"PREDICTING THE PRESENCE OF INTRA ABDOMINAL ADHESIONS IN PREGNANT WOMEN UNDERGOIN REPEAT CAESAREAN SECTION BY ASSESSING ULTRASOUND SLIDING SIGN." A PROSPECTIVE OBSERVATIONAL STUDY

By

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Dissertation submitted to

BLDE (DEEMED TO BE UNIVERSITY) VIJAYAPURA

In partial fulfilment of the requirements for

MASTER OF SURGERY

OBSTETRICS AND GYNECOLOGY

Under the guidance of

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SL No.	ABBREVATION	EXPANSION
1.	CS	CESAREAN SECTION
2.	US	ULTRASOUND
3.	WHO	WORLD HEALTH ORGANIZATION
4.	NPO	NIL PER OS
5.	LTCD	LOW TRANSVERSE CESAREAN DELIVERIES
6.	BMI	BODY MASS INDEX
7.	CD	CESAREAN DELIVERY
8.	TVS	TRANSVAGINAL ULTRASONOGRAPHY
9.	DIE	DEEP INFILTRATING ENDOMETRIOSIS
10.	POD	POUCH OF DOUGLAS
11.	ANC	ANTE- NATAL CARE
12.	OBGYN	OBSTERIC & GYNAECOLOGY
13.	OPD	OUT PATIENT DEPARTMENT
14.	HIV	HUMAN IMMUNO-DEFICIENCY VIRUS
15.	ANOVA	ANALYSIS OF VARIANCE

LIST OF TABLES & FIGURES

ABSTRACT

BACKGROUND AND OBJECTIVE:

Caesarean section (CS) is a common obstetric procedure, with repeat CS increasing the risk of intra-abdominal adhesions, leading to surgical complications. The ultrasound sliding sign has been proposed as a non-invasive tool to predict adhesions, but its diagnostic accuracy remains under evaluation. This study aims to assess the accuracy of the ultrasound sliding sign in predicting intra-abdominal adhesions in repeat CS cases and evaluate its correlation with intraoperative findings.

MATERIAL AND METHODS:

A prospective observational study was conducted at BLDE (D.U) Shri B.M. Patil Medical College from May 2023 to December 2024, including 200 women undergoing repeat CS. Preoperative ultrasound evaluated the sliding sign, classifying cases as positive (free uterine movement, no adhesions) or negative (restricted movement, adhesions). Intraoperative findings were recorded for correlation. Statistical analysis was performed using IBM SPSS (Version 20).

RESULTS:

Among the participants, 40% had adhesions. The ultrasound sliding sign demonstrated 86.1% sensitivity, 85.8% specificity, 77.5% PPV, and 91.6% NPV. Adhesions were significantly associated with maternal age (>30 years), parity (≥2), higher BMI, and multiple previous CS. ROC analysis confirmed the strong predictive value of the sliding sign.

CONCLUSION:

The ultrasound sliding sign is a reliable, non-invasive tool for predicting intraabdominal adhesions in repeat CS, aiding in surgical preparedness. Given its high diagnostic accuracy, it can enhance clinical decision-making, but further studies are needed to refine its application.

TABLE OF CONTENTS

INTRODUCTION

The birth of the fetus, alive or dead, through an abdominal uterine incision following the period of viability is known as caesarean section (CS).[1] CS may save the mother's and the fetus's lives.

The surgical delivery of one or more fetuses through the abdominal wall and uterine incision is known as a C-section. The World Health Organization (WHO) states that since 1985, 10–15% of all deliveries globally have been satisfactory C-sections. The rate of caesarean deliveries has risen from 20.7% in 1995 to 31.6% in 2016, according to one of the American Centres for Disease Control and Prevention's most important studies.[1]

According to recent data, United States showed a rise from 20.7% to 32.9% between 1996 and 2009. The rate of caesarean deliveries decreased from 2009 to 2019, peaking at 31.7% in 2019, then rising in 2020 (31.8%) and 2021 (32.1%).2. For medical, societal, and economic reasons, primary CS rates have increased globally due to modern obstetrics practices. Between 2015–16 and 2019–20, India's CS rate rose from 17.2% to 21.5%. In India, the percentage of C-sections rose from 17.2% in 2016 to 21.5% in 2021.

The United States reported the rates of caesarean sections greater than 50% between 1996 and 2009, from 20.7% to 32.9%. The percentages were nearly 40% in Louisiana and New Jersey. A higher proportion of recurrent caesarean deliveries is one of the numerous reasons contributing to the rising rate of caesarean deliveries. The rate of repeat caesarean deliveries among all live births increased by more than 120 percent, from 6.7% in 1996 to 14.8% in 2001.3. According to Martin et al., among low-risk

women previously having a caesarean section, repeat rate caesarean deliveries rose from 69.8 in 1996 to 88.7 in 2003 per 100 births.[4]

When compared to vaginal delivery, the rising number of caesarean sections (CS) globally is worrying for obstetricians and public health professionals because it can impact maternal health and raise financial burden.

Adhesions, stomach pain, bladder injury, delayed operation, postoperative haemorrhage, intestinal obstruction, wound dehiscence, rupture, and placenta accreta are only a few of the numerous risks associated with CS.1, 5 These issues prolong the time to birth, increase risk of bowel or bladder damage, complicate surgery and fetal extraction.[1, 6]

One of the issues with CS that makes future CS more difficult is adhesions. Fibrous attachments that form between tissues and intra-abdominal organs once the peritoneum becomes inflamed are known as adhesions which form abnormally between the surfaces of internal organs and tissues post inflammation or injury during wound healing. It is composed of fibroblasts, connective tissue and occasionally blood vessels.[7]

The presence of a filmy, vasculature-free connective tissue between two tissue or organ surfaces is lysed by blunt dissection is a minimum required for intraoperative diagnosis wherein affected tissues include the vesico uterine pouch, the bladder, the colon, the uterus and anterior abdominal wall on internal surface.[7]

Intra-abdominal adhesions following CS could be dangerous upon abdominal reentry. A significant risk factor for later surgeries is post-CS adhesions, which raise the possibility of bowel and bladder damage (0.1–0.2%), bleeding (0.1–1.2%), infection (0.4–1.5%) and potentially hysterectomy (0.1–1.3%). [8]

In a patient with possible intra-abdominal adhesions the risk of complications is also linked to the length of the procedure and in emergency CS, the perinatal adverse outcome associated with neonate's delayed delivery.[8]

Adhesion rates at the second CS are between 24% and 46%, at the third CS they are between 43% and 75%, and at the fourth CS they can reach 83%. Difficult recurrent abdominal procedures, bowel or bladder injury, bleeding, protracted surgery, hysterectomy risk, infections, and poor infant outcomes in cases of prolonged births are notable post-adhesion consequences. Chronic pelvic pain, intestinal blockage, ectopic pregnancies, and infertility are among the long-term effects on mothers.[7]

In 1988, the sonographic sliding sign, also known as "the sliding organs sign," as described by Timor-Tritsch et al. as a dynamic finding that may also be useful to general and Colo-rectal surgeons performing surgery on hollow-viscus structures in pelvis.[9]

Separately, Drukker et al. and Baron et al. demonstrated an innovative method for predicting adhesions among high-risk and low-risk women using sliding signs of transabdominal ultrasound (US). However, they focused on predicting severe adhesions. A more thorough method of planning and advising patients on potential surgical problems would be to use pre-operative third trimester transabdominal sonography determine the presence and severity of adhesions.[10, 11]

There is a dearth of research on the risk of intra-abdominal adhesions after caesarean sections and no concentrates on third trimester of pregnancy, most pertinent period in patients who have had abdominal surgery in the past to receive counselling and plan their surgery. Surgeons must identify patients at high risk for adhesions so that a multidisciplinary surgical discussion can take place prior to surgery. They must also let the patient know that repeat abdominal surgery carries a significant risk of problems.

In light of this, the current study aims to ascertain if exhibiting a sliding sign before to surgery is a reliable indicator of existence and type of intra-abdominal adhesions, added to whether performing it will lengthen the duration of the US.

AIM & OBJECTIVES

- The primary goal is to develop a method for identifying presence of intra-abdominal adhesions using ultrasonic sliding sign.
- To Assess Sliding Sign's Diagnostic Accuracy.
- To compare pre operative intra-abdominal wall adhesions by ultrasonography and intra-operative surgical findings.

REVIEW OF LITERATURE

Caesarean Delivery

Introduction:

A caesarean delivery is a medical technique in which a uterine incision (hysterotomy) and an abdominal incision (laparotomy) to deliver the baby. Since the first recorded caesarean section in AD 1020, the practice has undergone substantial change.[12]

In the five years preceding 2021, the prevalence of C-sections in India rose from 17.2% to 21.5%. These figures, which are 43.1% (2016) and 49.7% (2021) in the private sector, indicate that almost one in two deliveries in the private sector are Csections.[13]. Numerous variables, such as changes in maternal age, medical improvements that complex pregnancies progress, and changing obstetric practices, can be blamed for this dramatic increase.

The majority of the more than 3.66 million births that occurred in the US in 2022 were the consequence of either induced or spontaneous labour. The most frequent reason for a primary caesarean delivery is still labour dystocia. Caesarean delivery rates are on the rise worldwide, and in the US, where they accounted for 32.2% of all births in 2022, lowering needless caesarean procedures is still a top concern.[14]

ANTOMY OF ABDOMINAL WALL:

The abdominal cavity is surrounded by the abdominal wall, which offers flexible coverage and shields the internal organs from harm. The spinal column forms its posterior boundary, the pelvic bones and inguinal ligament form its inferior boundary, and the xiphoid process and costal margins form its superior boundary. The

anterolateral and posterior abdominal walls are the two portions that make up the abdominal wall. This intricate system is made up of many layers, ranging from superficial to deep: peritoneum, muscles and associated fasciae, superficial fascia, and skin. [15]

Layers of the abdominal wall	From superficial to deep: - Skin - Superficial fascia - Muscles - Transversalis fascia - Extraperitoneal fat (extraperitoneal fascia) - Peritoneum
Function	Protection of the internal abdominal organs Stabilization and rotation of the trunk Increase of intra-abdominal pressure (involved in coughing, defecating, vomiting)
Anterolateral abdominal wall muscles	Transversus abdominis muscle Internal abdominal oblique muscle Rectus abdominis muscle External abdominal oblique muscle Pyramidalis muscle *Mnemonic:* **TIRE** Pump
Posterior abdominal wall muscles	Psoas major muscle Iliacus muscle Quadratus lumborum muscle Psoas minor muscle

ANATOMY OF UTERUS:

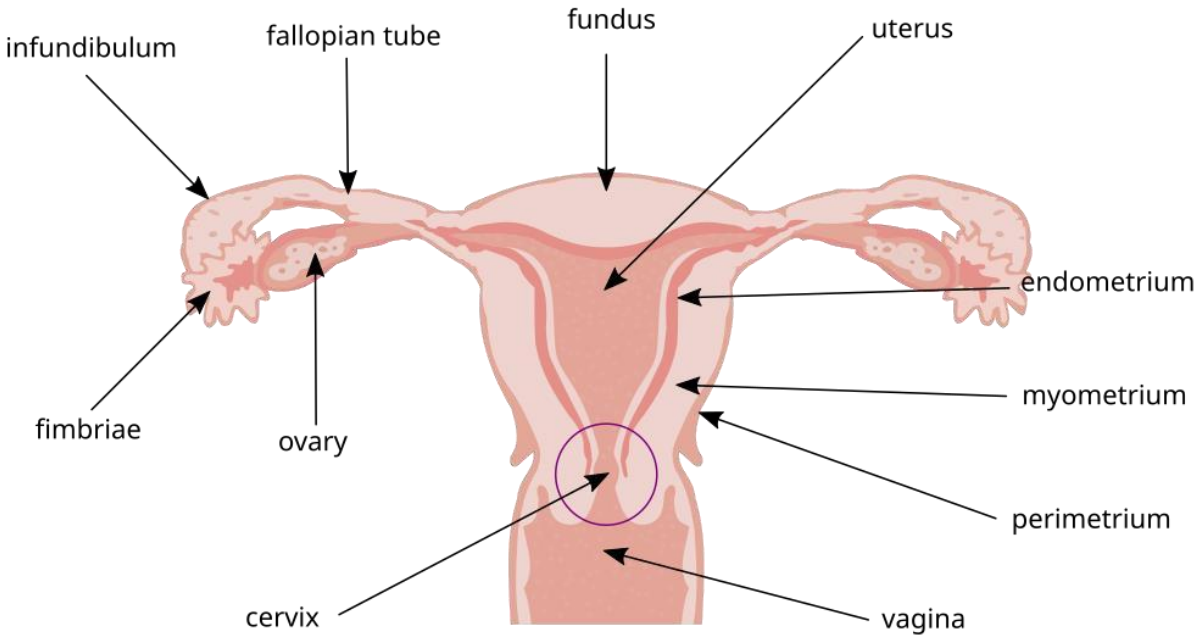


FIGURE 1: SHOWING THE ANATOMY OF THE UTERUS

The aponeurosis of external oblique muscle forms first layer- uterine fascia, whereas aponeuroses of transverse abdominis and internal oblique muscles merge to form second layer.

Three layers make up the uterus: the muscular layer (myometrium), the inner mucosal layer (endometrium), and the serosa outer layer (perimetrium).

When making or extending the incision, great care must be taken to prevent damage to uterine vessels which are bilateral along lateral walls of uterus. Internal iliac artery's anterior division gives rise to the uterine arteries.

Blood flows through the uterine arteries eight times faster during pregnancy, reaching unilateral flow 300 mL/min at 36th gestational week. Cardinal ligament is where the uterine arteries enter the uterus after crossing the ureters anteriorly. In the broad ligament, which emerges from the abdominal aorta, they also anastomose with the ovarian arteries.

Unlike a non-gravid patient, a gravid patient usually encounters the uterus as soon as they enter the abdomen.

The surgeon may come across adhesions affecting omentum, colon, anterior wall of abdomen, bladder and uterus anteriorly, if patient has sticky disease from prior procedures.

after uterus identification, the surgeon finds the vesico uterine serosa, also known as the vesico uterine peritoneum, which joins the bladder and uterus. When lower uterine section is sufficiently developed to offer a thinner and less vascular area for the transverse hysterotomy, caesarean births are best carried out during the term period.

This entry point is unavailable in premature deliveries, particularly those that occur before 34 weeks gestation, and a "classical caesarean delivery" would be necessary. This requires a vertical incision for the hysterotomy, which raises the risk of bleeding and, because of the increased danger of uterine rupture, prevents a trial of labour following caesarean delivery in subsequent pregnancies.

The surgeon may come into contact with amniotic sac when cutting the uterus, depending on whether the patient's amniotic membranes are intact or torn.
Early in pregnancy, the chorion and amnion, the two layers that make up the amniotic sac, fuse together.

The amniotic sac serves as the last line of defence between the fetus and the surgeon if it is unbroken. The fetus is born after this layer is broken, fulfilling the main objective of the caesarean delivery. The majority of the reproductive anatomy is usually hidden by the gravid uterus.

Additional structures might show up after fetal delivery, mainly when uterus is exteriorized for repair. In addition to performing medically recommended treatments, such as bilateral salpingectomy in cases of opportunistic salpingectomy or ovarian cystectomy for troublesome ovarian cysts, the surgeon may examine the ovaries and fallopian tubes.[12, 16, 17]

PREPARATION:

A danger associated with caesarean birth is aspiration and eventual pneumonitis. To avoid low stomach pH, pre-operative antacids (sodium citrate) and H2 antagonist. It is customary to request that a patient is "nil per oral" (NPO) after midnight. Instructing patient to fast for six hours before an unplanned caesarean section is routine.

According to enhanced recovery guidelines, patients should refrain from eating solid food for six hours before the planned surgery and be advised to consume clear liquids up until two hours beforehand.

Furthermore, non-diabetic individuals may be administered carbohydrate fluid supplementation up to two hours before to surgery, which could enhance results. It is

not advised to prepare the bowels orally or mechanically. In an emergency, urgent maternal or fetal indications may take precedence over NPO status. It has been demonstrated that preoperative gabapentin enhances pain management following caesarean delivery and Preoperative sedation should be avoided because of the possibility of postpartum psychomotor impairment and possible fetal concerns, including poor Apgar scores, problems with thermogenesis, and "floppy baby syndrome."

Prophylactic antibiotic use reduce probability of infection by 60–70% in CS. Rather than after umbilical cord clamping, prophylactic antibiotics ought to be given prior to surgery. The clinical situation and the patient's allergy history influence the antibiotic selection.

Women who weigh less than 80 kg typically receive a single intravenous dosage of 1 gram of cefazolin; patients who weigh 80 kg or more often receive a dose of 2 grams. To guarantee appropriate tissue concentrations of the antibiotic, the cefazolin dosage may be raised to 3 grams for women weighing 120 kg or more. Prophylactic treatment with 900 mg of clindamycin and 5 mg/kg of an aminoglycoside is advised for patients who are contraindicated for cefazolin, such as those with severe allergies.

In caesarean section, both skin and vaginal flora increase the risk of infection. Vaginal bacteria are prime among women with caesarean delivery following labor or membrane rupture. According to recent studies, these women may benefit from 500 mg of intravenous azithromycin in addition to the usual antibiotic prophylaxis in order to lower infection morbidity.

After a caesarean section, topical medications like povidone-iodine and chlorhexidine are frequently used to lower the risk of infection. Both have been proven to be successful in preparing the skin of the abdomen.

Vaginal preparation should be taken into consideration in addition to abdominal skin preparation as it probably lowers the incidence of endometritis following caesarean section, according to a recent Cochrane analysis. Solutions of povidoneiodine and chlorhexidine are regarded as suitable choices for this use. .[12, 18-25]

The epidemiology: → Rate: around 25% 5–6 maternal deaths per 100,000 caesarean sections.

Due to a combination of postpartum infections, bleeding, and thrombosis, caesarean delivery is preferable to vaginal delivery. In the USA, perinatal mortality is 3/1000, but in the UK, it is 7/1000.

The following factors have been linked to an increase in caesarean deliveries: →

Pretended benefits for the fetus; → Delaying childbearing until later in life, which increases risk and generally lowers maternal risk; → Social preference; → Fear of legal action.

Caesarean sections are classified as either elective (scheduled and timed) or emergency (unplanned, during labour, or prior to the start of labour).

ABSOLUTE CAESAREAN SECTION INDICATIONS:

Moderate to severe contractions of the pelvis

The lower uterine segment's fibroids

Cervical cancer

Strictures in the vagina or neck

RELATIVE INDICATIONS:

1. Previous uterine or caesarean sections performed on the mother

Inadequate obstetric background

Prior procedures for vesicovaginal fistula, stress incontinence, and anal incontinence at the request of the mother

2. Fetal malpresentations, including transverse or breech lies and first twin malpresentations

Maternal macrosomia

Twins who are conjoined or malformed mother with HIV

3. Placental

Placenta previa major degrees Vasa previa[26]

EQUIPMENT FOR CAESAREAN SECTION:

FIGURE 2: EQUIPMENTS FOR CESAREAN DELIVERY

The equipment needed for a caesarean delivery is determined by clinical situation. Surgical tools: The surgical tray may contain a variety of scissors, including straight and curved Mayo, Metzenbaum, and bandage scissors.

clamps (Kelly, Kocher, Allis, and Babcock), suction devices (Yankauer or Poole), knife handles, needle drivers, ring or sponge forceps, Adson, Russian, Ferris-Smith

and smooth tissue forceps and bladder blade, army-navy and Richardson retractors.[12]

Skin incisions:

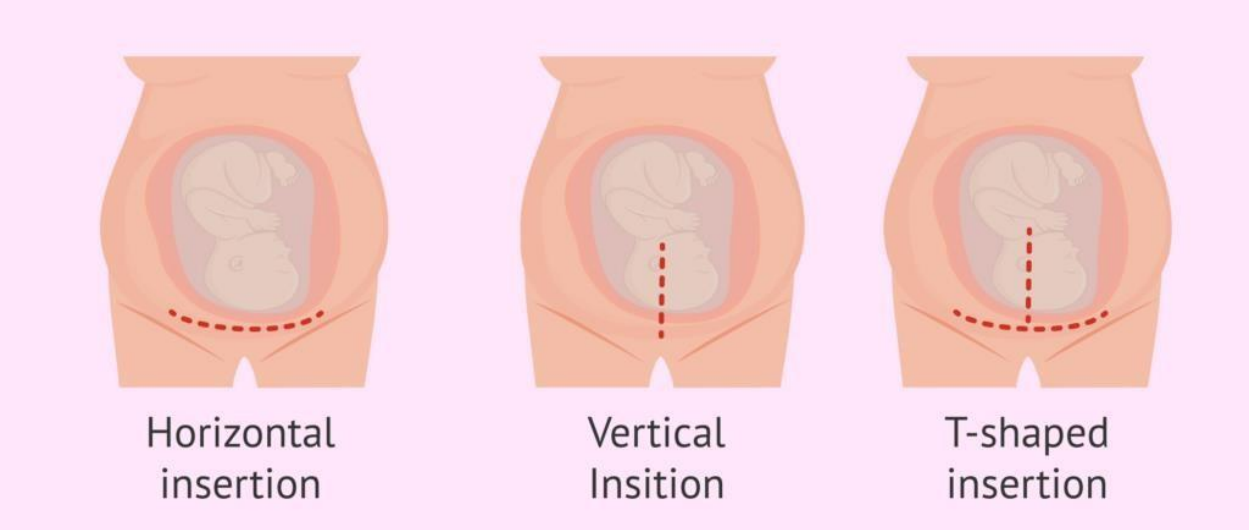


FIGURE 3: SHOWING SKIN INCISIONS

Types:

Low transverse: most common.

→ Midline.

The initial skin incision for a cesarean section can be either suprapubic transverse or midline vertical.

↓

The vertical incision along midline offers quicker access to abdominal cavity, disrupts less tissue layers and vessels.

↓

A vertical incision facilitates visualization away from areas with severe adhesive disease. A vertical incision may be chosen to provide greater surgical exposure and access hypogastric arteries.

A transverse skin incision typically preferred in many cases due to its association with better wound healing and greater patient comfort. [12]

Uterine Incision

Upper Segment (classical)

Lower Segment

The classical upper segment is made up of the uterus's contractile fundus. less frequently carried out.

The procedure is simple, no bladder dissection is required, and there is a 5% chance of uterine rupture before and during birth.

→ Types include: → Vertical, → Transverse, and → Cervical cancer is an uncommon indication.

Other indications include:

→ preterm breech with underdeveloped lower uterine segment;

→ transverse back down fetal position;

→ poor access to lower segment due to myomas or adhesions; → planned caesarean hysterectomy.

Benefits include ability to birth any fetus, regardless of intrauterine orientation, and the ability to avoid lower segment varicosities or myomas.

The risk of bleeding and adhesions makes it risky to try labour during a second pregnancy.

Lower Segment: → Constructed in the uterus' noncontractile section. of the greatest and most widely utilized.

The lower uterine segment is from which bladder must be removed. There is a 0.5% probability of uterine rupture during subsequent labour, thus we prefer it to the upper segment.

Types: Vertical Transverse "T," "U," or "J"

Benefits: there is no chance of bleeding or adhesions when trying labour in a later pregnancy.

One drawback is that the fetus or fetuses must lie longitudinally.

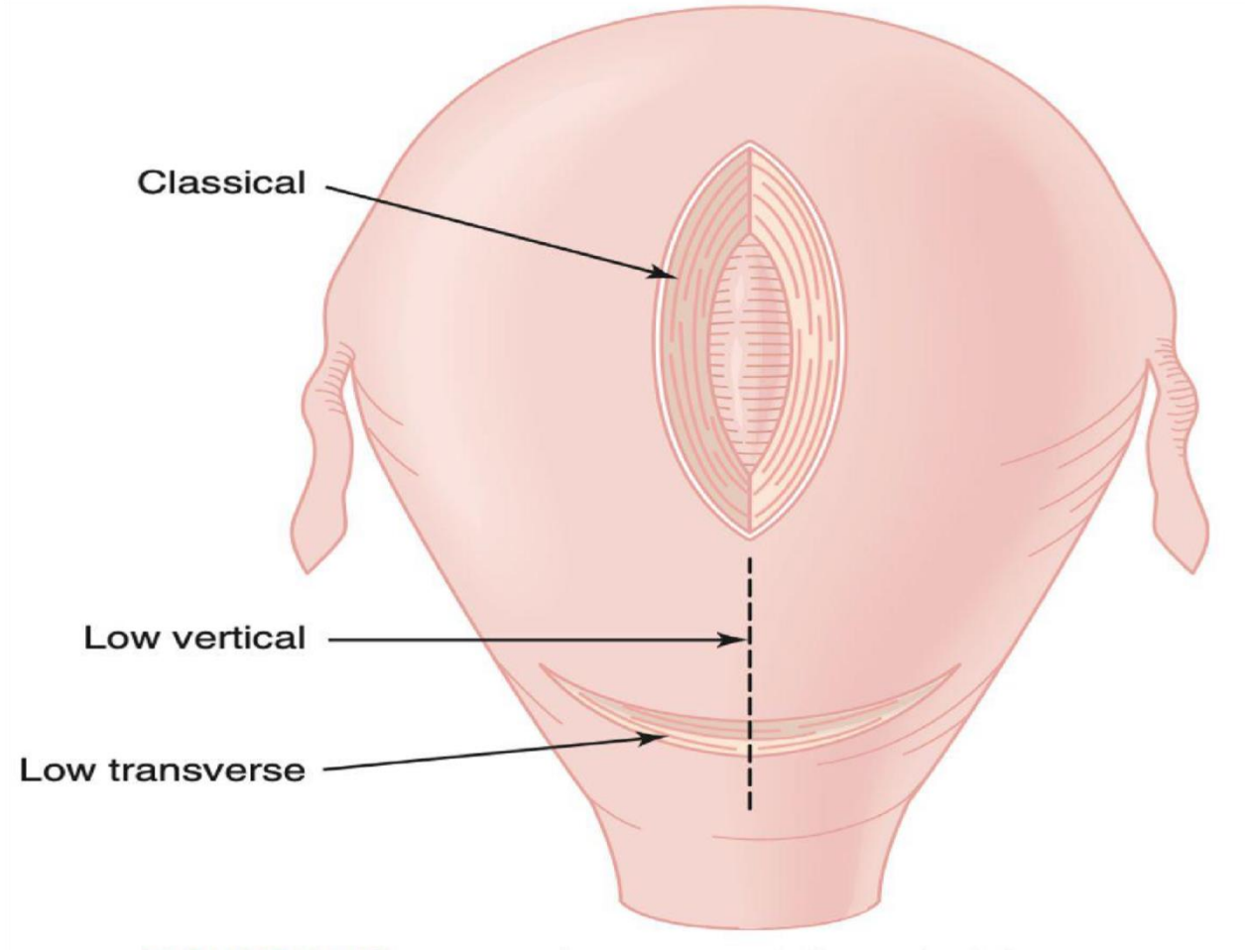


FIGURE 4: TYPES OF CESAREAN DELIVERY INCISION

Delivery by Vertical Classical Caesarean Section

A vertical incision is made into the myometrium in the top part of the uterus. Risk of uterine rupture: 4–7%.

← All following deliveries must be caesarean.

A low vertical caesarean delivery involves making a vertical incision through the myometrium in the lower part of the uterus, though the incision always extends into the higher part.

The advantages of low transverse caesarean deliveries (LTCDs) include: → ↓

(<1%) risk of symptomatic uterine rupture rate in subsequent pregnancy; → Higher if labour induction or augmentation is performed; → Transverse uterine incision made in lower uterine segment following bladder flap; → Incision of choice, less bleeding, and easy repair.[12]

STEPS IN CS:

1. Preoperative concerns

• Ascertain that informed consent is acquired. Evaluate maternal and fetal health.

• Apply proper anaesthesia, such as spinal, epidural, or general.

• To avoid aortocaval compression, arrange the patient in a supine position with the left uterus displaced.

• Administer prophylactic antibiotics before to surgery.

2. Cutting and Dividing

A. The Subcutaneous Layer and Skin

• Make a vertical midline or Pfannenstiel incision in the skin.

• Use both blunt and sharp methods to cut through subcutaneous tissue.

By restricting sharp dissection to midline for visibility of fascia and reduce blood loss.

• while transecting blood vessels, exercise caution while using cautery to preserve haemostasis.

B. Rectus and Fascia Muscles

• Using blunt or sharp dissection, cut the fascia in the middle and extend laterally.

• Use Kocher clamps and a combination of blunt instruments to separate the fascia from the rectus muscles underneath.

C. Flap of the bladder and peritoneal entrance

• To enter the abdominal cavity, cut or bluntly open the peritoneum.

• For better vision, position a bladder blade or self-retaining retractor.

• By cutting and dissecting the peritoneum covering the bladder and lower uterine section, a bladder flap can be created.

3. Uterine Incision and Delivery

A. Hysterotomy • Choose the type of incision:

o Low transverse incision (optimal since it permits vaginal delivery in the future)

o Low vertical incision (for breech presentation or other challenging fetal extractions) o Traditional incision (for upper-segment or preterm access; necessitates repeat caesarean sections in subsequent pregnancies)

- To prevent damage to the uterine vessels, make sure the incision is positioned midline.
- Use a scalpel to make the incision in shallow strokes, incorporating blunt dissection where necessary.
- If the myometrium is thick, use bandage scissors or your fingers to extend the incision laterally (blunt technique preferable).
- Blood loss and unintentional extension are decreased by a cephalad-caudad blunt extension.

B. Delivery of the Fetus

- Vertex Presentation: o Place a hand into the uterus to raise the fetal head.

Use forceps, a vacuum cup, or vaginal help if necessary.

To aid with delivery, use fundal pressure.

Determine the fetal lay in a breech presentation.

Deliver the hips or feet first, followed by the head and shoulders in order.

If necessary, apply the Maurice au-Smellie-Veit manoeuvre.

In rare instances, piper forceps may be used to deliver the head.

C. The Placental Delivery and Cord Clamping

· If maternal and fetal conditions permit, think about delaying cord clamping. • Double clamp and cut the umbilical cord.

• Use cord traction and fundal massage to naturally deliver the placenta, or by hand if required.

• Use moist laparotomy sponges to clean the uterus.

4. Repair of the Uterus

• Depending on the surgeon's preference, choose whether to exteriorize the uterus or leave it in place.

• To seal the hysterotomy, use a running delayed absorbable suture, being sure to include the corners of the incision while avoiding lateral veins.

• To enhance myometrial healing and lower the risk of uterine rupture in subsequent pregnancies, take into account two-layer closure.

• It could be better to use an unlocked closing strategy.

• To lower the chance of placenta accreta in subsequent pregnancies, avoid endometrial inclusion.

5. Closure of the Abdomen

A. Cavity Clearance and Haemostasis

• Remove any blood or clots from the abdominal cavity and posterior cul-de-sac.

• Steer clear of routine intra-abdominal irrigation because it has no demonstrated benefit and increases nausea.

B. Peritoneal Closure: Adhesion prevention evidence is conflicting; peritoneal closure is optional.

C. Closure of the Face

• Check for haemostasis in the subfascial tissues and rectus muscles.

• If desired, reapproximate the rectus muscles; however, this may make the postoperative pain worse.

• Use a running, non-locking, delayed-absorbable suture to close the fascia.

• To lower the risk of infection and hernia formation, think about using monofilament suture.

D. Skin Closure and Subcutaneous Closure

• Maintain haemostasis while irrigating subcutaneous tissues.

• If the thickness of the subcutaneous tissue is greater than 2 cm, close it to prevent haemorrhage, seroma, and wound problems.

Steer clear of placing subcutaneous drains on a regular basis.

• Use subcuticular suture to close the skin (recommended for decreased infection and wound separation).

o Surgical staples (although sutures have been shown in certain trials to have better results)

o As substitutes, use sticky glues or absorbable staples.

6. Management Following Surgery

• Keep an eye out for uterine atony, infection, and bleeding.

> To avoid problems, provide early ambulation and pain treatment.

• Promote breastfeeding and evaluate the health of the newborn.

Talk to the patient about wound care and follow-up strategies.[12]

Common Operative Methods for Caesarean Delivery

4 Technique in caesarean delivery are:

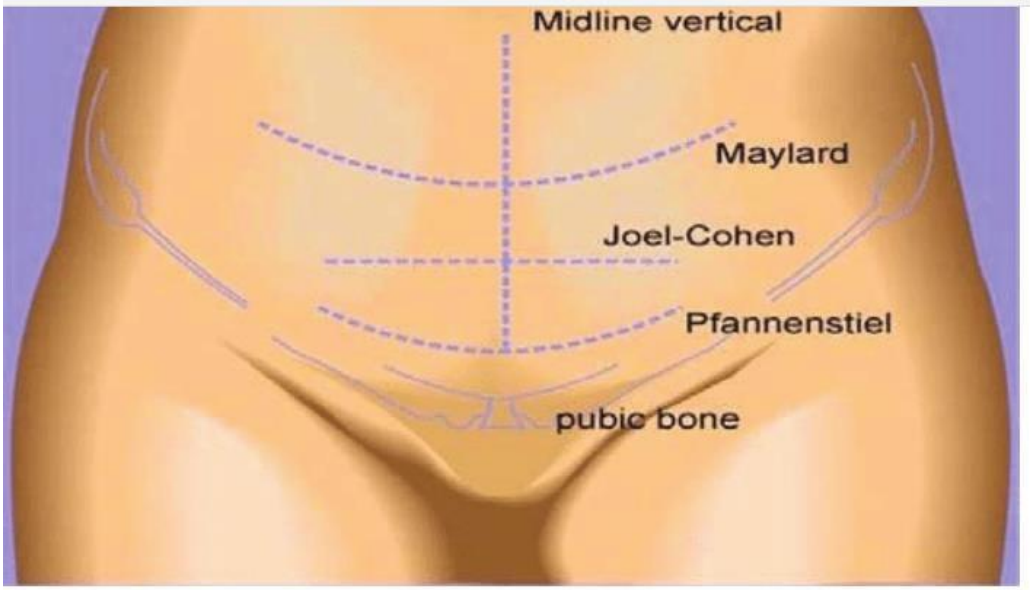


FIGURE 5: The Joel-Cohen, Midline and Pfannenstiel abdominal wall incisions.

Pfannenstiel-Kerr method

Sharp peritoneal entry; blunt uterine entry after a sharp superficial entry; manual placenta removal; single-layer interrupted uterine closure; peritoneal closure; interrupted fascia closure; and continuous skin suture

Joel-Cohen method

The incision is subcutaneous layer's blunt dissection and fascial opening's blunt extension into peritoneum; abrupt superficial entry followed by blunt entry into uterus; spontaneous removal placenta; single-layer interrupted uterine closure; non closure of peritoneum; interrupted fascia closure and continuous skin sutures.[3]

Misgav-Ladach method

The subcutaneous layer's blunt dissection and fascial opening's blunt extension, Blunt entry into peritoneum and into uterus after a sharp superficial entry; manual placenta removal; single-layer running uterine closure; non closure of peritoneum; continuous fascia closure and mattress suture closure of skin.

Modified Misgav-Ladach method

The Pfannenstiel skin incision, the subcutaneous layer's blunt dissection and the fascial opening's blunt extension

• Placenta spontaneous removal; • Single-layer running closure of the uterus; • Blunt entrance into the peritoneum; • Sharp superficial entry into the uterus followed by blunt entry; • Peritoneal closure; • Constant closure of the fascia

Constant skin suture[12]

COMPLICATIONS:

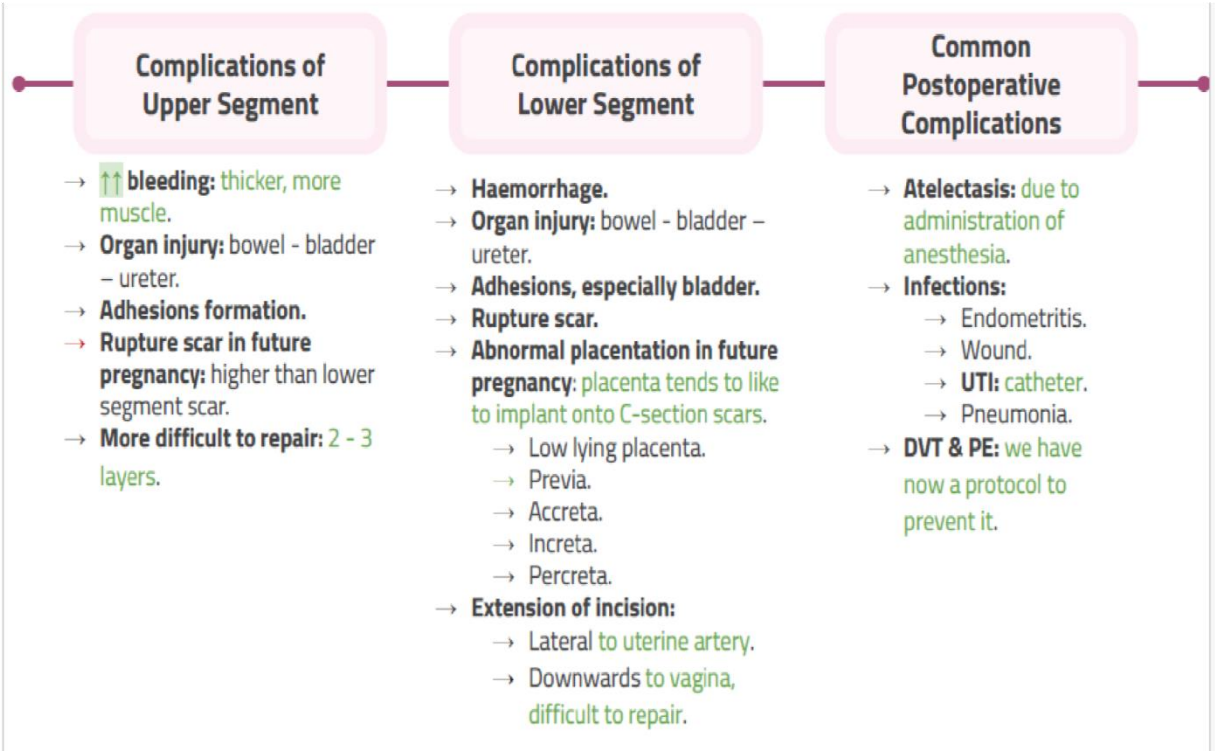


FIGURE 6: SHOWING COMPLICATIONS [26]

POSTOPERATIVE INTRAABDOMINAL ADHESIONS:

DEFINITION:

Adhesions, which are characterized as an aberrant fibrous attachment between two anatomically distinct surfaces, are a mysterious disorder with a wide range of clinical presentations. Originally outlined by Swolin in 1967 and made prominent in the 1980s, the principles of microsurgery are now recognized as the cornerstone of ethical surgical practice.

They occur in 55% -100% women following gynaecologic surgery; rates in second CD are lower ranging 43%- 75% at the third CD and increase to 83% at fourth.[27]

CAUSES OF ADHESION FORMATION:

- Adhesion Formation Risk Factor: Abdominal Surgery
- Any surgery or inflammatory cause, such as trauma or bleeding, might result in abdominal adhesions. The most common known cause of adhesions is surgery, especially open surgery. Common gynaecologic and obstetric operations that cause intraabdominal and pelvic adhesion formation include myomectomy, tuboplasty, salpingectomy, oophorectomy and CS are carried out via suprapubic transverse or midline vertical incision. Myomectomy is especially prone to adhesions; nearly, 22.6 and 37.9% women experience

post- operative adhesions, which are caused by a variety of trauma-related factors and occur when the surfaces of wounded tissue join to produce scar tissue.

- The intricacy of procedure, the degree of peritoneal damage, a patient's inadequate nutritional state, comorbidities in patient including diabetes, are known to affect the creation of these adhesions. Other elements influencing development of postoperative adhesions include high suture tension, which causes ischemia in the sutured area.

- Adhesions may result from contact with foreign objects such fibres from disposable paper products, lint from abdominal packs or talc powders from gloves. Mesothelial dehydration and abrasion from dry abdominal drapes, as well as dehydration from the use of light and heat, are risks associated with laparotomies. local application of hyaluronic acid barriers decreases the formation of intraabdominal adhesions following laparoscopy according to a few observations. [28]

Individual Predisposition and Genetic Factors as cause for adhesions:

According to epidemiological data, patients differ significantly in the probability and severity of adhesions following this surgery.

After similar surgeries performed by one using similar techniques, some people acquire thick adhesions, while others develop few or no adhesions. There are no known human mutations that increase the likelihood of adhesion development. Studies on mice have demonstrated that the likelihood of adhesiogenesis can be elevated by knockout mutations in specific genes (Thbs2 gene). As predictive

genomics develops as a science, genes and their related pathways can be utilized for counselling.

Other Causes of Adhesions

Although tubal adhesions and occlusions are linked to STDs including trichomoniasis, gonorrhoea and chlamydia.

Endometriosis is a most common cause with a frequency approximately 40%. It is even believed that up to 50% of infertile women have endometriosis.[28]

PATHOPHYSIOLOGY:

Adhesions form as a result of abnormal wound healing.

During tissue healing

↓

aggregation of blood cells, platelets, clotting and growth factors leads to fibrin clot formation.

↓

fibrinolytic activity prevents the formation of fibrin deposits and abnormal tissue attachments during the normal healing process.

↓

Suppressing fibrinolysis (e.g., by tissue ischemia and hypoxia) result in fibrin deposits persist and develop into adhesions.

One factor behind adhesions is physical trauma of surgery, ischemia of tissue. Others are foreign substances, inflammation, surgical infection, and leftover blood.

Adhesions are frequently characterized as dense or filmy.

Filmy adhesions are typically easy to cut or remove, weak, stringy, and have few blood vessels.

Tissues are held together by dense adhesions, which makes them challenging to remove. They are more prone to return following removal and may contain blood vessels.

In the initial days after a CD, the uterus's size keeps the incision site from coming into close touch with the intestines.

As a result, the majority of adhesions tend to be located between uterus, bladder and omentum in lower abdomen.

Because of the sub sterile operating site, higher blood loss, incision and altered physiological and anatomical state of pregnancy, the pathophysiology underlying adhesion formation after CD may be different from those following other procedures.

Because of its fibrinolytic properties, amniotic fluid may help avoid adhesions.[27, 29-37]

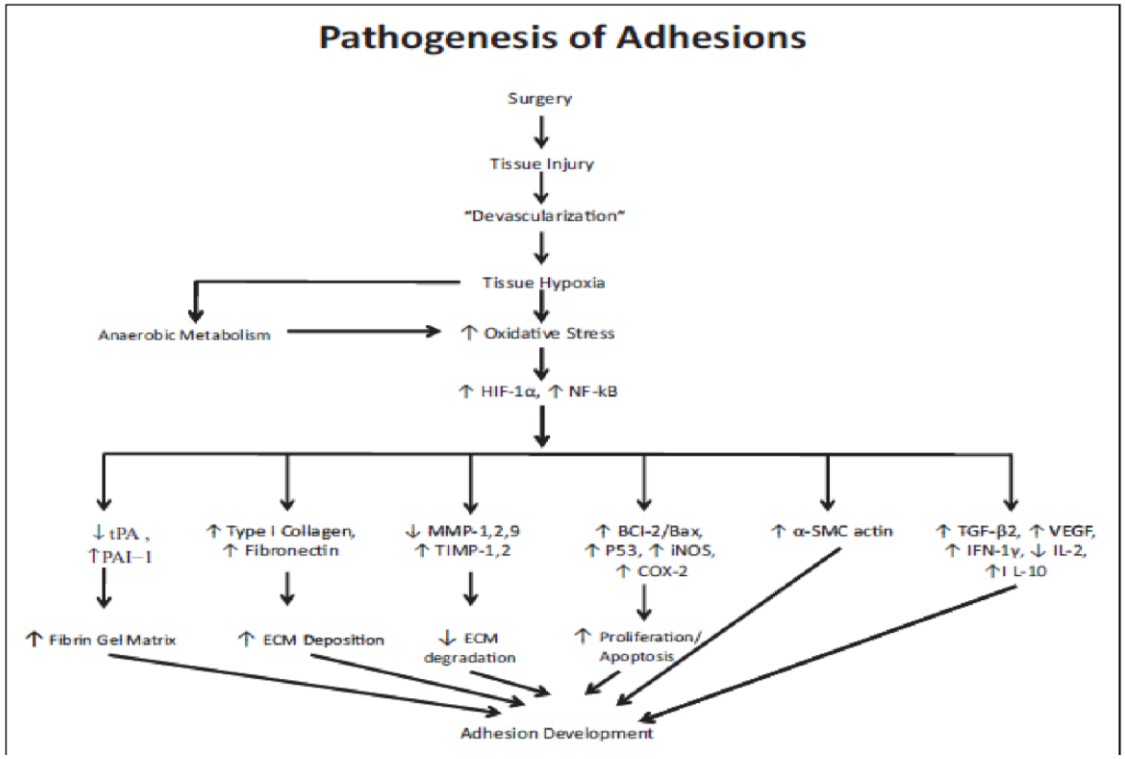


FIGURE 7: Proposed scheme for the pathogenesis of adhesion development following injury and induction of gene expression.[27]

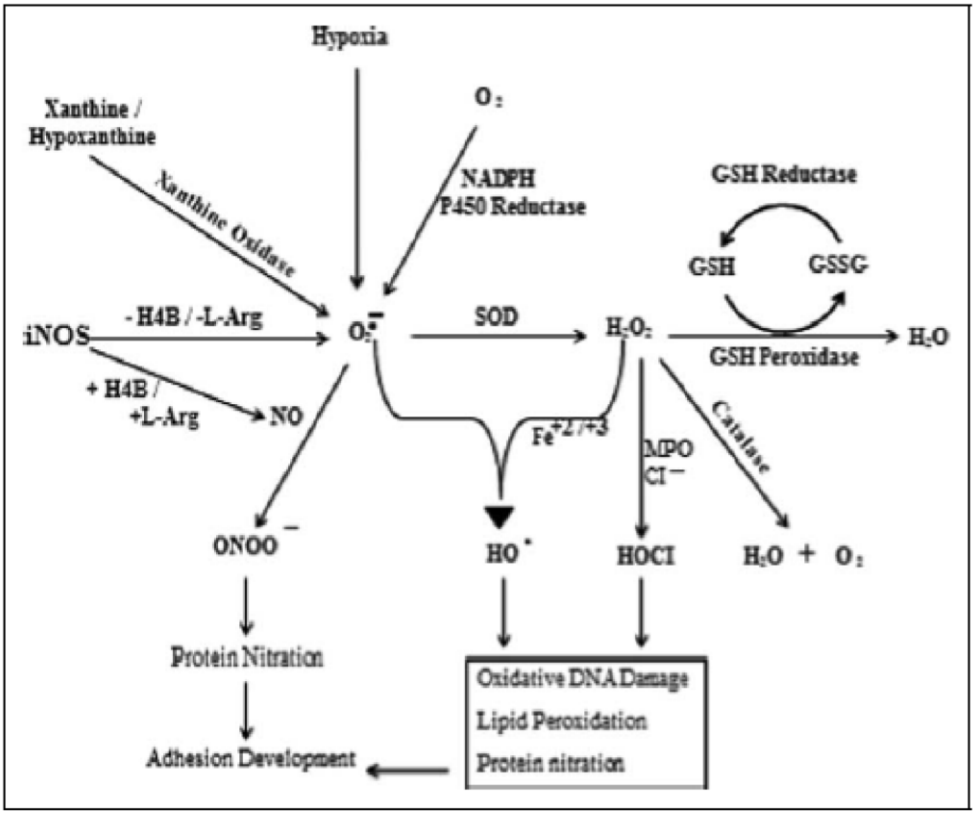


FIGURE 8: Proposed scheme for the interaction of operative oxidative metabolic reaction and free radicals associated adhesion development.[27]

TYPES OF ADHESIONS:

- Congenital
- Acquired adhesions.

- Congenital adhesions may result from aberrant peritoneal cavity formation during embryonic development or from organogenesis. They are only discovered by accident and typically don't create any symptoms.

Both non-operative and postoperative inflammatory mechanisms can lead to acquired adhesions. Many inflammatory conditions, including diverticulitis, cholecystitis, peritonitis, and pelvic inflammatory disease, are non-surgical causes of adhesions.

- Pelvic adhesions can also result from an inflammatory response brought on by endometriosis, infections, or even side effects from intrauterine contraception. The majority of adhesions are thought to occur after surgery, while it is challenging to determine the precise attributable fraction for each of these.[38, 39-43]

ADHESION CLASSIFICATION: [29]

Classification system	Categories	Definition/score	R
Proposed classification for CD		Each site scored separately based on area of CD incision covered by adhesions to determine total score	
	Between uterus and bladder	<3 cm (filmy = 1; dense = 4), 3–6 cm (filmy = 2; dense = 8) or >6 cm (filmy = 4; dense = 16)	
	Between uterus and abdominal fascia		
	Between uterus and omentum		
	Between omentum and abdominal fascia	Filmy = 2; dense = 8	
	Adhesions to other pelvic structure that interfere with delivery	Filmy = 4; dense = 8	
Type 1 and 2	Type 1 (*de novo*)	1A: adhesions at nonsurgical sites of surgical procedures 1B: adhesions at sites of surgical incisions or at which surgery was performed	
	Type 2 (adhesion reformation)	2A: adhesions that develop at the site of previous adhesiolysis 2B: adhesions that develop at sites of both previous adhesiolysis and prior surgery	
Nair's classification	Grade 0	Complete absence of adhesions	
	Grade 1	Single band of adhesion between viscera or between viscera and abdominal wall	
	Grade 2	2 bands of adhesions between viscera or between viscera and abdominal wall	
	Grade 3	>2 adhesion bands between viscera or between viscera and abdominal wall, or whole of intestines forming a mass without adhesion to abdominal wall	
	Grade 4	Viscera directly adhered to abdominal wall regardless of number and extent of adhesion bands	
American Fertility Society classification of adnexal adhesions	Total score for each adnexa obtained by combining score for ovary and tube: minimal = 0–5; mild = 6–10; moderate = 11–20; severe = 21–32	Right ovary, right tube, left ovary and left tube scored separately: <a third of enclosure: filmy = 1; dense = 4 One- to two-thirds of enclosure: filmy = 2; dense = 8 >two-thirds of enclosure: filmy = 4; dense = 16	
March system (intrauterine adhesions)	Minimal	<a quarter of the uterine cavity affected, adhesions thin or filmy, ostial areas and upper fundus minimally involved or not affected	
	Moderate	Affecting a quarter to three-quarters of uterine cavity, without agglutination of the uterine wall, only partial occlusion of the ostial areas and upper fundus	
	Severe	Involving >three-quarters of uterine cavity, agglutination of the uterine wall or thick bands, occlusion of the ostial areas and upper fundus	

CONSEQUENCES OF ADHESIONS:

Significant morbidity is linked to abdominal adhesions, which can cause chronic pelvic pain, bowel blockage,

subsequent infertility (due to anatomical distortion and/or tubal obstruction) and the requirement for additional surgery.

The only option is surgical lysis, also known as adhesiolysis, frequently leads to the development of new adhesions. Adhesions make subsequent surgery more difficult because they necessitate more tissue separation, which lengthens the operation's duration and raises the danger of bleeding and organ damage, including bladder damage.

According to an analysis of the literature, adhesions form after roughly 94–100% upper and 68–92% lower abdominal laparotomies. As a result, prevention is a significant unmet need.[27, 38, 44-49]

They make it more difficult to perform repeat CDs because they prolong the time to delivery and the duration of the procedure by delaying entry into the uterus. Recent prospective cohort analyses indicated statistically insignificant effects on newborn status at birth with prolonged incision-to-delivery times, delivery time is especially

crucial. A repeat CDs without confirmed adhesions needs to be delivered more slowly than those with adhesions, though not as much. An increased risk of bladder damage is also linked to the presence of adhesions.[27, 29]

One out of 28 (3.6%) cases evaluated in retrospective case analysis following exploratory relaparotomy had bowel obstruction. In a prospective study of 50 women having a second CD, the authors hypothesized that adhesions after CD might differ from adhesions after other types of abdominal surgery because there was no association between adhesions and abdominal pain, chronic constipation, dyspareunia, or dysmenorrhea and similarly between quantity, severity of adhesions and symptoms. The authors admit need of further studies.[27, 29]

EFFECTS OF ABDOMINAL ADHESIONS ON INFERTILITY

Adhesions can restrict how muscles, ligaments, organs, and other anatomical systems move and function. Even with in vitro fertilization, this can cause pelvic anatomical distortion and limit blood flow to pelvic tissues, which can make conception more difficult. Infertility-associated adhesions can form on the uterine walls and ligaments or inside the cervix, which might hinder sperm transit to the uterus and Fallopian tubes and perhaps increase uterine spasms, implantation problems, and miscarriages. The fimbria's capacity to pick up the oocyte may be restricted by Para ovarian adhesions. They increase the likelihood that the ovum will be squandered in the abdominal cavity by limiting the fimbria's tentacle-like clutching of it occurring in distal portion of the fallopian tube. They can cause partial or complete tubal blockage if they develop on the inner or outer side of the Fallopian tube, lowering conception

and raising ectopic pregnancy risk. Additionally, it may prevent oocyte aspiration by blocking ovarian access.[28]

ADHESION PREVENTION AND THERAPY:

According to a prospective study, the more prior surgeries performed, the higher the incidence of adhesions. 10.4% (12 of 155) of the patients in the study developed adhesions at the time of their initial laparotomy, usually as a result of prior inflammatory processes. The incidence of adhesions was 93% (195 of 210) of the 210 patients who had previously undergone laparotomy; in the 150 patients who had just had one laparotomy, the incidence was already higher than 91%.[27, 28]

General Significance of Intraabdominal Adhesions

Adhesions can be regarded as either natural and helpful for tissue healing or as detrimental since they can cause difficulties, depending on their origin and location. According to one study, pelvic adhesions are the cause of 15–20% of female infertility cases, 40% cases of female infertility, 80% chronic postoperative abdominal pain, 60% intestinal obstructions and other sequelae like decreased range of motion. Moreover, they can make further abdominal or pelvic surgery more technically challenging.[28]

Surgical Techniques[29]

Method	Adhesion-prevention technique/agent	Comments
Modification of surgical technique	Reduce trauma and tissue ischemia (e.g., less invasive techniques and gentle handling of tissue); minimize foreign materials (e.g., glove powder and abdominal swabs) and electrocauterization; nonreactive sutures; optimal hemostasis; minimize tissue drying with liberal irrigation	Beneficial but not sufficient alone to prevent adhesion formation [6,]
Hydroflotation (anti-adhesion fluids and gels)	Instillation of large volumes of crystalloid isotonic solutions (e.g., saline or Ringer's lactate) into peritoneum after surgery	Not effective in preventing adhesion formation (meta-analysis)
	Steroids	Insufficient evidence of efficacy in Cochrane review of randomized trials
	Dextran	Insufficient evidence of efficacy in Cochrane review of randomized trials
	Icodextrin 4% (Adept®; Baxter Healthcare, IL, USA)	Approved for intraperitoneal use as adjunct to good surgical technique for reduction of postsurgical adhesions in patients undergoing gynecological laparoscopic adhesiolysis; has been used in past, but not currently widely used in the USA for CD
	Polyethylene oxide/sodium carboxymethylcellulose gel (Intercoat®; Ethicon Inc., NJ, USA)	Not approved in the USA
Absorbable membranes or films	Oxidized regenerated cellulose (Interceed®; Ethicon Inc.)	Approved as an adjuvant in open (laparotomy) gynecologic pelvic surgery for reducing incidence of postoperative pelvic adhesions after meticulous hemostasis is achieved, consistent with microsurgical principles
	Sodium hyaluronate/carboxymethylcellulose adhesion barrier (Seprafilm®; Genzyme Biosurgery, MA, USA)	Approved for the reduction of postsurgical adhesions in patients undergoing abdominal or pelvic laparotomy
Nonabsorbable barriers	Expanded polytetrafluoroethylene (Gore® Preclude®; WL Gore & Associates Inc., AZ, USA)	Approved for reconstruction of peritoneum where minimal adhesions are desired. Sutured/stapled into place and remains in the body or must be removed surgically a few days after application; therefore limited in usefulness. Not generally used in labor and delivery setting in the USA

SLIDING SIGN:

A dynamic sonographic indicator used during transvaginal ultrasonography (TVS) of women suspected of having pelvic endometriosis. The absence of this indication is symptomatic of deep infiltrating endometriosis (DIE) and signifies pouch of Douglas (POD) obliteration as a result of adhesions. It's crucial to remember that while endometriosis is the most common cause of POD obliteration, adhesions can also result from other factors, like pelvic infections.

The uterus's typical sliding action is considered a "positive" sliding indicator. When this sliding motion is absent, the bag of Douglas is obliterated, which is known as a "negative" sliding sign. According to studies, this indication can indicate the chance of POD obliteration with higher than 90% accuracy in women with probable endometriosis having laparoscopy. A meta-analysis has shown a sensitivity of 88% and specificity of 94%.

According to a meta-analysis, the sliding sign has an 81% sensitivity and a 95% specificity for identifying rectosigmoid lesions, making it a highly useful diagnostic for rectosigmoid endometriosis.[50, 51]

In 1988, a book on Transvaginal Sonography on sonographic sliding sign, commonly known as "the sliding organs sign," was first published by Timor-Tritsch et al. useful to general and Colo-rectal surgeons operating on hollow-viscus structures in the pelvis. In order to determine whether the peritoneal serosa—the bladder and uterus—are movable, the patient's uterus is moved during the ultrasound. This "sliding sign" indicates that there aren't any obvious adhesions. The advent of minimally invasive

surgery may lead to more re-operative procedures being performed minimally invasively when an open approach would have been more appropriate.

Parietal endometriosis, which typically manifests following a procedure (such as a caesarean section or hysteroscopy). The sliding sign can be used to determine the extent of deeply invasive endometriosis if intestinal loops are adherent to the uterus or if it is seen in the Douglas pouch.[51]

STUDIES:

Mohammed Bukar et al (2022) in their study for Transabdominal sonography performed on 67 women in third trimester scheduled for repeat elective CS for assessing whether the presence or absence of sonographic sliding sign prior to surgery is a reliable indicator of adhesions. Accuracy of mild, moderate, and severe adhesions detected by preoperative ultrasonography. Inter-observer correlations and amount of time needed to determine sliding were secondary outcomes. The sliding sign showed a sensitivity and specificity of 100% for adhesion and no adhesion. Sign was found with 65.0% sensitivity and a specificity 82.98% for predicting presence of moderate intra-abdominal adhesions in women who had previously undergone CS without a significant increase in sonography duration.[7]

Ali H. Yosefet al (2023) in their study measured intraperitoneal adhesions to validate the use of ultrasound sliding signs in intra-peritoneal adhesions prediction among women undergoing repeated CS. A positive sliding sign indicated that the uterus moved freely, while a negative indicated that the uterus had limited mobility. The obstetrician, who was blind to ultrasound data, inquired whether adhesions were present or absent during the caesarean section. After examining 120 women, 54 of them reported negative sliding, and 66 of them reported positive sliding. The presence of intra-abdominal adhesions was confirmed in 44 cases assigned to highrisk group, 100% and a specificity of 86.84%. The findings indicated that the sliding sign is a useful tool.[52]

J. BARON et al (2018) did a prospective observational study to predict intraabdominal adhesions in third trimester of pregnancy undergoing repeat CS and history of at least one CS through transabdominal ultrasound to check for sonographic sign. Majority of i.e. 59 of the 63 patients who had at least one prior CS examination finished the study and had CS at our hospital. Surgery verified suspicion in 16 out of 19 instances that were placed in the high-risk group for serious adhesions because the uterus did not slide. In 35 out of 40 patients, the low risk for adhesions prediction was validated. The findings indicated a straightforward sonographic sign may be able to distinguish between patients of Caesarean delivery at high and low risk and this technique may help in decisions for patients undergoing repeat CS. The sliding sign's sensitivity and specificity in predicting intra-abdominal adhesions presence among women undergoing repeat CS were 76.3% and 93.1%, respectively.[8]

G. **HUDELIST et al (2013)** evaluated whether presence of utero rectal adhesions demonstrated by TVS can be a simple sonographic predictor for DIE of rectum in patients with symptoms suggestive of endometriosis on women scheduled for laparoscopy. patients were prospectively evaluated using TVS, 117 patients underwent laparoscopy and resection. Sensitivity, specificity, positive (PPV) and negative (NPV) predictive values, accuracy, and positive (LR+) and negative (LR−) were computed for a negative uterine "sliding sign". DIE of rectum was seen in 34 individuals (29 percent). The sonographic demonstration of utero rectal adhesions reflected by a negative uterine sliding sign is a simple and useful method for predicting the presence of DIE involving the rectum. This can be "red flag" indicator for sending patients to specialty clinics and tertiary referral centres for in-depth examination.[53]

MATERIALS AND METHODS

SOURCE OF DATA

Study was conducted at Dept. of OBGYN BLDE (D U) Shri B .M Patil Medical College Hospital & Research Centre at Vijayapura.

In fulfilment of Declaration of Helsinki, patients will be given comprehensive information about the study before giving their consent.

Hospital with tertiary care setting include 200 subjects.

Research Type: Long-Term Follow-Up Study.

Study Period: May -2023-December- 2024

INCLUSION CRITERIA:

Women who had underwent previous caesarean section and of gestational period between 37 weeks to 42 weeks were taken into study.

CRITERIA FOR EXCLUSION:

The study will not cover pregnant women who have EMERGENCY LSCS. The study will not include women who are known to have tissue or collagen abnormalities.

- Women who are pregnant and have had abdominal procedures other than LSCS like Appendicitis
- ectopic pregnancy
- cystectomy
- prior infections in previous caesarean section in the past will not be considered.

Sample size calculation

These studies have a 95% confidence interval when a 5% significance threshold and a 0.5 margin of error are taken into account with use of following formula: Sample size (n) = $(Z^* \sigma /d)^2$ Where, **z** is the z score= 1.96 **d** is the margin of error= 0.5 **n** is the population size **σ** is the Standard Deviation =2.7

The estimated sample size of this study is **200**.

STATISTICAL ANALYSIS:

SPSS (Version 20), a statistical program focused on social science, is used to analyse data that has been gathered in an Excel file. Charts, tables, and bar charts are used to display the Mean SD. For independent samples, t-test will be used to compare two sets of data on continuously distributed, normally distributed variables. Fisher's exact test or the Chi-square test to compare categorical variables. The ANOVA for multiple groups and the Kruskal-Wallis H Test for data that is not regularly distributed. If the confidence value is less than 0.05, the result is deemed significant.

A two-tailed distribution is always used for tests in statistics.

METHODOLOGY

This study is a prospective observational study.

Institutional review board and approval was sought [BLDE(DU)/IEC/895/2022-23]

Study is registered under clinical trials: CTRI/2023/07/055085.

Every patient who met the requirements for inclusion were examined. Once the patient had been admitted for LSCS and had been seen in the OBGYN OPD for an ANC check-up, consent was obtained in accordance with Helsinki's declaration. In addition to an ultrasound scan, a patient was assessed utilizing the sliding sign method upon admission for LSCS.

There is a correlation between the results of intraoperative surgery and preoperative ultrasonography sliding signs.

ULTRASOUND SLIDING SIGN:

After positioning the 5MHz abdominal convex probe perpendicularly above the previous caesarean scar, it will be moved laterally, vertically, and horizontally. Throughout the procedure, the patient is told to breathe deeply. The uterine wall's movement in relation to the front of the abdomen must then be monitored.

POSITIVE SLIDING SIGN: Free uterus movement indicates the absence of adhesions.

When the uterus moves very little or not at all, there is a negative sliding signal. The results of the scan and the intraoperative findings will be compared. Standardized, routine procedures are needed for the investigations or interventions in this study. This study does not involve any animal experimentation.

CAESAREAN DELIVERY: Patient who were taken into study were posted for elective caesarean section. During surgery, obstetrician was blinded about the ultrasonography sliding sign report.

All data entered in pre validated proforma.

RESULTS

PARTICIPANTS:

A total of 913 women attended OBG OPD at Shri B M Patil Medical College Hospital & research centre, Vijayapura from April 2023 to February 2025. 200 consenting women taken into this study who fulfilled the inclusion criteria.

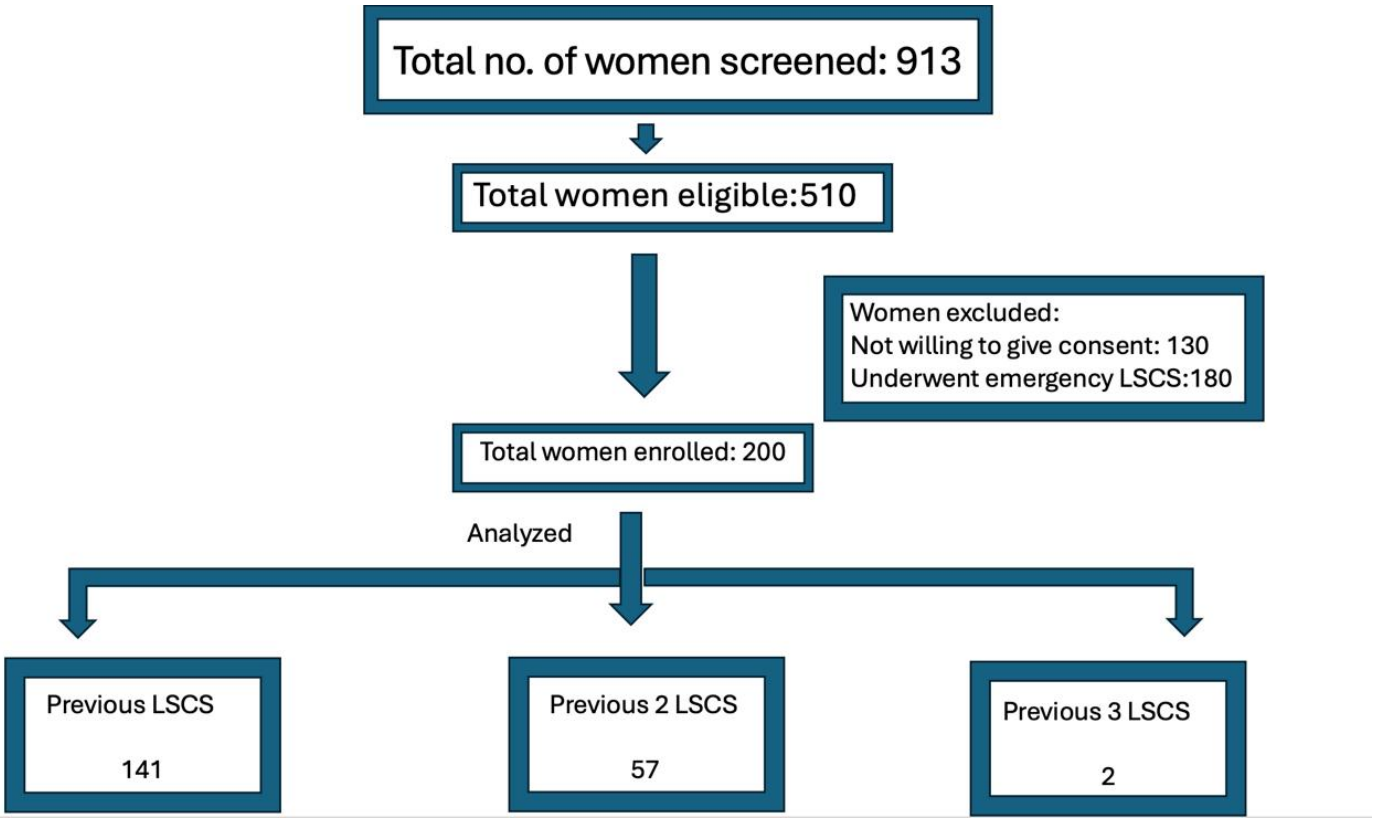
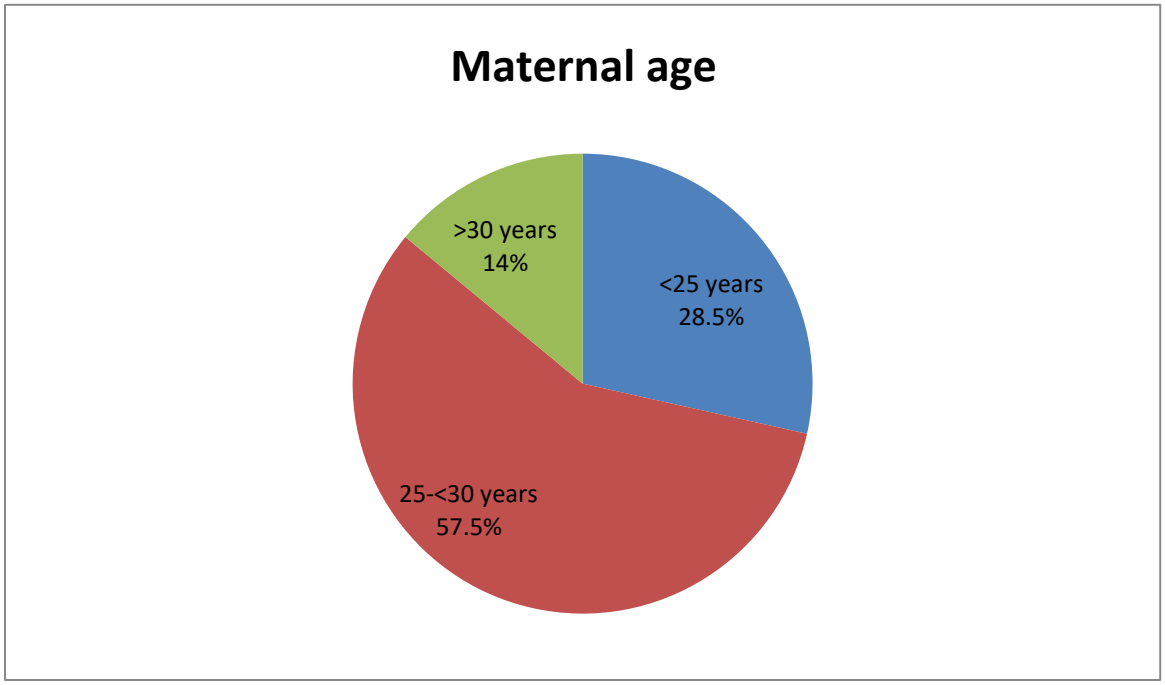


TABLE 1- DISTRIBUTION OF MATERNAL AGE

Maternal age	Frequency	Percent
<25 years	57	28.5
25-30 years	115	57.5
>30 years	28	14.0
Total	200	100.0

FIGURE 9-



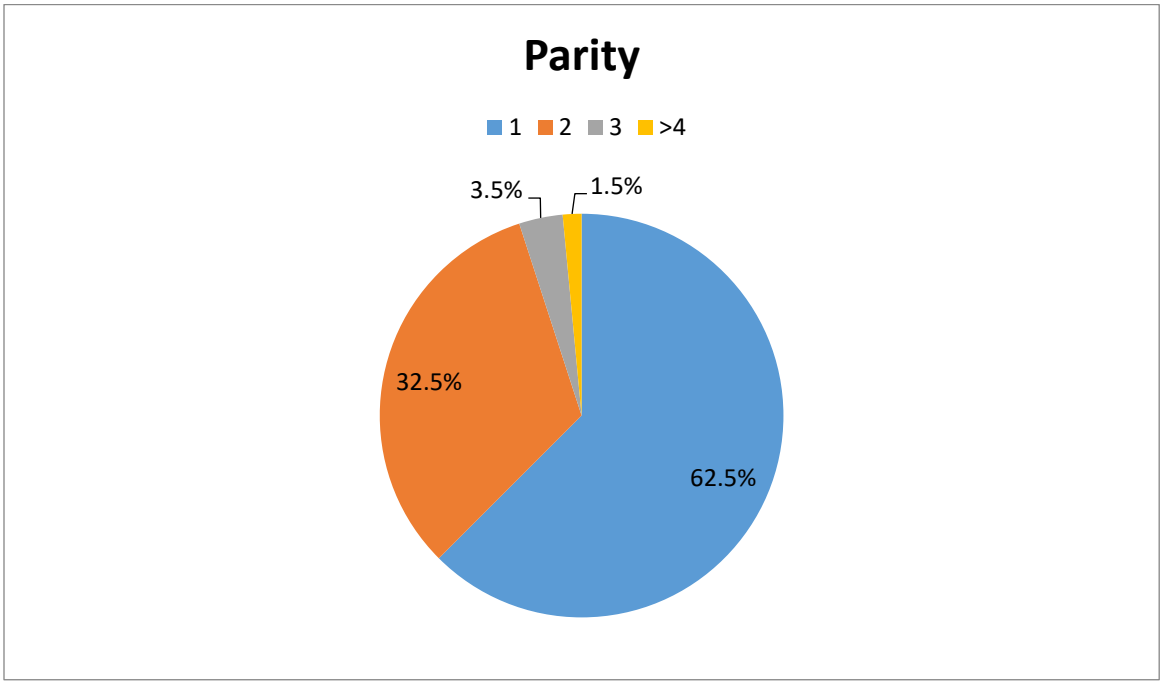
Among the subjects, 57(28.5%) were from <25 years of maternal age, maximum

115(57.5%) were from 25-<30 years of maternal age and 28(14%) were from >30 years of maternal age.

TABLE 2- DISTRIBUTION OF PARITY

Parity	Frequency	Percent
1	125	62.5
2	65	32.5
3	7	3.5
>4	3	1.5
Total	200	100.0

FIGURE -10

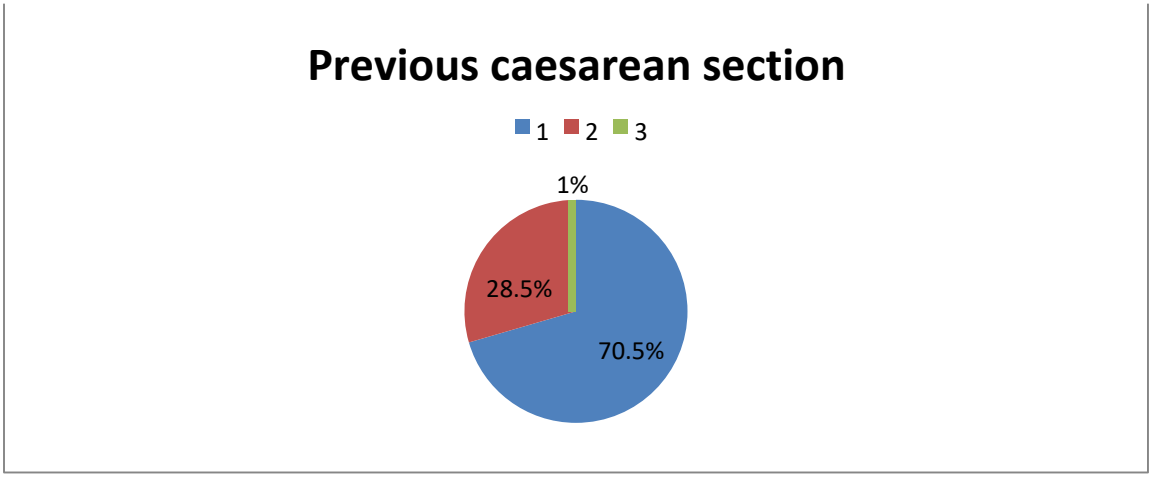


Among the subjects, maximum 125(62.5%) were having parity 1, 65(32.5%) were having parity 2, 7(3.5%) were having parity 3 and only 3(1.5%) were having parity >4.

TABLE 3- DISTRIBUTION OF PREVIOUS CAESAREAN SECTION

Previous caesarean section	Frequency	Percent
1	141	70.5
2	57	28.5
3	2	1.0
Total	200	100.0

FIGURE 11

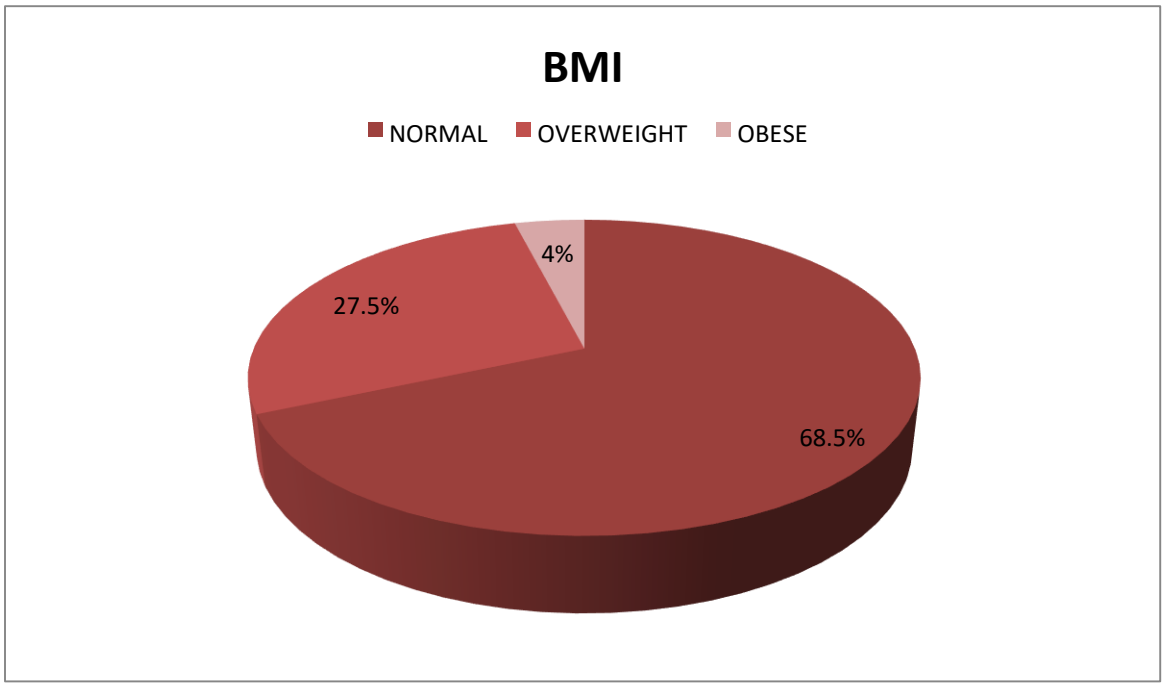


Among the subjects, maximum 141(70.5%) were having one previous caesarean section, 57(28.5%) were having two previous caesarean section and 2(1%) were having three previous caesarean section

TABLE 4- DISTRIBUTION OF BMI

BMI	Frequency	Percent
NORMAL	137	68.5
OVERWEIGHT	55	27.5
OBESE	8	4.0
Total	200	100.0

FIGURE 12

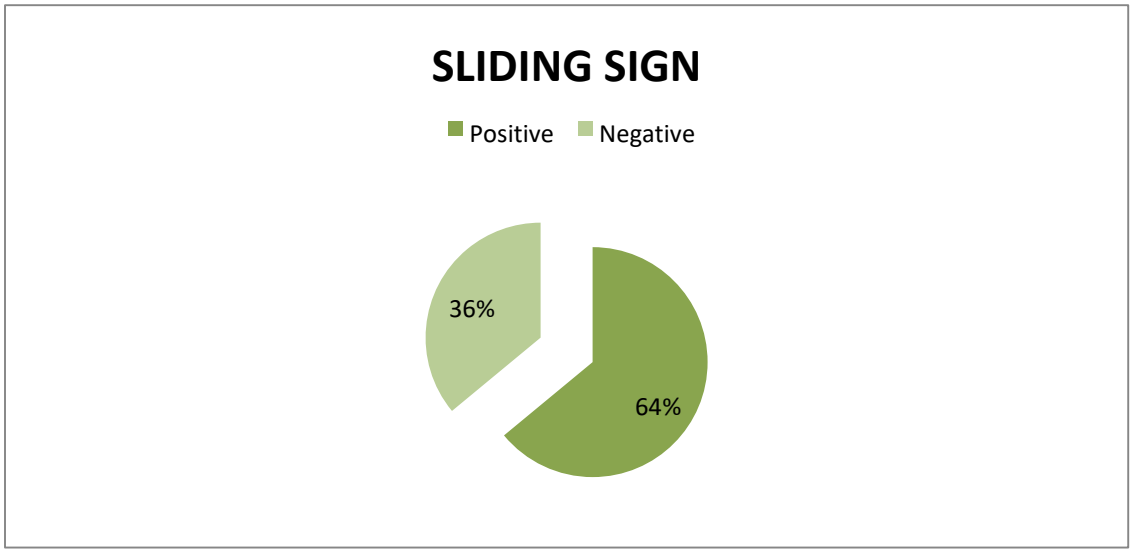


Among the subjects, maximum 137(68.5%) were having normal BMI, 55(27.5%) were having overweight BMI and only 8(4%) were having obese BMI.

TABLE 5 - DISTRIBUTION OF SLIDING SIGN

Sliding sign	Frequency	Percent
Positive	128	64.0
Negative	72	36.0
Total	200	100.0

FIGURE 13

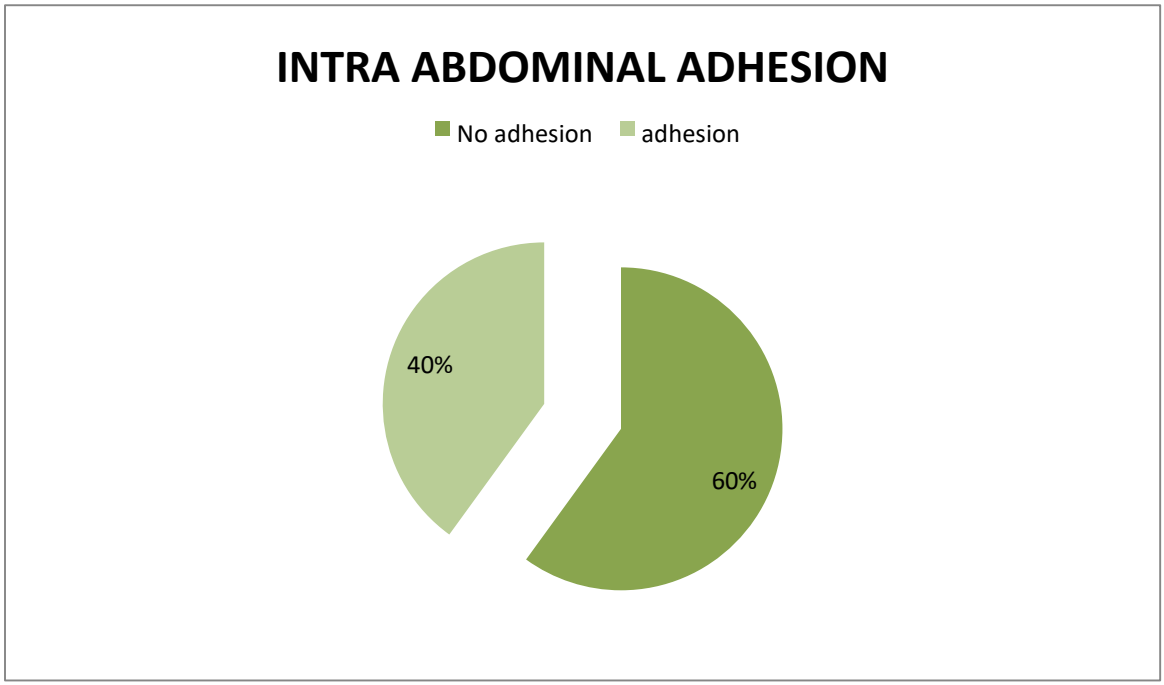


Among the subjects, 128(64%) were having positive sliding sign and 72(36%) were having negative sliding sign.

TABLE 6- DISTRIBUTION OF INTRA ABDOMINAL ADHESION

Intra-abdominal Adhesion	Frequency	Percent
No adhesion	120	60.0
adhesion	80	40.0
Total	200	100.0

FIGURE 14



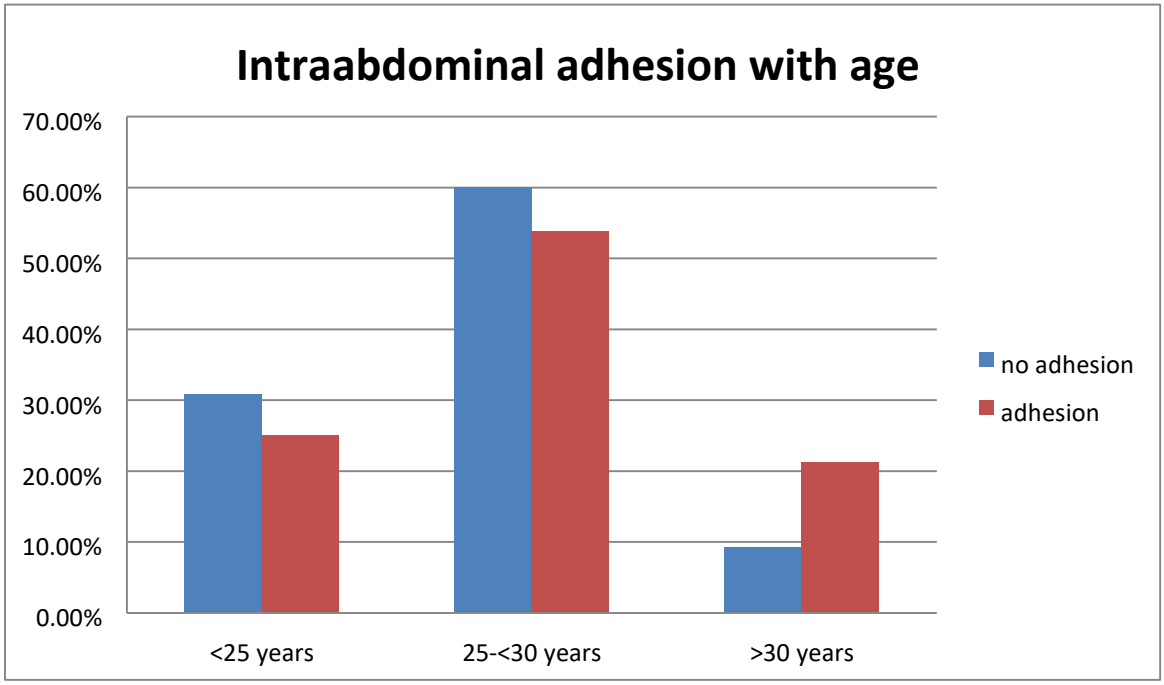
Among the subjects, 120(60%) were having no intra-abdominal adhesion and 80(40%) were having intra-abdominal adhesion.

TABLE 7- DISTRIBUTION OF MATERNAL AGE WITH INTRA ABDOMINAL ADHESION

Maternal age	Intra-abdominal adhesion			Chi value	p value
	no adhesion	adhesion	Total		
<25 years	37	20	57	5.989	.05
	30.8%	25.0%	28.5%		
25-<30 years	72	43	115		
	60.0%	53.8%	57.5%		
>30 years	11	17	28		
	9.2%	21.2%	14.0%		
Total	120	80	200		
	100.0%	100.0%	100.0%		

Test used- chi square, $p \leq 0.05$ significant

FIGURE 15-



Among the total 120(100%) of no intra-abdominal adhesion in which, 37(30.8%) were having <25 years maternal age, maximum 72(60%) were having 25-<30 years maternal age and 11(9.2%) were having >30 years maternal age

Among the total 80(100%) of intra-abdominal adhesion in which, 20(25%) were having <25 years maternal age, maximum 43(53.8%) were having 25-<30 years maternal age and 17(21.2%) were having >30 years maternal age

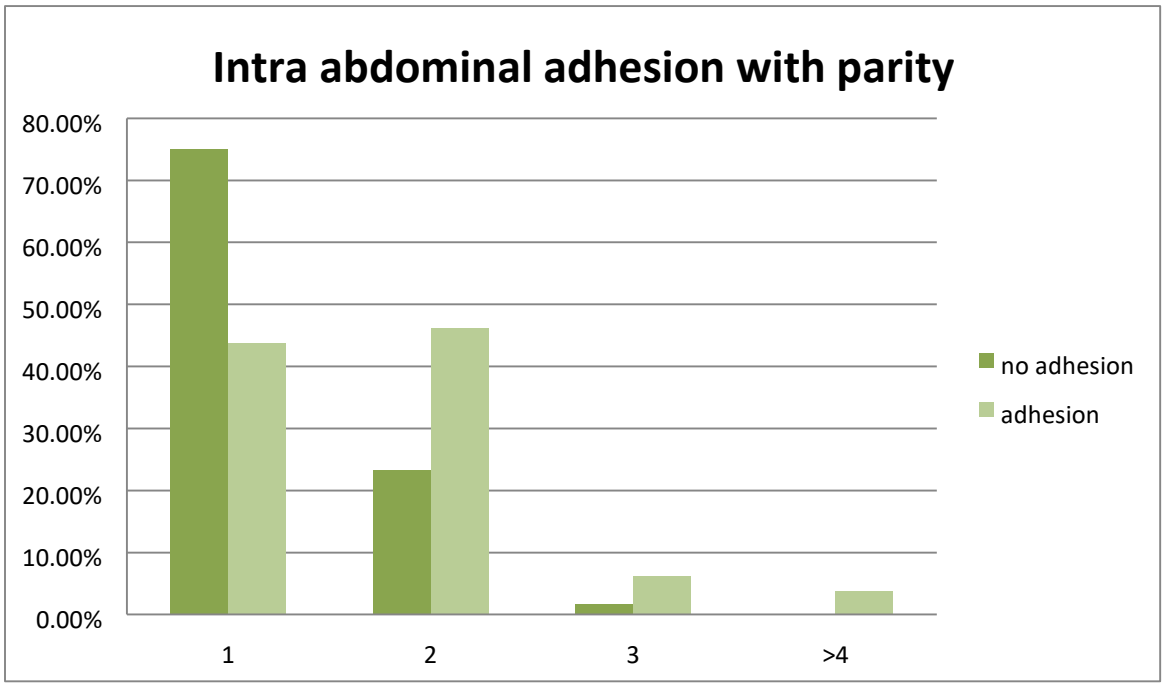
Results obtained were significant when comparing intra-abdominal adhesion with maternal age.

TABLE 8- DISTRIBUTION OF PARITY WITH INTRA ABDOMINAL ADHESION

Parity	Intra-abdominal adhesion			Chi value	p value
	no adhesion	adhesion	Total		
1	90	35	125	22.637	<0.001
	75.0%	43.8%	62.5%		***
2	28	37	65		
	23.3%	46.2%	32.5%		
3	2	5	7		
	1.7%	6.2%	3.5%		
>4	0	3	3		
	0.0%	3.8%	1.5%		
Total	120	80	200		
	100.0%	100.0%	100.0%		

Test used- chi square, $p \leq 0.05$ significant

FIGURE 16-



Among the total 120(100%) of no intra-abdominal adhesion in which, 90(75%) were having parity 1, 28(23.3%) were having parity 2, 2(1.7%) were having parity 3 and none were having parity >4.

Among the total 80(100%) of intra-abdominal adhesion in which, 35(43.8%) were having parity 1, 37(46.2%) were having parity 2, 5(6.2%) were having parity 3 and 3(3.8%) were having parity >4.

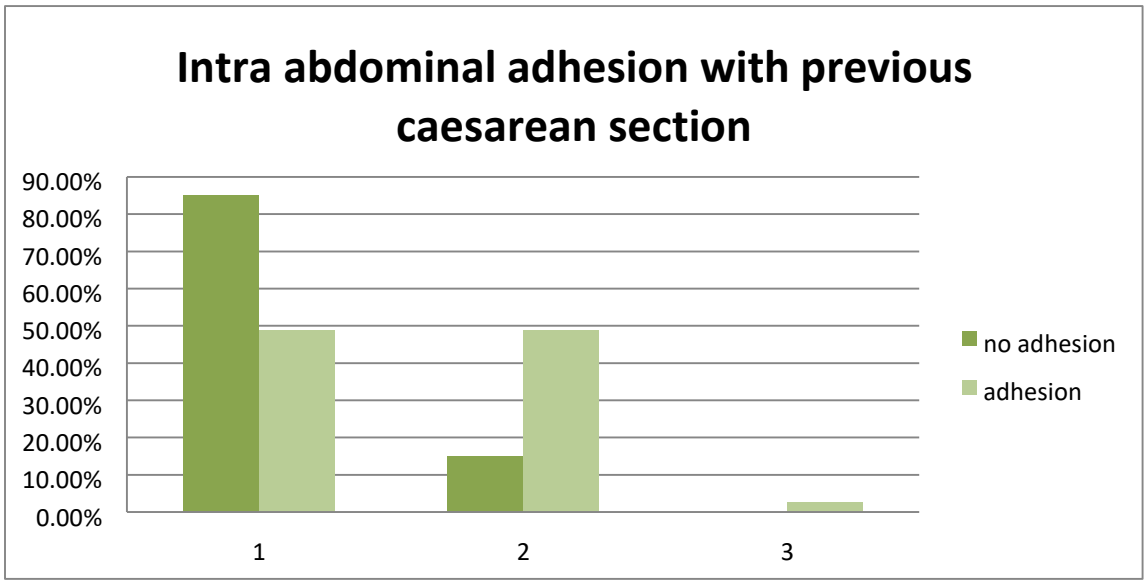
Results were highly significant when comparing intra-abdominal adhesion with parity.

TABLE 9- DISTRIBUTION OF PREVIOUS CAESAREAN SECTION WITH INTRA ABDOMINAL ADHESION

Section	Intra-abdominal adhesion			Chi value	p value
	no adhesion	adhesion	Total		
1	102	39	141	31.131	<0.001***
	85.0%	48.8%	70.5%		
2	18	39	57		<0.0002**
	15.0%	48.8%	28.5%		
3	0	2	2		
	0.0%	2.5%	1.0%		
Total	120	80	200		
	100.0%	100.0%	100.0%		

Test used- chi square, $p \leq 0.05$ significant

FIGURE 17-



Among the total 120(100%) of no intra-abdominal adhesion in which, maximum 102(85%) were having one previous caesarean section, 18(15%) were having two previous caesarean section and none were having three previous caesarean section. Among the total 80(100%) of intra-abdominal adhesion in which, maximum 39(48.8%) each were having one and two previous caesarean section and 2(2.5%) were having three previous caesarean section.

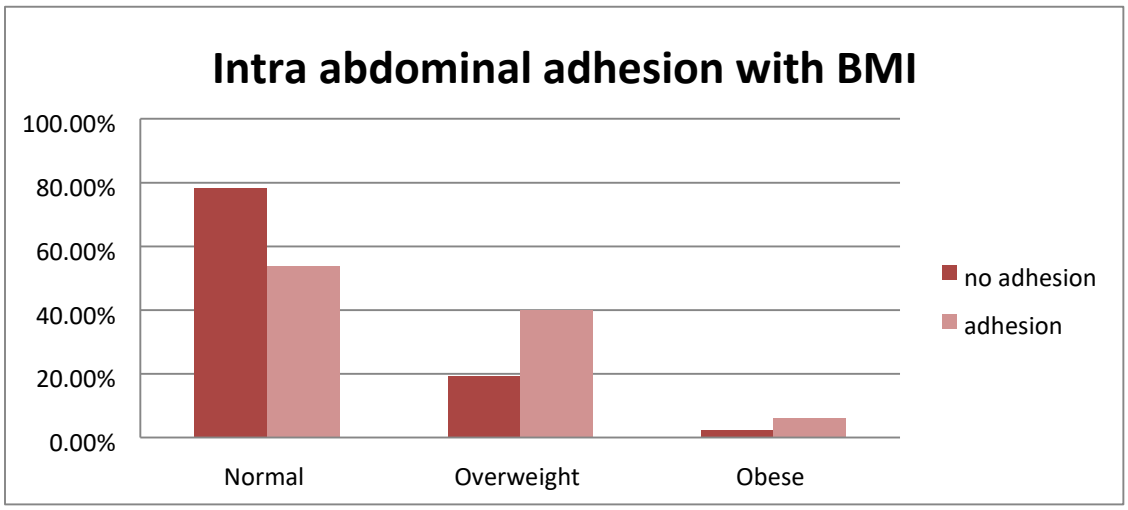
Results obtained were highly significant when comparing intra-abdominal adhesion with previous caesarean section

TABLE 10- DISTRIBUTION OF BMI WITH INTRA ABDOMINAL ADHESION

BMI	Intra-abdominal adhesion			Chi value	p value
	no adhesion	adhesion	Total		
Normal	94	43	137	13.498	.001**
	78.3%	53.8%	68.5%		
Overweight	23	32	55		
	19.2%	40.0%	27.5%		
Obese	3	5	8		
	2.5%	6.2%	4.0%		
Total	120	80	200		
	100.0%	100.0%	100.0%		

Test used- chi square, $p \leq 0.05$ significant

FIGURE 18 -



Among the total 120(100%) of no intra-abdominal adhesion in which, maximum 94(78.3%) were having normal BMI, 23(19.2%) were having overweight BMI and only 3(2.5%) were having obese BMI.

Among the total 80(100%) of intra-abdominal adhesion in which, maximum 43(53.8%) were having normal BMI, 32(40%) were having overweight BMI and only 8(4%) were having obese BMI.

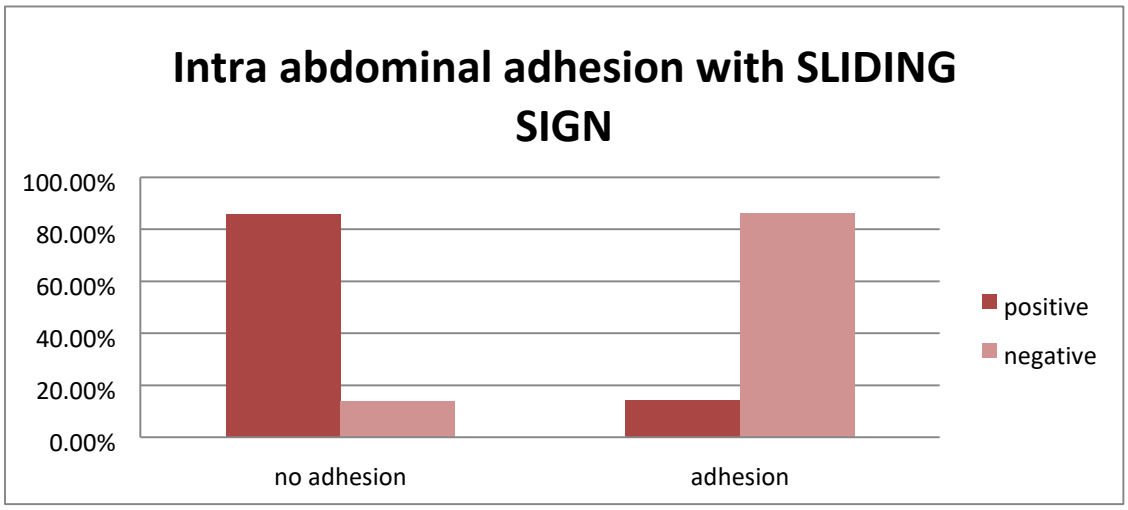
Highly significant Results were found on comparing intra-abdominal adhesion with BMI

TABLE 11- DISTRIBUTION OF INTRA ABDOMINAL ADHESION WITH SLIDING SIGN

Intraabdominal Adhesion	Sliding sign			Chi value	p value
	positive	negative	Total		
No adhesion	110	10	120	99.667	<0.001**
	85.9%	13.9%	60.0%		
Adhesion	18	62	80		
	14.1%	86.1%	40.0%		
Total	128	72	200		
	100.0%	100.0%	100.0%		

Test used- chi square, $p \leq 0.05$ significant

FIGURE 19



Among total 120(100%) of positive sliding sign in which maximum 110(85.8%) were having no intra-abdominal adhesion and 18(14.1%) were having intraabdominal adhesion.

Among total 72(100%) of negative sliding sign in which 10(13.9%) were having no intra-abdominal adhesion and 62(86.1%) were having intra-abdominal adhesion.

highly significant Results were found on comparing intra-abdominal adhesion with sliding sign.

Sensitivity- 86%

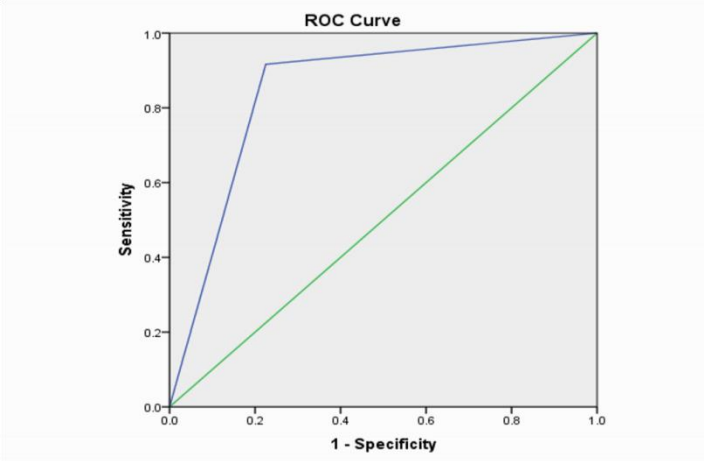
Specificity- 86.1%

Positive predictive value- 91.7%

Negative predictive value- 77.6%

ROC CURVE FOR SLIDING SIGN WAS- 0.846

FIGURE 1-



DISCUSSION:

This study has been conducted at the Dept. of Obstetrics & Gynaecology, BLDE (D U) Shri B.M. Patil Medical College Hospital & Research Centre at Vijayapura. Today, CS rates are rising sharply, which is causing more complications like intra-peritoneal adhesions, injury to bowel . These can cause serious problems during CS, which can have a detrimental effect on both the mother. Using sliding sign ultrasonography in predicting intraabdominal adhesions who underwent repeat CSs. A total of 200 pregnant women with at least one prior CS history who intended having elective CS were included. In order to forecast intraperitoneal adhesions without appreciably lengthening the duration of CS, this study highlights the value of a thorough preoperative transabdominal sonographic evaluation at third trimester of pregnancy employing sliding signs. Currently, the number of prior CS and clinical evaluation of prior surgeries are used to predict adhesions. Such information has several benefits, such as careful planning, counselling before repeat elective CS on potential surgical problems, appropriate selection of the experienced obstetrician to perform the procedure, and consideration of anaesthetics for both intraoperative and postoperative care.

Out of 200 patients who are taken into study, 57 of them (28.5%) are under

25 years old, 115 of them (57.5%) are between 25 and 30 years old, and 28 of them (14.5%) are beyond 30 years old.

The mean age in study participants was 26.70 ± 5.01 years, according to Ali H. Yosef et al.'s [52] study, while Baron et al.[11] and Drukker et al. [10] reported 34.5 ± 1.15 and 34.46 years, respectively.

According to Roaya M. Yaqoub et al.[56], women between the ages of 32 and 42 have higher levels of CS.

Out of 200 maximum of 125 patients (62.5%) are with parity 1, 65 are with parity 2 (32.5%), 7 are with parity 3 (3.5%), and only 3 are with parity >4.

The mean parity of 2.49 ± 1.12, as reported by Ali H. Yosef et al. [52], was fairly comparable to that of 2.42 ± 1.17, as reported by Bukar et al. (2022)[7]. The current study is consistent with the above research.

The majority of the patients in this study have normal BMIs 137 or 68.5% , with 55 or 27.5%, having overweight BMIs and only 8 or 4%, having obese BMIs.

44.2% of women were obese, according to Ali H. Yosef et al. [52], mean BMI of

28.36 ± 3.23 kg/m2.

According to Drukker et al. (2018)[10], the BMI was 30.96 ± 5.5 kg/m2.

In our study, a maximum of 141 people (70.5%) have had one prior caesarean procedure, 57 people (28.5%) have had two prior caesarean sections, and 2 people (1%) have had three prior caesarean sections.

Our findings are consistent with study by Drukker et al. (2018)[10], in which 135

(37%) had two CS deliveries, 123 (33%) had three or more CS deliveries, and 112 (30%) had only had one. The greater mean parity was showed by Baron et al.

(2018)[7], however, explains the increased rate of CSs. Of these, 8(13%) had only had one prior CS, 20 (34%) had two, and 31 (53%) had more than two prior CS delivery.

In this study, out of 200, 72 individuals have negative sliding signs while 128 patients have positive sliding sign. Acc to Ali H. Yosef et al. [52] out of 120 women, negative sliding was seen in 54 patients, 66 women was having positive sliding sign. Acc to Baron et al[8] examined 59 in that 19 had negative sliding sign and 40 had positive sliding sign.

The distribution of intra-abdominal adhesion in the current study reveals that 120 (60%) have no intra-abdominal adhesion, 80 (40%) have adhesions, 128 (64%) have a positive while 72(36%) had a negative sliding sign. Acc to Baron et al[8], 16 had intraabdominal wall adhesions and 35 had no adhesions. Acc to Ali H. Yosef et al. [52] 66 had no adhesions and 44 had intraabdominal wall adhesions.

We obtained noteworthy results when comparing intra-abdominal adhesion with age. In contrast to 80 patients with abdominal adhesion, we observed that 17 (21.2%) had maternal ages greater than 30, and a maximum of 43 (53.8%) were between the ages of 25 and 30. Of the 120 patients without intra-abdominal adhesion, the majority were under 30. We discovered that adhesions are more common in elderly women than in younger ones.

Our findings are in line with the earlier research by Ali H. Yosef et al. [52], which discovered that, compared to women without adhesion, only 19 patients had maternal ages greater than 30. With adhesion, a maximum of 23 patients had such ages.

When comparing intra-abdominal adhesion to parity, we discovered noteworthy outcomes. In contrast to 80 patients with abdominal adhesion, we found that, among 120 patients without intraabdominal adhesion, 90 (75%) have parity 1, 28 (23.3%) have parity 2, and at least 2 (1.7%) have parity 3. At most, 37 individuals (46.2%) have parity 2, 35 individuals (43.8%) have parity 1, 5 individuals (6.2%) have parity 3, and 3 individuals (3.8%) have parity >4. Therefore, compared to mothers with lower parity, we observed a higher incidence of adhesions.

Ali H. Yosef et al.[52] study also revealed similar results: of the 44 patients with adhesion, a maximum of 19 had parity 3, and 12 each had parity 2 and parity 4. In contrast, of the 76 patients without adhesion, only 24 had parity 1, 28 had parity 2, 13 had parity 3, and 11 had parity 4 and 5. Therefore, the current study agrees with the work by Ali H. Yosef et al.[52]

The results were statistically significant. When comparing intraabdominal adhesion with the CS, we discovered that 120 women without intraabdominal adhesion had 102 (85%) prior caesarean sections, 18 (15%) had two prior caesarean sections, and 80 women with intraabdominal adhesion maximum 39 (40.8%) had one and two prior caesarean sections, and 2 (2.5%) had three prior caesarean sections.

In research by Ali H. Yosef et al. [52], 44 women with intra-abdominal adhesion had 28 women with three CS and 12 with two CS history. In contrast, 76 women without intra-abdominal adhesion had a maximum of 40 had history of one CS, 23 patients

with two CS, and 13 patients with three CS. The findings of our investigation align with those of the Yosef et al. [52] study.

The current study comparing intra-abdominal adhesion and BMI found that women with intra-abdominal adhesion had a higher percentage of overweight and obese women (32, or 40%) with an overweight BMI and only 8 (or 4%), compared to women with non-intra-abdominal adhesion (23, or 19.2%) and an overweight BMI and only 3 (2.5%). Our findings are therefore noteworthy and consistent to research done by Ali H. Yosef et al.[52]Additionally, he discovered 25 obese women did not have intra-abdominal adhesion, but 28 obese women.

In terms of parity, women who have more than two parities are more likely to have adhesions than women with fewer parities; the incidence increased significantly with repeated CS; preterm (33–36 week) deliveries are linked to higher incidence and BMI (kg/m2) is linked to greater incidence among obese. Regretfully, the same linkages are not covered in any earlier works as reported by Reem Falah Alshammari et al,[57]Yehui Lan et al,[58]Kondori et al, [59] and Kietpeerakool et al[60].

In this study, 72 individuals have negative sliding signs while 128 patients have positive ones. When intra-abdominal adhesion and the sliding sign were compared, we found that the ROC CURVE FOR THE SLIDING SIGN WAS-0.846 and that the sensitivity was 86%, the specificity was 86.1%, and among the positive sliding signs, a maximum of 110 (85.8%) have no intra-abdominal adhesion and 18 (14.1%) have it. Among the negative sliding signs, 10 (13.9%) had no intra-abdominal adhesion and 62 (86.1%) had it.

Ali H. Yosef et al. [32], reported 54 patients with negative uterine sliding, while 66 women had positive sliding. The ROC curve analysis measured predictive ability to slide sign for detection with repeat CD. He found that ROC curves were 86.9 and sensitivity was 100%, the specificity was 86.84%, and the overall accuracy was 85%. Out of 54 cases as high-risk

group, 44 cases confirmed at the surgery, while 66 women had low risk predictions. Therefore, our findings align with the research conducted by Ali H. Yosef et al.[32]

The findings of this study also concur with those of Bukar et al. (2022)[7], showed 100% sensitivity and specificity for intraperitoneal adhesion detection. Baron et al. (2018)[11] found 76.2% sensitivity and 92.1% specificity. Conversely, Shu (2021)[32] and Drukker et al. (2018)[10] observed lesser sensitivity of 56 and 53.3%.

STRENGTH OF STUDY:

- Our study's blinded-prospective approach and novelty are among its strong points.
- We are the first study in South India to evaluate the predictive value of transabdominal ultrasound for adhesions in women who have had multiple CSs.

LIMITATIONS:

- The primary limitations of the study were the absence of patient follow-up.
- Presence of many professionals conducting CS might influence assessment of adhesion severity**.**

SUMMARY:

The present study showed that

- A maximum, 115(57.5%) were from 25-<30 years of maternal age.
- Results found of the total 120 women, 55(27.5%) were having overweight BMI and only 8(4%) were having obese BMI.
- Among the subjects, 120(60%) were having no intra-abdominal adhesion and 80(40%) were having intra-abdominal adhesion.
- Among the total 80(100%) of intra-abdominal adhesion, 20(25%) were having <25 years maternal age, maximum 43(53.8%) were having 25-<30 years maternal age and 17(21.2%) were having >30 years maternal age.
- Among the total 80(100%) of intra-abdominal adhesion, a maximum 39(48.8%) were having one and two previous caesarean section and 2(2.5%) were having three previous caesarean section showed highly significant results.
- Among total 120(100%) of positive sliding sign in which maximum 110(85.8%) were having no intra-abdominal adhesion and 18(14.1%) had adhesion.

CONCLUSION:

In the current study, 120 (60%) had no intraabdominal adhesion. The study also found a strong correlation between intraabdominal adhesion and age, parity, BMI, and the sliding sign. According to the study, the sensitivity and specificity were 86% and 86.1%, respectively. Intraabdominal adhesion prediction has a high risk of 91.6%.

The study finds that among women with a history of multiple caesarean deliveries, the sliding sign is a useful tool for identifying intra-abdominal adhesions.

With no appreciable increase in sonography time, our research supports the use of transabdominal Ultrasonography with sliding signs in preoperative evaluation among those who have had prior CS. It can offer precise information that is necessary for women to plan for repeat CS.

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ANNEXURE

CONSENT FORM

BLDE (DEEMED TO BEUNIVERSITY) SHRI B.M PATIL MEDICAL

COLLEGE HOSPITAL AND RESEARCH CENTER, VIJAYAPURA-586103

INFORMED CONSENT FOR PARTICIPATION IN DISSERTATION/

RESEARCH

I, the undersigned, _____ _, D/OW/O, agedyears, ordinarily resident of, do hereby state/declare that Dr. NALLABALE SHALINI of Shri. B. M. Patil Medical College Hospital and Research Centre have examined me thoroughly onat _____ (place), and it has been explained to me in my own language that I am suffering from_

disease(condition), and this disease/condition mimic following diseases. Further,

Dr. NALLABALLE SHALINI informed me that he/she is conducting dissertation/research titled" PREDICITING THE PRESENCE OF INTA ABDOMINAL ADHESIONS IN PREGNANT WOMEN UNDERGOING REPEAT CAESEREAN SECTION BY ASSESSING ULTRASOUND SLIDING SIGN" under the guidance of Dr. SHAILAJA.R. BIDRI, requesting my participation in the study. Apart from routine treatment procedure, the preoperative, operative, post-operative and follow-up observations will be utilized for the study as reference data. The doctor has also informed me that during the conduct of this procedure like, adverse results may be encountered. Among the above complications, most of them are

treatable but are not anticipated hence there is a chance of aggravation of my condition, and in rare circumstances, it may prove fatal in spite of anticipated diagnosis and best treatment made available. Further Doctor has informed me that my participation in this study would help in the evaluation of the results of the study, which is a useful reference to treatment of other similar cases in near future, and also, I may be benefited from getting relieved of suffering or cure of the disease I am suffering. The Doctor has also informed me that information given by me, observations made, photographs video graphs taken upon me by the investigator will be kept secret and not assessed by a person other than me or my legal hirer except for academic purposes.

The Doctor did inform me that though my participation is purely voluntary, based on information given by me, I can ask any clarification during the course of treatment / study related to diagnosis, procedure of treatment, result of treatment or prognosis. At the same time, I have been informed that I can withdraw from my participation in this study at any time if I want or the investigator can terminate me from the study at any time from the study but not the procedure of treatment and follow-up unless I request to be discharged.

After understanding the nature of dissertation on research, diagnosis made, mode of treatment, I the under signed smt under my full conscious state of mind agrees to participate in the said research/dissertation.

Signature of patient:

Signature Doctor:

Date:

Place

ಬಿ.ಎಂ. .ಪಾಟೀಲ್ಮೆಡಿಕಲ್ಕಾಲೇಜು, ಆಸ್ಪತ್ರೆಮತ್ತುಸಂಶೋಧನಾಕೇಂದ್ರ,
ವಿಜಯಪುರ-586103ಪೆಬಂಧ/ಸಂಶೋಧನೆಯಲ್ಲಿಪಾಲೊಳ್ಳಲುಮಾಹಿತಿಪಡೆದ್ಪಮತಿ

ನಾನು, ಕಳ್ಗಿನವರು_____ಸ್ಹಯಿಟ್ಟವರು, ಮಗ/ಮಗಳ್ತು/ಪತಿಯ
_____ವಯಸ್ತುತು_____ವರ್ಷಗಳ್ತು,
ಸಾಮಾನಯವಾಗಿನಿವಾಸಿಸ್ತುವಸ್ಥಳ್ದೆಹಸ್ರು_____,
ಇಲ್ಲಿಹೇಳಿದ್ದೀನೆ/ಫೀಷಿಸ್ತುತಳಿೀನೆಡಾಕಟರ್ಹೆಸ್ರು_____ಅವರುಆಸ್ಪತ್ರೆಹೆಸ್ರು_____
____ಅವರುನನಿನುಶಿಪೂರ್ಷವಾಗಿಪರೀಕ್ಷಿಸಿದ್ರುದಿನಾಂಕದ್ದು_____ಸ್ಥಳ್ದೆಹಸ್ರು_____
ಮತ್ತುತುನನಗೆನನಿಭಾಷೆಯಲ್ಲಿವಿವರಸ್ದಾಗಿದ್ದಾನುಒಂದ್ತುರೀಗ(ಸಿಥತಿ)
ಅನುಭವಿಸ್ತುತಿುದ್ದೀನೆ.
ಮುಂದ್ತುವರದ್ತುಡಾಕಟರ್ನನಗೆತಿಳಿಸಿದ್ತುದರಅವರುಒಂದ್ತುಪದ್ಧತಿ/ಸಂಶೋಧನೆನಡೆ
ಸ್ತುತಿುದ್ತುದರಶೀಷಿಷಕಯುಳ್ಳ_____ಡಾಕಟರ್_____
ಮಾಗಷದ್ರ್ಶನದ್ದುನನಿಪಾಲೊಳ್ತುಳವಿಕಯನುಶಿಕೀಳಿದ್ತುದರಅಥಯಯನದ್ದು.

ಡಾಕಟರ್ನನಗೆಇದ್ದುಶಿಕಡಾತಿಳಿಸಿದ್ತುದರಈಕೆಮದ್ದನಡೆವಲ್ಲಿಪೆತಿಕಲಫಲ್ಲತಾಂರ್ಗಳ್ದುಶಿಎ
ದ್ತುರಸ್ಬಹುದ್ತು. ಮೇಲಹೇಳಿದ್ದೆಕಟ್ಟೆಣಗಳ್ಲಿ್ದು,
ಅಧಿಕಾಂರ್ವುಚಿಕಿತಿುಸ್ಬಹುದ್ತುದ್ರಅದ್ದುಶಿನಿರೀಕ್ಷಿಸ್ದಾಗುತಿುಲಿಆದ್ದರಂದ್ದನಿಸಿಥತಿಯಹಿರ
ದ್ತುಗುವಅವಕಾರ್ವಿದ್ಮತ್ತುತುಅಪರಪದ್ಸಂದ್ಬಷಗಳ್ಲಿ್ದುಅದ್ತುಮರರ್ಕಾರಕವಾಗಿಪರ
ರ್ವಿಸ್ಬಹುದ್ತುಹೆಂದಿದ್ರಿೀಗನಿರ್ತುಷರಮತ್ತುತುಯಥಾರ್ಕುಚಿಕಿತ್ರುಮಾಡಲುಹೆಂದಿದ್ರ.
ಮುಂದ್ತುವರದ್ತುಡಾಕಟರ್ನನಗೆತಿಳಿಸಿದ್ತುದರನನಿಪಾಲೊಳ್ತುಳವಿಕಈಅಥಯಯನ
ದ್ಬಲ್ಲತಾಂರ್ಗಳ್ಮೌಲಯಮಾಪನದ್ದು್ದುಸ್ಹಾಯಕವಾಗುತ್ತ್ತುದ್ಇತ್ರಸ್ಥಾನಪೆಕರರ್ಗಳ್ಚಿಕಿತ್ರುಗೆಱ

ಪಯುಕುಉಲೀಖವಾಗಿದ್,
ಮತ್ುುನಾನುಅನುಭವಿಸ್ುವರೀಗದಿಂದ್ವಮುಕಿುಅಥವಾಗುರ್ುಖಗೆಳ್ುಳವಲ್ಲಿನನಗೆ
ಪೆಯಿೀಜನವಾಗಬಹುದ್ುು.

ಡಾಕಟರ್ನನಗೆಇದ್ುುಿಕಡಾತಿಳಿಸಿದ್ುಾದರನನಿಿಂದ್ನೀಡಿದಾಾಹಿತಿ,
ಮಾಡಿದ್ಪರಶೀಲನೆಗಳ್ುು/ ಫ್ಲೀಟೀಗ್ುಾೆಫಗಳ್ುು/
ಪೀಡಿಯಿೀಗ್ುಾೆಫಗಳ್ುುನನಿಮೀಲತ್ರಗೆದ್ುುಕಳ್ಳಲಾಗುವಅನೆವೀರ್ಕರುರಹಸ್ಯವಾಗಿಇಡು
ವರುಮತ್ುುನಾನುಅಥವಾನನಗೆಕಾನನುದ್ೃಷಿಟಯಲ್ಲಿಸ್ಂಬಂಧಿತ್ಪೊರತ್ುುಪಡಿಸಿಇತ್ರ
ವಯಕಿುಯಿಂದ್ಾೌಲಯಮಾಪನಮಾಡಲಾಗುವುದಿಲಿ.
ಡಾಕಟರ್ನನಗೆತಿಳಿಸಿದ್ುಾದರನನಿಪಾಲೊಳ್ುುಳವಿಕರ್ುುದ್ವಾಗಿಸ್ವೀಚ್ುಾುಾಯಿತ್,
ನನಿಿಂದ್ನೀಡಿದಾಾಹಿತಿಯಆರ್ುಾರದ್ಾೀಲ, ಚಿಕಿತ್ುು/
ಅಧಯಯನದ್ಸ್ಂಬಂಧದ್ಲ್ಲಿರೀಗನಿರ್ುಾಷರ, ಚಿಕಿತ್ುುಯವಿರ್ುಾನ,
ಚಿಕಿತ್ುುಯಫಲ್ಲತಾಂರ್ಥವಆಭವಿರ್ುದ್ೆವೃತಿುಗಳ್ುುಬಗೊಯಾವುದ್ೀಸ್ಪರ್ುತ್ರಕೀಳ್ಬ
ಹುದ್ುು.
ಅದ್ೀಸ್ಮಯದ್ಲ್ಲಿನನಗೆತಿಳಿಸ್ಾಗಿದಾಾನುಯಾವುದ್ೀಸ್ಮಯದ್ಲ್ಲಿಈಅಧಯಯನದ್ಲ್ಲಿನನಿಪಾ
ಲೊಳ್ುುಳವಿಕಯನುುಿನಿಲ್ಲಿಸ್ಬಹುದ್ುುನಾನುಬಯಸಿದ್ರಅಥವಾಅನೆವೀರ್ಕರುಅಧಯಯ
ನದಿಂದ್ಾಯವುದ್ೀಸ್ಮಯದ್ಲ್ಲಿನನಿನುುಿನಿಲ್ಲಿಸ್ಬಹುದ್ುು.

ಪೆಬಂಧಅಥವಾಸ್ಂಶೀಧನೆಯಸ್ವಭಾವ,
ಮಾಡಿದ್ರಿೀಗನಿರ್ುಾಷರಮತ್ುುಚಿಕಿತ್ುುಯವಿರ್ುಾನವನುುಿಅಥಪಮಾಡಿಕಂಡು,
ನಾನುಕಳ್ಸಿನಶೀ/
ಶೀಮತಿ_____ನನಿಪೂರ್ವಾದ್ವೆಜ್ಞಯಸಿಥತಿಯಲ್ಲಿಹೀಳಿದ್ಸ್ಂಶೀಧನೆ/
ಪೆಬಂಧದ್ಲ್ಲಿಪಾಲೊಳ್ಳಲುಒಪುಪತುಿೀನೆ.

ರೀಗಿಯಸ್ಿಡಾಕಟರನಸ್ಿ

ಸಾಕ್ಷಿಗಳ್ು

1)

2)

PROFORMA

“PREDICTING THE PRESENCE OF INTRA ABDOMINAL ADHESIONSIN PREGNANT WOMEN UNDERGOING REPEAT CAESAREAN

SECTION BY ASSESSING ULTRASOUND SLIDING SIGN.”

NAME:	AGE:	DOA
IPNo :		DOD

DATEOFDELIVERY:

DIAGNOSIS:

CHIEF COMPLAINTS:

OBSTETRIC HISTORY:

MARITAL HISTORY:

LAST MENSTRUAL PERIOD:

EXPECTED DATE OF DELIVERY:

PERIOD OF GESTATION:

A.N.C.:

1ST TRIMESTER:

2ND TRIMESTER:

3RD TRIMESTER:

RELATED DRUG HISTORY:

PAST HISTORY:

PERSONAL HISTORY:

GENERAL PHYSICAL EXAMINATION:

HEIGHT: WEIGHT: BMI:

TEMPERATURE: PULSE: BLOOD PRESSURE:

PALLOR: BREAST:

ICTERUS: SPINE:

CYANOSIS: THYROID:

CLUBBING:

LYMPHADENOPATHY:

EDEMA:

CARDIOVASCULAR SYSTEM:

RESPIRATORY SYSTEM:

PER ABDOMEN:

Sliding sign findings:

Abdominal wall adhesions: Present/Absent

Total no of LSCS:

Previous LSCS date:

Present LSCS findings:

Date and time of LSCS:

Abdominal wall adhesions present intraoperative? Present/Absent.

Comparison between Ultrasound sliding sign and LSCS:

Adhesions present during scan and LSCS:

Adhesions present during scan and absent during LSCS:

Adhesions absent during scan and present during LSCS:

MASTERCHART

S.NO.	IP NUMBER	MATERNAL AGE	PARITY	PREVIOUS CAESAREAN SECTION	PLACE OF DELIVERY	GESTATIONAL AGE	BMI	INTRA ABDOMINAL ADHESIONS	SLIDING SIGN
1	1174	26	1	1	blde	37 weeks 1 day	21.5	no adhesions	positive
2	1782	28	1	1	blde	37 weeks 0 day	27.2	no adhesions	positive
3	2043	24	2	2	blde	37 weeks 0 day	23	adhesions present	negative
4	2151	27	2	1	blde	41 weeks 0 days	26.8	no adhesions	positive
5	2181	24	1	1	blde	39 weeks 0 day	27	adhesions present	negative
6	2191	28	2	2	blde	37 weeks 0 day	23.5	adhesions present	positive
7	1259	32	2	2	blde	37 weeks 2 days	24	adhesions present	negative
8	1072	27	2	2	blde	37 weeks 0 day	22	no adhesions	positive
9	1643	23	2	2	blde	38 weeks 4 days	25.8	adhesions present	positive
10	2649	34	3	2	blde	37 weeks 1 day	23.2	no adhesions	positive
11	4029	29	1	1	blde	39 weeks 1 day	26.4	no adhesions	positive
12	4238	26	1	1	blde	38 weeks 6 days	23.5	adhesions present	negative
13	4558	22	1	1	blde	38 weeks 1 day	22	no adhesions	positive
14	4794	27	2	2	blde	38 weeks 0 day	26.4	adhesions present	negative
15	5332	29	1	1	blde	39 weeks 2 days	22	no adhesions	positive
16	5856	23	1	1	blde	39 weeks 0 day	21.8	no adhesions	positive
17	5650	27	1	1	blde	37 weeks 2 days	22.6	no adhesions	positive
18	6272	22	1	1	blde	38 weeks 1 day	24.3	no adhesions	positive
19	6437	33	3	2	blde	37 weeks 4 days	24.6	adhesions present	positive
20	6859	21	1	1	blde	37 weeks 2 days	27	no adhesions	negative
21	7083	25	1	1	blde	38 weeks 3 days	28.4	no adhesions	positive
22	6972	31	2	2	blde	38 weeks 1 day	31	no adhesions	positive
23	71031	29	1	1	blde	38 weeks 5 days	26.5	adhesions present	negative
24	7150	26	1	1	blde	38 weeks 6 days	22.5	adhesions present	negative
25	7841	23	1	1	blde	37 weeks 0 day	21.4	adhesions present	negative
26	8142	27	2	2	blde	38 weeks 1 day	20.9	no adhesions	positive
27	8148	29	1	1	blde	38 weeks 0 day	32	no adhesions	positive
28	9153	27	1	1	blde	38 weeks 0 day	22.5	no adhesions	positive
29	9384	31	2	2	blde	37 weeks 1 day	23.5	no adhesions	positive
30	9449	25	1	1	blde	39 weeks 0 day	29.5	adhesions present	positive
31	9382	22	1	1	blde	37 weeks 0 day	22.6	adhesions present	negative
32	9545	35	4	3	blde	38 weeks 6 days	31	adhesions present	negative
33	9558	28	2	2	blde	39 weeks 2 days	28	no adhesions	positive
34	9733	24	1	1	blde	38 weeks 5 days	22.6	no adhesions	negative
35	9953	28	2	2	blde	37 weeks 2 days	21.5	no adhesions	positive
36	10095	26	1	1	blde	38 weeks 0 day	24.2	no adhesions	positive
37	10485	24	1	1	blde	37 weeks 5 days	22.6	adhesions present	negative
38	8331	29	2	2	blde	37 weeks 5 days	21.9	no adhesions	positive
39	8399	24	2	2	blde	39 weeks 6 days	23.5	adhesions present	negative
40	11286	23	1	1	blde	37 weeks 0 day	26.5	adhesions present	negative
41	11184	26	2	2	blde	38 weeks 4 days	27.5	adhesions present	negative
42	11501	23	1	1	blde	39 weeks 0 day	22.5	no adhesions	positive
43	11515	26	1	1	blde	37 weeks 0 day	28.6	no adhesions	positive
44	11883	28	1	1	blde	37 weeks 1 day	21.5	no adhesions	positive
45	12116	24	1	1	blde	38 weeks 0 day	20	no adhesions	positive
46	12783	27	2	2	blde	38 weeks 1 day	24.8	adhesions present	negative
47	12883	25	2	2	blde	38 weeks 0 day	26.8	no adhesions	positive
48	12781	23	1	1	blde	39 weeks 2 days	26.8	no adhesions	positive
49	12682	26	1	1	blde	37 weeks 1 day	27.8	no adhesions	positive
50	12940	28	4	2	blde	39 weeks 0 day	22.5	adhesions present	negative
51	12965	24	1	1	blde	38 weeks 0 day	26.3	adhesions present	negative
52	13321	26	1	1	blde	39 weeks 1 day	22.5	no adhesions	positive
53	13760	27	2	2	blde	38 weeks 1 day	21.6	no adhesions	positive

54	13497	25	1	1	blde	38 weeks 3 days	28.2	no adhesions	positive
55	13921	27	1	1	blde	37 weeks 2 days	29	adhesions present	positive
56	14077	24	2	1	blde	37 weeks 1 day	27.2	no adhesions	positive
57	15019	23	1	1	blde	39 weeks 1 day	24.5	adhesions present	negative
58	15277	26	1	1	blde	37 weeks 2 days	23.2	no adhesions	positive
59	15410	29	2	2	blde	38 weeks 2 days	28.5	adhesions present	positive
60	15248	22	1	1	blde	37 weeks 0 day	22.3	no adhesions	positive
61	15668	26	1	1	blde	39 weeks 6 days	26.5	no adhesions	positive
62	15652	21	1	1	blde	39 weeks 0 day	21	adhesions present	negative
63	10691	25	2	2	blde	37 weeks 0 day	27.8	adhesions present	positive
64	11307	22	1	1	blde	37 weeks 6 days	22.6	no adhesions	positive
65	11613	28	1	1	blde	37 weeks 6 days	23.4	no adhesions	positive
66	14071	26	1	1	blde	39 weeks 4 days	24.8	no adhesions	positive
67	14084	29	2	2	blde	37 weeks 0 day	22.4	adhesions present	negative
68	16443	26	2	2	blde	37 weeks 1 day	23.6	adhesions present	negative
69	16507	22	1	1	blde	38 weeks 1 day	22.8	no adhesions	positive
70	16595	30	2	2	blde	38 weeks 2 days	27.1	adhesions present	positive
71	16812	25	1	1	blde	37 weeks 4 days	26.5	adhesions present	negative
72	16813	27	2	1	blde	38 weeks 0 day	22.5	no adhesions	positive
73	17007	24	1	1	blde	37 weeks 1 day	23.8	no adhesions	positive
74	16987	21	1	1	blde	37 weeks 1 day	24.5	no adhesions	positive
75	17333	29	2	2	blde	38 weeks 4 days	24.9	adhesions present	negative
76	17434	26	1	1	blde	38 weeks 2 days	22.5	adhesions present	negative
77	17428	28	2	2	blde	38 weeks 4 days	21.5	no adhesions	positive
78	17456	29	1	1	blde	39 weeks 2 days	28.6	adhesions present	positive
79	17438	24	2	2	blde	38 weeks 4 days	23.5	no adhesions	positive

80	17453	29	2	2	blde	38 weeks 1 day	27.6	adhesions present	negative
81	17918	26	1	1	blde	39 weeks 1 day	22.5	no adhesions	positive
82	18360	24	2	1	blde	37 weeks 1 day	23.5	no adhesions	positive
83	19185	27	1	1	blde	38 weeks 2 days	28	no adhesions	positive
84	19756	21	1	1	blde	40 weeks 3 days	26.4	no adhesions	negative
85	19744	24	1	1	blde	38 weeks 2 days	21	no adhesions	positive
86	20048	27	1	1	blde	37 weeks 5 days	22	no adhesions	positive
87	21617	20	1	1	blde	37 weeks 3 days	25.1	no adhesions	positive
88	15835	24	1	1	blde	39 weeks 0 day	24.8	adhesions present	negative
89	15803	23	1	1	blde	37 weeks 4 days	23.5	no adhesions	positive
90	16213	29	2	2	blde	37 weeks 1 day	21	no adhesions	positive
91	16529	25	1	1	blde	38 weeks 0 day	23.6	no adhesions	positive
92	16854	31	2	2	blde	39 weeks 0 day	26	adhesions present	negative
93	16786	26	1	1	blde	39 weeks 0 day	25.2	adhesions present	positive
94	16811	22	1	1	blde	38 weeks 0 day	24	no adhesions	positive
95	19600	28	1	1	blde	37 weeks 0 day	22.6	no adhesions	positive
96	172	26	1	1	blde	39 weeks 0 day	23.5	no adhesions	positive
97	365	25	1	1	blde	37 weeks 4 days	21.5	no adhesions	positive
98	453	21	1	1	blde	37 weeks 0 day	28	no adhesions	positive
99	864	29	1	1	blde	38 weeks 0 day	30.2	adhesions present	negative
100	674	25	1	1	blde	38 weeks 0 day	26.5	no adhesions	positive
101	40605	24	1	1	blde	37 weeks 0 day	24.2	no adhesions	positive
102	168	22	1	1	blde	39 weeks 0 day	22.5	adhesions present	negative
103	846	26	2	1	blde	39 weeks 3 days	23.5	adhesions present	negative
104	640	27	2	2	blde	37 weeks 2 days	22.1	adhesions present	positive
105	612	22	1	1	blde	38 weeks 0 day	25.6	adhesions present	negative
106	1104	29	2	2	blde	37 weeks 0 day	23.5	no adhesions	positive

107	641	32	3	2	blde	37 weeks 5 days	22.6	no adhesions	positive
108	1295	36	2	2	blde	37 weeks 0 day	28	adhesions present	negative
109	710	28	1	1	blde	39 weeks 0 day	23.6	no adhesions	positive
110	1392	25	1	1	blde	37 weeks 3 days	24.5	no adhesions	positive
111	21003	28	1	1	blde	40 weeks 0 day	24	adhesions present	negative
112	12193	24	1	1	blde	38 weeks 0 day	23.6	no adhesions	positive
113	11704	26	1	1	blde	37 weeks 0 day	25.6	adhesions present	positive
114	1393	28	1	1	blde	37 weeks 0 day	26.4	no adhesions	positive
115	612	26	1	1	blde	40 weeks 0 day	22.5	no adhesions	positive
116	714	25	2	1	blde	37 weeks 3 days	25	adhesions present	negative
117	471	21	1	1	blde	37 weeks 2 days	21.5	adhesions present	negative
118	28435	23	1	1	blde	37 weeks 1 day	23.5	no adhesions	positive
119	1056	25	1	1	blde	37 weeks 0 day	23.5	adhesions present	negative
120	415	26	1	1	blde	37 weeks 4 days	21.6	no adhesions	negative
121	9006	27	1	1	blde	37 weeks 3 days	21.5	no adhesions	positive
122	144902	29	1	1	blde	38 weeks 6 days	22.6	no adhesions	positive
123	248833	25	2	2	blde	39 weeks 1 day	24.1	no adhesions	positive
124	207504	20	1	1	blde	37 weeks 1 day	23.5	no adhesions	positive
125	199598	25	1	1	blde	38 weeks 4 days	22.5	no adhesions	positive
126	218956	31	1	1	blde	39 weeks 6 days	21.9	no adhesions	positive
127	123773	23	2	2	blde	37 weeks 3 days	22.5	adhesions present	negative
128	269728	25	2	2	blde	37 weeks 5 days	26.5	adhesions present	negative
129	269019	21	1	1	blde	37 weeks 0 day	24.5	adhesions present	positive
130	280823	22	1	1	blde	38 weeks 2 days	24.5	adhesions present	negative
131	165314	26	2	1	blde	39 weeks 3 days	22.5	no adhesions	negative
132	281789	29	1	1	blde	39 weeks 1 day	26	adhesions present	negative
133	380832	36	1	1	blde	38 weeks 4 days	23.5	no adhesions	negative

134	291119	24	1	1	blde	40 weeks 0 day	22.4	no adhesions	positive
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137	270045	31	1	1	blde	37 weeks 6 days	24	adhesions present	negative
138	370746	26	2	1	blde	39 weeks 2 days	22.1	no adhesions	positive
139	266268	30	1	1	blde	38 weeks 3 days	23.4	no adhesions	positive
140	12696	27	1	1	blde	38 weeks 0 day	21.2	adhesions present	negative
141	2897	26	1	1	blde	37 weeks 4 days	23.5	no adhesions	negative
142	14890	35	2	1	blde	38 weeks 4 days	24.5	adhesions present	negative
143	23418	24	1	1	blde	37 weeks 3 days	22.5	no adhesions	positive
144	397582	27	2	1	blde	39 weeks 5 days	24.5	no adhesions	positive
145	32094	29	1	1	blde	38 weeks 3 days	26	adhesions present	negative
146	33776	26	3	2	blde	37 weeks 3 days	25.5	adhesions present	negative
147	36317	27	2	2	blde	37 weeks 3 days	24	adhesions present	negative
148	36338	35	1	1	blde	39 weeks 3 days	24.6	no adhesions	negative
149	19385	36	2	2	blde	40 weeks 1 day	25.8	adhesions present	positive
150	6627	25	1	1	blde	38 weeks 2 days	23.5	no adhesions	positive
151	25881	24	1	1	blde	38 weeks 5 days	22.5	no adhesions	positive
152	14294	27	2	1	blde	37 weeks 2 days	25.8	adhesions present	negative
153	247169	31	2	2	blde	39 weeks 2 days	25.1	adhesions present	negative
154	48664	36	3	2	blde	37 weeks 5 days	22.5	adhesions present	negative
155	59612	29	1	1	blde	38 weeks 1 day	23.5	no adhesions	negative
156	325186	24	1	1	blde	37 weeks 2 days	22.6	no adhesions	positive
157	289869	28	2	1	blde	39 weeks 3 days	24.2	no adhesions	positive
158	41449	21	1	1	blde	38 weeks 2 days	21.3	no adhesions	positive
159	76507	28	1	1	blde	39 weeks 4 days	24	no adhesions	positive
160	282628	32	1	1	blde	37 weeks 6 days	23.5	no adhesions	positive

161	87273	36	2	2	blde	38 weeks 3 days	22.3	adhesions present	negative
162	71904	26	1	1	blde	39 weeks 3 days	24.2	no adhesions	positive
163	217278	28	1	1	blde	38 weeks 2 days	22.8	no adhesions	positive
164	338659	25	1	1	blde	39 weeks 6 days	25	no adhesions	negative
165	60829	28	1	1	blde	38 weeks 2 days	24	no adhesions	positive
166	101602	24	1	1	blde	39 weeks 3 days	23.4	no adhesions	positive
167	74912	26	1	1	blde	40 weeks 0 day	22.5	adhesions present	positive
168	42681	29	3	2	blde	38 weeks 3 days	23.8	adhesions present	negative
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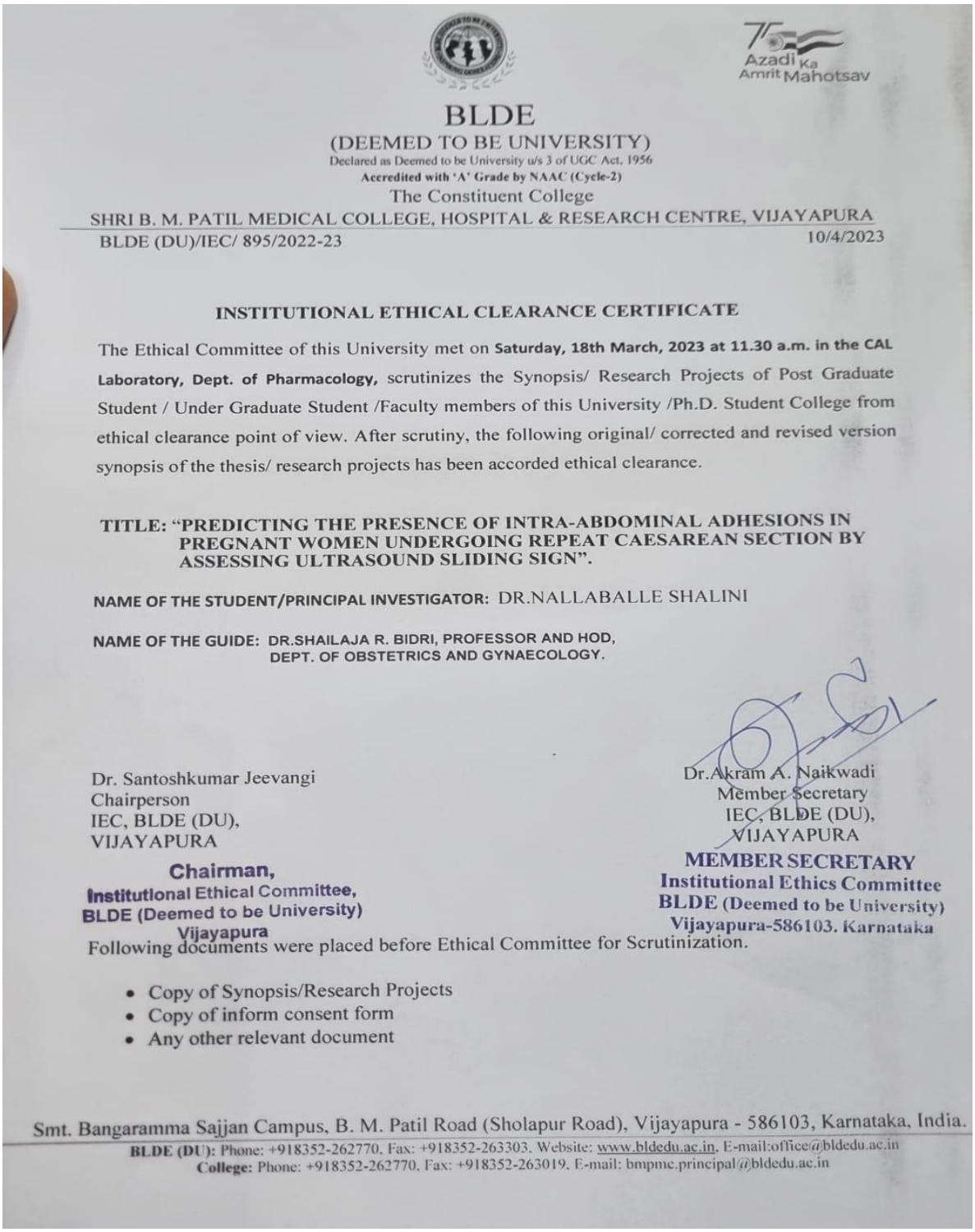
170	113346	24	1	1	blde	37 weeks 3 days	28	adhesions present	negative
171	126587	28	2	1	blde	39 weeks 3 days	23.8	no adhesions	positive
172	146482	34	1	1	blde	38 weeks 2 days	24.2	no adhesions	positive
173	120653	29	2	2	blde	39 weeks 2 days	26	adhesions present	negative
174	165006	34	2	2	blde	38 weeks 1 day	23.2	adhesions present	positive
175	132303	23	1	1	blde	37 weeks 5 days	21.5	no adhesions	positive
176	113330	29	2	2	blde	38 weeks 1 day	23.6	no adhesions	positive
177	182221	30	2	2	blde	39 weeks 3 days	24.2	adhesions present	negative
178	199485	22	1	1	blde	37 weeks 3 days	25	no adhesions	positive
179	143082	26	1	1	blde	38 weeks 1 day	22.6	no adhesions	positive
180	200551	29	2	2	blde	39 weeks 4 days	23.5	adhesions present	negative
181	201889	28	1	1	blde	38 weeks 2 days	20.5	no adhesions	positive
182	204752	31	2	2	blde	37 weeks 3 days	30.2	adhesions present	negative
183	94740	26	1	1	blde	38 weeks 5 days	24	no adhesions	positive
184	210652	25	1	1	blde	37 weeks 6 days	23.4	no adhesions	positive
185	183886	22	1	1	blde	38 weeks 2 days	22.5	no adhesions	positive
186	226404	27	1	1	blde	39 weeks 3 days	24.5	adhesions present	negative
187	232514	26	1	1	blde	37 weeks 6 days	23	no adhesions	positive

188	234037	32	2	1	blde	40 weeks 1 day	31.5	no adhesions	positive
189	90258	29	1	1	blde	38 weeks 2 days	24	no adhesions	positive
190	240203	26	2	1	blde	39 weeks 1 day	22.5	no adhesions	positive
191	246745	28	1	1	blde	39 weeks 6 days	23.1	no adhesions	positive
192	244008	32	3	2	blde	40 weeks 0 day	32	adhesions present	negative
193	118964	36	2	2	blde	37 weeks 5 days	22.5	no adhesions	positive
194	84092	31	1	1	blde	38 weeks 6 days	26.5	adhesions present	positive
195	254118	25	2	2	blde	37 weeks 1 day	21.5	adhesions present	negative
196	275191	24	2	2	blde	39 weeks 5 days	23.6	adhesions present	negative
197	277720	32	4	3	blde	38 weeks 4 days	31.5	adhesions present	positive
198	278146	29	2	1	blde	37 weeks 2 days	25	no adhesions	positive
199	170529	24	1	1	blde	38 weeks 6 days	24.6	no adhesions	positive
200	271405	23	1	1	blde	37 weeks 6 days	23.4	no adhesions	positive

ETHICAL COMMITTEE CLEARANCE



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INSTITUTIONAL ETHICAL CLEARANCE CERTIFICATE

The Ethical Committee of this University met on **Saturday, 18th March, 2023 at 11.30 a.m. in the CAL Laboratory, Dept. of Pharmacology,** scrutinizes the Synopsis/ Research Projects of Post Graduate Student / Under Graduate Student /Faculty members of this University /Ph.D. Student College from ethical clearance point of view. After scrutiny, the following original/ corrected and revised version synopsis of the thesis/ research projects has been accorded ethical clearance.

TITLE: "PREDICTING THE PRESENCE OF INTRA-ABDOMINAL ADHESIONS IN PREGNANT WOMEN UNDERGOING REPEAT CAESAREAN SECTION BY ASSESSING ULTRASOUND SLIDING SIGN".

NAME OF THE STUDENT/PRINCIPAL INVESTIGATOR: DR.NALLABALLE SHALINI

NAME OF THE GUIDE: DR.SHAILAJA R. BIDRI, PROFESSOR AND HOD, DEPT. OF OBSTETRICS AND GYNAECOLOGY.

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IEC, BLDE (DU),
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Chairman,
Institutional Ethical Committee,
BLDE (Deemed to be University)
Vijayapura

Dr.Akram A. Naikwadi
Member Secretary
IEC, BLDE (DU),
VIJAYAPURA

MEMBER SECRETARY
Institutional Ethics Committee
BLDE (Deemed to be University)
Vijayapura-586103. Karnataka

Following documents were placed before Ethical Committee for Scrutinization.

- Copy of Synopsis/Research Projects
- Copy of inform consent form
- Any other relevant document

Smt. Bangaramma Sajjan Campus, B. M. Patil Road (Sholapur Road), Vijayapura - 586103, Karnataka, India.
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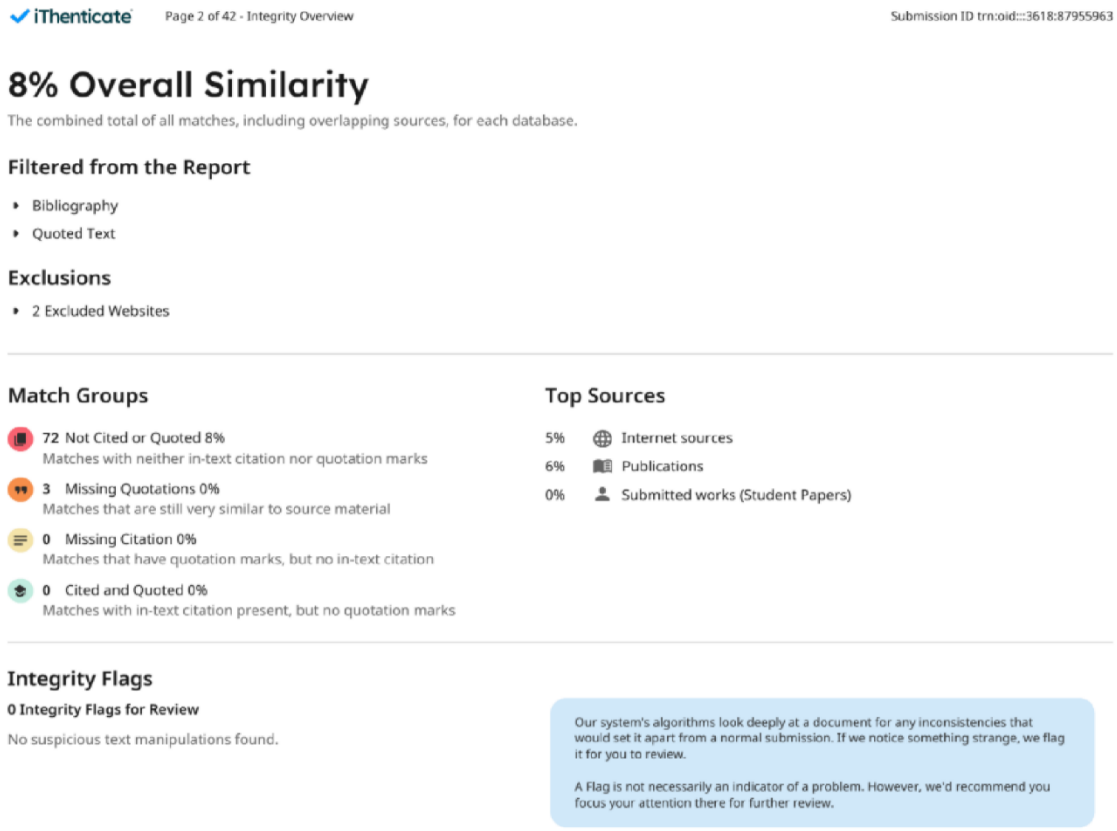
PLAGIARISM



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