound will normally go through a reparative process that is both ordered and timely, which ultimately results in the sustained restoration of both the anatomical and functional integrity of the wound. However, there are certain exceptions to this rule. If it does not heal within a period of six weeks, a wound that is considered to be acute has the potential to become a chronic wound. Platelet aggregation, haemostasis by vasoconstriction, and the production of thrombin through the activation of complement proteins are the initial steps that take place during the early stages of inflammation, which take place within the first twenty-four hours following the onset of the condition. Numerous growth factors, including as platelet-derived growth factor (PDGF), transforming growth factor-β, fibroblast growth factor (FGF), keratinocyte growth factor (KGF), epidermal growth factor (EGF), and insulin-like growth factor (IGF-1), are released by platelets. Platelets are responsible for the release of these growth factors. Platelets are involved in the process of releasing these growth factors into the blood stream.In addition to being a key source of cytokines, specifically TNF-α, pancreatic mononuclear cells (PMNs) are also accountable for the release of proteases, including collagenases, during the initial phases of inflammation. In the absence of PMNs, sterile incisions will heal in a manner that is consistent with typical patterns. Approximately twenty-four hours after the creation of the surgical wound, monocytes arrive to the surgical site. This occurs after the wound has been created. Inflammation, rubor (redness), tumour (swelling), calor (heat), and dolour (pain) are the clinical symptoms that occur as a consequence of the combination of severely increased vasodilation and increased vascular permeability. This phase of wound healing is responsible for ensuring that the wound bed is free of bacteria and other pollutants, as well as generating the optimum environment for the production of granulation tissue and epithelialisation. Additionally, it is responsible for wound healing during this phase. During this phase, the overarching objective is to make the healing process easier to accomplish. It is characterised by an increase in the mitogenic activity of fibroblasts and endothelial cells, as well as the migration of epithelial cells and the creation of collagen. The process of regeneration takes place over the course of the ensuing few days to weeks and is characterised by these characteristics. In order for the wound to reach the maturity stage, which is the final part of the healing process, it may take up to two years for it to finally reach that state. Granulation tissue will eventually turn into scar tissue as this phase continues to progress. Scar tissue will gradually get paler, shrink, and grow thinner as time goes on. [19]

RISK FACTORS

Table: Risk factors for surgical site infection in obstetrics and gynaecology[8,20-25]

Patient factors	Preoperative/pre pregnancy factors	Intraoperative/intrapartum factors	Postoperative factors
Age	Hypertension in pregnancy	Frequent vaginal examination	Haematoma
Obesity	Gestational diabetes	Prolonged rupture of membranes	Blood transfusion
Diabetes mellitus	Multiple pregnancy	Prolonged labour	Length of hospital stay
Place of residence – rural		Chorioamnionitis	
Smoking	Previous caesarean section	Emergency caesarean section	
Immunosuppression – e.g. steroid use, alcohol	Skin preparation	Prolonged surgery	
Poor nutritional status	Hair removal	Poor surgical technique	
Length of preoperative stay	Type I and II diabetes mellitus (glycaemic control)	Surgical drains	
Anaemia	American Society of Anaesthesiology (ASA) score of a minimum of 3	Non-use of antimicrobial prophylaxis	
	Pre-hospital stay of minimum of 2 days	Primary postpartum haemorrhage	
		Intrapartum pyrexia	
		Premature rupture of membranes	

MICROBIOLOGY

A wide range of organisms are responsible for causing SSIs. These organisms are responsible for the generation of symptoms by triggering changes in a number of pathways through the complement system and the inflammatory system. Some of these organisms are known as endogenous commensals, and they are often found on the skin, in the gastrointestinal system, and in the vaginal tract during the course of normal body activities. It is conceivable for SSIs to emerge as a result of a complex relationship between the virulence of the organisms and the sort and number of the organisms. This connection can be mediated by the organisms themselves.[26]

Among the microorganisms that are responsible for the development of the disease, the most often isolated pathogens are Staphylococcus aureus, enterobacterales (which were formerly known as enterobacteriaceae), and coliforms such as Escherichia coli and Proteus mirabilis. [8,27] Enterobacterales and S. aureus were found to be responsible for 30.2% and 22.9% of cases, respectively, according to the findings of the SSI audit that was carried out over the entirety of the National Health Service (NHS). In comparison, P. mirabilis accounted for 13.3% of the total, whereas coliforms accounted for 19.6% of the mixture.[9] From 22.1% in 2017/18 to 22.9% in 2018/19, the percentage of SSIs that were related with S. aureus increased for the second consecutive year.Between 2017/18 and 2018/19, there was a 1.0% increase in the number of infections that were associated with methicillin-resistant S. aureus (MRSA) or methicillin-sensitive S. aureus (MSSA). The percentage of coagulase-negative staphylococci (CoNS) stayed unchanged at 19.4% in 2018/19, although it had the highest percentage growth since 2009/10. Enterococcus spp. showed the second highest percentage increase, with 8.7% in 2018/19. When the species distribution was restricted to deep or organ/space SSI alone, the picture was very similar; however, the proportion of cases that were caused by CoNS and Enterococcus spp. was significantly greater (21.7% and 9.9% in 2018/19, respectively).

The bacteria that are most frequently responsible for surgical site infections (SSIs) in the field of obstetrics and gynaecology are polymicrobial aerobes and anaerobes. These germs frequently originate from both the skin and the genital tract flora. [8,28] Staphylococcus aureus, CoNS, Enterococcus spp., and Escherichia coli are the most common types of SSIs that can complicate abdominal hysterectomy. [29] These bacteria may begin from the skin or climb from the vagina if the vagina is opened, as is the case following a hysterectomy. Furthermore, the vagina may be the source of the germs. Staphylococcus aureus, Escherichia coli, and anaerobic bacteria are known to be implicated in gynaecological surgeries such as hysterectomy, in which the wound is normally classified as clean contaminated. These bacteria are known to be present in the wounds of patients who undergo these procedures. These germs frequently contaminate surgical sites while the treatment is being performed, or they come from the microflora of the vaginal space or the gastrointestinal system. [24] The organism most commonly responsible for SSI after CS is S. aureus. In a prospective study of risk factors for SSI following CS in 14 hospitals in England, Wloch et al. found that S. aureus was the most common organism responsible, identified in 40.4% of cases (of which 17.1% were methicillin-resistant). Other causative pathogens are anaerobic cocci such as E. coli (13.3%) and Streptococcus sp. (7.4%), Enterococcus sp. And Pseudomonas sp. [22]

Table: Organisms responsible for surgical site infection in obstetrics and gynaecology[8,26,28]

Gram-positive aerobes	Gram-negative aerobes	Anaerobes
Staphylococcus aureus	Klebsiella sp.	Clostridium (Clostridioides) sp.
Enterococcus sp.	Escherichia coli	Gardnerella vaginalis
Group β haemolytic streptococcus	Pseudomonas aeruginosa	Fusibacterium sp.
Staphylococcus pyogenes	Proteus sp.	Bacteroides fragilis
Staphylococcus epidermidis	Klebsiella sp.	Peptostreptococcus sp.
Methicillin-resistant Staphylococcus aureus (MRSA)		Prevotella sp.

<u>LITERATURE FROM PREVIOUS STUDIES:</u>

Albaharnah et al. (2024) conducted a retrospective cohort study at Qatif Central Hospital in Eastern Saudi Arabia over the course of five years (2018–2022) to investigate the incidence of surgical site infections (SSIs) that occurred after caesarean sections (CS) and the risk variables that were linked with them. The study was carried out in order to determine the factors that were associated with these infections. Because there were a total of 10,308 births, there were a total of 1,584 caesarean sections performed, which resulted in an overall SSI rate of 4.7%. At the beginning of the year 2020, the yearly incidence was 2.2%, and by the end of the year 2022, it had reached its highest point of 6.7%. A significant independent risk factor for surgical site infections (SSI) was discovered to be diabetes mellitus (odds ratio

[OR] = 10.76, p = 0.038), as was surgery that lasted for more than one hour (OR = 3.54, p = 0.002). Both of these factors were shown to be associated with a higher likelihood of risk. Surficial surgical site infections (SSIs) accounted for 89.2% of all surgical site infections, with deep incisional infections accounting for 8.1% and organ/space infections accounting for 2.7%. Staphylococcus species were the most prevalent organisms that were isolated, accounting for 44.2% of the total. Streptococcus species came in second, accounting for 23.1% of the total, and anaerobes made up the remaining 3.8% of the total. The findings of the study led the researchers to the conclusion that it may be possible to reduce the rates of surgical site infections (SSIs) that occur following caesarean deliveries by optimising surgical procedures, improving diabetes control, and modifying antibiotic prophylactic strategies.[30]

Researchers Fultariya et al. (2024) conducted a prospective study at a referral hospital in Southern Gujarat, India, with the objective of determining the incidence of surgical site infections (SSIs), as well as the risk factors and microbiological profile of these infections that occurred after obstetric and gynaecological surgeries. The study was carried out with the intention of determining the surgical site infections that occurred after these surgeries. Every single one of the 960 ladies who took part in the research project had undergone any kind of surgical procedure between the months of August 2023 and July 2024. 11 percent of the population received SSI benefits total. The lower segment caesarean section (LSCS) was responsible for 43.39 percent of all surgical site infections (SSIs), making it the surgical procedure that generated the highest percentage of SSIs on their own. A total abdominal hysterectomy (21.69%) and an exploratory laparotomy (5.66%) were the subsequent procedures that were performed. It was discovered that anaemia was the most common risk factor, as it was responsible for 34.90 percent of all cases. The next most common risk factors, which accounted for 23.58 percent of the total, were diabetes, obesity, a previous surgical scar, and emergency surgery. In 90 (84.90%) of the 106 wound swabs that were obtained, the results were determined to be positive for culture. It was determined that the pathogens that were identified the most frequently were Escherichia coli (22%), Klebsiella spp. (13%), and Pseudomonas aeruginosa (7%), in that order. Staphylococcus aureus was reported to be the pathogen that was isolated the most frequently. In order to reduce the frequency of surgical site infections (SSIs) that occur during obstetric and gynaecological procedures, the study highlighted the importance of improving surgical techniques, addressing patient-related risk factors, and implementing antimicrobial stewardship programs. These are all things that need to be done. [31]

Kangan et al. (2024) conducted a prospective longitudinal hospital-based study with the objective of determining the microbiological profile and risk factors that are associated with post-cesarean surgical site infections (SSI). The investigation was carried out with the intention of determining the prevalence of SSI. Six hundred eighty-eight people who had undergone caesarean sections at the Government Medical College and Hospital in Chandigarh during the months of April 2021 and September 2022 were included in the study. The study ran from April 2021 to September 2022. There were a number of characteristics that were found to be significant risk factors for the development of surgical site infections (SSI). These risk factors included gestational diabetes mellitus (GDM), thrombocytopenia, chorioamnionitis, protracted labour, repeated vaginal inspections, and prolonged surgery. A total of 3.49 percent of people were affected by SSI. It was determined that Staphylococcus aureus was the most common pathogen, and that three out of every five isolates were methicillin-resistant Staphylococcus aureus (MRSA). It was found that linezolid had the maximum susceptibility to the infection, but ciprofloxacin had the highest level of resistance to the infection. It was shown that the early identification and control of modifiable risk factors, in addition to the practical use of linezolid, contribute to the decrease of the incidence of surgical site infections (SSI) and the improvement of maternal outcomes.[32]

Basany et al. (2024) conducted a study at MediCiti Institute of Medical Sciences in Medchal, Telangana, India, to investigate the incidence of surgical site infections (SSIs), as well as the risk factors, microbiological profile, and antibiotic susceptibility patterns associated with these infections. The study was conducted after a single dose of antibiotic prophylaxis was administered during a caesarean section (CS). As a prospective cohort study, the research was conducted. The research was conducted with the participation of two thousand and fifteen women who had undergone CS between the months of June 2017 and December 2019. After conducting an investigation, it was found that the overall SSI rate was 4.6%, with 98.9% of infections being categorised as superficial and 1.1% being classified as deep infections. A diagnosis of social security disability insurance (SSI) was made after a median amount of time of seven days had passed. Significant risk variables were identified as being young maternal age (defined as a maternal age of 25 years or younger; adjusted relative risk [aRR] = 2.3, 95% confidence interval [CI] = 1.1–4.8), obesity (aRR = 2.5, 95% CI = 1.4–4.6), and emergency care (aRR = 3.0, 95% CI = 1.1–8.8). Young maternal age was defined here as a maternal age of 25 years or younger. Staphylococcus aureus, Escherichia coli, and Klebsiella spp. were the most common pathogens, accounting for 26 percent, 24 percent, and 12.3 percent of the total, respectively. It was discovered that the antibiotics ampicillin and amoxicillin-clavulanate were resistant to a considerable percentage of resistance among the species of E. coli and Klebsiella. According to the findings of the study, antibiotic prophylaxis should be administered in compliance with WHO guidelines, and surveillance should be increased, in order to reduce the frequency of surgical site infections that arise following CS. [33]

Sharma et al. (2024) conducted a prospective study at Umaid Hospital in Jodhpur, India, with the objective of identifying the incidence of surgical site infections (SSIs) and the factors that put patients at risk for developing them after undergoing a lower segment caesarean section (LSCS). The investigation was carried out with the intention of determining the factors that put patients at risk for developing SSIs. During the course of the research, a total of 2,061 female participants who had undergone LSCS during the months of June and August 2023 were included. After emergency LSCS, there were 39 instances, which accounts for 75% of the total, and after elective LSCS, there were 13 cases, which accounts for 25% of the total. The SSI rate per capita was 2.5% overall. Ninety-four point two percent of the patients were younger than thirty-five years old, and sixty-seven point three percent of them were from suburban or rural areas. Additional substantial risk factors for surgical site infections (SSI) included anaemia (51.9% of cases), prolonged labour (38.4% of cases), many vaginal inspections (>5) (34.6%), and premature rupture of membranes (PROM) (26.9% of cases). These factors were added in the list of factors. The utilisation of silk suture material was discovered to have a strong link with surgical site infections (SSI), with 71% of cases using silk sutures and 29% involving vicryl sutures. This was discovered through the use of a correlation analysis. Based on the findings of the study, it is possible that the incidence of surgical site infections (SSIs) following laparoscopic subcutaneous surgery (LSCS) might be decreased through the implementation of targeted risk reduction initiatives, the improvement of perioperative care, and the appropriate selection of sutures. [34]

A prospective study was conducted by Snehaa et al. (2024) with the purpose of determining the prevalence of surgical site infections (SSIs) and the risk factors that are associated with them among patients who were undergoing a variety of surgical procedures at a teaching hospital in Port Blair, India that offered tertiary care. The researchers wanted to find out how common SSIs are and what risk factors are associated with them. During the period beginning in January 2018 and ending in June 2018, the research was conducted inside the Department of Microbiology. In total, there were 776 patients that took part in the research pertaining to the study. The patients in question had undergone treatments that were both elective and emergency in nature. It was determined that obstetrics and gynaecology surgeries were responsible for 44% of all surgical site infections (SSIs), which accounted for 12.88% of the total number of SSIs, which was 100 cases. It was discovered that patients who had undergone lower segment caesarean section (LSCS) had the greatest infection rate, which was 19.42%. Out of the pathogens that were isolated, the ones that were found to be the most abundant were Escherichia coli (18.18%), Staphylococcus aureus (56.81%), and coagulase-negative staphylococci (18.18%). There were substantial risk factors for surgical site infections (SSIs), including a younger age range (between the ages of 26 and 35), female gender, emergency surgery, diabetes mellitus (in 61% of cases), and a longer period of hospital stay (greater than seven days). 90% of the infections were superficial, while 10% were deep incisional infections. The majority of the infections were superficial. In order to lessen the number of surgical site infections (SSIs) that take place in Indian hospitals, it is essential to implement targeted preventative measures, particularly for obstetric and gynaecologic surgeries, in addition to increased infection control approaches. This is the conclusion that can be drawn from the findings of the study. [35]

Kachipedzu et al. (2024) conducted a study at Queen Elizabeth Central Hospital (QECH) in Blantyre, Malawi, to investigate the incidence of surgical site infections (SSIs) following caesarean section (CS), as well as the risk factors, microbiological profile, and antibiotic use associated with these infections. As a prospective cohort study, the research was conducted. Participants in the study were 208 pregnant women who had undergone caesarean section (CS) during the months of February and July 2023 and were followed up for a period of thirty days after the surgery. The study was conducted in the United States. Only five percent of all instances were categorised as deep SSIs, whereas ninety-six percent of all cases were classified as superficial SSIs. A total of 9.61% of SSIs were reported across the board. The researchers found that the average age of the participants was 26.1 years, with a standard deviation of 6.2 years. Antibiotic prophylaxis, namely ceftriaxone, was administered to each and every one of the women prior to the surgical process. Furthermore, 66.35 percent of the women were also administered antibiotics after the surgical procedure, despite the fact that there was no recorded bacterial infection at the time of administration. There were ten positive culture findings, and sixty percent of them were positive for Staphylococcus aureus, which was the most prevalent isolate. Second and third place, respectively, went to the Enterobacteriaceae and Acinetobacter baumannii families of bacteria. The presence of antibiotic resistance was discovered in twenty-five percent of the cases, with S. aureus exhibiting resistance to clindamycin, erythromycin, and cefoxitin. After doing the research, it was shown that ruptured membranes and prolonged labour were two of the most significant risk factors for surgical site infections (SSI). The writers came to the conclusion that the inappropriate use of antimicrobials and the emergence of bacteria that are resistant to antimicrobials highlight the demand for improved infection control measures and antimicrobial stewardship programs at QECH. [36]

Onuzo et al. (2022) conducted a study at the Korle Bu Teaching Hospital (KBTH) in Accra, Ghana, to investigate the incidence of surgical site infections (SSIs) following caesarean sections (CS), as well as the risk factors, microbiological aetiology, and drug susceptibility patterns associated with these infections. As a prospective cohort study, the research was conducted. Four hundred and seventy-four of the five hundred women who took part in the research project between April and July of 2017 were able to finish the follow-up procedure. There were 12.8% of surgical site infections, with 67.2% of them being superficial, 29.5% being deep incisional, and 3.3% being within the organ space. The frequency of surgical site infections was 12.80 percent. The following were some of the key risk factors: having an emergency caesarean section after more than eight hours of labour, having midline incisions, having preoperative cleaning done with stored water, being a single mother, and drinking alcohol while pregnant. The most prevalent type of isolate was determined to be Staphylococcus aureus, and 9.8% of them were methicillin-resistant (MRSA). This was discovered through the process of isolation. Quinolones were found to have the highest susceptibility among the antibiotics that were examined, while amoxicillin-clavulanic acid and clindamycin were shown to have the lowest efficiency. By improving preoperative preparation and selecting antibiotics, the study recommended reducing the occurrence of surgical site infections (SSIs), which are infections that occur at surgical sites.[37]

The purpose of the research conducted by Jain et al. (2022) was to evaluate the prevalence of surgical site infections (SSIs) in a tertiary care hospital located in

Western India. Additionally, the researchers were interested in the risk factors, microbiological profile, and antibiotic resistance patterns that are related with these infections. The research was carried out at Dr. S. N. Medical College and Associated Hospital in Jodhpur, and it comprised 280 women who had encountered SSIs after having a caesarean delivery. The research was undertaken with the objective of determining the effectiveness of the treatment. The percentage of people in the population who were receiving SSI was reported to be 14.7%. Having a previous caesarean section, having an emergency caesarean section, having a high body mass index (>25), having severe anaemia, having a lengthy hospital stay, and not receiving preoperative antibiotic prophylaxis were some of the significant risk variables that were found in this study. It was found that the most prevalent types of microorganisms that were extracted from the samples were Staphylococcus aureus (22.1%) and Klebsiella pneumoniae (24.4%). After conducting antibiotic susceptibility testing, it was revealed that imipenem was the most effective antibiotic, while amoxicillin-clavulanate demonstrated the highest amount of antibody resistance. This conclusion was reached based on the overall results of the testing. The research highlighted the necessity of identifying risk factors in a timely way and delivering antimicrobial medicine that is appropriate in order to reduce the incidence of maternal morbidity and the development of drug-resistant infections. This was done in order to reduce the number of complications that arise during pregnancy. [38]

A prospective study was conducted by Tadvi et al. (2021) in order to evaluate the bacteriological profile and antibiotic resistance patterns of surgical site infections (SSIs) that occurred following caesarean sections in a tertiary care hospital in Nanded, India. The hospital was located in India. A total of two hundred individuals who had undergone caesarean sections during the months of June 2017 and December 2018 were included in the study as participants. The total SSI rate was thirty percent of the population. There were sixty culture-positive cases, and the three pathogens that were identified the most frequently were Escherichia coli (18.33%), Klebsiella pneumoniae (16.66%), and Acinetobacter spp. (12.33%). The pathogen that was isolated the most frequently was Staphylococcus aureus, which accounted for 31.66 percent of the total. Twenty percent of the cases that were investigated exhibited the presence of polymicrobial diseases. There was a one hundred percent resistance to penicillin among the Staphylococcus aureus isolates. Additionally, there was a 42.10 percent sensitivity to erythromycin, clindamycin, and ciprofloxacin, and a one hundred percent sensitivity to vancomycin and linezolid. Furthermore, there was a one hundred percent resistance to vancomycin. MRSA, which stands for methicillin-resistant Staphylococcus aureus, was discovered in one of the samples that were being taken into consideration. A total of sixty-six percent of the E. coli isolates were found to be positive for amikacin, whereas forty-two point eight percent of the Klebsiella pneumoniae isolates were found to be positive for both amikacin and ciprofloxacin. It was highlighted in the research that the prevalence of multidrug-resistant pathogens, such as extended-spectrum beta-lactamase (ESBL)-producing E. coli and Klebsiella pneumoniae, is on the rise. In addition to this, it underlined the significance of administering antibiotics in a responsible manner and putting into practise infection control strategies that are effective in order to reduce the incidence of surgical site infections (SSIs) that arise following caesarean sections. [39]

The researchers Arya et al. (2021) conducted a prospective descriptive observational study with the objective of identifying the degree of surgical site infection (SSI) and the diversity of microbiological flora that occurred after a caesarean section. The study was carried out with the intention of evaluating the level of SSI. The investigation was carried out at SMS Medical College in Jaipur over the course of a period of six months, beginning in July 2020 and ending in December 2020. To determine the appropriate size of the sample, a total of 450 women who were planning to undergo a caesarean section were collected. The case study made use of the Southampton wound grading system as well as the recommendations that were issued by the Centres for Disease Control and Prevention. Eleven point one percent of the participants developed atypical wounds, while eighty-eight percent of the subjects experienced normal wound healing. The majority of infections were superficial, accounting for over ninety-two percent, while just eight percent were deep incisional. Among the organisms that were isolated the most frequently, the two that were found to be the most prevalent were Staphylococcus saprophyticus (6%), and Enterococcus faecalis (8%). In addition, there were instances of infections that were combined together. to the end of the investigation, the researchers arrived to the conclusion that prompt detection and management of surgical site infections (SSI) are essential in order to minimise complications and reduce the cost of healthcare. [40]

Sharma et al. (2021) conducted a retrospective cross-sectional study at Chitwan Medical College Teaching Hospital in Nepal with the objective of determining the incidence of surgical site infections (SSIs) related to obstetric procedures, specifically lower segment caesarean section (LSCS), as well as the risk factors that are associated with these infections. The study was carried out with the intention of determining the prevalence of these infections. Between the months of April 2019 and April 2020, a total of 1,739 patient records were reviewed for the purpose of researching the study. It was demonstrated that the overall rate of surgical site infections was 2.9%, with 92% of infections occurring after emergency caesarean sections and 80% of cases having SSI that began after the patient was discharged from the hospital. Within seven days following the surgery, forty percent of the infections were shown to have been caused by the procedure itself. In twelve percent of the instances, the results of the swab culture were found to be positive. Both Staphylococcus aureus and Acinetobacter spp. were responsible for thirty-three percent of the cases, with Klebsiella spp. and Pseudomonas spp. coming in second and third, respectively, with sixteen and seven percent of the cases. A statistically significant correlation was discovered between surgical site infections (SSI) and the type of operation ($p = 0.007$). On the other hand, there was no association observed between SSI and age, haemoglobin level, parity, or blood transfusion. Based on the findings of the study, it was underlined how important it is to improve wound care education and discharge counselling in order to reduce the risk of surgical site infections (SSIs) that occur after caesarean sections. [41]

A retrospective case-control study was carried out by Gomaa et al. (2021) at Minia Maternity and Children University Hospital in Egypt over a period of five years, beginning in January 2013 and ending in December 2017. The purpose of the study was to determine the incidence of surgical site infections (SSIs), as well as the risk factors and management of these infections. The total number of CSs done was 15,502, and 828 of those instances resulted in the development of SSIs, resulting in an overall incidence rate of 5.34%. Chorioamnionitis (adjusted odds ratio [AOR] = 4.51) was found to be a significant risk factor for surgical site infections (SSI). Other risk factors included premature rupture of membranes (AOR = 3.99), blood loss greater than 1000 mL (AOR = 2.21), emergency caesarean section (AOR = 2.16), operative duration greater than one hour (AOR = 2.05), prolonged labour (AOR = 1.45), diabetes mellitus (AOR = 1.37), obesity (AOR = 1.34), high parity (AOR = 1.27), and hypertension (AOR = 1.19). Of the total number of cases, 47.1% were caused by superficial incisional infections, whereas 28% were caused by deep incisional infections, and 24.9% were caused by organ or space infections. Sixty-two percent of patients were treated medically, while twenty-two percent required surgical procedure to be explored. A death rate of 1.33 percent was attributed to SSI. The findings of the study indicated that a reduction in the incidence of surgical site infections (SSIs) might be achieved with the implementation of targeted antibiotics, enhanced perioperative care, and effective wound management. [42]

Onkari et al. (2021) conducted a prospective study in a tertiary care hospital located in the state of Maharashtra in India using a prospective research design. The objective of the study was to determine the prevalence of surgical site infections (SSIs), as well as their bacteriological profile and antibiotic susceptibility, that occurred following lower segment caesarean section (LSCS). A total of 1,453 girls who had undergone LSCS during the months of February and June of 2021 were included in the study as participants. Overall, the SSI rate was 7.9%, with a higher frequency of SSI occurring in emergency LSCS (8.2%) as opposed to elective LSCS (5.3%). The overall SSI rate was computed and determined. After Staphylococcus aureus, which was responsible for 62% of the isolates in 116 cases of surgical site infections (SSI), the next most prevalent bacteria were Klebsiella pneumoniae (13%), Acinetobacter baumannii (13%), Escherichia coli (8%), and Enterococcus spp. (4%). Staphylococcus aureus was the most common germ. Methicillin-resistant Staphylococcus aureus, more commonly referred to as MRSA, was the most common pathogen found in 33 percent of the patients being investigated. It was discovered that the bacteria E. coli, Klebsiella spp., and Staphylococcus aureus had relatively significant levels of resistance to a number of different medications. When it came to gram-positive pathogens, the antibiotics vancomycin, linezolid, and clindamycin proved to be the most effective. On the other hand, the antibiotics meropenem, gentamicin, piperacillin-tazobactam, and colistin displayed the highest sensitivity against gram-negative isolates. Based on the findings of the study, it was determined that the reduction of post-LSCS surgical site infections (SSIs) should be accomplished through the implementation of stringent infection control measures, the improvement of surgical procedures, and the administration of targeted antibiotic therapy. [43]

B.D. Sharma, the Pt. A prospective study was conducted by Soni et al. (2020) at the Post Graduate Institute of Medical Sciences in Rohtak, India. The purpose of the study was to investigate the bacteriological profile and antibiotic susceptibility of surgical site infections (SSIs) among patients who had undergone caesarean sections. The study comprised one hundred fifty women who had wound infections following a caesarean section at the time of the procedure. One full year was allotted for the duration of the study. The overall number of SSIs was 15.33%, and the presence of bacterial growth was established in 23 specific cases (16 of which were monomicrobial and 7 of which were polymicrobial). Following Escherichia coli (25%) and Pseudomonas spp. (12.5%) as the most common pathogens found in monomicrobial isolates, it was discovered that Staphylococcus spp. was the most prevalent pathogen, accounting for 43.75 percent of all cases. Gram-negative organisms were the primary culprits in infections that were brought on by polymicrobial organisms. These species included combinations of E. coli and Acinetobacter spp. accounting for 28.57 percent of the total. One hundred thirty-three percent of the isolates were discovered to have high rates of multidrug resistance, and sixty-two point five percent of the Staphylococcus species were determined to be methicillin-resistant Staphylococcus aureus (MRSA). Both of these findings were made. Ipenem and meropenem were the most effective antibiotics for gram-negative organisms, whilst linezolid and doxycycline were the most effective antibiotics for gram-positive infections. Both of these medicines were found to be effective against gram-negative organisms. The research underlined the relevance of applying tight infection control measures, practicing proper hand hygiene, and making reasonable use of antibiotics in order to reduce the number of surgical site infections (SSIs) that occur during obstetric procedures. This was done in order to reduce the number of SSIs that occur. [44]

Metgud et al. (2020) conducted a retrospective study to investigate the incidence of wound dehiscence, as well as the risk factors and microbiological profile associated with it. The study was carried out after obstetric and gynaecological surgeries were performed at KLE's Dr. Prabhakar Kore Charitable Hospital in Belagavi, Karnataka, India. During the course of the research, there were 3,172 female participants. These women underwent substantial obstetric and gynaecological procedures between the months of May 2016 and August 2017, between the years 2016 and 2017. The findings indicated that the overall incidence of wound dehiscence was 3.05%, with 84.54 percent of cases occurring after obstetric surgeries and 15.46 percent occurring after gynaecological procedures. The findings also indicated that the incidence of wound dehiscence was 3.05% globally. In terms of the total number of cases, emergency operations accounted for 81.44% of the cases, while elective surgeries accounted for 18.56% of the cases. The most common reasons for a caesarean section (CS) were foetal discomfort (30.48%) and a prior caesarean section (23.17%) among the instances that involved wound dehiscence being present. It was determined that the organisms that were isolated the most commonly were Staphylococcus aureus (13.4%), Escherichia coli (10.31%), and Pseudomonas aeruginosa (8.25%). There were a number of factors that contributed to the development of wound dehiscence, including the presence of anaemia (78.35%), hypertension (19%), diabetes (5.15%), and prolonged labour. The findings of the study led the researchers to the conclusion that it might be possible to reduce the number of wound dehiscences that occur during obstetric and gynaecological surgeries by improving the treatment of wounds both during and after surgical procedures, employing surgical techniques that are more effective, and using antibiotics in a more rational manner. [45]

The University of Calabar Teaching Hospital (UCTH) in Calabar, Nigeria, was the location of the prospective study that Njoku et al. (2019) carried out in order to investigate the incidence of surgical site infections (SSIs), as well as the risk factors and bacteriological profile of these infections that occurred after caesarean sections. A total of 600 women who had caesarean sections over the course of a period of six months participated in the study. The SSI rate was 8.5% across the board. Staphylococcus aureus (37.3%), Klebsiella pneumoniae (27.1%), and Escherichia coli (22.0%) were the pathogens that were encountered the most frequently during the isolation process. An emergency caesarean section, prolonged rupture of membranes (more than twenty-four hours), prolonged labour, intraoperative blood loss greater than one litre, surgery duration greater than one hour, and postoperative packed cell volume (PCV) less than thirty percent were all independent risk factors that were significantly associated with post-cesarean surgical site infections (SSIs). There was a high level of resistance to cephalosporins, gentamycin, and amoxicillin, according to the results of antibiotic sensitivity testing. On the other hand, amikacin and imipenem showed the highest level of sensitivity. According to the findings of the study, it is vital to adhere to infection control policies and to use antibiotics in a targeted manner based on sensitivity patterns in order to reduce the occurrence of surgical site infections (SSIs) and to enhance patient outcomes. [46]

Smt NHL Municipal Medical College and VS General Hospital in Ahmedabad, India were the locations where Panchal et al. (2019) conducted an investigation into the incidence of surgical site infections (SSIs), as well as the risk factors, bacteriological profile, and antibiotic susceptibility of these infections that occurred after obstetric and gynaecological surgeries. The study was an observational study with a prospective design. Three thousand six hundred and sixteen women who had undergone surgery between the months of June 2018 and March 2019 were included in the study by the researchers. It was determined that the rate of surgical site infections (SSI) was 7.29 percent overall, with emergency lower segment caesarean sections (LSCS) being responsible for 82.6% of all cases. As a result of the investigation, it was found that the pathogen that was isolated the most frequently was Staphylococcus aureus (17.39%). This was followed by E. coli (1.73%), Pseudomonas aeruginosa (1.73%), Klebsiella spp. (0.86%), and Enterococcus spp. (0.86%). In contrast, gram-negative bacteria exhibited the highest susceptibility to imipenem, although S. aureus shown a sensitivity of one hundred percent to linezolid, as indicated by the findings of antibiotic susceptibility testing of the bacteria. There were a number of significant risk factors for surgical site infections (SSI), including prolonged labour, premature rupture of membranes (PROM), repetitive vaginal inspections, anaemia, and poor nutritional status. Surgical site infections (SSIs) are infections that occur during obstetric and gynaecological procedures. The research proposed that better infection control strategies, such as correct wound care, surgical technique refinement, and targeted antibiotic usage, should be implemented in order to minimise the rates of SSIs that occur during these procedures. [47]

Surgical site infections (SSIs) that occurred after caesarean sections (CS) were the subject of a prospective observational cohort study that was conducted by Zejnullahu et al. (2019) at the University Clinical Centre of Kosovo (UCCK). The researchers wanted to determine the incidence rate, risk factors, and microbiological profile of these infections. There were 325 female participants that took part in the research investigation. After undergoing CS between January and September of 2018, patients were monitored for a period of thirty days after the surgery. This observation took place after the surgical treatment. There were 9.85% of surgical site infections overall, with 93.75% of these being superficial and 6.25% being deep incisional infections. The overall rate of surgical site infections was 9.85%. Previous CS was related with a 7.4-fold increased risk, the presence of one or more comorbidities was associated with an 8-fold increased risk, and protracted operation (lasting more than one hour) was associated with a substantial risk. All of these factors significantly raised the likelihood of subsequent complications. The use of antibiotics before to surgery and the duration of the procedure being kept to less than one hour both contributed to a reduction in the risk of surgical site infections (SSIs). It was determined that the two pathogens that were isolated the most commonly were Escherichia coli (9.4%) and Enterococcus faecalis (15.6%). However, Staphylococcus aureus was the pathogen that was isolated the most frequently. In order to reduce the number of surgical site infections (SSIs), this study brought to light the importance of enhancing the methods of infection control and the administration of antibiotics prior to surgical procedures. [34]

A prospective study was conducted at Farwania Hospital in Kuwait by Alfouzan et al. (2019) between January 2014 and December 2016 with the objective of identifying the prevalence of surgical site infections (SSIs), as well as trends and risk factors related with these infections. The study was carried out with the intention of evaluating the prevalence of SSIs. A total of 7235 caesarean sections were carried out, and the overall prevalence rate of surgical site infections (SSI) was found to be 2.1%. This information was gathered after thorough investigation. In 2016, this rate was 2.95%, which is a significant rise from 1.7% in 2014 ($P = 0.010$). There have been 152 cases of surgical site infections that have been described, and 98 percent of those infections were diagnosed as superficial incisional infections. One of the cases featured an infection that occurred deep within the incision, while the other two cases involved infections of organs, spaces, or both. Seventy-four point three percent of surgical site infections (SSIs) manifested themselves within fifteen days of patients undergoing surgical procedures. Bacterial growth was observed in twelve hundred seventy-seven percent of the 148 culture samples, with forty-two isolates representing 37.5% of the total. These isolates were resistant to multiple drugs, also known as multidrug-resistant). Methicillin-resistant Staphylococcus aureus (MRSA) was found in 34 of the isolates, while Klebsiella pneumoniae and Escherichia coli, both of which were reported to be positive for extended-spectrum beta-lactamase (ESBL), were found in three of the cases each. Both of these bacteria were found in the same number of cases. It was discovered that the presence of emergency CS and the absence of prophylactic antibiotic treatment were revealed to be significant risk factors for surgical site infections (SSI) ($P < 0.0001$). As a component of antimicrobial stewardship, updated antibiotic prophylactic methods ought to be applied in order to cut down on the frequency of surgical site infections (SSI) and the spread of multidrug-resistant organisms (MDR), as shown by the findings of the academic study.[48]

MATERIALS AND METHODS

Source of Data: All the women who undergo surgical procedures in obstetrics and gynaecology and develops surgical site infections at KLE'S Dr. Prabhakar Kore Hospital and Research Centre, Belagavi.

Study Design: Observational study

Study Period: 1 year (January 2024 - January 2025)

SAMPLE SIZE

Formula used for sample size calculation is,

$$n = \frac{p(100-p)Z^2}{E^2}$$

n - the sample size required,

p - the percentage occurrence of a state or condition (proportion or prevalence)

E - the percentage maximum error required

Z - the value corresponding to level of confidence required.

According Njoku and Njoku[46] 8.5 % of patients had infection. Considering this, at 95% of confidence level and 5% of maximum error, the sample size is given by,

$$n = \frac{8.5 \text{ x } (100-8.5) \text{ x } 1.96^2}{5^2}$$

$$n = 119.5 \approx 120$$

Hence, the minimum sample size required is 120. As sample size increases, the accuracy of the result also increases.

INCLUSION CRITERIA

1. Women undergoing surgical procedures in the department of obstetrics and gynaecology at KLE's Dr. Prabhakar Kore hospital
2. Surgical site infections occurring within 30 days of surgical procedure

EXCLUSION CRITERIA

1. Surgical procedures done outside the hospital, admitted following wound infections.
2. Women declining for informed consent.

METHODOLOGY

After obtaining approval from the ethical committee and informed consent from the women who met the inclusion criteria, wound swabs for microbiological culture were taken from the infection site using sterile swab sticks before the wound was cleaned with an antiseptic solution, taking care not to contaminate with skin commensals. The samples were immediately sent to the microbiological laboratory for microscopy and antibiotic sensitivity testing.

Structured questionnaires were used to collect data from patients who developed secondary site infections. These questionnaires included information on age, existing chronic diseases (such as diabetes mellitus and hypertension), lack of prenatal care, history of previous caesarean section, past medical history, duration of preoperative hospitalization, emergency or labored deliveries, current drug use (such as steroids and smoking), weight, height, and body mass index (BMI).

To determine the risk factors, additional data were collected from medical charts, anesthesia lists, and patients' medication records, including details on preoperative and postoperative antibiotic prophylaxis, duration and type of surgery, and type of anesthesia (general or regional spinal).

Surgical site infections (SSIs) were further classified as superficial incisional SSI, deep incisional SSI, or organ/space SSI, and were managed accordingly.

Wound culture samples from SSIs were sent immediately to the microbiological laboratory for microscopy and antibiotic sensitivity testing. The samples were incubated on appropriate culture media. For bacteriology, they were incubated on blood agar and MacConkey agar plates at 37°C aerobically for 18–24 hours.

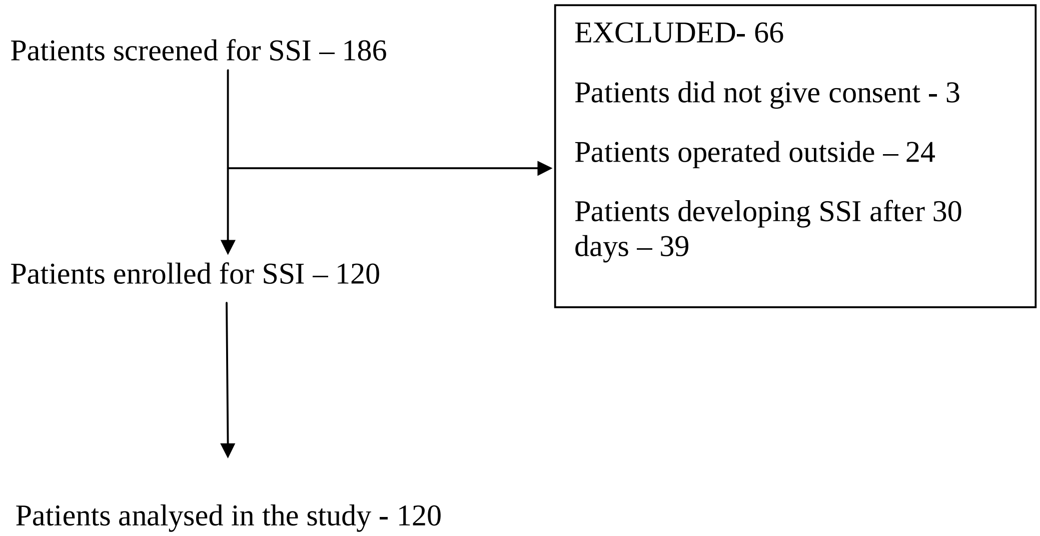
After incubation, colony characterization was performed using gram staining. Biochemical tests were then carried out for 18–24 hours to identify the bacterial species, and antibiotic susceptibility testing was conducted according to CLSI guidelines. The final reports provided information on the bacterial genus and species, along with the antibiogram.

Data processing and analysis/statistical analysis:

- Data were analyzed using statistical software R version 4.1.2 and Microsoft Excel.
- Continuous variables were compared using either the t-test or the Mann–Whitney test, depending on the data distribution.
- Categorical variables were analyzed using the chi-square test.
- Descriptive statistics were presented as mean, standard deviation, and percentages.

Ethics committee approval was obtained from the JNMC Institutional Ethics Committee on Human Subjects Research on 28/04/2023. The trial was registered under CTRI/2024/04/066286.

STROBE DIAGRAM

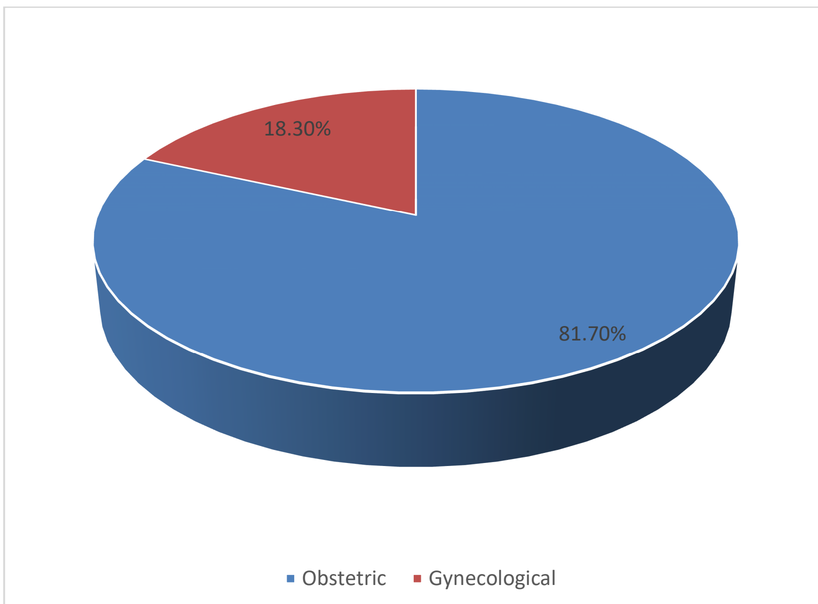


RESULTS

Table 1: Distribution of patients on the basis of type of surgery

		Frequency	Percent
Type of surgery	Obstetric	98	81.7%
	Gynaecological	22	18.3%
	Total	120	100.0%

Out of a total of 120 cases, 98 cases (81.7%) were obstetric surgeries, while 22 cases (18.3%) were gynaecological surgeries.



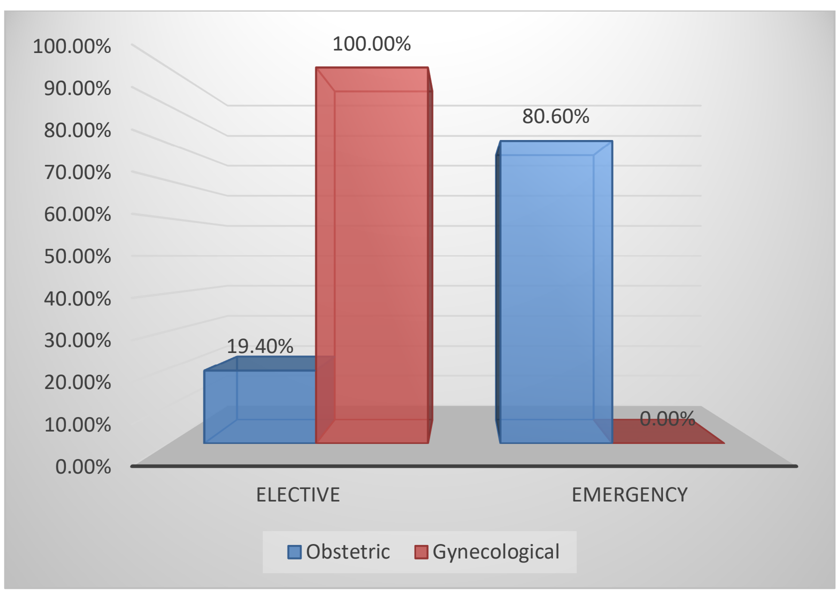
Graph 1: Distribution of patients on the basis of type of surgery

Table 2: Distribution of patients on the basis of elective/emergency surgery

			Type of surgery		Total
			Obstetric	Gynaecological	
Elective / Emergency	Elective	n	19	22	41
		%	19.4%	100.0%	34.2%
	Emergency	n	79	0	79
		%	80.6%	0.0%	65.8%
Total		n	98	22	120
		%	100.0%	100.0%	100.0%

Chi-Square:51.90, P Value: 0.001, Statistically Significant

Out of a total of 120 cases, 41 cases (34.2%) were elective, while 79 cases (65.8%) were emergency.

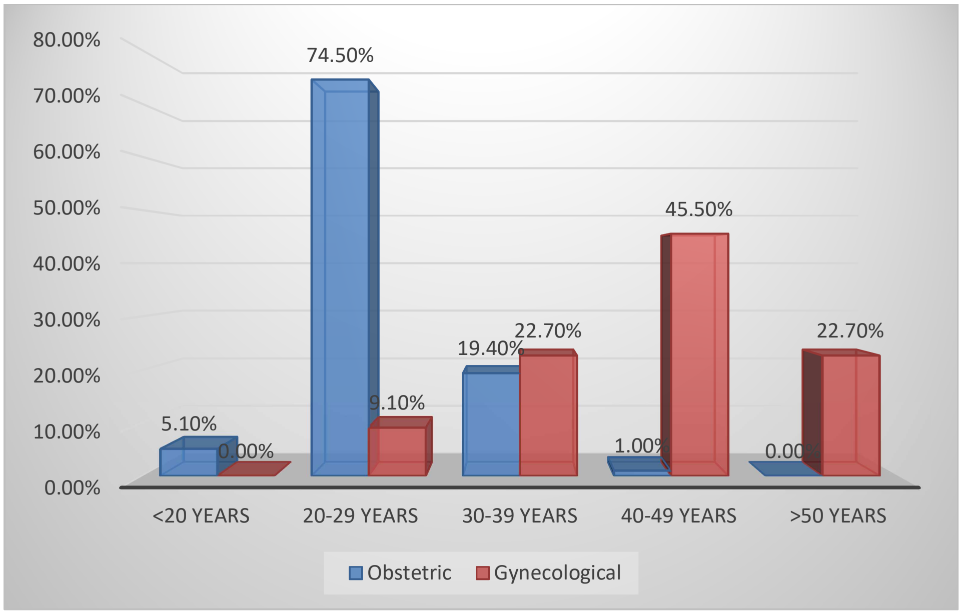


Graph 2: Distribution of patients on the basis of type of surgery: Elective/Emergency

Table 3 Distribution of patients based on socio demographic status

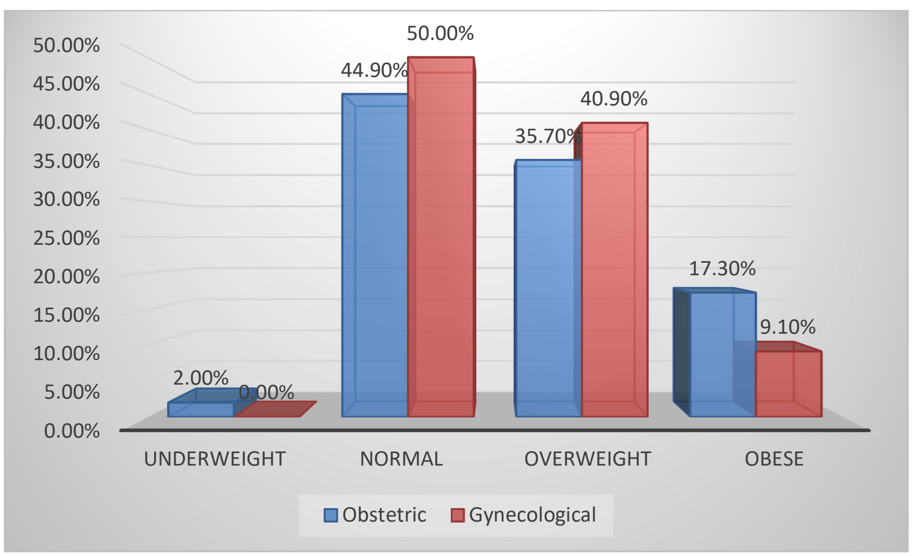
			Type of surgery		Total (n=120)
			Obstetric (n=98)	Gynecological (n=22)	
Age Group	<20 years	n	5	0	5
		%	5.1%	0.0%	4.2%
	20-29 years	n	73	2	75
		%	74.5%	9.1%	62.5%
	30-39 years	n	19	5	24
		%	19.4%	22.7%	20.0%
	40-49 years	n	1	10	11
		%	1.0%	45.5%	9.2%
	>50 years	n	0	5	5
		%	0.0%	22.7%	4.2%
BMI	Underweight	n	2	0	2
		%	2.0%	0.0%	1.7%
	Normal	n	44	11	55
		%	44.9%	50.0%	45.8%
	Overweight	n	35	9	44
		%	35.7%	40.9%	36.7%
	Obese	n	17	2	19
		%	17.3%	9.1%	15.8%
Socio Economic Status	Upper Class	n	1	0	1
		%	1.0%	0.0%	0.8%
	Upper Middle	n	1	0	1

	Class	%	1.0%	0.0%	0.8%
	Middle Class	n	66	10	76
		%	67.3%	45.5%	63.3%
	Lower Middle Class	n	27	8	35
		%	27.6%	36.4%	29.2%
	Lower Class	n	3	4	7
		%	3.1%	18.2%	5.8%
Parity	P0	n	0	1	1
		%	0.0%	4.5%	0.8%
	P1	n	49	1	50
		%	50.0%	4.5%	41.7%
	P2	n	42	9	51
		%	42.9%	40.9%	42.5%
	P3	n	6	9	15
		%	6.1%	40.9%	12.5%
	P4	n	1	2	3
		%	1.0%	9.1%	2.5%



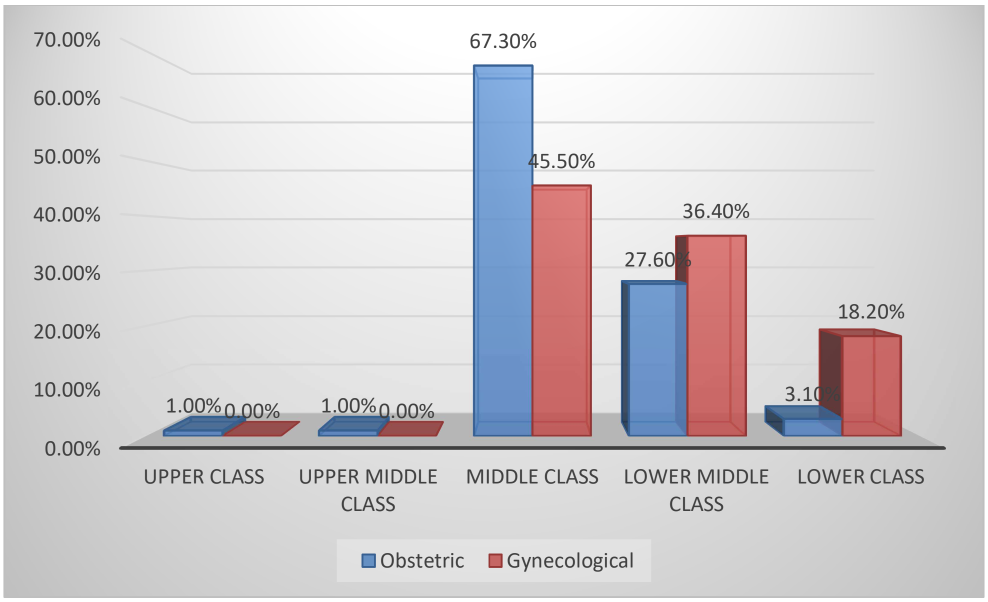
Graph 3: Distribution of patients based on age group

Out of the total 120 cases, the majority of patients belonged to the 20–29 years age group, accounting for 75 cases (62.5%). The difference in age distribution between obstetric and gynaecological cases was found to be statistically significant (p=0.001).



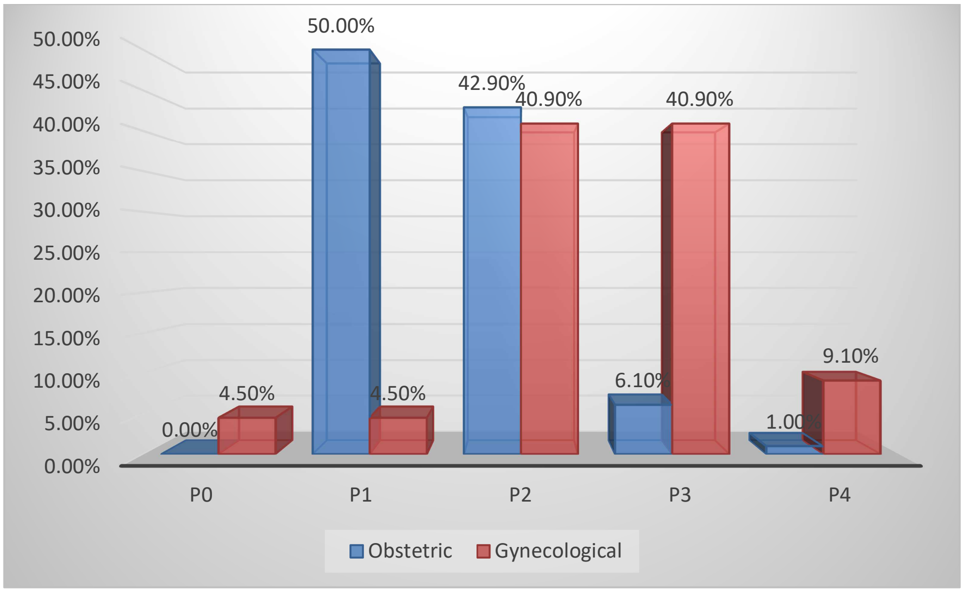
Graph 4: Distribution of patients on the basis of BMI

Out of the total 120 cases, the majority of patients had a normal BMI, accounting for 55 cases (45.8%). Among obstetric cases, 44 out of 98 cases (44.9%) were in the normal BMI category. In gynaecological cases, 11 out of 22 cases (50.0%) were in the normal BMI category. The difference in BMI distribution between obstetric and gynaecological cases was not statistically significant (p=0.69)



Graph 5: Distribution of patients on the basis of socioeconomic status

Out of the total 120 cases, the majority of patients belonged to the middle class, accounting for 76 cases (63.3%). The difference in socioeconomic status distribution between obstetric and gynaecological cases was found to be statistically significant (p=0.001)



Graph 6: Distribution of patients on the basis of parity

Out of the total 120 cases, the highest proportion of cases was recorded in parity 1 (50 cases, 41.7%) and parity 2 (51 cases, 42.5%). The difference in parity distribution between obstetric and gynaecological cases was found to be statistically significant (p=0.001).

Table 4: Distribution of patients on the basis of the type of surgical procedure

			Type of surgical procedure		Total
			Obstetric	Gynecological	
Surgical procedure	Full term elective LSCS	n	13	0	13
		%	13.3 %	0.0%	10.8%
	Full term emergency LSCS	n	62	0	62
		%	63.3%	0.0%	51.7%
	Pre term elective LSCS	n	2	0	2
		%	2.0%	0.0%	1.7%
	Preterm emergency LSCS	n	17	0	17
		%	17.3%	0.0%	14.2%
	FTVD	n	2	0	2
		%	2.0%	0.0%	1.7%
	FT ventouse delivery	n	2	0	2
		%	2.0%	0.0%	1.7%
	Exploratory laparotomy	n	0	3	3
		%	0.0%	13.6%	2.5%
	Total abdominal hystrectomy	n	0	17	17
		%	0.0%	77.3%	14.2%
Myomectomy		n	0	2	2
		%	0.0%	9.0%	1.6%
Total		n	98	22	120
		%	100.0%	100.0%	100.0%

Out of a total of 120 cases, the most common surgical procedure was full-term emergency LSCS (Lower Segment Caesarean Section) (51.7%) and among gynaecological cases, total abdominal Hysterectomy (TAH) (14.2%).

Table 5: Distribution of Obstetric Cases by Indication

Indication	No. of obstetric cases	Percentage
Antepartum haemorrhage	1	1.0%
Bad obstetric history	1	1.0%
Breech in labour	1	1.0%
CDMR	2	2.1%
CPD in labour	4	4.1%
DCDA twins	3	3.1%
Failed induction	2	2.1%
Fetal distress	8	8.2%
FTVD	2	2.1%
MSL	19	19.4%
Non progression of labour	1	1.0%
Persistent fetal tachycardia	1	1.0%
Placenta accreta spectrum	2	2.1%
Placenta previa	4	4.1%
Previous LSCS	31	31.6%
Previous 2 LSCS	3	3.1%
Poor maternal bearing down	2	2.1%
PPROM	3	3.1%
Previous pregnancy	1	1.0%
Severe oligohydraminos	2	2.1%
Severe PE	4	4.1%
Placental abruption	1	1.0%
Total	98	100.0%

Out of a total of 98 obstetric cases, the most common indication was previous LSCS (Lower Segment Caesarean Section). This reflects the increasing trend of repeat caesarean sections in obstetric practice.

Table 6: Distribution of Gynaecological Cases by Indication

Indication	No. of cases	Percentage
Adenomyosis	2	9.1%
AUB	4	18.2%
Benign polyp	1	4.6%
Fibroid uterus	6	27.3%
Heavy menstrual bleeding	3	13.6%
Ruptured Cyst	1	4.6%
Paraovarian cyst	1	4.6%
Scar endometriosis	1	4.6%
Subserosal fibroid	3	13.6%
Total	22	100.0%

Out of a total of 22 gynaecological cases, the most common indication was fibroid uterus, accounting for 6 cases (27.3%).

Table 7: Distribution of patient on the basis of intra operative findings

			obstetric	gynaecological	
Estimated blood loss (ml)		Mean	320.71	100.45	p value –
		SD	95.52	38.01	0.001
Duration	nil	n	4	0	4
		%	4.1%	0.0%	3.3%
	< 1 hr	n	88	6	94
		%	89.8%	27.3%	78.3%
	> 1 hr	n	6	16	22
		%	6.1%	72.7%	18.3%
Type of suture	Subcuticular	n	57	11	68
		%	58.1%	50.0%	56.6%
	Mattress	n	41	11	52
		%	41.8%	50.0%	43.3%
Suture material	Monocryl	n	57	11	68
		%	58.1%	50.0%	56.6%
	Ethilon	n	41	11	52
		%	41.8%	50.0%	43.3%
Pre Op Antibiotic	Inj Augmentin 1.2 gm iv	n	38	11	49
		%	38.7%	50.0%	40.8%
	Inj Ceftriaxone 1 gm iv	n	60	11	71
		%	61.3%	50.0%	59.2%

In obstetric cases, the mean estimated blood loss was 320.71 ml with a standard deviation (SD) of 95.52 ml. In gynaecological cases, blood loss was 100.45 ml with a standard deviation of 38.01 ml. The difference in estimated blood loss between obstetric and gynaecological cases was found to be statistically significant

Out of the total 120 cases, the majority of surgeries (94 cases, 78.3%) lasted less than 1 hour, while 22 cases (18.3%) lasted more than 1 hour. The difference in duration of surgery between obstetric and gynecological cases was statistically significant (Chi-Square: 53.33, P-Value: 0.001).

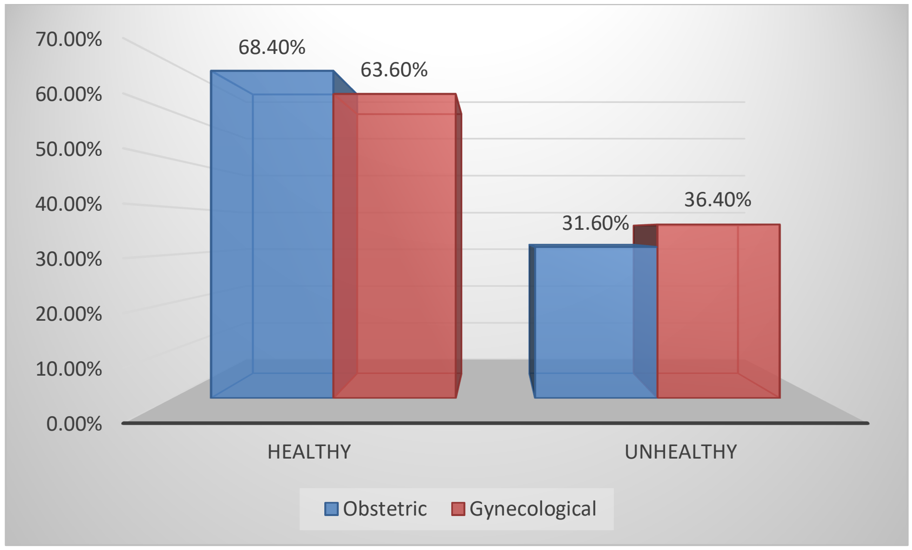
Out of the total 120 cases, 68 cases (56.6%) were closed using subcuticular sutures, while 52 cases (43.3%) were closed using mattress sutures.

Out of the total 120 cases, 71 cases (59.2%) received Inj. Ceftriaxone 1 gm as a preoperative antibiotic, while 49 cases (40.8%) received Inj. Augmentin 1.2 gm.

Table 8: Distribution of patients on the basis of signs and symptoms of SSI

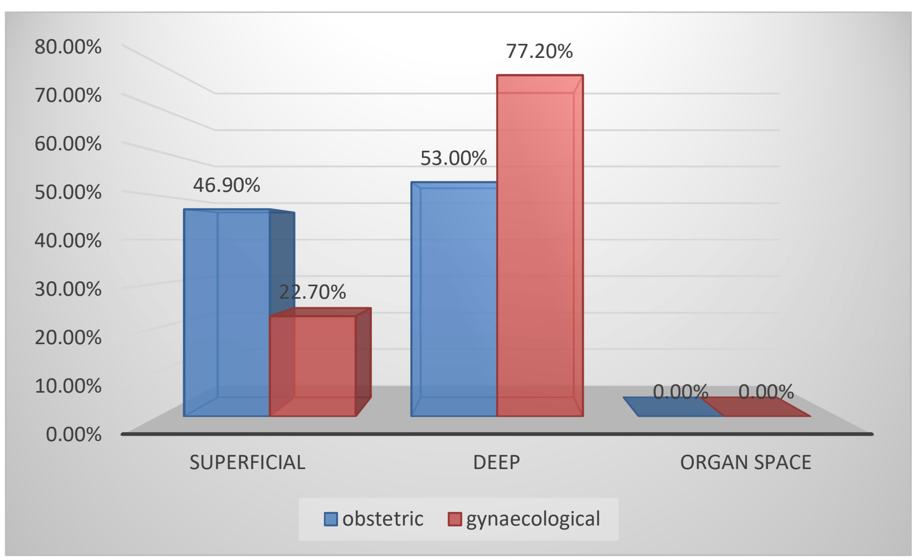
		Type of surgery			Total	P value
		Obstetric		Gynecological		
Induration	Yes	n	45	15	60	0.04
		%	45.9%	68.2%	50.0%	
	No	n	53	7	60	
		%	54.1%	31.8%	50.0%	
Separation of edges	Yes	n	23	10	33	0.03
		%	23.5%	45.5%	27.5%	
	No	n	75	12	87	
		%	76.5%	54.5%	72.5%	
Wound	Yes	n	84	21	105	0.19

discharge		%	85.7%	95.5%	87.5%	
	No	n	14	1	15	
		%	14.3%	4.5%	12.5%	
Fever with tenderness at incision site	Yes	n	7	2	9	0.51
		%	7.1%	9.1%	7.5%	
	No	n	91	20	111	
		%	92.9%	90.9%	92.5%	
Type of surgical site infection	Superficial	n	46	5	51	0.00
		%	46.9%	22.7%	42.5%	
	Deep	n	52	17	69	
		%	53.0%	77.2%	57.5%	
	Organ space	n	0	0	0	
		%	0.0%	0.0%	0.0%	
Status of wound (72 hrs)	Healthy	n	67	14	81	0.42
		%	68.4%	63.6%	67.5%	
	Unhealthy	n	31	8	39	
		%	31.6%	36.4%	32.5%	



Graph 7: Distribution of patients on the basis of status of wound on post operative day (POD 3)

Out of the total 120 cases, the majority of wounds were reported as healthy, accounting for 81 cases (67.5%). 39 cases (32.5%) showed unhealthy wound status at 72 hours. The difference in wound healing status between obstetric and gynaecological cases was not statistically significant.



Graph 8: Distribution of patients based on the type of surgical site infection

Out of the total 120 cases, the majority of SSIs were deep infections (69 cases, 57.5%), while 51 cases (42.5%) were superficial infections. No organ space infections were reported.

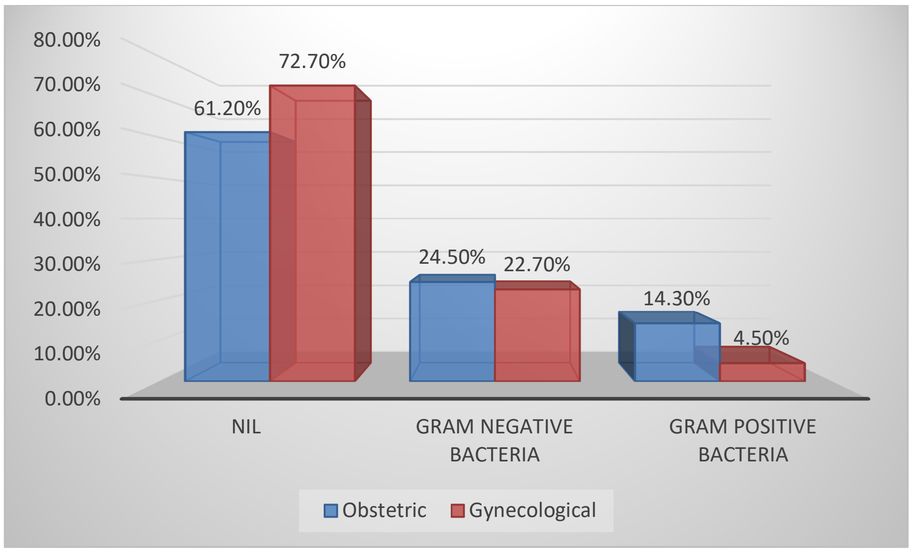
Induration was observed in 60 cases (50.0%) overall. The difference was found to be statistically significant (P-Value: 0.04). Separation of wound edges occurred in 33 cases (27.5%). Wound discharge was the most frequently reported symptom, present in 105 cases (87.5%). However, the difference was not statistically significant (P-Value: 0.19). Fever with tenderness at the incision site was the least common symptom, reported in 9 cases (7.5%) overall. The difference was not statistically significant.

Table 9: Distribution of patients on the basis of Type of Bacteria isolated in wound culture reports

			Type of surgery		Total
			Obstetric	Gynaecological	
Type of bacteria	No organism	n	60	16	76
		%	61.2%	72.7%	63.3%
	Gram negative bacteria	n	24	5	29
		%	24.5%	22.7%	24.2%
	Gram positive bacteria	n	14	1	15
		%	14.3%	4.5%	12.5%
Total		n	98	22	120
		%	100.0%	100.0%	100.0%

Chi-Square:1.76, P Value: 0.41, Statistically not Significant

Out of the total 120 cases, no organism was observed in 76 cases (63.3%). Gram-negative bacteria were isolated in 29 cases (24.2%) overall. Gram-positive bacteria were less commonly isolated, observed in 15 cases (12.5%). The difference in bacterial isolation between obstetric and gynaecological cases was not statistically significant.



Graph 9: Distribution of patients on the basis of Type of Bacteria isolated in wound culture reports

Table 10: Distribution of patients on the basis of microorganisms isolated in wound culture reports

			Type of surgery		Total
			Obstetric	Gynecological	
Wound culture report	Acinetobacter species	n	5	1	6
		%	5.1%	4.5%	5.0%
	Citrobacter freundii	n	5	0	5
		%	5.1%	0.0%	4.1%
	Coagulase neg staphylococcus aureus	n	4	1	5
		%	4.1%	4.5%	4.2%
	Enterococcus species	n	1	0	1
		%	1.0%	0.0%	0.8%
	Escherichia coli	n	5	1	6
		%	5.1%	4.5%	5.0%
	Klebsiella oxytoca	n	1	1	2
		%	1.0%	4.5%	1.6%
	Klebsiella pneumoniae	n	3	2	5
		%	3.1%	9.09%	4.1%
	Methicillin resistant staphylococcus aureus	n	5	0	5
		%	5.1%	0.0%	4.2%
	No organism	n	47	15	62
		%	48.0%	68.2%	51.7%
	Pseudomonas aeruginosa	n	5	0	5
		%	5.1%	0.0%	4.2%
	Skin commensals	n	13	1	14
		%	13.3%	4.5%	11.7%
	Staphylcoccus aureus	n	2	0	2

		%	2.0%	0.0%	1.6%
Staphylococcus epidermis		n	2	0	2
		%	2.0%	0.0%	1.6%
Total		n	98	22	120
		%	100.0%	100.0%	100.0%

Table 11: Distribution of patients according to risk factors in obstetric cases

			Type of surgery	Total
			Obstetric	
Duration of labour	</=12 hrs	n	44	44
		%	57.1%	57.1%
	>12 hrs	n	33	33
		%	42.9%	42.9%
Membrane rupture	Yes	n	46	46
		%	66.7%	66.7%
	No	n	23	23
		%	33.3%	33.3%
Duration of membrane rupture	<12 hrs	n	40	40
		%	87.0%	87.0%
	>12 hrs	n	6	6
		%	13.0%	13.0%

Out of the total 98 obstetric cases, In terms of labour duration, 44 cases (57.1%) had labour lasting ≤12 hours, while 33 cases (42.9%) had labour lasting >12 hours. Membrane rupture was reported in 46 cases (66.7%), while 23 cases (33.3%) had intact membranes at the time of delivery. Among the cases with membrane rupture, 40 cases (87.0%) had rupture lasting <12 hours, while 6 cases (13.0%) had prolonged membrane rupture lasting >12 hours.

Table 12: Distribution of patients on the basis of risk factors

			Type of surgery		Total
			Obstetric	Gynecological	
Anemia Hb (g%)	10-10.9	n	52	12	64
		%	53.1%	54.5%	53.3%
	7-9.9	n	46	10	56
		%	46.9%	45.4%	46.6%
Diabetes Mellitus	Yes	n	15	6	21
		%	15.3%	27.3%	17.5%
	No	n	83	16	99
		%	84.7%	72.7%	82.5%
HTN	Yes	n	15	5	20
		%	15.3%	22.7%	16.7%
	No	n	83	17	100
		%	84.7%	77.3%	83.3%
History of previous surgery	Yes	n	41	5	46
		%	43.2%	22.7%	39.3%
	No	n	54	17	71
		%	56.8%	77.3%	60.7%

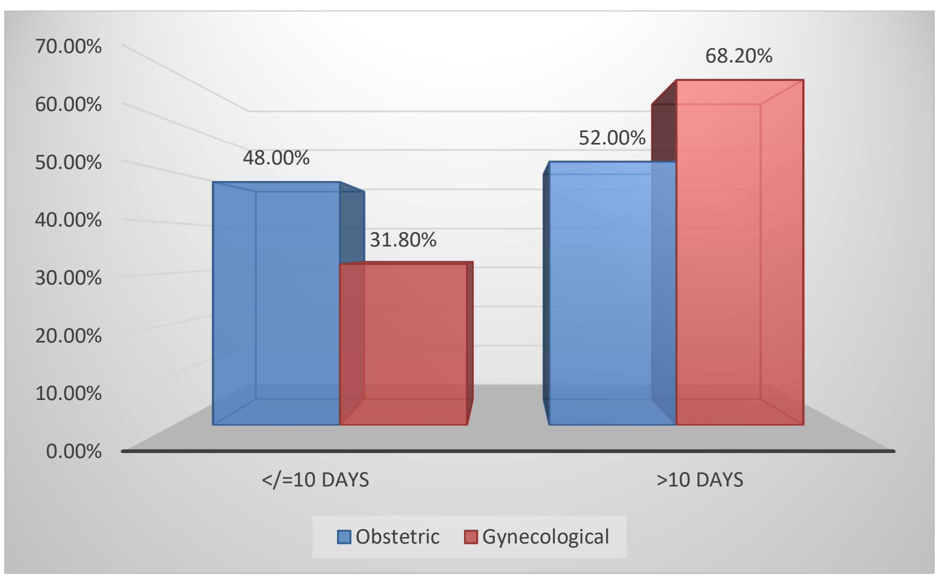
In terms of anemia, 64 out of 120 cases (53.3%) had hemoglobin levels between 10–10.9 g%, while 56 cases (46.6%) had levels between 7–9.9 g%. Diabetes mellitus was present in 21 cases (17.5%) overall. Hypertension was present in 20 cases (16.7%) overall. A history of previous surgery was noted in 46 cases (39.3%).

Table 13: Distribution of patients on the basis of post operative stay in the hospital

			Type of surgery		Total
			Obstetric	Gynecological	
Post operative stay (days)	</=10 days	n	47	7	54
		%	48.0%	31.8%	45.0%
	>10 days	n	51	15	66
		%	52.0%	68.2%	55.0%
Total		n	98	22	120
		%	100.0%	100.0%	100.0%

Chi-Square:1.89, P Value: 0.12, Statistically not Significant

Out of the total 120 cases, 54 cases (45.0%) had a hospital stay of ≤10 days, while 66 cases (55.0%) had a hospital stay of >10 days. The difference in postoperative hospital stay between obstetric and gynaecological cases was not statistically significant.



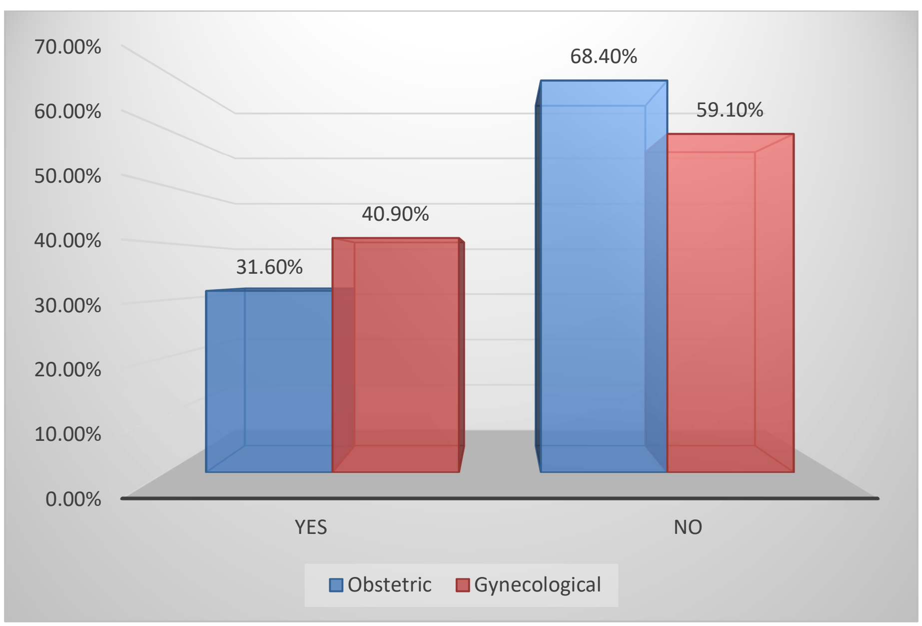
Graph 10: Distribution of patients on the basis of post operative stay in the hospital

Table 14: Distribution of patients on the basis of Readmission

			Type of surgery		Total
			Obstetric	Gynecological	
Readmission	Yes	n	31	9	40
		%	31.6%	40.9%	33.3%
	No	n	67	13	80
		%	68.4%	59.1%	66.7%
Total		n	98	22	120
		%	100.0%	100.0%	100.0%

Chi-Square:0.69, P Value: 0.27, Statistically not Significant

Out of the total 120 cases, 40 cases (33.3%) required readmission, while 80 cases (66.7%) were managed without the need for readmission.. The difference in the rate of readmission between obstetric and gynaecological cases was not statistically significant.



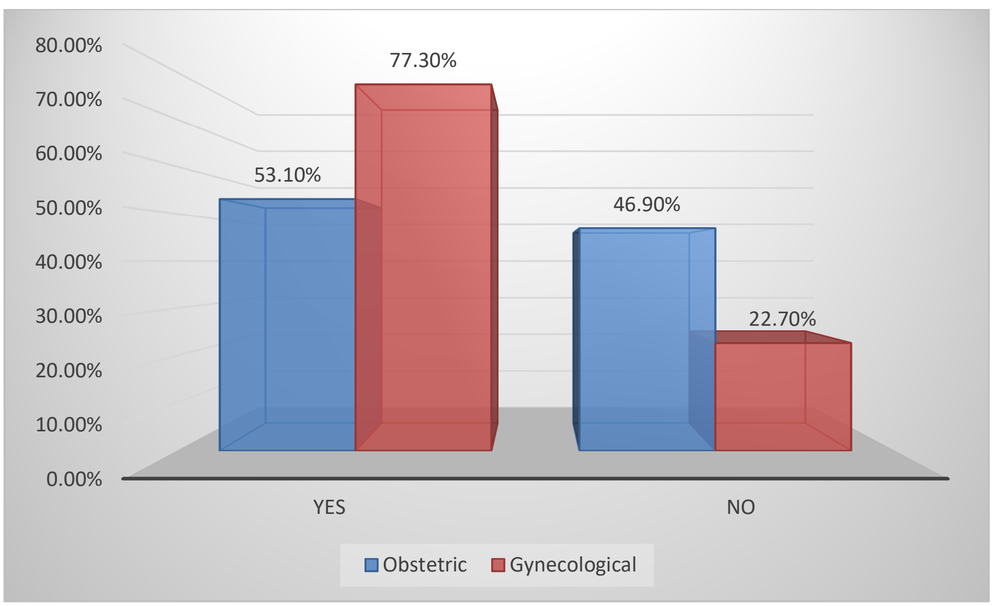
Graph 11: Distribution of patients on the basis of Readmission

Table 15: Distribution of patients on the basis of secondary suturing

			Type of surgery		Total
			Obstetric	Gynecological	
Secondary suturing	Yes	n	52	17	69
		%	53.1%	77.3%	57.5%
	No	n	46	5	51
		%	46.9%	22.7%	42.5%
Total		n	98	22	120
		%	100.0%	100.0%	100.0%

Chi-Square:4.31, P Value: 0.03, Statistically Significant

Out of the total 120 cases, 69 cases (57.5%) required secondary suturing, while 51 cases (42.5%) healed without the need for secondary suturing. The difference in the need for secondary suturing between obstetric and gynaecological cases was found to be statistically significant.



Graph 12: Distribution of patients on the basis of secondary suturing

Table 16: Different microorganisms and sensitivity

Microorganism isolated	**Sensitivity**
Acinetobacter species	Aztreonam, meropenem, linezolid
Citrobacter freundii	Tetracycline, cotrimoxazole, doxycycline, amikacin, linezolid, gentamycin
Coagulase negative staphylococcus aureus	Ampicillin, gentamycin, levofloxacin, linezolid, penicillin, piperacillin and tazobactum , cotrimoxazole, ampicillin
Enterococcus species	Linezolid, penicillin
Escherichia coli	Gentamycin, tetracyclin, cotrimoxazole, meropenem, amikacin
Klebsiella oxytoca	Meropenem, gentamcyin
Klebsiella pneumoniae	Meropenem, tetracyclin, linezolid, gentamycin, amikacin,
Methicillin resistant staphylococcus aureus	Doxycycline, cefotaxin, linezolid, gentamycin
Pseudomonas aeruginosa	Meropenem, amikacin, imipenem, aztreonam, cefepime, ciprofloxacin, levofloxacin, cotrimoxazole, piperacillin and tazobactum
Staphylococcus aureus	ampicillin, gentamycin, levofloxacin doxycycline
Staphyloccus epidermis	Levofloxacin, ciprofloxacin, linezolid, clindamycin, clindamycin

DISCUSSION

The objective of the current research was to ascertain the microbiological profile, antimicrobial susceptibility patterns, and related risk factors of surgical site infections (SSI) that occur after obstetric and gynaecological procedures. The major purpose was to identify the bacterial pathogens that cause surgical site infections (SSIs) and their sensitivity to antibiotics. The secondary objective was to discover the risk factors that contribute to the development of surgical site infections (SSIs) in patients who are undergoing obstetric and gynaecological procedures. Between the months of January 2024 and January 2025, the research was conducted at the KLE’S Dr. Prabhakar Kore hospital in Belagavi, Karnataka, in the department of obstetrics and gynaecology

Type of Surgery: Elective/Emergency Status

The bulk of the cases in this study were obstetric surgeries (98 cases, or 81.7%), as opposed to gynaecological surgeries (22 cases, or 18.3%). The total number of cases investigated in this study was 120. The fact that obstetric cases made up a bigger amount of the surgical workload in the department of obstetrics and gynaecology is reflected by this fact. According to this study, a greater number of obstetric cases were emergency procedures (79 instances, or 80.6%), whereas all gynaecological cases were considered to be elective rather than necessary. The difference was statistically significant (p-value = 0.001), which indicates that instances involving obstetrics were more likely to require immediate surgical intervention.

The University of Calabar Teaching Hospital (UCTH) was the location of a comparable prospective study that was carried out by Njoku and colleagues. The study involved 600 patients who had undergone caesarean sections. Among the 600 cases, 410 (68.3%) were caesarean sections performed in response to an emergency, while 190 (31.7%) were caesarean sections performed on an elective basis. [46] Emergency surgical procedures were responsible for 82.6% of the obstetric cases and 17.39% of the gynaecological cases in the study conducted by Panchal et al. In cases of emergency laparoscopic surgical procedures (LSCS), the rate of post-operative wound infection was greater (82.6%) than in cases of elective LSCS (60%) procedures.[47] The results in this study were comparable to the results in other studies.

Age

In this particular study, the majority of patients were between the ages of 20 and 29 years old, which accounted for 75 instances (62.5% of the total numbers). From the total number of obstetric cases, 73 out of 98 cases, or 74.5 percent, were in the age category of 20–29 years, followed by 19 cases, or 19.4 percent, in the age group of 30–39 years. The distribution was more evenly distributed throughout the various age groups in cases with gynaecological conditions. 10 out of 22 instances, or 45.5%, were accounted for by individuals in the age bracket of 40–49 years old. This was the largest proportion. The difference in age distribution between obstetric and gynaecological cases was determined to be statistically significant. This means that the difference is substantial. According to Njoku et al., the highest rate of Social Security Income (SSI) was observed among adolescents aged 19 years or under (16.7%). The age groups of 20–29 years (7.4%), 30–39 years (8.8%), and ≥40 years (5.3%) had a lower rate of incidence than the other age groups. On the other hand, the difference did not meet the criteria for statistical significance ($p = 0.44$). [46]

Patients in the study by Jain AK et al. ranged in age from 18 to 42 years, with the majority of them (41.7% of them) being between the ages of 23 and 27. On the other hand, the frequency of SSI was highest among women aged 37 and older (17.3%).[38] The results in this study were not comparable to the results in other studies.

BMI

Fifty-five cases, or 45.8 percent, of the total 120 cases were patients who had a body mass index (BMI) that was within the normal range. After this, there were 44 instances (36.7% of the total) assigned to the overweight category, and 19 cases (15.8% of the total) assigned to the obese category. In the category of obstetric cases, 44 out of 98 cases belonged to the normal body mass index (BMI), whereas 35 cases (35.7% of the total) were considered to be overweight. obesity was present in 17 patients (17.3%). In the field of gynaecology, 11 out of 22 cases (or 50 percent) fell into the normal body mass index (BMI) group, whereas 9 instances (or 40.9%) were considered to be overweight. Just two of the cases, or 9.1%, were obese. Statistical analysis revealed that there was no significant variation in the distribution of body mass index (BMI) between obstetric and gynaecological cases. The researchers Njoku et al. found that those with a body mass index (BMI) of 30 or higher had a substantially greater incidence of surgical site infections (SSI) (11.5%) compared to those with a BMI of less than 30 (6.9%) ($p = 0.026$). [46] Higher body mass index (BMI) (≥25) was found to be substantially linked with SSI (23.2% SSI rate, $p<0.0001$) in the study conducted by Jain AK et al. [38] The results in this study were comparable to the results in other studies.

Socioeconomic Status

For the purpose of this investigation, the majority of patients were members of the middle class, which accounted for 76 cases (63.3%). After this, there were 35 instances (29.2%) registered in the lower middle class, and there were seven cases (5.7%) registered in the lower class. Patients from the middle class made up the majority of those who were diagnosed with obstetric conditions (66 out of 98 cases, or 67.3%), followed by patients from the lower middle class (27.6%) in the number of instances. A slightly different distribution was observed in cases involving gynaecological conditions. In terms of the number of cases, the middle class accounted for the biggest proportion (10 out of 22 cases, or 45.5%), followed by the lower middle class, which accounted for 46.4 percent of the cases. It was shown that there was a statistically significant variation in the socioeconomic status distribution of obstetric and gynaecological cases. In a study conducted by Panchal and colleagues, it was found that malnutrition and a lower socioeconomic position were important factors that contributed to post-operative wound infections. [47] According to Kangan et al., the rates of SSI were highest among women who belonged to the upper-middle and lower-middle socioeconomic classes. However, the researchers found that there were no statistically significant differences across the various socioeconomic groups.[32] The results in this study were comparable to the results in other studies.

Parity

Parity 1 (50 instances, 41.7% of the total) and parity 2 (51 cases, 42.5% of the total) were the two categories that had the largest proportion of cases documented in this study. Patients who were in the parity 1 and parity 2 groups made up the majority of those who encountered obstetric cases. To be more specific, 52 percent of the 98 cases were in the parity 1 category, while 42 percent of the cases were in the parity 2 category. Within the nulliparous (P0) group, there were no incidences of obstetric complications recorded. When it came to gynaecological cases, the distribution was more evenly distributed. Both parity 2 and parity 3 were represented in the same proportion, with 9 cases (or 40.9% of the total). According to the findings of the study, there is a statistically significant variation in the distribution of parity between obstetric and gynaecological cases.

Multiparity was found to be a substantial risk factor for surgical site infections (SSI) in obstetric patients, accounting for 32.2% of the cases, according to Umare et al. findings.[49] In Panchal et al., Multiparity was identified as a significant risk factor for increased post-operative wound infection rates in obstetric cases.[47] The results in this study were comparable to the results in other studies.

Type of Surgical Procedure

According to the findings of this research, the surgical method that was performed the most frequently was a full-term emergency LSCS (Lower Segment Caesarean Section), which accounted for 62 instances (51.7%). This emphasises the large number of caesarean sections that are performed in emergency situations in the field of obstetrics. When it came to obstetric cases, the technique that was carried out the most commonly was full-term emergency LSCS (62 out of 98 cases, or 63.3%). This was followed by preterm emergency LSCS (17 cases, or 17.3%) and full-term elective LSCS (13 cases, or 13.3%). Total abdominal hysterectomy (TAH) was the procedure that was performed the most frequently in gynaecological patients, accounting for 17 out of 22 cases; this represents 77.3% of the total. Other gynaecological treatments included myomectomy (two instances, nine percent) and exploratory laparotomy (three cases, thirteen percent or thirteen percent).. In Panchal et al.,[47] majority of obstetric cases involved LSCS**.** Among gynecological cases, hysterectomy was the most common procedure. The results in this study were comparable to the results in other studies.

Obstetric Cases Based on Indication

Previous Lower Segment Caesarean Section (LSCS) was the most common indication in this study, accounting for 31 instances (31.6%) out of a total of 98 obstetric cases. This was the most common indication. This is a reflection of the growing trend in obstetric practice of performing caesarean sections more than previously. There were also other important signs, including as severe preeclampsia (PE), poor maternal bearing down, and placenta accreta spectrum, all of which were observed in 2.1% of cases respectively. The authors Panchal et al. emphasised the fact that emergency LSCS patients were related with higher post-operative wound infection rates. This was attributable to a number of factors, including protracted labour, premature rupture of membranes (PROM), frequent vaginal inspections, and anaemia. [47] The most common reason for a caesarean section, according to Zejnullahu et al., was a history of previous caesarean delivery, which accounted for 14.1% of all cases. [34] The results in this study were comparable to the results in other studies.

Gynaecological Cases Based on Indication

The fibroid uterus was the most common indication in this study, accounting for 6 instances (27.3%) out of a total of 22 gynaecological cases. This study was conducted in the United States. The second most common symptom was abnormal uterine bleeding (AUB), which was responsible with four instances (18.2%) of the total. Subserosal fibroid and heavy menstrual flow were both observed in three cases, which accounts for 13.6% of the total. The fact that bleeding disorders and issues associated to fibroids were the primary reasons for gynaecological procedures is reflected by this.

Estimated Blood Loss

It was shown that the mean estimated blood loss was substantially larger in cases involving obstetrics as opposed to situations involving gynaecology. The mean estimated blood loss in obstetric cases was 320.71 millilitres, with a standard deviation (SD) of 95.52 millilitres among the cases. The average estimated blood loss in gynaecological cases was much lower than the average blood loss in other instances, coming in at 100.45 ml with a standard deviation of 38.01 ml. It was discovered that there was a statistically significant variation in the amount of blood loss that was predicted to occur between obstetric and gynaecological cases (p-value equivalent to 0.001). With this information, it appears that obstetric procedures are linked to a greater amount of blood loss. Estimated blood loss greater than one litre was shown to be related with a considerably increased risk of surgical site infection (16.4%) in comparison to blood loss of less than one litre (7.6%).[46] The results in this study were comparable to the results in other studies.

Duration of surgical procedure

The majority of the surgeries, which accounted for 94 out of the total 120 cases, lasted for less than one hour. On the other hand, 22 out of the 120 cases, which accounted for 18.3 percent of the total, lasted for more than one hour. There were only four occurrences, which accounts for 3.3% of the total, that were documented without any specific length. Regarding obstetric cases, the majority of procedures (88 out of 98 cases, or 89.8%) were completed within one hour, while only six instances (or 6.1% of the total) lasted longer than one hour. This indicates that the majority of obstetric surgeries were completed within one hour. The bulk of gynaecological procedures, on the other hand, lasted for more than an hour, with only six cases (27.3% of the total) lasting for less than twelve minutes. Three-quarters of the twenty-two cases, or fifteen out of twenty-two, lasted for more than an hour. When comparing the amount of time spent on surgery between obstetric and gynaecological cases, it was shown to be statistically significant that there was a difference in the amount of time spent on surgery.

<u>Type of Suture and Suture Material Used</u>

Sutures were used to close 68 of the total 120 cases that were investigated in this study. Mattress sutures were used to close 52 of the cases, collectively accounting for 43.3% of the total. Subcuticular sutures were used to treat 68 of the cases. Undercuticular sutures were utilised in the closure of 57 out of 98 obstetric cases, which constitutes 58.1% of the total. Mattress sutures, on the other hand, were utilised in the closure of 41 instances, which constitutes 41.8% of the total. The utilisation of various kinds of sutures was distributed uniformly across the board when it came to gynaecological circumstances. The subcuticular sutures were used to close eleven out of twenty-two cases, while mattress sutures were used to close eleven of the cases. The rate of closure being fifty percent is represented by this. Monocryl was the preferred suture material in both obstetric and gynaecological circumstances, with 53.6% of the total number of cases employing this material. This is comparable to the previous statement. On the other hand, monocryl was successful in closing 57 out of 98 obstetric cases, which accounts for 58.1% of the total, and 11 out of 22 gynaecological cases, which accounts for 50.0% of the total. In total, there were 52 instances in which ethilon was utilised, which is equivalent to 43.3% of the total numbers. The obstetric cases accounted for 41 (41.8%) of these, whereas the gynaecological cases accounted for 11 (50.0%) of these. There was no way to determine whether or not there were any significant differences between the groups studied.

Preoperative Antibiotic Use

As a preoperative antibiotic, 71 cases (59.2%) were given intravenous ceftriaxone 1 gm, and 49 instances (40.8%) were given intravenous augmentin 1.2 gm. The total number of cases was 120. Sixty out of 98 patients, or 61.3%, were administered intravenous ceftriaxone at a dosage of 1 gramme, while 38 cases, or 38.7%, were administered intravenous augmentin at a dosage of 1.2 grammes. In gynaecological patients, the distribution was more balanced, with 11 out of 22 cases receiving intravenous ceftriaxone at a dosage of 1 gramme, and the remaining 11 cases receiving intravenous augmentin at a dosage of 1.2 grammes. Preoperative antibiotic prophylaxis was consistently administered in the study by Kangan et al., with the majority of the antibiotics being ampicillin or ceftriaxone. On the other hand, neither the timing nor the antibiotic choice had a significant impact on the incidence of SSI. [32] In Jain AK et al., [38] failure to administer preoperative prophylactic antibiotics significantly increased the SSI risk. The results in this study were comparable to the results in other studies.

Status of Wound at 72 Hours Postoperatively

The majority of the wounds that were reported as being healthy in this study were 81 out of a total of 120 instances, which accounts for 67.5% of the overall percentage. At the 72-hour mark, 39 instances, or 32.5%, had an unacceptable wound condition. When it came to obstetric cases, 67 out of 98 cases (68.4%) had a healthy wound status at 72 hours, while 31 cases (31.6%) revealed an unhealthy wound status. A healthy wound status was present in 14 out of 22 instances (63.6% of the total) that were gynaecological, while an unhealthy wound status was seen in 8 cases (36.4% of the total). When comparing the wound healing status of obstetric and gynaecological patients, there was no statistically significant difference between the populations. It is not possible to draw any comparisons between the findings of this study and those of other investigations.

Type of SSI

There were a total of 120 instances of surgical site infections (SSIs), 60 of which were deep infections (57.5% of the total), whereas 51 of the cases (42.5% of the total) were superficial infections. There were no reports of infections in the organ space. The deep infections that occurred in 52 out of 98 obstetric cases (53.0%) were more prevalent than the superficial infections that occurred in 46 cases (46.9%). Regarding gynaecological cases, seventeen out of twenty-two cases (or 77.2%) were deep infections, whereas only five instances (or 22.7% of the total) were superficial infections. The majority of the infections that were found in Zejnullahu et al. were superficial incisional SSIs (93.75 percent), whereas the remaining infections were deep incisional SSIs (6.25%). There were no reports of infections in the organs or spaces.[34] The results in this study were comparable to the results in other studies.

Signs and Symptoms of SSI

During the course of this research, induration was found in sixty cases, which accounts for fifty percent of the total. In gynaecological cases, it occurred far more frequently (15 out of 22 cases, or 68.2%), in contrast to obstetric cases, which occurred 45 out of 98 times, or 45.9% of the time. It was discovered that the difference was statistically significant, which led researchers to conclude that induration was more frequently connected with gynaecological treatments. In 33 cases, twenty-seven and a half percent, the wound margins were apart. When compared to obstetric cases, which accounted for 23 out of 98 cases, the incidence of this condition was much higher in gynaecological cases (10 out of 22 cases, 45.5%).

In 105 cases, or 87.5%, the patient reported experiencing wound drainage. This was the most often reported symptom. The occurrence of this phenomenon was seen in 84 out of 98 instances of obstetrics (85.7%), and in 21 out of 22 cases of gynaecology (95.5%). Nevertheless, the difference did not meet the criteria for statistical significance. In all, nine instances, or 7.5% of the total, were reported to have fever together with soreness at the incision site. This was the least prevalent symptom. The difference did not meet the criteria for statistical significance. According to Kangan et al., the symptoms that were most frequently observed were purulent discharge (75 percent), pain and discomfort (62.5%), induration and swelling (33.3%), wound dehiscence (25 percent), fever (20.8%), serous discharge (16.7%), and erythema (8.3%).[32] Approximately seventy percent of people who had SSI had moderate erythema or irritation. A serosanguinous or purulent discharge was observed in 22% of the patients, and 8% of the patients complained of a serious deep infection.[40] The results in this study were comparable to the results in other studies.

<u>Type of Bacteria Isolated from Wound Culture</u>

According to the findings of this investigation, out of a total of 120 cases, 76 cases (63.3%) did not include any organisms. In cases involving obstetrics, bacterial growth was not present in sixty out of ninety-eight cases (61.2%), whereas in situations involving gynaecology, it was not present in sixteen out of twenty-two cases (72.7%). A total of 29 cases, or 24.2% of the total, were found to have Gram-negative bacteria. The prevalence of these findings was established in 24 cases of obstetrics (24.5%) and 5 cases of gynaecology (22.7%). Gram-positive bacteria were recovered in a smaller percentage of instances, with only 15 cases (12.5%) containing them. While they were discovered in 14 cases of obstetrics (14.3%), they were only discovered in one case of gynaecology (4.5%). There was not a statistically significant difference in the amount of bacteria that was isolated from obstetric and gynaecological cases. There were a total of 51 wound swabs obtained for the study by Njoku et al., and 47 of them (92.2% of the total) revealed evidence of bacterial growth. Twelve cases, or 25.5%, were discovered to have mixed growth, which is defined as the presence of more than one isolate.[46] In Panchal et al., Out of 115 wound swabs collected**,** 89 (77.39%) showed no bacterial growth. Positive bacterial cultures were found in 26 cases (22.6%)**.**[47] In Jain AK et al., Out of 280 SSI cases, 254 (90.7%) had positive wound cultures, with 9.3% sterile cultures likely due to antibiotic treatment before culture.[38] The results in this study were comparable to the results in other studies.

Wound Culture Reports

In this particular investigation, out of a total of 120 instances, 62 cases (or 51.7% of the total) were found to have no evidence of bacterial growth. In cases involving obstetrics, there was no growth discovered in 47 out of 98 cases (48%) and in situations involving gynaecology, there was no growth found in 15 out of 22 cases (68.2%). The skin commensals were the most often identified organisms among the bacterial isolates. They were discovered in 14 instances (11.7%), 13.3% of which were obstetric cases, and 4.5% of which were gynaecological cases. In six cases, or five percent of the total, Acinetobacter species and Escherichia coli were found to be present. Both methicillin-resistant Staphylococcus aureus and Citrobacter freundii were found to be present in five instances, which accounts for 4.1% of the total. There were five cases (4.2%) in which coagulase-negative Staphylococcus aureus was found. Four of these cases were obstetric cases (4.1%), and one of them was gynaecological (4.5%). Gram-negative organisms, in particular Escherichia coli, Acinetobacter species, and Klebsiella pneumoniae, were among the most prevalent isolates in both obstetric and gynaecological cases, according to the findings of the study. According to Kangan et al., the bacterium that was isolated the most frequently was Staphylococcus aureus (20.8%). This was followed by Escherichia coli (16.7%), other staphylococci species (16.7%), Klebsiella pneumoniae (8.3%), Acinetobacter, Citrobacter koseri, and Enterococcus faecium (each 4.2%).32: Klebsiella pneumoniae (24.4%) and Staphylococcus aureus (22.1%) were the most prevalent isolates in the study conducted by Jain AK et al., which found that Gram-negative bacteria were the most prevalent 63% of the microorganisms.[38]

In the study conducted by Umare et al., it was shown that Escherichia coli was the most often isolated organism in surgical site infections (SSI). This particular organism was responsible for 35.5% of all cases, making it the most prevalent pathogen. The bacteria that was responsible for 19.4% of infections was Staphylococcus aureus, which was the second most often identifiable organism. Eleven percent of the cases were discovered to include Pseudomonas, whereas eight thirty-three percent of the patients contained methicillin-resistant Staphylococcus aureus (MRSA).[49]

In surgical site infections (SSI) that occurred after lower segment caesarean section (LSCS), the organisms that were isolated the most commonly were Staphylococcus aureus. This particular organism was responsible for 17.39% of all cases, making it the most prevalent pathogen. This information was provided by Panchal et al. Escherichia coli and Pseudomonas aeruginosa were each found in 1.73 percent of the patients, which indicates that they have a role as less prevalent but still substantial contributors to infection. It was found that Klebsiella and Enterococci were isolated in 0.86% of cases each, which indicates that the presence of these bacteria in SSI cases is relatively low but nonetheless noticeable. [47] The results in this study were comparable to the results in other studies.

Duration of Labour and Membrane Rupture in Obstetric Cases

During the course of this research, 42.9% of obstetric cases were found to have prolonged labour (more than 12 hours). There were 66.7% of cases in which the membrane ruptured, with the majority of ruptures lasting less than 12 hours. The fact that prolonged labour and membrane rupture are extremely common during obstetric procedures is reflected in this.The authors Panchal et al. emphasised the fact that emergency LSCS patients were related with higher post-operative wound infection rates. This was attributable to a number of factors, including protracted labour, premature rupture of membranes (PROM), frequent vaginal inspections, and anaemia. [47] The results in this study were comparable to the results in other studies.

Risk Factors for SSI

Regarding the levels of haemoglobin, this study found that 64 out of 120 cases (53.3% of the total) had haemoglobin levels that were between 10 and 10.9 g%, while 56 cases (46.6% of the total) had levels that were between 7 and 9.9 g%. Out of 98 instances, 52 cases (53.1%) had haemoglobin levels that were between 10 and 10.9 grammes per decilitre, whereas 46 cases (46.9%) had levels that were between 7 and 9.9 grammes per decilitre. The range was comparable in instances involving gynaecological conditions, with 54.5% of cases having haemoglobin levels between 10 and 10.9 g% and 45.4% having levels between 7 and 9.9 g%. In total, there were 21 patients (17.5%) that were diagnosed with diabetes mellitus. Compared to obstetric cases, which accounted for 15.3% of all instances, gynaecological patients had a higher incidence of the condition, with six out of twenty-two cases (27.3%). Twenty of the cases, or 16.7% of the total, were found to have hypertension. Comparatively, the incidence of this condition was slightly higher in obstetric patients (15 cases, 15.3%) than it was in gynaecological cases (5 cases, 22.7%). In forty-six(39.3%) of the cases, a history of previous surgical procedures was found. In comparison, the incidence of this condition was significantly higher in obstetric cases (41 out of 98 cases, or 43.2%) than in gynaecological patients (5 out of 22 cases, or 22.7%). It was shown that both obstetric and gynaecological cases were associated with high rates of anaemia (Hb 7–9.9 g%), diabetes, and hypertension. Earlier surgical procedures were performed more frequently in obstetric circumstances. It was found by Umare et al. that multiparity was the most common risk factor for surgical site infection (SSI) in obstetric cases. This factor was responsible for 32.2% of all cases, making it the most significant contributor to infection risk. In 13.5% of instances, anaemia and inadequate preoperative preparation were shown to be risk factors. This highlights the significance of optimising maternal health and surgical readiness in order to reduce the likelihood of complications. The presence of diabetes mellitus was recorded in 10.16 percent of cases, which is indicative of the increased susceptibility of diabetic patients to postoperative infections. With obesity and hypertension being diagnosed in 6.77% and 5.08% of cases, respectively, prolonged surgery lasting more than two hours was related with a risk of surgical site infection (SSI) that was 10.1% higher than the overall risk. In instances involving gynaecology, diabetes mellitus was shown to be the most prevalent risk factor, accounting for 23.07% of infections. More than two hours of surgery was associated with a 15.38% incidence of surgical site infection (SSI), highlighting the importance of developing effective surgical procedures to reduce the amount of time spent in the operating room. An increased risk of surgical site infections (SSI) was found to be associated with advanced age, obesity, and vertical incision. [49] The results in this study were comparable to the results in other studies.

Postoperative Hospital Stay

There were a total of 120 instances in this study, and out of those, 54 cases (or 45%) had a hospital stay of less than or equal to ten days, while 66 cases (or 55%) had a hospital stay that was more than ten days. There was a reasonable amount of equilibrium in the postoperative stay for obstetric cases. Forty-eight percent of the 98 patients were discharged within ten days, whereas fifty-two percent of the cases required a stay of more than ten days on average. In situations involving gynaecology, a prolonged hospital stay was more frequently observed. Out of the 22 instances, only seven cases (31.8%) required a stay of less than ten days, whereas fifteen cases (68.2%) required a stay of more than ten days. In cases involving obstetrics and gynaecology, there was no statistically significant difference in the length of time people stayed in the hospital after the operation. According to Kangan et al., several patients required readmission, daily dressings, intravenous antibiotics, and secondary suturing as a result of sexually transmitted infections (SSI), which greatly lengthened their hospital stays.[32] The results in this study were comparable to the results in other studies.

Readmission

The total number of cases was 120, and out of those, 40 cases (33.3% of the total) required readmission, while 80 cases (66.7% of the total) were administered without the need for readmission. When it came to obstetric cases, 31 out of 98 patients (31.6%) required readmission, whereas 67 cases (68.4%) did not require readmission. The rate of readmission was slightly greater in instances with gynaecological conditions, with nine out of twenty-two cases (40.9% of the total) necessitating readmission, while thirteen cases (59.1% of the total) did not require readmission. The difference in the rate of readmission between cases concerning obstetrics and those concerning gynaecology did not meet the criteria for statistical significance. The outcomes of this study were comparable to the findings of other studies that have been conducted.

Secondary Suturing

There were a total of 120 instances in this study, and out of those, 69 cases (57.5% of the total) required secondary suturing, whereas 51 cases (42.5% of the total) healed without the need for secondary suturing. In cases involving obstetrics, secondary suturing was necessary in 52 out of 98 cases (53.1% of the total), while 46 cases (46.9% of the total) did not require it. Only five cases (22.7%) were able to heal without the need for secondary suturing, while seventeen out of twenty-two cases (77.3%) required secondary suturing. It was shown that there was a statistically significant difference between the number of primary suturing procedures that were required for obstetric and gynaecological cases. Secondary suturing was necessary in 86.08 percent of the cases that were examined by Panchal et al. [47] The results in this study were comparable to the results in other studies.

Antibiotic Sensitivity Pattern of Isolated Microorganisms

- In this study, Acinetobacter species were sensitive to aztreonam, meropenem, and linezolid. This indicates that carbapenems and oxazolidinones are effective in treating Acinetobacter infections.
- Citrobacter freundii showed sensitivity to a broad range of antibiotics, including tetracycline, cotrimoxazole, doxycycline, amikacin, linezolid, and gentamycin. This suggests that both aminoglycosides and tetracyclines are effective against Citrobacter infections.

- Coagulase-negative Staphylococcus aureus was sensitive to ampicillin, gentamycin, levofloxacin, linezolid, penicillin, piperacillin and tazobactam, and cotrimoxazole.
- Escherichia coli was sensitive to gentamycin, tetracycline, cotrimoxazole, meropenem, and amikacin. Carbapenems and aminoglycosides remain effective against E. coli infections.
- Methicillin-resistant Staphylococcus aureus (MRSA) showed sensitivity to doxycycline, cefotaxime, linezolid, and gentamycin. Oxazolidinones and aminoglycosides were particularly effective against MRSA.
- Pseudomonas aeruginosa demonstrated sensitivity to meropenem, amikacin, imipenem, aztreonam, cefepime, ciprofloxacin, levofloxacin, cotrimoxazole, and piperacillin and tazobactam. Carbapenems, aminoglycosides, and fluoroquinolones were highly effective against Pseudomonas infections.
- Staphylococcus aureus showed sensitivity to ampicillin, gentamycin, levofloxacin, and doxycycline, indicating the effectiveness of aminoglycosides and fluoroquinolones.
- Staphylococcus epidermis was sensitive to levofloxacin, ciprofloxacin, linezolid, and clindamycin. This suggests that fluoroquinolones and oxazolidinones are effective against Staphylococcus epidermis infections.

According to Zejnullahu et al., the bacteria that were isolated from surgical site infections (SSI) had various degrees of sensitivity to antibiotics. The fact that cefazolin and gentamycin were shown to be effective antibiotics for treating infections produced by Staphylococcus aureus is evidence that these antibiotics are excellent treatment options for infections caused by this organism. It was shown that

Escherichia coli was sensitive to both meropenem and amikacin, which indicates that these antibiotics have the potential to be successfully utilised in situations involving this bacterium. Due to the fact that Enterococcus faecalis was sensitive to linezolid, this antibiotic was an excellent choice for treating infections that were caused by this individual. Pseudomonas aeruginosa was found to be sensitive to both ciprofloxacin and meropenem, which demonstrates the efficacy of these antibiotics in the treatment of infections that are caused by this bacteria. [34] Staphylococcus aureus was shown to have a high susceptibility to both amikacin and imipenem, with both antibiotics demonstrating an effectiveness rate of 72.7%, as stated by Njoku et al. Because it was discovered that Escherichia coli is extremely sensitive to imipenem, which has a sensitivity rate of one hundred percent, imipenem is a dependable treatment option for infections that are caused by this causative agent. Similar to the last example, Pseudomonas aeruginosa demonstrated a hundred percent sensitivity to imipenem, which is evidence that the antibiotic is effective against this resistant bacteria. On the other hand, gram-negative bacteria were shown to have a high level of resistance to cephalosporins and amoxicillin/clavulanate. This finding brings to light the growing problem of antibiotic resistance and the necessity of selecting antimicrobial therapy with caution based on sensitivity testing.[46] According to Umare et al., cefotaxime was the most effective antibiotic for treating surgical site infections (SSI). It had a sensitivity rate of 40.27 percent, which made it the most trustworthy option among the antibiotics that were evaluated. A sensitivity rate of 23.61% was observed by amikacin, while a sensitivity rate of 22.22% was demonstrated by gentamycin, demonstrating that both antibiotics are somewhat successful in the management of SSI cases. Linezolid demonstrated a reduced sensitivity rate of 8.33%, which gives the impression that it is only partially effective against the microorganisms that were identified. This antibiotic has a large amount of resistance, as seen by the fact that amoxiclav had the lowest sensitivity, which was 5.55%.[49] The following antibiotics have been shown to have a high level of sensitivity against the bacteria that are most frequently isolated in surgical site infections (SSI), as stated by Panchal et al. In the case of Staphylococcus aureus, the sensitivity to linezolid was found to be one hundred percent, whereas the sensitivity rate for amikacin and piperacillin/tazobactam was identically eighty-five percent. In addition, Klebsiella demonstrated a hundred percent sensitivity to amikacin and piperacillin/tazobactam, which demonstrates that these antibiotics are helpful in treating infections that are caused by this bacterium. The fact that enterococci showed a sensitivity of one hundred percent to linezolid is evidence of the drug's impressive efficacy in treating infections of this kind.[47] In Kangan et al., most effective antibiotic was Linezolid (100% sensitivity**).** Ciprofloxacin exhibited significant resistance, making it less favorable for empirical treatment.[32]

CONCLUSION

In conclusion, the post-caesarean SSI rate is higher in our hospital. Wherein, emergency cases had higher rate of SSI than elective cases. The most common indications for obstetric surgeries developing SSI were previous LSCS and fetal distress, while fibroid uterus and abnormal uterine bleeding were the leading causes in gynaecological procedures. Gram-negative organisms, particularly Escherichia coli and Acinetobacter species, were more frequently isolated, with Carbapenems, Aminoglycosides, and Oxazolidinones being the most effective antibiotics. The use of pre- and postoperative antibiotics, timing of preoperative antibiotics, proper handling of sterile instruments, intra-op suturing techniques and materials, postoperatively proper wound care practices by doctors postoperatively are crucial in bringing down the overall number of SSI. Besides, preceding medical history such as diabetes and chronic hypertension should be supervised efficiently to prevent the development of SSI. This will improve patient safety and decrease the financial burden on individuals and healthcare facilities.

LIMITATIONS

Following are the limitations of the study –

1. The study was conducted in a single centre, which may limit its generalizability of the results.

2. Only superficial and deep SSIs were observed during the study period; organ-space infections were not reported, possibly underestimating the total SSI burden.

3. Prior use of empirical antibiotics in some patients might have affected wound culture results, resulting in a number of culture-negative cases and limiting the accuracy of microbiological analysis.

SUMMARY

During the study period of one year from January 2024 till January 2025, 186 women were screened who developed SSI after obstetric and gynaecological surgical procedures. A total of 120 patients were recruited in the study and analysed and 82 patients were not recruited (3 patients did not give consent , 39 patients developed SSI after 30 days of the procedure and 24 were operated outside the hospital). A total of 120 women had SSI following obstetric surgeries (81.7%) and 22 women following gynaecological surgeries (18.3%). The number of emergency surgeries were 79 (65.8%), which included emergency lower segment caesarean section (LSCS) and the elective cases were 41 (34.2%), which comprised of elective LSCS, tubal ligation, and gynaecological surgeries such as total abdominal hysterectomy, laparotomy , myomectomy.

The age distribution showed that most obstetric cases were in the 20–29 years age group (74.5%), while gynaecological cases were more common in older patients aged 40–49 years (45.5%).

In terms of body mass index (BMI), most patients had a normal BMI (45.8%) or were overweight (36.7%), with no significant difference between obstetric and gynaecological cases. Socioeconomic status analysis revealed that most patients belonged to the middle class (63.3%).

Parity analysis showed that most obstetric cases were in parity 1 (50.0%) and parity 2 (42.9%), whereas parity 2 and parity 3 were more common in gynaecological cases. Among obstetric cases, the most common indications were previous LSCS (31.6%), meconium-stained liquor (MSL) (19.4%), and fetal distress (8.2%). In gynaecological cases, the most common indication was fibroid uterus (27.3%), followed by abnormal uterine bleeding (AUB) (18.2%).

The most frequently performed obstetric procedure was full-term emergency LSCS (63.3%), while total abdominal hysterectomy (TAH) (77.3%) was the most common gynaecological procedure. Estimated blood loss was significantly higher in obstetric cases compared to gynaecological cases. Prolonged labour was observed in 42.9% of obstetric cases, and membrane rupture occurred in 66.7% of cases, with most ruptures lasting ≤12 hours.

Preoperative antibiotics were given in all cases, with Inj. Ceftriaxone 1 gm being the most commonly used (59.2%) and Inj. Augmentin 1.2 gm (40.8%). Postoperative hospital stay was longer than 10 days in 55.0% of cases, particularly in gynecological cases.

Subcuticular sutures and Monocryl were the most commonly used sutures, with no significant difference between obstetric and gynaecological cases. At 72 hours postoperatively, most wounds were healthy (67.5%), However, secondary suturing was more frequently required in gynaecological cases (77.3%) compared to obstetric cases (53.1%).

Readmission was required in 33.3% of cases. Risk factors for surgical site infections (SSI) included anemia (Hb 7–9.9 g%), diabetes mellitus (17.5%), and hypertension (16.7%). A history of previous surgery was more frequent in obstetric cases (43.2%) than in gynecological cases (22.7%).

Signs and symptoms of SSI included induration (50.0%), separation of wound edges (27.5%), wound discharge (87.5%), and fever with tenderness at the incision site (7.5%).

No organism was reported in 63.3% of cases. Among the positive cultures, gram-negative bacteria (24.2%) were more frequently isolated than gram-positive bacteria (12.5%). Escherichia coli, Acinetobacter species, and Methicillin-resistant Staphylococcus aureus (MRSA) were the most commonly isolated organisms.

Gram-negative organisms showed sensitivity to carbapenems (e.g., meropenem), aminoglycosides (e.g., gentamycin), and fluoroquinolones (e.g., ciprofloxacin). Gram-positive organisms were sensitive to oxazolidinones (e.g., linezolid) and penicillin-based antibiotics.

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ANNEXURE – I - INFORMED CONSENT FORM

Microbiological profile of surgical site infections following surgical procedures in the department of obstetrics and gynaecology – a descriptive observational study

Name of Student/Principal Investigator:

Name of Guide/Co Investigators:

Introduction- Surgical site infection is defined as an infection occurring within 30 days after a surgical operation and affecting either incision or deep tissues at the operation site. These infections may be a superficial or deep incisional infection or infections involving organ or body space

Explanation of procedure: Wound culture samples from SSIs will be collected with sterile swab sticks before the wound is cleaned with an antiseptic solution , samples will be sent to the microbiological laboratory immediately for the microscopic, culture and sensitivity

Withdrawal from participation in the study: Participation in this study in voluntary. You will be free to decide whether to participate in this study or continue participation once enrolled. In case you decide to withdraw your participation, you are free to do so. However, please convey the decision to the principal investigator.

Possible benefits from participating in the study: it will help plan and manage your further treatment Possible risks from participating in the study: There are no risks involved in participating in this study. Privacy and confidentiality: The information collected from you will be coded, to prevent any person to identify you. Your identity will never be revealed. The data collected from you will be kept confidential and only processed or aggregated data will be used for publication.

Financial incentives: You will not receive any payment for participating in this study.

Cost of investigations done during the course of study will be paid by the principal investigator Authorization for publication of aggregated data: Results obtained after processing of the aggregated data will be published for scientific purpose and or presented to scientific groups. However, your identity will never be revealed.

Questions: In case of any questions with regard to this study, you are free to contact Dr Harsha Hegde, Chairperson, Ethical committee of JNMC, 0831-2473777 Extension 4052.

Legal rights: By signing this consent form, we are not waving any of your legal rights

I am making a voluntary decision to participate in the study "**Microbiological profile of surgical site infections following surgical procedures in the department of obstetrics and gynaecology – a descriptive observational study**" My signature below indicates that I have decided to participate and I have read the information provided above or the information provided above has been read to me in the language that I understand best. I was given the opportunity to ask questions and that they have been answered to my satisfaction.

Name of the participant:

Signature or left thumb impression of the participant:

Name of the witness:

Signature or left thumb impression of the witness:

Name of the investigator:

Signature of the investigator:

ANNEXURE – II - SCREENING FORM

Screening number : | | |

First name: _____________ Middle name:_________ Last name:______

Age(years): | |

IP number: | | | | | |

Husband's name: _______________

Address:

Occupation :

Phone no. :

Socio economic status:

Obstetric score: | | |

LMP (DD/MM/YY) | | | | | |

Screening for inclusion criteria

1. Woman giving consent -
2. Woman undergoing surgical procedure in KLE's Dr. Prabhakar kore hospital-
3. Surgical site infection occurring with 30 days of surgical procedure –

   YES -1 , NO-2

ANNEXURE – III - PROFORMA

Microbiological profile of surgical site infections following surgical procedures in the department of obstetrics and gynaecology – a descriptive observational study

ENROLLMENT NUMBER

First name: _____________ Middle name: __________ Last name: ______

Age(years):

IP number:

Husband's name: ________________

Address:

Date of the surgical procedure done:

Name of the surgical procedure done:

Consent obtained: (yes-1/no-2)

Any comorbidities: (yes-1, no – 2)

Diabetes mellitus-

Hypertension-

Thyroid disorders-

Cardiac disease-

Epilepsy-

Bronchial asthma-

Others

Obstetric score-

Gravida-

Para-

Living-

Abortion-

GENERAL PHYSICAL EXAMINATION

Pulse rate: ______

Blood pressure: ____

Height: ____

Weight: ____

BMI: ____

SYSTEMIC EXAMINATION

Respiratory system: _________

Cardiovascular system: ________

Central nervous system: _______

Abdominal examination:

PAST SURGICAL HISTORY (yes-1 , no- 2)

If applicable, specify -

SOCIO DEMOGRAPHIC INFORMATION

1. How old are you? __
2. What is the level of schooling? (yes-1, no-2)
    - No formal schooling , illiterate
    - No formal schooling, literate
    - Schooling
    - Don't know
3. Number of years of schooling?

SOCIO-ECONOMIC STATUS (according to modified BJ Prasad classification)

1. Upper class:
2. Upper middle class:
3. Middle class:
4. Lower middle class:
5. Lower class:

MENSTRUAL HISTORY

1. What was the last day of your menstrual cycle?
2. Were your cycles regular? (yes-1,no-2)
3. Estimated date of delivery (EDD) as per LMP (if applicable) ?
4. Corrected estimated date of delivery (CEDD) (if applicable) ?
5. Gestational age - _____ weeks ___ days

PRE -OP DIAGNOSIS - ________________________________

POST-OP DIAGNOSIS - _______________________________

SURGICAL PROCEDURE - _____________________________

INDICATION - ____________________________________

Blood loss –

Duration -

INVESTIGATIONS

Blood group-

Hemoglobin-

Platelets-

RBC-

WBC-

DLC-

Urine routine & microscopy-

HIV-

HBSAG-

VDRL-

TSH-

DIPSI/Hba1C –

Duration of labour ,if applicable-

Membrane rupture (yes-1, no-2) –

Duration of membrane rupture , if applicable -

POST OPERATIVE FOLLOW UP

1. Status of the wound after 72 hours.(healthy-1, unhealthy-2): ________
2. Signs of infection & inflammation: (yes-1,no-2)
    - Redness at incision site. ____
    - Pain at incision site. ____
    - Swelling at incision site. ____
    - Increase in temperature at incision site. ____
    - Discharge from incision site. ____
    - Pus from abscess. ____
    - Separation of edges at incision site. ____
    - Fever with tenderness at incision site. ____
3. What post op day SSI (surgical site infection)noted ? -
4. What type of suture applied ? (subcuticular -1, mattress-2) –
5. What type of suture material used? (monocryl-1, ethilon – 2)
6. Type of SSI (Superficial -1 , deep-2, organ space -3) -

MICROSCOPY REPORT -

BACTERIAL CULTURE REPORT- _______________________

ANTIBIOTIC SUSCEPTIBILITY TESTS-

(Resistant- 1, sensitive- 2, intermediate -3)

NAME	RESISTANT/SENSITIVE
1. Meropenem -	
2. Augmentin -	
3. cefotaxime -	
4. Ampicillin -	
5. Gentamicin -	
6. Tetracycline -	
7. Piperacillin -	
8. Cotrimoxazole -	
9. Imipenem -	
10. Amikacin -	
11. Amoxiclav -	
12. Cefepime -	
13. Cefuroxime -	
14. Ceftriaxone -	
15. Levofloxacin -	
16. Ciprofloxacin -	
17. Linezolid -	
18. Clindamycin -	

PRE OPERATIVE ANTIBITICS –

Name: Course:

POST OPERATIVE ANTIBIOTICS

Name: Course:

POST SSI ANTIBIOTICS –

Name- Course –

SECONDARY SUTURING (yes-1 ,no-2)- ______

If yes, date of secondary suturing **–**

POST OPERATIVE HOSPITAL STAY DURATION - __________

READMISSION (yes-1, no-2) –

ANNEXURE – IV

MASTER CHART

PARTICIPANT NO.	IP NO.	AGE	BMI	SOCIO ECONOMIC STATUS	OBSTETRIC SCORE	PERIOD OF GESTATION	SURGICAL PROCEDURE	INDICATION	ESTIMATED BLOOD LOSS	DURATION	STATUS OF WOUND (72 HRS)	Type of SSI	POD # (SSI)	TYPE OF SUTURE	SUTURE MATERIAL	INDURATION	DISCHARGE	SEPARATION OF EDGES	FEVER	WOUND CULTURE REPORT	TYPE OF BACTERIA	SENSITIVE TO	PRE OP ANTIBIOTIC	POST OP ANTIBIOTIC	DURATION OF POST OP	POST SSI ANTIBIOTIC	DURATION OF POST SSI	SECONDARY SUTURING	READMISSION	POST OPERATIVE STAY	Hb	DIABETES	HTN	HISTORY OF PREVIOUS SURGERY	DURATION OF LABOUR	MEMBRANE RUPTURE	DURATION OF MEMBRANE RUPTURE
1	10006139	22	25.9	3	P1L1	37 weeks	full term emergency LSCS	thick MSL	300 ml	> 1 hr	1	1	4	1	1	2	1	2	2	No organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	8 days	10.2	2	2	2	17 hrs	1	1
2	10005501	40	23.4	5	P2L2	N/A	TAH +left sided salpingoopherectomy	adenomyosis	50 ml	> 2 hr	2	2	4	1	1	1	1	2	2	No organsim	N/A	N/A	Inj ceftriaxone 1 gm	inj augmentin 1.2 gm	3 doses	inj linezolid 600 mg	3 days	1	one	12 days	10	1	2	2	N/A	N/A	N/A
3	10006894	19	26.9	4	P1L1	38 weeks 5 days	full term emergency LSCS	fetal distress	280 ml	> 1 hr	2	2	4	1	1	1	1	2	2	staphylcoccus epidermis	gram positive bacteria	levofloxacin, ciprofloxacin, linezolid, clindamycin	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj linezolid 600 mg	6 days	1	one	12 days	11.2	2	2	2	18 hrs	1	1
4	10008105	21	32.2	3	P1L1A1	38 weeks	full term emergency LSCS	CDMR	400 ml	> 1 hr	2	2	4	1	1	1	1	2	2	citrobacter freundii	gram negative bacteria	gentamycin, tetracyclin	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj gentamycin 80 mg	5 days	1	two	13 days	11	2	2	2	4 hrs	N/A	N/A
5	10006095	23	17.1	4	P2L2	38 weeks	full term elective LSCS	prev LSCS not w/f VBAC	350 ml	> 1 hr	2	2	4	2	2	2	1	2	2	Klebsiella pneumoniae	gram negative bacteria	meropenem , tetracycline	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj gentamycin 80 mg	5 days	1	two	12 days	9.8	2	1	1	N/A	N/A	N/A
6	10020122	25	27.6	4	P1L1	38 weeks 3 days	full term emergency LSCS	thick MSL	300 ml	> 1 hr	1	2	16	1	1	2	1	2	2	no organsim	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj linezolid 600 mg	7 days	1	one	14 days	10	2	2	2	21 hrs	1	1
7	10025512	23	24.2	4	P2L2	40 weeks	full term emergency LSCS	prev LSCS in latent labour	450 ml	>1 hr	1	2	8	2	2	1	1	2	2	methicillin resistant staphylococcus aureus	gram positive	gentamycin	Inj ceftriaxone 1 gm	inj augmentin 1.2 gm	3 doses	inj gentamycin 80 mg	5 days	1	one	14 days	10.1	2	2	1	6 hrs	2	N/A
8	10008723	19	30.8	5	P1L1	37 weeks 4 days	full term emergency LSCS	failed induction	350 ml	>1 hr	2	2	4	1	1	1	1	2	2	pseudomonas aeruginosa	gram negative bacteria	meropenem, amikacin	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj meropenem 1 gm	5 days	1	one	12 days	12.2	2	1	2	18 hrs	1	1
9	10013531	22	24.9	3	P1L1	39 weeks	full term emergency LSCS	failed induction	250 ml	>1 hr	2	1	4	1	1	1	1	2	2	staphylococcus aureus	gram positive	doxycycline	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linezolid 600 mg	5 days	2	two	15 days	13.1	2	1	2	10 hrs	1	1
10	10023841	20	23.1	3	P1L1	38 weeks 5 days	full term emergency LSCS	CPD in labour	370 ml	> 1 hr	1	2	11	1	1	1	1	2	2	klebsiella oxytoca	gram negative bacteria	meropenem	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj clindamycin 300 mg	5 days	1	one	10 days	11	2	2	1	15 hrs	1	1
11	10001858	30	29.6	4	P3L3	38 weeks	full term elective LSCS	prev 2 LSCS	400 ml	>1 hr	2	2	4	2	2	1	1	2	2	Klebsiella pneumoniae	gram negative bacteria	amikacin	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj gentamycin 80 mg	7 days	1	two	14 days	9.2	1	2	1	N/A	N/A	N/A
12	10037366	24	24.9	5	P1L1A1	39 weeks 1 day	full term emergency LSCS	CPD in labour	200 ml	>1 hr	2	2	5	1	1	1	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj linezolid 600 mg	7 days	1	one	15 days	8	2	2	2	12 hrs	1	1
13	10020926	24	37.5	4	P2L1D1	36 weeks	preterm elective LSCS	Prev LSCS with GDM on insulin	250 ml	>1 hr	2	2	4	1	1	1	1	1	2	staphylococcus epidermis	gram positive	clindamycin, linezolid	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	2 days	inj linezolid 600 mg	5 days	1	two	10 days	8.5	1	2	1	NA	N/A	N/A
14	10030365	27	24.2	4	P2L2	40 weeks 5 days	full term emergency LSCS	prev LSCS wih post datism	350 ml	>1 hr	1	2	13	2	2	2	1	2	2	Escherichia coli	gram negative bacteria	gentamycin, tetracyclin	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	2 days	inj meropenem 1 gm	5 days	1	one	12 days	10.2	2	2	1	12 hrs	1	1
15	10010041	24	24.2	4	P1L1A1	38 weeks 6 days	full term emergency LSCS	CDMR	400 ml	>1 hr	1	1	4	1	1	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	8 days	11.3	1	2	2	6 hrs	N/A	N/A
16	10022122	28	31.6	3	P3L3	40 weeks 6 days	full term emergency LSCS	prev 2 LSCS	450 ml	>1 hr	1	1	4	2	2	2	1	2	2	No organsim	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	8 days	12	2	2	1	2 hrs	2	N/A
17	10001973	45	23.1	5	P2L2	N/A	TAH + bilateral salpingoopherectomy	subserosal fibroid	60 ml	>1 hr	2	2	4	1	1	1	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	8 days	1	two	10 days	9.8	1	2	2	N/A	N/A	N/A
18	10037416	24	29.6	4	P2L2	38 weeks 3 days	full term emergency LSCS	prev LSCS in labour	250 ml	>1 hr	1	2	5	2	2	2	2	2	2	No organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	8 days	1	one	12 days	10.9	2	2	1	4 hrs	2	N/A
19	10026885	20	34.3	3	P1L1	37 weeks 1 day	full term emergency LSCS	Severe PE with HELLP	380 ml	>1 hr	1	1	6	1	1	1	1	2	2	acinetobacter species	gram negative bacteria	aztreonam	inj augmentin 1.2 gm	inj augmentin 1.2 gm	2 days	inj piptaz 4.5 gm	5 days	2	two	14 days	11.5	2	2	2	8 hrs	2	N/A
20	10053369	35	28.8	4	P1L1	36 weeks 6 days	preterm emergency LSCS	thick MSL with breech	490 ml	> 1 hr	1	2	13	1	1	2	1	2	2	MRSA	gram positive	linezolid, doxycycline	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linezolid 600 mg	5 days	1	two	12 days	10	2	1	2	4 hrs	1	1
21	10030005	26	28.3	3	P1L1A3	38 weeks 4 days	full term emergency LSCS	MSL with unfavourable cervix	320 ml	>1 hr	1	2	18	1	1	1	1	2	2	citrobacter freundii	gram negative bacteria	linezolid	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj piptaz 4.5 gm	7 days	1	two	12 days	10.5	2	2	2	12 hrs	1	1
22	10035264	28	28.1	3	P2L2	37 weeks 4 days	full term elective LSCS	prev LSCS with GDM with G.HTN	400 ml	> 1 hr	2	1	4	2	2	1	1	1	1	coagulase neg staphylococcus aureus	gram positive	linezolid, ampicillin	inj augmentin 1.2 gm	inj augmentin 1.2 gm	2 days	inj linezolid 600 mg	7 days	2	two	10 days	10.2	1	1	1	N/A	N/A	N/A
23	10061475	50	26.5	4	P4L4	N/A	TAH + bilateral salpingoopherectomy	benign polyp	50 ml	> 1 hr	1	2	13	1	1	1	1	1	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linezolid 600 mg	8 days	1	two	14 days	11.3	1	1	2	N/A	N/A	N/A
24	10060945	32	30	3	P1L1	40 weeks	full term emergency LSCS	thick MSL	280 ml	> 1 hr	1	2	8	1	1	2	1	2	2	Escherichia coli	gram negative bacteria	tetracycline, cotrimoxazole,amikacin, cefepime	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj gentamycin 80 mg	8 days	1	two	8 days	10.5	1	2	2	16 hrs	1	1
25	10092291	23	29.6	3	P2L2	39 weeks 4 days	full term emergency LSCS	prev LSCS not w/f VBAC	300 ml	>1 hr	1	1	4	1	1	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	7 days	2	two	12 days	9.6	2	2	1	4 hrs	2	N/A
26	10055233	21	32	4	P1L1	39 weeks	full term emergency LSCS	severe oligohydraminos	250 ml	>1 hr	1	2	6	1	1	1	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	7 days	1	two	14 days	9	2	2	2	8 hrs	1	1
27	10054206	21	34.7	4	P1L1	37 weeks 4 days	full term emergency LSCS	persistent fetal tachycardia with MSL	290 ml	> 1 hr	1	2	16	1	1	1	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj piptaz 4.5 gm	7 days	1	one	14 days	13.1	2	2	2	12 hrs	1	1
28	10054412	23	24	4	P1L1	N/A	myomectomy	AUB with fibroid	100 ml	> 1 hr	1	2	13	1	1	2	1	2	2	Klebsiella pneumoniae	gram negative bacteria	linezolid	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj linezolid 600 mg	6 days	1	one	12 days	11.9	2	2	2	N/A	N/A	N/A
29	10058349	26	23	3	P1L1A1	40 weeks	full term emergency LSCS	CPD in labour	300 ml	> 1 hr	2	2	4	1	1	1	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj linezolid 600 mg	6 days	1	two	10 days	9.2	2	2	2	14 hrs	2	N/A
30	10051896	60	24.8	5	P3L3	N/A	TAH + bilateral salpingoopherectomy	subserosal fibroid	100 ml	>2 hr	2	2	3	2	2	1	1	1	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj augmentin 1.2 gm	7 days	1	two	12 days	10.2	2	1	2	N/A	N/A	N/A
31	10034291	30	31.6	3	P2L2	36 weeks 1 day	preterm emergency LSCS	prev LSCS with polyhydraminos with macrosomia	400 ml	>1hr	1	2	10	2	2	2	1	1	2	Escherichia coli	gram negative bacteria	meropenem	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj piptaz 4.5 gm	7 days	1	one	12 days	11	1	2	1	3 hrs	2	N/A
32	10087371	60	27.6	4	P3L3	N/A	TAH + bilateral salpingoopherectomy	Fibroid uterus	150 ml	>2 hr	2	2	4	2	2	1	1	2	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linezolid 600 mg	5 days	1	two	15 days	8.9	1	1	1	N/A	N/A	N/A
33	10030817	70	24.2	5	P4L4	N/A	exploratory laparotomy	fibroid uterus	150 ml	>2 hr	1	2	6	2	2	2	1	2	2	klebsiella pneumoniae	gram negative bacteria	gentamycin, amikacin	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj piptaz 4.5 gm	5 days	1	two	14 days	11	2	2	2	N/A	N/A	N/A
34	10074306	34	31.2	3	P1L1	39 weeks 1 day	full term emergency LSCS	precious pregnancy	360 ml	>1 hr	1	2	5	1	1	1	1	2	2	acinetobacter species	gram negative bacteria	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj piptaz 4.5 gm	7 days	1	two	12 days	10.9	2	2	2	9 hrs	2	N/A

PARTICIPANT NO.	IP NO.	AGE	BMI	SOCIO ECONOMIC STATUS	OBSTETRIC SCORE	PERIOD OF GESTATION	SURGICAL PROCEDURE	INDICATION	ESTIMATED BLOOD LOSS	DURATION	STATUS OF WOUND (72 HRS)	Type of SSI	POD # (SSI)	TYPE OF SUTURE	SUTURE MATERIAL	INDURATION	DISCHARGE	SEPARATION OF EDGES	FEVER	WOUND CULTURE REPORT	TYPE OF BACTERIA	SENSITIVE TO	PRE OP ANTIBIOTIC	POST OP ANTIBIOTIC	DURATION OF POST OP	POST SSI ANTIBIOTIC	DURATION OF POST SSI	SECONDARY SUTURING	READMISSION	POST OPERATIVE STAY	Hb	DIABETES	HTN	HISTORY OF PREVIOUS SURGERY	DURATION OF LABOUR	MEMBRANE RUPTURE	DURATION OF MEMBRANE RUPTURE
35	10035025	31	25.3	3	P2L2	34 weeks 5 days	preterm emergency LSCS	prev LSCS with fetal distress	310 ml	> 1 hr	1	2	10	2	2	1	1	2	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj meropenem 1 gm	5 days	1	one	11 days	11.4	2	2	1	15 hrs	1	1
36	10032945	29	27.6	4	P2L2A1	38 weeks 2 days	full term emergency LSCS	prev LSCS not w/f VBAC	350 ml	> 1 hr	1	2	10	1	1	1	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	8 days	1	one	10 days	10.8	2	2	1	4 hrs	2	N/A
37	10034145	42	23.4	4	P3L3	N/A	TAH +right sided salpingoopherectomy	heavy menstrual bleeding	100 ml	>2 hr	2	2	4	2	2	2	1	2	2	no organsim	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj piptaz 4.5 gm	5 days	1	two	10 days	9.6	2	2	1	N/A	N/A	N/A
38	10044863	25	25	3	P2L2	37 weeks 3 days	full term emergency LSCS	complete placenta previa	700 ml	> 2 hr	1	1	9	1	1	1	1	2	2	acinetobacter species	gram negative bacteria	meropenem	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj augmentin 1.2 gm	7 days	2	two	15 days	11	2	2	1	2 hrs	2	N/A
39	10084390	40	27.6	3	P2L2	N/A	TAH +right sided salpingoopherectomy	Fibroid uterus	100 ml	> 2 hr	1	1	10	2	2	2	1	2	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj augmentin 1.2 gm	7 days	2	two	10 days	12.4	2	1	2	N/A	N/A	N/A
40	10040499	21	24.2	3	P1L1A1	40 weeks 4 days	full term emergency LSCS	fetal distress	400 ml	> 1 hr	1	2	14	1	1	1	1	1	2	coagulase neg staphylococcus aureus	gram positive	linezolid, cotrimoxazole	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj piptaz 4.5 gm	7 days	1	one	14 days	9.6	2	2	2	10 hrs	1	1
41	10070824	29	26.5	4	P3L3	N/A	Laparotomy	right paraovarian cyst	50 ml	> 2 hr	1	2	18	1	1	1	1	1	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj piptaz 4.5 gm	7 days	1	two	13 days	13.1	2	2	2	N/A	N/A	N/A
42	10089487	31	21.4	3	P2L1D1A2	34 weeks 1 day	preterm emergency LSCS	placenta previa with previous LSCS with IUFD	550 ml	>2 hr	2	1	4	2	2	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 days	inj augmentin 1.2 gm	5 days	2	two	10 days	12.4	2	2	1	N/A	N/A	N/A
43	10094285	33	25	3	P2L2	38 weeks 4 days	full term emergency LSCS	thick MSL with fetal distress	350 ml	> 1 hr	1	1	9	2	2	1	1	2	2	No organsim	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	10 days	11.2	2	2	1	8 hours	1	1
44	10093573	27	26.9	3	P2L2	38 weeks 6 days	full term elective LSCS	prev LSCS not w/f VBAC	300 ml	> 1 hr	1	1	7	2	2	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj clindamycin	5 days	2	two	10 days	12.5	2	2	1	N/A	N/A	N/A
45	10080424	32	23.8	3	P2L2	38 weeks 3 days	full term elective LSCS	prev LSCS not w/f VBAC	300 ml	> 1 hr	1	1	4	2	2	2	1	2	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	10 days	10.4	2	2	1	N/A	N/A	N/A
46	10043758	30	23.4	3	P2L2	34 weeks 1 day	preterm emergency LSCS	severe PE with imminent signs	350 ml	> 1 hr	1	2	6	2	2	1	1	1	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj piptaz 4.5 gm	8 days	1	two	10 days	10.6	1	1	1	N/A	N/A	N/A
47	10093840	44	23.8	4	P2L2	N/A	TAH+R salpingooopeherectomy + L salpnigectomy	heavy menstrual bleeding	150 ml	> 2 hrs	1	2	15	2	2	1	1	1	1	no orgnanism	N/A	NA	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj piptaz 4.5 gm	7 days	1	one	13 days	11.6	2	2	2	N/A	N/A	N/A
48	10095260	23	23.8	3	P1L1	37 weeks 1 day	full term emergency LSCS	fetal distress	250 ml	> 1 hr	1	1	6	1	1	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	3 days	2	two	12 days	9.8	2	2	2	12 hrs	1	1
49	10069790	45	26.9	3	A2	N/A	TAH	AUB with adenomyosis	100 ml	> 2 hr	1	2	16	1	1	1	1	1	2	klebsiella oxytoca	gram negative bacteria	meropenem, gentamycin, amikacin	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj augmentin 1.2 gm	8 days	1	one	11 days	10.1	2	1	2	N/A	N/A	N/A
50	10041313	40	27.6	3	P3L3	N/A	TAH	AUB	150 ml	> 2 hr	1	2	18	2	2	1	1	1	2	skin commensals	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj piptaz 4.5 gm	7 days	1	one	12 days	12	2	2	2	N/A	N/A	N/A
51	10092480	42	18.5	3	P2L2	N/A	TAH + Bilateral salpingoopherectomy	AUB	75 ml	> 2 hr	1	2	6	1	1	1	2	2	2	coagulase neg staphylococcus aureus	gram positive	piperacillin and tazobactum	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj piptaz 4.5 gm	7 days	1	one	13 days	12.2	2	2	2	N/A	N/A	N/A
52	10098413	50	25.7	4	P3L3	N/A	TAH + BSO	AUB	50 ml	> 2 hr	2	2	19	2	2	1	1	1	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj linid 600 mg	7 days	1	one	15 days	11.3	2	2	2	N/A	N/A	N/A
53	10088583	18	24.9	3	P1L1	40 weeks 4 days	full term emergency LSCS	MSL	330 ml	> 1 hr	1	2	8	1	1	1	1	1	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj linezolid 600 mg	7 days	1	one	10 days	9.9	2	2	2	18 hrs	1	1
54	10110208	35	24.1	3	P2L2A1	N/A	open myomectomy with BS	subserosal fibroid	50 ml	> 1 hr	1	2	18	1	1	1	1	1	1	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj linezolid 600 mg	8 days	1	one	20 days	11	1	2	2	N/A	N/A	N/A
55	10107992	28	28.9	3	P2L1D1A1	32 weeks 3 days	preterm emergency LSCS	prev LSCS with IUD	250 ml	> 1 hr	2	2	13	2	2	1	1	1	2	skin commensals	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj piptaz 4.5 gm	7 days	1	two	15 days	10.4	2	2	2	4 hrs	2	N/A
56	10117320	26	27.2	3	P1L1	29 weeks 2 days	preterm emergency LSCS	PPROM with breech	150 ml	> 1 hr	2	2	8	1	1	1	1	1	2	no organim	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 days	inj piptaz 4.5 gm	7 days	1	two	10 days	10.6	2	2	2	14 hrs	1	1
57	10117911	44	23.8	3	P2L2		TAH + R sided salpingooopherectomy	fibroid uterus with heavy menstrual	150 ml	> 2 hr	1	1	9	2	2	1	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	ceftriaxone 1 gm	3 days	inj augmentin 1.2 gm	3 days	2	two	7 days	9.9	2	2	2	N/A	N/A	N/A
58	10119456	28	24.2	3	P1L1	39 weeks	full term ventouse delivery	poor maternal bearing down	350 ml	N/A	1	1	2	N/A	N/A	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	3 days	2	two	7 days	11	2	2	N/A	16 hrs	1	1
59	10121298	23	24.89	3	P1L1	39 weeks 6 days	full term emergency LSCS	MSL	250 ml	> 1 hr	2	2	4	1	1	1	1	1	1	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj linezolid 600 mg	8 days	1	two	12 days	11.1	2	2	2	14 hrs	1	1
60	10120888	27	27.6	3	P1L1	39 weeks 4 days	full term emergency LSCS	thick MSL	300 ml	> 1 hr	2	2	19	1	1	1	1	1	1	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	7 days	1	one	15 days	9.7	2	2	2	18 hrs	1	1
61	10112917	23	24.2	4	P2L2	39 weeks 4 days	full term emergency LSCS	prev LSCS in labour	250 ml	> 1 hr	1	1	4	2	2	2	1	2	2	skin commensals	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	7 days	9.9	2	2	1	2 hrs	2	N/A
62	10118932	23	24.2	4	P2L2A1	38 weeks 4 daya	FTVD		200 ml	N/A	1	1	4	N/A	N/A	2	1	2	2	skin commensals	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	3 days	2	two	6 days	10.9	1	2	N/A	17 hrs	1	1
63	10121387	30	21.9	4	P1L2	36 weeks 6 days	preterm emergency LSCS	DCDA twins	200 ml	> 1 hr	2	2	4	1	1	1	1	2	1	Escherichia coli	gram negative bacteria	gentamycin, amikacin	inj monocef 1 gm	inj monocef 1 gm	3 doses	inj linezolid 600 mg	7 days	1	two	10 days	11	2	2	2	2 hrs	2	N/A
64	10122178	24	23.5	1	P2L1D1	36 weeks 2 days	preterm emergency LSCS	suspected abruption	200 ml	> 1 hr	1	2	14	2	2	1	1	1	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj linezolid 600 mg	6 days	1	two	13 days	11.2	1	2	1	12 hrs	2	N/A
65	10120672	32	23.4	3	P2L2	38 weeks 6 days	full term elective LSCS	previous LSCS not willing for VBAC	250 ml	> 1 hr	1	1	5	2	2	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	10 days	12.3	2	2	1	3 hrs	2	N/A
66	10121964	24	23.4	3	P1L1	40 weeks	full term emergency LSCS	prolonged PROM with unfavourable cervix	400 ml	> 1 hr	1	2	7	1	1	1	2	2	1	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj piptaz 4.5 gm	7 days	1	one	12 days	10.6	2	2	2	34 hrs	1	2
67	10108347	28	22.2	4	P2L2	40 weeks 3 days	full term emergency LSCS	MSL	220 ml	> 1 hr	2	1	4	1	1	2	1	2	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj augmentin 1.2 gm	5 days	2	two	7 days	11.4	2	2	2	26 hrs	1	2
68	10110697	29	25.3	3	P2L2	38 weeks 6 days	full term elective LSCS	prev LSCS not w/f VBAC	220 ml	> 1 hr	2	1	4	1	1	2	1	2	2	skin commensals	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxione 1 gm	3 doses	inj linezolid 600 mg	5 days	2	two	6 days	11	2	2	1	N/A	N/A	N/A
69	10096222	32	35.1	3	P3L4	35 weeks 6 days	preterm emergency LSCS	DCDA twins with overt DM	300 ml	> 1 hr	1	1	5	2	2	1	1	2	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj piptaz 4.5 gm	5 days	2	two	10 days	9.6	1	2	1	N/A	N/A	N/A
70	10089062	20	26.9	3	P2L2	34 weeks 4 days	preterm elective LSCS	prev LSCSA with breech with FGR	350 ml	> 1 hr	2	2	4	1	1	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	5 days	1	two	10 days	9.4	2	2	1	N/A	N/A	N/A
71	10019525	22	23.8	2	P1L1	38 weeks 3 days	full term emergency LSCS	non progression of labour	500 ml	> 1 hr	1	2	7	1	1	2	2	2	2	coagulase neg staphylococcus aureus	gram positive	linezolid, penicillin	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj linezolid 600 mg	7 days	1	two	15 days	10.3	2	2	2	18 hrs	1	1
72	10012573	22	31.1	3	P1L1	38 weeks 4 days	full term emergency LSCS	breech in labour	300 ml	> 1 hr	2	2	4	1	1	1	1	1	1	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftiaxone 1 gm	3 doses	inj augmentin 1.2 gm	8 days	1	two	16 days	11.2	2	2	2	6 hrs	2	N/A

PARTICIPANT NO.	IP NO.	AGE	BMI	SOCIO ECONOMIC STATUS	OBSTETRIC SCORE	PERIOD OF GESTATION	SURGICAL PROCEDURE	INDICATION	ESTIMATED BLOOD LOSS	DURATION	STATUS OF WOUND (72 HRS)	Type of SSI	POD # (SSI)	TYPE OF SUTURE	SUTURE MATERIAL	INDURATION	DISCHARGE	SEPARATION OF EDGES	FEVER	WOUND CULTURE REPORT	TYPE OF BACTERIA	SENSITIVE TO	PRE OP ANTIBIOTIC	POST OP ANTIBIOTIC	DURATION OF POST OP	POST SSI ANTIBIOTIC	DURATION OF POST SSI	SECONDARY SUTURING	READMISSION	POST OPERATIVE STAY	Hb	DIABETES	HTN	HISTORY OF PREVIOUS SURGERY	DURATION OF LABOUR	MEMBRANE RUPTURE	DURATION OF MEMBRANE RUPTURE
73	10031737	30	25.6	3	P3L2D1	38 weeks 4 days	full term elective LSCS	prev 2 LSCS	450 ml	> 1 hr	2	1	3	2	2	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	10 days	10.9	2	2	1	N/A	N/A	N/A
74	10112305	33	36.1	3	P1L1	37 weeks 1 day	full term elective LSCS	placenta previa major	350 ml	> 2 hr	2	1	4	1	1	2	1	2	2	skin commensals	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linezolid 600 mg	6 days	2	two	12 days	11.2	2	2	2	N/A	N/A	N/A
75	10110263	21	24.2	3	P1L1	40 weeks 1 day	full term emergency LSCS	fetal distress	320 ml	> 1 hr	1	2	8	1	1	1	1	1	2	skin commensals	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	7 days	1	two	12 days	10.8	2	2	2	20 hrs	1	1
76	10113665	29	23.1	4	P2L2	39 weeks 3 days	full term emergency LSCS	prev LSCS in labour	250 ml	> 1 hr	1	2	14	2	2	1	1	1	2	citrobacter freundii	gram negative bacteria	amikacin	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj piptaz 4.5 gm	7 days	1	one	13 days	11.4	2	2	1	1 hr	N/A	N/A
77	10103919	35	26.2	3	P3L3	N/A	TAH	heavy menstrual bleeding	100 ml	> 2 hr	1	1	5	1	1	2	1	2	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linid 600 mg	5 days	2	two	10 days	13.1	2	2	2	N/A	N/A	N/A
78	10085396	29	24.2	4	P2L2A3	37 weeks 5 days	full term emergency LSCS	bad obstetric history	280 ml	> 1 hr	1	1	5	1	1	1	1	2	2	pseudomonas aeruginosa	gram negative bacteria	meropenem, imepenem, aztreonam	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	10 days	12.4	1	2	2	2 hrs	2	N/A
79	10082497	29	41.8	3	P2L2A1	38 weeks 2 days	full term emergency LSCS	prev LSCS with breech presentation with fibroid	550 ml	> 2 hr	2	2	4	1	1	1	1	1	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj linid 600 mg	5 days	1	one	12 days	8.8	2	2	1	6 hrs	2	N/A
80	10099249	37	24.2	3	P2L1D1A2	35 weeks 5 days	preterm emergency LSCS	antepartum hemorrhage	400 ml	> 1 hr	1	2	13	2	2	1	2	2	1	skin commensals	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj augmentin 1.2 gm	7 days	1	two	15 days	12.1	2	2	2	8 hrs	1	1
81	10099814	22	26.2	4	P1L1	38 weeks 5 days	full term elective LSCS	short stature with fetus having TORCH	250 ml	> 1 hr	1	1	11	2	2	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	3 days	2	two	10 days	10.5	2	2	2	N/A	N/A	N/A
82	10102579	20	26	3	P2L2	39 weeks 2 days	full term emergency LSCS	prev LSCS in labour	200 ml	> 1 hr	1	2	13	2	2	1	1	1	2	pseudomonas aeruginosa	gram negative bacteria	meropenem, cefepime, imipenem, ciprofloxacin	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	7 days	1	one	12 days	10.5	2	2	1	4 hrs	2	N/A
83	10102901	31	24.2	3	P2L2	39 weeks 3 days	full term emergency LSCS	placenta accreta spectrum with prev LSCS	300 ml	> 2 hr	2	2	4	2	2	1	1	1	2	pseudomonas aeruginosa	gram negative bacteria	meropenem, cotrimoxazole,cefipime,levofloxacin	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj linezolid 600 mg	7 days	1	two	13 days	10.3	2	2	1	2 hrs	2	N/A
84	10103346	47	35.1	3	P3L3	N/A	TAH + BSO	AUB	100 ml	> 2 hr	1	1	8	1	1	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftiaxone 1 gm	3 doses	inj ceftriaxone 1 gm	7 days	2	two	10 days	11.4	2	2	2	N/A	N/A	N/A
85	10101562	20	31.1	4	P1L1	39 weeks 3 days	full term emergency LSCS	thick MSL	350 ml	> 1 hr	2	1	4	1	1	2	1	2	2	acinetobacter species	gram negative bacteria	linezolid	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	7 days	2	two	10 days	9.2	2	2	2	16 hrs	1	1
86	10085999	26	26.5	4	P4L3D1A1	30 weeks 2 days	preterm emergency LSCS	placenta accreta spectrum with prev 2 LSCS	460 ml	> 2 hr	1	2	12	2	2	1	1	1	2	Klebsiella pneumoniae	gram negative bacteria	linezolid	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj linezolid 600 mg	7 days	1	one	12 days	9.6	2	2	1	N/A	N/A	N/A
87	10089225	35	31.1	4	P2L1D1	N/A	TAH	scar endometriosis	100 ml	> 1 hr	1	2	19	2	2	1	1	1	2	acinetobacter species	gram negative bacteria	gentamycin, piperacillin and tazobactum	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	2 days	inj linezolid 600 mg	6 days	1	one	14 days	10.3	2	2	1	N/A	N/A	N/A
88	10031175	28	15.9	3	P1L1	38 weeks 2 days	full term emergency LSCS	thick MSL	290 ml	> 1 hr	1	2	25	1	1	1	1	1	2	No organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	2 days	inj gentamycin 80 mg	5 days	1	one	12 days	11.3	2	2	2	16 hrs	1	1
89	10000625	26	24.2	5	P1L1A2	37 weeks 5 days	full term emergency LSCS	thick MSL	290 ml	> 1 hr	2	2	4	1	1	1	1	1	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linezolid 600 mg	7 days	1	two	16 days	10.3	1	2	2	12 hrs	1	1
90	10006344	24	23.1	3	P2L2	37 weeks 2 days	full term emergency LSCS	prev LSCS with chronic HTN	200 ml	> 1 hr	2	1	4	2	2	2	1	2	2	coagulase neg staphylococcus aureus	gram positive	ampicillin, gentamycin,	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linezolid 600 mg	7 days	2	two	12 days	9.8	2	1	1	N/A	N/A	N/A
91	10121363	26	23.4	3	P1L1	31 weeks 6 days	preterm emergency LSCS	PPROM with chorioamnionitis	200 ml	> 1 hr	1	1	7	1	1	2	2	2	2	no organism	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 days	inj piptaz 4.5 gm	5 days	2	two	10 days	10.5	2	2	2	30 hrs	1	2
92	10024716	36	26.6	3	P2L2	39 weeks 2 days	full term elective LSCS	prev LSCS not w/f VBAC	380 ml	> 1 hr	1	2	15	2	2	1	1	1	2	methicillin resistant staphylococcus aureus	gram positive	linezolid, doxycycline	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linid 600 mg	7 days	1	one	12 days	11.2	2	1	1	N/A	N/A	N/A
93	10119435	24	28.3	4	P1L1	34 weeks 5 days	preterm emergency LSCS	placenta previa with previous LSCS with IUFD	700 ml	> 1 hr	1	1	4	1	1	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 days	inj augmentin 1.2 gm	5 days	2	two	8 days	11.4	2	2	2	2 hrs	N/A	N/A
94	10121397	20	31.6	3	P1L1	39 weeks 6 days	full term emergency LSCS	MSL	350 ml	> 1 hr	1	1	10	1	1	2	2	2	2	methicillin resistant staphylococcus aureus	gram positive	inj cefotaxin	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linezolid 600 mg	7 days	2	two	10 days	11	2	2	2	17 hrs	1	1
95	10111928	40	21.9	3	P1L2	35 weeks	preterm emergency LSCS	DCDA twins in labour	280 ml	> 1 hr	1	2	28	1	1	1	2	2	2	no organism	N/A	N/A	inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj linezolid 600 mg	7 days	1	one	15 days	11.3	2	2	2	3 hrs	2	N/A
96	10120220	26	20.7	3	P1L1	40 weeks 3 days	full term emergency LSCS	fetal distress	260 ml	> 1 hr	1	1	7	1	1	1	1	2	2	skin commensals	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	8 days	12.4	2	2	2	17 hrs	1	1
97	10107523	38	23.1	4	P3L2D1	31 weeks	preterm emergency LSCS	severe PE	350 ml	> 1 hr	1	1	8	2	2	2	2	2	2	skin commensals	N/A	N/A	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj augmentin 1.2 gm	7 days	2	two	10 days	12.1	2	1	1	N/A	N/A	N/A
98	10123846	23	24	3	P1L1	40 weeks 3 days	full term emergency LSCS	fetal distress	250 ml	> 1 hr	1	2	10	1	1	2	1	2	2	skin commensals	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	7 days	1	one	10 days	10.1	2	2	2	18 hrs	1	1
99	10128880	38	28.5	3	P2L2A2	N/A	TAH	fibroid uterus	150 ml	> 1 hr	2	2	5	1	1	1	1	1	2	Escherichia coli	gram negative bacteria	amikacin	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linezolid 600 mg	7 days	1	two	12 days	10.9	1	2	1	N/A	N/A	N/A
100	10115789	27	35.1	3	P1L1	39 weeks 3 days	full term emergency LSCS	fetal distress	250 ml	> 1 hr	2	1	4	1	1	2	1	2	2	No organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	3 days	2	two	7 days	11.2	2	1	2	16 hrs	1	1
101	10129043	24	27.5	3	P1L1	38 weeks 2 days	full term emergency LSCS	CPD in labour	300 ml	> 1 hr	1	2	9	1	1	2	1	2	2	skin commensals	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	5 days	1	one	12 days	11.1	2	1	2	21 Hrs	1	1
102	10127928	24	20.4	3	P1L1	38 weeks 5 days	FTVD	N/A	250 ml	N/A	1	1	15	N/A	N/A	2	1	2	2	MRSA	gram positive	doxycycline	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	one	10 days	10.2	2	2	N/A	28 hrs	1	2
103	10004468	28	27.5	4	P2L2A1	39 weeks 3 days	full term emergency LSCS	prev LSCS in latent labour	250 ml	> 1 hr	2	2	4	2	2	2	1	2	2	enterococcus species	gram positive	linezolid, penicillin	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linezolid 600 mg	7 days	1	two	14 days	11.9	2	2	2	4 hrs	N/A	N/A
104	10006109	20	26.6	3	P3L3	38 weeks 2 days	full term emergency LSCS	prev LSCS not w/f VBAC	260 ml	> 1 hr	1	1	4	2	2	2	1	2	2	skin commensals	N/A	N/A	inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	7 days	2	two	10 days	9.9	2	2	1	4 hrs	N/A	N/A
105	10126730	22	26.6	3	P1L1	40 weeks	full term emergency LSCS	fetal distress	280 ml	> 1 hr	1	1	10	1	1	2	2	2	2	staphylococcus aureus	gram positive	ampicillin, gentamycin,	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	one	12 days	10.2	2	2	2	18 hrs	1	1
106	10008815	26	23.4	3	P2L2A1	37 weeks 5 days	full term elective LSCS	prev LSCS not w/f VBAC	300 ml	> 1 hr	1	1	5	1	1	2	1	2	2	skin commensals	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftriaxone 1 gm	3 doses	inj augmentin 1.2 gm	7 days	2	two	10 days	10.6	2	2	1	N/A	N/A	N/A
107	10022225	22	25.5	3	P2L2	40 weeks 2 days	full term emergency LSCS	prev LSCS with gest HTN with RHD	280 ml	> 1 hr	1	2	4	2	2	2	2	2	2	acinetobacter species	gram negative bacteria	linezolid	inj augmentin 1.2 gm	inj augmentin 1.2 gm	3 doses	inj linid 600 mg	7 days	1	one	12 days	11	2	1	1	4 hrs	N/A	N/A

PARTICIPANT NO.	IP NO.	AGE	BMI	SOCIO ECONOMIC STATUS	OBSTETRIC SCORE	PERIOD OF GESTATION	SURGICAL PROCEDURE	INDICATION	ESTIMATED BLOOD LOSS	DURATION	STATUS OF WOUND (72 HRS)	Type of SSI	POD # (SSI)	TYPE OF SUTURE	SUTURE MATERIAL	INDURATION	DISCHARGE	SEPARATION OF EDGES	FEVER	WOUND CULTURE REPORT	TYPE OF BACTERIA	SENSITIVE TO	PRE OP ANTIBIOTIC	POST OP ANTIBIOTIC	DURATION OF POST OP	POST SSI ANTIBIOTIC	DURATION OF POST SSI	SECONDARY SUTURING	READMISSION	POST OPERATIVE STAY	Hb	DIABETES	HTN	HISTORY OF PREVIOUS SURGERY	DURATION OF LABOUR	MEMBRANE RUPTURE	DURATION OF MEMBRANE RUPTURE
108	10005837	27	22.2	3	P2L2	40 weeks 2 days	full term emergency LSCS	thick MSL	350 ml	> 1 hr	2	2	4	1	1	2	2	2	2	Escherichia coli	gram negative bacteria	meropenem, amikacin,gentamycin, tetracycline	Inj ceftriaxone 1 gm	inj ceftraxione 1 gm	3 doses	inj linezolid 600 mg	7 days	1	two	12 days	9.8	1	2	2	16 hrs	1	1
109	10035979	38	23.1	3	P3L3E1	6 weeks 3 days	laparotomy	left sided unruptuted ectopic	125 ml	> 2 hr	2	1	4	2	2	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftraxione 1 gm	3 doses	inj augmentin 1.2 gm	7 days	2	two	10 days	9.4	2	2	1	N/A	N/A	N/A
110	10033702	24	24.2	3	P1L1	39 weeks 5 days	full term emergency LSCS	thin MSL	250 ml	> 1 hr	1	1	7	1	1	2	1	2	2	pseudomonas aeruginosa	gram negative bacteria	imipenem, piperacillin and tazobactum	Inj ceftriaxone 1 gm	inj ceftraxione 1 gm	3 days	inj augmentin 1.2 gm	5 days	2	two	10 days	10.4	2	2	2	6 hrs	1	1
111	10010493	22	26.6	3	P2L2	38 weeks 4 days	full term ventouse delivery	N/A	350 ml	N/A	1	1	2	N/A	N/A	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftraxione 1 gm	1 dose	inj augmentin 1.2 gm	3 days	2	two	7 days	10	2	2	2	30 Hrs	1	2
112	10010379	23	23.1	4	P1L1	37 weeks 4 days	full term emergency LSCS	MSL	200 ml	> 1 hr	2	1	3	1	1	2	2	1	2	citrobacter freundii	gram negative bacteria	tetracycline, cotrimoxazole, doxycycline	Inj ceftriaxone 1 gm	inj ceftraxione 1 gm	3 days	inj linid 600 mg	7 days	2	two	10 days	10.3	2	1	2	12 hrs	1	1
113	10012359	23	26.6	3	P2L2	38 weeks 5 days	full term emergency LSCS	prev LSCS in labour	350 ml	> 1 hr	1	1	4	2	2	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftraxione 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	8 days	11.3	2	1	1	5 hrs	2	N/A
114	10033601	24	24.2	3	P2L2	40 weeks	full term emergency LSCS	prev LSCS not w/f VBAC	300 ml	> 1 hr	1	1	4	2	2	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftraxione 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	10 days	10.2	2	2	1	N/A	N/A	N/A
115	10030399	23	23.4	3	P1L1	35 weeks 2 days	pre term emergency LSCS	severe oligohydraminos	250 ml	> 1 hr	1	1	6	1	1	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftraxione 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	10 days	9	2	2	2	36 hrs	1	2
116	10016888	23	25	3	P2L2A1	38 weeks 6 days	full term emergency LSCS	prev LSCS in labour	350 ml	> 1 hr	1	2	4	2	2	2	2	1	2	citrobacter freundii	gram negative bacteria	imipenem, meropenem, amikacin, levofloxacin	inj ceftriaxone 1 gm	inj ceftraxione 1 gm	3 doses	inj linid 600 mg	7 days	1	one	15 days	9.8	1	2	2	6 hrs	N/A	N/A
117	10017934	29	21.4	3	P2L2	40 weeks 1 day	full term elective LSCS	prev LSCS not w/f VBAC	260 ml	> 1 hr	1	1	6	2	2	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftraxione 1 gm	3 doses	inj augmentin 1.2 gm	7 days	2	two	12 days	12	2	2	1	N/A	N/A	N/A
118	10019853	25	26.9	3	P1L1	39 weeks 6 days	full term emergency LSCS	thick MSL	280 ml	> 1 hr	1	1	8	1	1	2	2	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftraxione 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	one	10 days	11.2	1	2	2	17 hrs	1	1
119	10018972	18	23.1	4	P2L2	38 weeks 3 days	full term emergency LSCS	prev LSCS in labour	260 ml	> 1 hr	1	1	8	2	2	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftraxione 1 gm	3 doses	inj augmentin 1.2 gm	7 days	2	one	12 days	11	2	2	1	4 hrs	2	N/A
120	10023194	19	25.3	3	P1L1	39 weeks 4 days	full term emergency LSCS	MSL	350 ml	> 1 hr	1	1	2	1	1	2	1	2	2	no organism	N/A	N/A	Inj ceftriaxone 1 gm	inj ceftraxione 1 gm	3 doses	inj augmentin 1.2 gm	5 days	2	two	8 days	10.1	2	1	2	16 hrs	1	1