A PROSPECTIVE STUDY OF COMPARING IMMEDIATE VERSUS DELAYED REMOVAL OF URINARY CATHETER FOLLOWING ELECTIVE CESAREAN DELIVERY

Dissertation submitted in

Partial fulfillment of the regulations required for the award of

M.S. DEGREE

In

OBSTETRICS & GYNAECOLOGY

THE TAMIL NADU DR. M.G.R. MEDICAL UNIVERSITY

CHENNAI

April – 2017

CERTIFICATE

This is to certify that DR. VIJAYA HARINI.V postgraduate student (2014-2017) in the department of Obstetrics & Gynaecology, PSG INSTITUTE OF MEDICAL SCIENCES AND RESEARCH, Coimbatore has done this dissertation titled "**A PROSPECTIVE STUDY OF COMPARING IMMEDIATE VERSUS DELAYED REMOVAL OF URINARY CATHETER FOLLOWING ELECTIVE CESAREAN DELIVERY"** under the direct guidance and supervision of guide Prof.Dr.Seetha Panicker in Fulfillment of the regulations laid down by the Tamilnadu Dr.M.G.R.Medical University, Chennai, for the award of M.S. degree in Obstetrics & Gynaecology.

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DECLARATION

I, Dr.VIJAYA HARINI.V Reg No.221416454 solemnly declare that this dissertation "**A PROSPECTIVE STUDY OF COMPARING IMMEDIATE VERSUS DELAYED REMOVAL OF URINARY CATHETER FOLLOWING ELECTIVE CESAREAN DELIVERY"** is a bonafide record of work done by me in the Department of OBSTETRICS AND GYNAECOLOGY, PSG Institute of Medical Sciences and Research, Coimbatore, under the guidance of **Prof. Dr.Seetha Panicker DGO, MS, DNB.** This dissertation is submitted to "The Tamilnadu Dr. M.G.R. Medical University, Chennai" in partial fulfillment of the University regulations for the award of MS Degree (Obstetrics & Gynaecology), Examination to be held in April 2017.

Place : Coimbatore

Date :

Dr. Vijaya Harini.V

ACKNOWLEDGEMENT

I wish to thank PSG HOSPITALS for having permitted me to conduct this study in this hospital.

I wish to express my sincere thanks and gratitude to my professor Dr. SEETHA PANICKER MD., DGO. DNB, Professor and HOD of Obstetrics and Gynecology, PSG Institute of Medical Science and Research for her guidance and encouragement all along in completing my study. She analyzed the progress of my work every now and then, gave suggestions and rectifications.

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To
Dr V Vijaya Harini
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Department of Obstetrics & Gynaecology
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Ref: Project No. 14/395

Date: February 16, 2015

Dear Dr Vijaya Harini,

Institutional Human Ethics Committee, PSG IMS&R reviewed and discussed your application dated 05.12.2014 to conduct the research study entitled "*A prospective study of comparing immediate versus delayed removal of urinary catheter following elective cesarean delivery*" during the IHEC review held on 19.12.2014.

The following documents were reviewed and approved:

1. Project Submission form
2. Study protocol
3. Informed consent form
4. Proforma
5. Current CVs of Principal investigator, Co-investigators
6. Budget

The following members of the Institutional Human Ethics Committee (IHEC) were present at the meeting held on 19.12.2014 at College Council Room, PSG IMS & R between 2.00 pm am and 4.30 pm:

Sl. No.	Name of the Member of IHEC	Qualification	Area of Expertise	Gender	Affiliation to the Institution Yes/No	Present at the meeting Yes/No
1	Mrs Y Ashraf	MPT	Physiotherapy	Female	Yes	Yes
2	Dr. S. Bhuvaneshwari (Member-Secretary, IHEC)	MD	Clinical Pharmacology	Female	Yes	Yes
3	Mr Gowpathy Velappan	BA., BL	Legal Advisor	Male	No	Yes
4	Mr P Karuppuchamy	M Phil in [illegible]	Social Scientist	Male	Yes	Yes
5	Mrs G Malarvizhi	M[illegible]	Nursing	Female	Yes	Yes
6	Mr. R. Nandakumar (Vice-Chairperson, IHEC)	BA.,	Legal Expert	Male	No	Yes
7	Dr. G. Rajendiran	D[illegible]	Clinician (Cardiology)	Male	Yes	Yes

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8	Dr. V. Ramamurthy	Ph D	Biotechnology	Male	Yes	No
9	Mrs P Rama	M Pharm	Non-Medical (Pharmacy)	Female	Yes	Yes
10	Dr. P. Sathyan (Chairperson, IHEC)	DO, DNB	Clinician (Ophthalmology)	Male	No	Yes
11	Dr. Seetha Panicker	MD	Clinician (Obstetrics & Gyanaecology)	Female	Yes	Yes
12	Dr. S. Shanthakumari	MD	Pathology, Ethicist	Female	Yes	No
13	Dr. Sudha Ramalingam (Alternate Member-Secretary, IHEC)	MD	Public Health, Epidemiology, Genetics, Ethicist	Female	Yes	No
14	Mrs. Swasthika Soundararaj	MBA	Lay person	Female	No	Yes
15	Dr. D. Vijaya	M Sc, Ph D	Basic Medical Sciences (Biochemistry)	Female	Yes	Yes

The study is approved in its presented form. The decision was arrived at through consensus. Neither PI nor any of proposed study team members were present during the decision making of the IHEC. The IHEC functions in accordance with the ICH-GCP/ICMR/Schedule Y guidelines. The approval is valid until one year from the date of sanction. You may make a written request for renewal / extension of the validity, along with the submission of status report as decided by the IHEC.

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1. IHEC should be informed of the date of initiation of the study
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3. PI and other investigators should co-operate fully with IHEC, who will monitor the trial from time to time
4. At the time of PI's retirement/intention to leave the institute, study responsibility should be transferred to a colleague after obtaining clearance from HOD, Status report, including accounts details should be submitted to IHEC and extramural sponsors
5. In case of any new information or any SAE, which could affect any study, must be informed to IHEC and sponsors. The PI should report SAEs occurred for IHEC approved studies within 7 days of the occurrence of the SAE. If the SAE is 'Death', the IHEC Secretariat will receive the SAE reporting form within 24 hours of the occurrence
6. In the event of any protocol amendments, IHEC must be informed and the amendments should be highlighted in clear terms as follows:
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    b. Alteration in the budgetary status should be clearly indicated and the revised budget form should be submitted
    c. If the amendments require a change in the consent form, the copy of revised Consent Form should be submitted to Ethics Committee for approval
    d. If the amendment demands a re-look at the toxicity or side effects to patients, the same should be documented
    e. If there are any amendments in the trial design, these must be incorporated in the protocol, and other study documents. These revised documents should be submitted for approval of the IHEC and only then can they be implemented

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f. Any deviation-Violation/waiver in the protocol must be informed to the IHEC within the stipulated period for review

7. Final report along with summary of findings and presentations/publications if any on closure of the study should be submitted to IHEC

Kindly note this approval is subject to ratification in the forthcoming full board review meeting of the IHEC.

Thanking You,

Yours Sincerely,

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INTRODUCTION :

Cesarean delivery rates have risen steadily. Maternal mortality associated cesarean delivery is rare because of improved anesthetic care, use of antibiotics prior to surgery to prevent infections. But there is some preventable morbidity still prevalent like urinary tract infections and voiding difficulties. Interventional strategies should be intensified to reduce the risk of these morbidities to prevent from postoperative complication.

Complications of cesarean section include bowel and bladder injury, blood loss. The use of catheter during cesarean section is to view bladder flap easily, to avoid bladder injury and postoperative urinary retention.

One of the preoperative preparations for cesarean delivery is the placement of an indwelling Foley urethral catheter.

According to each person the duration of catheter use varies postoperatively and standard evidence for duration of catheter is not available. Even though there are lots of studies and policies, CAUTI remains a significant problem in many of the tertiary centers. Further larger studies are needed to identify the risk factors, to reduce the rate of CAUTI.

There were several studies suggesting that routine use of urethral catheter in all cesarean sections is not necessary. Early catheter removal is practiced to reduce the incidence of CAUTI, as well as improves other parameters like early ambulation, early first voiding time, shortens hospital stay and decrease the patients discomfort after surgery.

AIM

To find out whether immediate removal of urinary catheter can be usefully implemented following elective cesarean section in our population.

OBJECTIVES

PRIMARY OBJECTIVE:

To compare the outcomes of immediate and delayed urethral catheter removal following elective cesarean section. The measures are

1. To compare the occurrence of urinary tract infection.

2. To compare recatheterisation

3. To compare first voiding time

4. To compare ambulation

SECONDARY OUTCOMES:

Patient’s discomfort

REVIEW OF LITERATURE

CESAREAN DELIVERY defines the birth of a fetus via laparotomy and then hysterectomy. The word cesarean is derived from the Latin word *caedare*, which means **to cut**.

HISTORY OVERVIEW:

Cesarean section dates from antiquity, since the reign of Numa Pompilius in Rome (715-672 BC).It is usually employed in the hope of obtaining a living child when the mother was dead or so near to death that maternal survival was not a practical consideration.The term cesarean section was first used by **James Guillimeau.** The first cesarean delivery was documented in 1020 AD.[1]

The Italian obstetrician Porro in 1876 devised the technique of amputation of the uterus at the internal os and fixation of the cervical stumps in the lower end of the abdominal wound.

In 1882, the German gynecologist Max Sanger introduced classical cesarean and advocated closure of the uterine incision using gut sutures which reduced the risk of hemorrhage and need for cesarean hysterectomy. He has rightly called as **the father of modern cesarean section.**[2]

In 1821, a disastrous attempt at extra peritoneal cesarean section was made by Ritgen, in which the patient died although the child was born alive.

At the beginning of 20th century, Frank in 1907 developed an extra peritoneal operation for cases in which uterus was infected. Kronig in 1912 modified the technique and suggested that success does not lie in the extra peritoneal approach and introduced the transperitoneal lower segment cesarean section.

It was Munro Kerr in 1926 that 1st described the lower segment transverse uterine incision and popularized the procedure (3)

INCIDENCE OF CESAREAN SECTION:

The incidence of cesarean section is rising in most parts of the world.

Cesarean rates were higher in women with previous cesarean (70.8%) and with breech presentation (89.8%) (4).

There are many reasons for the increase in cesarean section rates over the last 40years including differences in organization and management of labor, higher expectations, poor outcomes, medico- legal cases and ultimately more recently maternal choice, which in most cases driven by a dissatisfaction of the previous care in labor.

Epidemiological changes have also taken place with an older age group of women giving birth, many with higher body mass indices and some co-existing medical conditions.

Attempts have made to standardize processes at institutional, local, regional, national and international levels[6] but have had only limited success.[7]

There is little doubt that cesarean section rates will vary in different institutions nationally and internationally and do not necessarily relate to poor quality care, particularly if cesarean rates were the only outcomes that were analysed.

Study by Potter JE, Berquo E, Perpetuo IH et al states that incidence also varies immensely between public and private institutions, cesarean section rates up to 70% reported from private set-ups.[5]

Recently two studies done by Sibanda T, Fox R, Draycott TJ,et al states that women and professionals are interested in safety and quality; safety and quality is related to outcome and outcome guides processes. In theory at least, it should be simpler to standardize measurement of outcomes and events [8, 9] rather than processes.

Advances in CS techniques, anesthesia, antibiotics and transfusion have transformed a CS from a procedure most commonly carried out as a last resort in the past to a relatively safe way of delivering a baby.[10, 11]

The reasons for continued increase in the cesarean rates are not completely understood, but some explanations include the following:

1. Women are having fewer children, thus a greater percentage of births are among nulliparous, who are at increased risk for cesarean section.
2. The average maternal age is rising, and older women, especially nulliparous, are at increased risk for cesarean delivery.
3. The use of electronic fetal monitoring is widespread. This technique is associated with an increased cesarean delivery rate compared with intermittent fetal heart rate auscultation. Cesarean delivery performed primarily for "fetal distress" comprises only a minority of all such procedures.

In many more cases, concern for an abnormal or "nonreassuring" fetal heart rate tracing lowers the threshold for cesarean delivery

4. Most fetuses presenting as breech are now delivered by cesarean. Fetal injury as well as the infrequency, with which a breech presentation meets criteria for a labor trial, almost guarantees that most will be delivered by cesarean.
5. The frequency of forceps and vacuum deliveries has decreased.
6. Rates of labor induction continue to rise, and induced labor, especially among nulliparous, increase the cesarean delivery rate.
7. The prevalence of obesity has risen dramatically, and obesity increases the cesarean delivery risk

8. Rates of cesarean delivery for women with preeclampsia have increased, whereas labor induction rates for these patients have declined.
9. Vaginal birth after cesarean – VBAC – has decreased from 28 percent to 8 percent in 2007.
10. Elective cesarean deliveries are increasingly being performed for variety of indications including concern for pelvic floor injury associated with vaginal birth, medically indicated preterm birth, reduction of fetal injury risk, and for maternal request.
11. Malpractice litigation related to fetal injury during spontaneous or operative vaginal delivery continues to contribute significantly to the present cesarean delivery rate.

Cesarean section is the delivery of the fetus via laparotomy and hysterectomy.(removal of fetus from uterus by abdominal and uterine incisions).Cesarean sections have been classified in many ways .One common method is by their urgency 1) planned or elective 2) Emergency section.

ELECTIVE INDICATIONS FOR CESAREAN SECTION:

I. MATERNAL:
1) Contracted pelvis
2) Pelvic soft tissue tumors – cervical atresia
3) Bony deformities affecting the pelvis
4) Vertebral column deformities – kyphosis ,scoliosis
5) Previously poor obstetric outcome
6) Previously traumatic delivery
7) Previously infertility
8) Maternal request

II. FETAL
1) Malpresentations
- Breech
- Transverse lie
- Unstable lie persistent at term
- First twin with malpresentation
2) Fetal macrosomia
3) HIV positive mother

III. PLACENTAL
1) Major degrees of placenta praevia
2) Vasa praevia

ABSOLUTE INDICATIONS:
1) Pelvic contraction of moderate to severe degree
2) Fibroid in the lower uterine segment or cervix
3) Ovarian cyst incarcerated in the pelvis
4) Cancer cervix
5) Pelvic bone tumors
6) Cervix or vaginal strictures that is indivisible or undilatable.

ADVANTAGES OF CESAREAN DELIVERY:

- Reduced incidence of perineal pain
- Reduced incidence of urinary incontinence
- Reduced incidence of uterovaginal prolapse

COMPLICATIONS FOLLOWING CESAREAN SECTION:

- Abdominal pain
- Injury to bowel and bladder
- Increased risk of rupture uterus and maternal death
- Neonatal respiratory morbidity
- Hysterectomy
- Thromboembolic disease
- Increased duration of hospital stay
- Ante partum or intrapartum intrauterine deaths in future pregnancies
- Patients with a previous history of cesarean delivery are more prone to develop complications like placenta previa and adherent placenta during future pregnancies.

Patient choice in cesarean delivery:

Women have taken a more active role in their obstetrical care, some request elective cesarean delivery. Data regarding the true incidence of cesarean delivery on maternal request (CDMR) are limited.

Reasons for requested cesarean delivery include

1) To avoid any risk to the fetus
2) Because of delivery pain
3) Protection of pelvic floor support and convenience. Thus the debate surrounding CDMR includes its medical rationale from both a maternal and fetal neonatal standpoint, the concept of informed free choice by the women, and the autonomy of the physical in offering this choice.

National Institute of Health (2006) held a state – of – the – science conference on Cesarean Delivery on Maternal Request. It is noteworthy that most of the maternal and neonatal outcomes examined had insufficient data to permit such recommendations.[69]

American college of Obstetrics and Gynecologist (2013) concluded that data comparing planned cesarean and planned normal vaginal delivery were minimal and thus should be interpreted cautiously.[70]

The panel was able to draw a few conclusions from existing information. Cesarean delivery on maternal request should not be performed before 39 weeks gestation unless there is an evidence of fetal lung maturity.

Finally it should not be motivated by the unavailability of effective pain management.

PREVIOUS CESAREAN SECTION:

Pregnant women with a previous section may be offered either planned VBAC or ERCS (Elective repeat cesarean section).VBAC stands for vaginal birth after cesarean, which refers to vaginal birth following one or more cesarean births.

.**Criteria for vaginal birth after cesarean section:**

1) Previous history of one uncomplicated lower segment transverse cesarean section
2) Low transverse incision on the uterus
3) Pelvis is adequate
4) Patient is willing for vaginal birth after cesarean section
5) Facilities for continuous monitoring of fetal heart rate during labor
6) No other contraindication for CS
7) Previous history of vaginal birth particularly VBAC
8) VBAC should be undertaken in settings where facilities for emergency CS are present.

Advantages of VBAC:

- Prevention of surgery related complications including deaths
- Prevention of blood loss
- Prevention of infection
- Prevention of injury to various organs including bowel, urinary bladder, etc.
- Prevention of thromboembolism.
- Breast feeding is generally easier after a vaginal birth
- Vaginal birth is usually associated with reduced health care costs in comparison to cesarean births.
- VBAC is also associated with lower fetal mortality and morbidity in comparison to elective repeat cesareans.

Contraindications for VBAC:

Previous history of uterine rupture
Previous history of J- shaped or an inverted T- shaped uterine incision
Previous history of high vertical classical cesarean section(CS),with uterine incision involving almost the whole length of the uterine corpus
History of previous three or lower segment uterine scars in the past
Presence of an obstetric indication for cesarean including cephalopelvic disproportion, placenta previa, malpresentation, etc
Limited resource setting, where it might not be possible to continuously monitor the patient
Patient refuses to give consent for VBAC.

Risk for VBAC:

- If VBAC turns out to be unsuccessful, an emergency CS may be required
- There is a risk of scar dehiscence and rupture
- Increased risk of maternal and perinatal mortality in case of scar rupture
- Failure of vaginal trail may end up in requirement for an emergency CS. It may also cause uterine rupture or pelvic floor dysfunction.

Advantages conferred by vaginal birth after cesarean section:

- VBAC helps in avoiding the potential future maternal consequences related to multiple cesarean deliveries
- Helps in avoidance of major abdominal surgery, which is associated with lower rates of complications such as hemorrhage, infection, etc. and a shorter recovery period.
- RCOG has reported that attempting VBAC helps in reducing the risk of the baby having respiratory problems after birth (risk of 2-3% with planned VBAC and 3-4% with ERCS).

Factors associated with a reduced success rate of vaginal birth after cesarean VBAC:

VBAC at or after 41 weeks of gestation
Birth weight greater than 4000g
No epidural anesthesia

Previous preterm cesarean births
Cervical dilatation of less than 4cm at the time of admission
History of previous cesarean birth less than 2 years back
Advanced maternal age
Non white ethnicity
Short stature and a male infant

INDICATIONS NOT REQUIRING CESAREAN SECTION:

Preterm birth

Twin pregnancy with first twin having a cephalic presentation

Intrauterine growth restriction

Infection with hepatitis B virus

Infection with hepatitis C virus

Recurrent genital herpes in the third trimester.

FACTORS REDUCING THE LIKELIHOOD OF CESAREAN BIRTH

- Continuous support during labor from women with or without prior training
- Induction of labor beyond 41 weeks

- Use of partogram with a 4 hour action line to monitor progress of labor in women with spontaneous labor having an uncomplicated singleton pregnancy
- Involvement of consultant obstetricians in the decision making process for cesarean delivery
- In case of abnormal heart rate pattern, use of fetal blood sampling for detecting the cases of suspected fetal acidosis.

The most important complication associated with CS is the possibility of scar rupture during future pregnancies, especially if given trial for vaginal delivery.

Symptoms of impeding scar rupture during the labor include the following:

- Dull suprapubic pain or severe abdominal pain, especially if persisting in between the uterine contractions
- Slight vaginal bleeding
- Bladder tenesmus or frequent desire to pass urine
- Unexplained maternal tachycardia
- Maternal hypotension or shock
- Abnormal FHR pattern
- Scar tenderness
- Interruption of previously efficient uterine contractions

  On vaginal examination, there may be a failure of normal descent of presenting part and the presenting part remaining high up. There also sudden loss of station of the presenting part.

  The diagnosis of scar rupture is ultimately confirmed at the time of emergency cesarean delivery or postpartum laparotomy.

One of the preoperative preparations for cesarean delivery is the placement of an indwelling Foley urethral catheter.

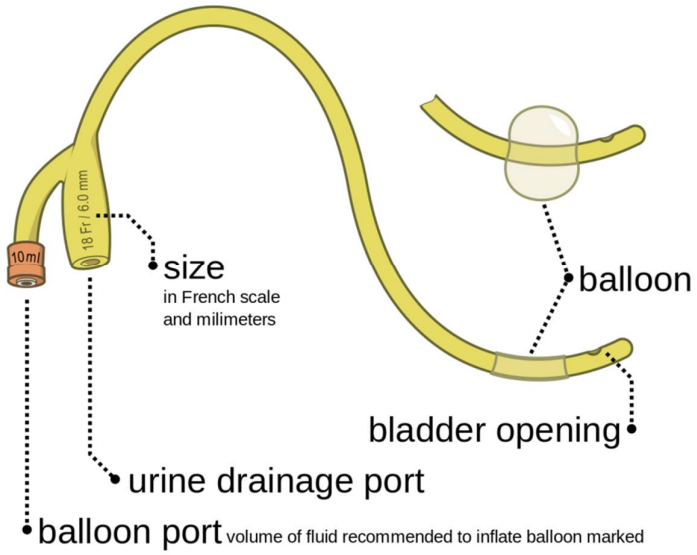
FOLEY CATHETER:

Named after its designer, **(Frederic Foley)** is a flexible tube passed through urethra and into the bladder to drain urine. It is the most common type of indwelling urinary catheter. The tube of a Foley catheter has two separated channels, or lumens, running down its length.

One lumen – opens at both ends and drains into collection bag.

Other lumen – valve on the outside and connects to a balloon at the tip.

The balloon is inflated with sterile water when it lies inside the bladder to stop it from slipping out. Foley catheters are commonly made from **silicone rubber.**



Reasons for catheterization::

1) To permit urinary drainage in patients with neurological conditions which cause bladder dysfunction
2) To manage urinary incontinence inpatients lacking cognitive function
3) To minimize skin breakdown and pressure ulcers in paralyzed, comatose or terminally ill patients;
4) To irrigate the bladder
5) To administer chemotherapy
6) To aid in urological surgery, other surgery or other contiguous structures.
7) To obtain accurate measurements of urinary output in critically ill or postoperative patients
8) To undergo urodynamic studies.

Draining the bladder is performed by inserting the Foley catheter into the urethra or crating artificial track i.e. suprapubic catheterization.

The female urethra is short, being 40mm in length, tubular structure that has the sole purpose of conducting urine from the bladder to the outside of the body. It develops from the endoderm and the surrounding splanchnic mesoderm of the urogenital sinus. At 7 weeks gestation, the cloaca divides into the urogenital sinus and the rectum with the development the urorectal septum. The female urethra is typically developed by the 12^{th} gestational week.

The developed urethra is a 4cm tubular structure that begins at the bladder neck and terminates at the vaginal vestibule. It is supplied by spongy cylinder and is designed to provide continence.

Foley catheter is expressed in French i.e. Fr or FG which is the circumference in mm. smallest catheter - 12-16 Fr

Larger catheter -18 Fr.

URINARY TRACT INFECTIONS IN PREGNANCY:

UTI are the most common bacterial infections encountered during pregnancy. Beginning from 6^{th} week and peak during 22-24^{th} weeks of pregnancy women develop ureteric dilatation, which remains until delivery.

Increased bladder volume and decreased bladder tone, along decreased urethral tone, contribute to increased urinary stasis and ureterovesical reflux

Causative organism:

Escherichia coli – 80-90% - originate from fecal flora that colonizes the periurethral area. (Ascending infection).

Klebsiella, Enterobacter, Proteus species – most remaining cases.

Enterococcus faecalis and group B streptococcus – gram positive clinically important pathogens.

Staphylococcus saprophyticus, - community acquired organism-persistent or recurrent.

Chlamydia infections – 30% nonbacterial infections.

PATHOGENESIS:

Approximately 90% of Escherichia coli strains that cause nonobstructive pyelonephritis have adhesins such as P- and S- fimbriae. These are cell surface protein structures that enhance bacterial adherence and thereby, virulence .These adhesins promote binding to vaginal and uroepithelial cells through expression of the Pap gene that encodes the P- fimbriae tip and by production of toxins and other virulence factors.

UTI has three principal presentations:

1) Asymptomatic bacteriuria

2) Acute cystitis

3) Pyelonephritis

ASYMPTOMATIC BACTERIURIA:

Refers to actively multiplying bacteria within urinary tract in women who have no symptoms.

Guito VT in a Cochrane review states that the prevalence of asymptomatic bacteriuria in pregnant women is 5-10%.[12]

Colony forming units per ml of urine.[13] If asymptomatic bacteriuria is not treated, about 25-30% of infected women will subsequently acute symptomatic infection during pregnancy with increased maternal morbidity and mortality.

Routine urine testing for bacteriuria is recommended early in pregnancy at the first antenatal visit.[15]

A midstream, clean catch urine specimen should be tested to avoid the possibility of cross – contamination from urethra and vagina. The presence of more than one organism in culture usually indicates contaminated specimen. The specimen should be sent as soon as possible. It should be refrigerated at 4degree C, if it cannot be transported.

DIPSTICK ANALYSIS:

COMPONENTS OF THE URINE DIPSTICK:

TEST	**NORMAL**	**POSITIVE RESULTS INDICATES**
LEUKOCYTES	Negative	**Infection ,Allergy**
NITRITES	Negative	**Gram – Negative Bacteria**
PROTEIN	Negative	**Renal inflammation, Allergies**
GLUCOSE	Negative	**Glucose spill - Diabetes, Allergy**
KETONES*	Negative	**Energy from fats, not CHO's**
UROBILINOGEN	Negative	**Compromised conjugation of bile**
BILIRUBIN	Negative	**Hemoglobin Destruction**
BLOOD	Negative	**Infection, Hypertension, Menses**
HEMOGLOBIN	Negative	**Cell damage – oxidation, Allergy**

***The presence of ketones in urine indicates that body is utilizing fat as fuel and may also be indicative of abnormal carbohydrate metabolism.**

LEUKOCYTE ESTERASE:

Leukocyte esterase refers to enzymatic remnant of the white blood cells. It is predominantly found in granules of the azurophilic neutrophil.These granules possess proteins exhibit esterolytic activity. This reacts with an impregnated reagent to produce a positive result of blue color. Since the neutrophils are labile, leukocyte esterase denotes enzymatic remnants of cells which are not visible microscopically.

A positive leukocyte esterase thus denotes presence of significant number of neutrophils – either intact or lyses. Leukocyte esterase catalyses hydrolysis reaction to produce respective alcohols and acid components.

FALSE NEGATIVE RESULTS:

1. Altered specific gravity, protein, glucose

2. Boric acid

3. Antibiotics like tetracycline, cephalexin, cephalothin

4. High ascorbic acid content.

FALSE POSTIVE RESULTS:

1. contaminated urine with vaginal secretions

2. An alternate for cellular sources of esterase

3. In the presence of formalin and oxidizing agents.

Nitrites:

Principle: Reduce nitrites - nitrates

Media and Reagents:

A. Nitrate Broth

Beef extract = 3g

Peptone = 5g

Potassium nitrate = 1g

Distilled water = 1L

B. Reagent A

Alpha – Naphthylamide = 5g

Acetic acid (5N), 30% = 1L

C. Reagent B

Sulfanilic acid =8g

Acetic acid = 1L

Gram negative bacteria like E.coli reduce nitrates – nitrites.

Atleast a minimum duration of 4 hours of urinary stasis is required for the action of bacteria to breakdown nitrates.

False positive results may occur if there is delay in testing the sample or in case of long standing sample.

Dipsticks measuring leukocyte esterase and nitrites have low sensitivity for screening for asymptomatic bacteriuria during pregnancy.[16]

URINE CULTURE:

Urine culture has been the gold standard. The laboratory must ensure that an appropriate, because a urine samples may be contaminated with the anterior urethral flora. The specimen must be processed as soon as receipt in the laboratory to avoid overgrowth of this flora. In case of any delay, sample may be refrigerated at 4-8◦c. Do not freeze it.

The drawbacks are the time lag (results available after 24 to 74hours), even some organism takes even longer time to grow.

ADVANTAGES:

1) Urine samples sent for culture and sensitivity to detect presence of pathogens that cause Urinary tract infections and determination of antibiotic sensitivities.

2) Urine culture sensitivity is the choice of treatment for UTI

3) It also helps whether treatment for UTI worked.

CULTURE MEDIA:

The samples are inoculated on differential media such as MacConkey and colonies suspected of being a pathogen are selected and processed. Common pathogens include Escherichia coli, Enterococcus faecalis, Proteus spp., Klebsiella pneumonia, Pseudomonas aeruginosa. The samples are also

inoculated on an enriched media such as Blood agar, for selection of Candida spp / Staphylococcal spp.

Non pathogenic micro flora of the perineum will not be identified and reported. These include – diphtherias and Bacillus spp.

Urine samples processed for culture and sensitivity are

1. Midstream clean – catch urine.
2. Urine from patient with an indwelling catheter
3. Urine obtained after using a straight in and out catheter
4. Suprapubic / cystoscopic aspirates.

Samples are considered unsuitable for culture if

1. Unrefrigerated urine >2hrs old
2. 24 hours urine sample for bacterial culture
3. Refrigerated urine sample > 24hours
4. Foleys catheter tip and urine and urine from the bag of catheterized patient.
5. Urine for anaerobic culture (only suprapubic aspirates accepted).
6. Improper labeling of sample or no requisition slip.
7. Sample in an unsterile container.

MEDIA: BA, MC, MHA ;inoculation loop 2mm size delivering 0.005 ml of urine slides, cover slips, flame, inoculation hood, sterile saline antibiotics discs, Vitek 2 cards ,McFarland standard, PW tube, Biochemical sets and reagents, Incubator, discarding jar.

All specimen inoculations are processed in a biosafety cabinet class II 2A.

DAY 1:

Macroscopic appearance of urine (turbid, clear, and bloody) is noted in the register.

In case of delay in processing store the specimen at 4◦c.

Uncentrifuged urine is processed for both microscopy and culture. Urine is to be centrifuged and deposit used only for following requests:

1. Microscopically observe ova of schistosoma haematobium or
2. For culture of salmonella from urine.

Microscopy:

1. **Wet preparation:** Mix the urine sample well by swirling. Take a loopful of urine, and place on a clean, grease-free slide. Place a cover slip on this avoiding formation of bubbles. Observe under 100X (low power field) and 400X (high power field).

Count number of pus cells, RBCs, epithelial cells/field. Pyuria is >3 cells/high power field.[54]

Note the presence or absence of bacteria.

Yeast like cells, Trophozoites of Trichomonas vaginalis and ova of schistosoma haematobium may also be observed.

GRAM STAINING:

Gram staining is not routinely done. This may be done if a specific request for the same is received.

Mix the urine sample well by swirling, Take a loopful of urine, Smear on a clean grease free labeled glass slide, Air dry, heat fix, Perform Gram's stain – observe under 1000X (oif –oil immersion field).

Record the number of pus cells, epithelial cells and the Gram reaction & morphology of the organism / Oil immersion field, correlates to 1,00,000 colonies or more by culture. One bacteria in gram stain = $>10^5$ CFU in culture.

CULTURE:

1. Media used: 5% sheep blood agar and MacConkey agar.

2. Mix the urine thoroughly by swirling with the lid closed

3. Loop (2mm) delivering 0.005ml of urine is used for culture. Dip the loop vertically into the urine, just enough to cover the loop. Ensure that a film of urine fills the loop with no bubbles to alter the calibrated volume.

4. Half plate of medium is used per sample. Loopful of urine is spread over the surface agar plate as shown below. The loop is not reheated in between streaks on the same plate.

Number of colonies	Report & Interpretation	Action taken
$>10^5$ colony forming unit(cfu/ml) of Gram negative bacilli (GNB) or $>10^4$ Gram positive cocci(GPC) or Candida spp	Significant bacteriuria /candiduria	Proceed with identification and antibiotic susceptibility testing. Report available on Day 3, with antibiotic sensitivity report.
10^3 to 10^4 cfu/ml of GPC, Candida spp	Significant bacteriuria/ candiduria	Proceed with identification and antibiotic susceptibility testing. Report available on Day 3, with antibiotic sensitivity report.
	2 morphotypes of isolates	
10^5 colony forming unit/ml (cfu/ml) of Gram negative bacilli (GNB) or 10^4 Gram positive cocci (GPC) or Candida spp. with Pyuria.	Significant bacteriuria	Proceed with identification and antibiotic susceptibility testing for each isolate. Report available on Day 3, with antibiotic susceptibility.
>/= 3 morphotypes	Mixed urethral flora. Suggest repeat MSU sample to confirm.	To be dealt on a case to case basis.
No colonies	Urine sterile after 24 hours of incubation.	Report sent on day 2*

Mid stream urine:

***In case slow growing pathogens like Candida spp. or if inhibition by antibacterial is suspected, incubate for further 24 hours.**

CLEAN – CATCH MIDSTREAM URINE COLLECTION:

This method helps protect the urine sample from germs that are normally found on vagina. The first urine of the day is preferred because bacterial levels will be higher.

- Wash your hands before collecting the urine.
- Women should spread open the folds of skin around her vagina with one hand, then use her other hand to clean the area around her vagina and urethra thoroughly. She should wipe the area from front to back to avoid spreading bacteria to the vagina that is normally found around the anus.

RESULTS:

A urine culture is a test to detect and identify organisms (usually bacteria) that may cause UTI.

Normal: No bacteria or other organisms grow in the culture. The culture result is negative

Abnormal: organisms grow in the culture. The result is positive.

If more than one organism is grown in the culture usually it is a contaminated sample.

What affects the test?

Taking antibiotics or just finished taking them Taking diuretics. They may dilute your urine and reduce the number of bacteria in the sample.

Catheterized patient

Number of colonies	Report &Interpretation	Action taken
Up to 3 morphotypes may be processed. Decide on case to case basis		
$>10^2$ colony forming unit/ml (cfu/ml) of Gram negative bacilli (GNB) or Gram negative cocci (GPC) or Candida spp.	Significant bacteriuria	Proceed with identification and antibiotic susceptibility testing each isolate. Report available on Day 3, with antibiotic sensitivity report.

Suprapubic aspirate

Number of colonies	Report & Interpretation	Action taken
$>10^2$ colony forming unit/ml (cfu/ml) of Gram negative bacilli (GNB) or Gram positive cocci (GPC) or Candida spp.(any number).	Significant bacteriuria	Do antibiotic susceptibility testing for each isolate. Report available on Day, with antibiotic sensitivity report.

Biochemical Identification and Antibiotic Susceptibility Testing:

Antibiotic susceptibility testing for Enterobacteriaeceae / Pseudomonas spp / Enterococcus spp / Staphylococcus spp / as appropriate with biochemical tests for identification.

Day 3: Report issued with identification, colony counts and AST. In case the isolate requires further biochemical testing, interim report with antibiotic susceptibility is issued. Final report is issued at a later date.

Samples after examination are kept in the refrigerator at 4◦c till the report is dispatched. After dispatch of all the results pertaining to the sample, the sample along with the container is sent for autoclaving and disposal according to the biochemical waste management norms. The reported bacterial isolate (in a test-tube – TSI / peptone water) is stored in the refrigerator for a week. If any additional information, such as antibiotic susceptibility results for an additional antibiotic is required, should inform with a week (7 days after dispatch for that bacterial isolate).

Media:

1. **BLOOD AGAR:**

   INGREDIENTS:

   Peptone – 1gm

   Sodium chloride – 0.5gm

   Beef extract – 0.3gm

   Agar – 1.5gms

Distilled water – 1000ml.

Mix all the ingredients and heat to dissolve adjust the ph 7.5-7.6 sterilize by autoclaving media should be cooled to about 45-50◦c before blood is added. Add sterile sheep blood. Mix well and pour about 20ml of blood agar in each Petri dish. Human blood is not recommended for preparation of blood agar.

Use: As an enriched medium and a differential medium for hemolytic organisms. Most common pathogens grow on it.

Blood Agar Plate

CHOCOLATE AGAR:

Chocolate agar is heated blood agar

Sterile sheep blood = 7ml

Nutrient agar = 100ml

Melt the Nutrient agar when the temperature is about 45-50◦c add the blood and mix well. After the addition of blood, heat in a water bath slowly, bringing up the temperature to 75◦c with constant agitation. Special care should be taken to avoid fluctuation in the temperature .Heating is continued till the blood changes to chocolate colour. The colour is very critical. Remove from the water bath. Cool to about 50◦c and pour 20ml into each plate with sterile precautions. Special care must be taken to avoid air bubbles.

Use: This is an enriched medium used for the cultivation of pathogenic Neisseria and H.influenza.

Uninoculated chocolate agar plate

MACCONKEY HIMEDIA:

Peptic digest of animal tissue = 20.00gms

Lactose = 5gms

Sodium taurocholate = 0.04gms

Neutral red = 20gms

Agar = 0.2

Ph = 7.4+

Suspended 55.0 grams in 1000ml distilled water heat to boiling to dissolve the medium completely. Sterilize by autoclaving at 15lbs pressure (121◦c) for 15 minutes.

Use: For differentiation of enteric bacteria. The omission of sodium chloride prevents the spreading of Proteus colonies.

MacConkey Agar Plate

MUELLER HINTON AGAR HIMEDIA:

INGREDIENTS:

Casein and hydrolysate = 17.50gms

Beef heart infusion = 2.00gms

Starch soluble = 1.50gms

Agar = 17.00gms

Distill water = 1000ml

Ph = 7.3^{+}

Directions: Suspend 38.0 grams in 1000ml distilled water. Mix well and boil to dissolve the medium completely. Sterilized by autoclaving at 15lbs pressure (121°c) for 15 minutes.

Use: Standard medium for antimicrobial susceptibility testing.

Mueller Hinton Agar Plate

TREATMENT:

Because of the dangers of maternal and fetal complications, acute care should focus on identifying and treating symptomatic and asymptomatic bacteriuria, along with ensuring that an alternate process is not the cause of the symptoms.

Pregnant women should be treated when bacteriuria is diagnosed. The choice of the antibiotic should be guided by antimicrobial susceptibility testing whenever possible. If not, the most common infecting organisms and sensitive antibiotics should be considered.

Nitrofurantoin seems to be the drug of choice for treatment of asymptomatic bacteriuria in pregnancy [17]

Empirical oral treatment for 10 days with nitrofurantoin macro crystals, 100 mg at bedtime, is usually effective.

Lumbiganon and associates in 2009 reported satisfactory results with a 7- day oral course of nitrofurantoin, 100mg given twice daily. It is preferable to use a 7 – day regimen of antibiotics rather than short courses of during pregnancy [18]

Single dose – antimicrobial therapy has also been used with success for bacteriuria. The important caveat is that, regardless of the regimen given, the recurrence rate is approximately 30%.This may indicate covert upper tract infection and the need for longer therapy.

Ciprofloxacin, ceftriaxone and augmentin have been found to be the most effective antibiotics in urinary isolates.[19]

Schneeberger in 2012 states that periodic surveillance is necessary to prevent recurrent urinary infections.

Lucas in his study states that recurrent bacteriuria we have had success with nitrofurantoin, 100mg orally at bed time for 21 days.[20, 21]

Fosfomycin, a phosphonic acid derivative, is useful in the treatment of uncomplicated UTI's caused by susceptible strains of E.coli and Enterococcus species. Fosfomycin is a US Food and Drug Administration (FDA) category B agent in pregnancy.

ACUTE CYSTITIS:

It is characterized by dysuria, urgency and frequency without evidence of systemic illness. Acute cystitis occurs in approximately 1% of pregnancies and may develop without antecedent asymptomatic bacteriuria.

Usually there is Pyuria as well as hematuria. Microscopic hematuria is common. Although cystitis is usually uncomplicated, upper urinary tract may become involved with ascending infection. Women with cystitis respond readily to any of the several antibiotic regimens.

Most of the three day regimens are 90% effective.

For simple cystitis, a test for urine culture should be repeated after 1-2 weeks of completion of therapy. Single dose therapy is less effective and if used, concomitant pyelonephritis must be confidently excluded.[24]

Lower urinary tract symptoms with Pyuria accompanied by a sterile urine culture may be from urethritis caused Chlamydia trachomatis.[59]

Mucopurulent cervicitis usually coexists and azithromycin therapy is effective.

ACUTE PYELONEPHRITIS:

Most common serious medical complication of pregnancy. It develops more frequently in the second trimester; nulliparity and young age are the other associated risk factors.[23]

It is unilateral and right-sided in more than half the cases and bilateral in one fourth. Onset is abrupt fever and chills, pain in one or both lumbar regions. Differential diagnosis includes labour, chorioamnionitis, appendicitis, placental abruption and infracted myoma.

A retrospective descriptive hospital based study by Dawkins JC states that the risk of preterm labour and premature delivery is increased.[24]

Maternal complications include anemia, septicemia, and transient renal dysfunction, pulmonary insufficiency.[23, 25]

Respiratory compromise can be exacerbated by iatrogenic fluid overload and tocolysis with beta-agonist.[26]

Maternal UTI has few direct sequelae because the fetal bloodstream infection is rare. However uterine hypo perfusion due to maternal dehydration, maternal anemia, and direct bacterial endotoxin damage to the placental vasculature may cause fetal cerebral hypo perfusion.

A retrospective population based study showed that UTI during pregnancy is independently associated with intrauterine growth restriction, pre-eclampsia, preterm delivery, and cesarean delivery. [27]

Early and aggressive treatment is important in preventing complications of pyelonephritis. Hospitalization is indicated in patients with signs of sepsis, who are vomiting and unable to maintain hydration, and who are having uterine contractions.

Intravenous hydration to ensure adequate urinary output is essential and antibiotics are started soon after clinical diagnosis.

If clinical improvement is not seen despite appropriate antibiotic therapy, the possibility of a structural or anatomical abnormality should be investigated. Persistent infection may be caused by urolithiasis or less commonly congenital renal abnormalities or perinephric abscess.

In such cases, diagnostic tests may include renal ultrasound, plain abdominal radiograph and/or modified one shot pyelograms (a single radiograph obtained 30 min after contrast injection).

Outpatient management of pyelonephritis in pregnancy is applicable in very few cases.

PREOPERATIVE CARE FOR CESAREAN SECTION:

Oral intake is stopped atleast 8 hours before the procedure.

Recently performed hematocrit and blood grouping & typing are checked. If indirect Coombs test is positive then cross matching of blood must be kept ready.

According to The American College of Obstetricians and Gynecologists, there are insufficient data to determine value of fetal monitoring before scheduled cesarean delivery in women without risk factors. Fetal heart sounds should be documented in the operating room prior to surgery. [68]

The risk of thromboembolism is increased with pregnancy and almost doubled in cesarean section. For women already receiving prophylaxis or those with increasing risk factors, prophylaxis is escalated.

An indwelling catheter is placed to collapse the bladder away from the hysterotomy incision, to avert urinary retention secondary to regional anesthesia and to allow accurate postoperative measurement.

Infection prevention:

Febrile morbidity is frequent after cesarean delivery. Numerous good-quality trial have proved that a single dose of an anti – microbial agent given at the time of cesarean delivery significantly decreases infection morbidity.

Many women undergoes unscheduled cesarean delivery, this practice also significantly lowers the postoperative infection rate in women undergoing elective surgery

Depending upon drug allergies, most recommend a single intravenous dose of a beta –lactam antimicrobial- either a cephalosporin or extended –spectrum penicillin derivative.

A 1gm dose of cefazolin is an efficacious and cost effective choice.

Pevzner and associates [72]showed this dose may be inadequate for body mass index >40. In women with intravenous dose of amino glycoside is an alternative. A 900 mg Clindamycin is used for obese patients.

American College of Obstetricians and Gynecologists recommend the prophylaxis be administered within 60 minutes prior to start of planned cesarean delivery.[71] For emergent delivery, prophylaxis should be given as soon as feasible.

Preoperative preparation of the anterior abdominal wall skin is effective to prevent wound infection. Either Chlorhexidine or Povidone - iodine solutions can be used.

Risk factors for infection:

Obesity

Diabetes /Immunosuppressive disorder (like HIV)

Chorioamnionitis (infection of the amniotic fluid and fetal membrane)

Taking long term steroids

Poor prenatal care

Previous C-sections

Long labor or surgery

Several studies support the nonuse of catheterization or immediate removal of indwelling catheter in hemodynamically stable women to minimize UTI.

Onile et al. and his colleagues conducted a study in 200 women admitted for elective cesarean delivery.

In one group of women catheter was removed immediately and in another group 24-h postoperatively. Urine samples were collected preoperatively and 72hours postoperatively. The samples were sent for urine microscopy, culture, and sensitivity.

There was lower incidence of urine analysis, urine culture sensitivity for patients in Group I compared than Group II.[29, 30]

Tambyah and Maki in their study stated that catheter insertion causes entry of organisms into the bladder and one of the risk factor for CAUTI is duration of catheter in place. Once catheterization is done the prevalence of UTI is found to be about 3-10%.[31]

Senanayake carried out a pilot prospective study in Colombo involving 50 women. The volume of urine obtained at the beginning and at the end of cesarean section was measured using an indwelling catheter.

In the main study, surgery was carried out without urethral catheterization on 344 women who had voided within previous hour.

The results showed statistically significant rates between the two groups in urinary tract infection. (6%vs0.58%) ($p < 0.05$). Because of urinary retention two women required recatheterization. The rest of the women voided within a mean of 8.76hrs.[33, 34, and 36]

A randomized controlled study conducted by AM Nasr[45] and his colleagues, among 420 gravid women undergoing cesarean were prospectively included one of two groups. In one group of patient catheter removed immediately and another group removed 12hr postoperatively.

Results included there were no significant differences regarding demographic characteristics, indications for cesarean, pre and post operative care, and intake of analgesics.

Non – placement of indwelling urinary catheter during cesarean was more convenient to women with no increase in intraoperative complications, or urinary retention. The incidence of UTI was found to be significantly greater in the Catheterized Group ($p<0.001$).

Hany Abdel - Aleem also done a study by comparing the use of an indwelling catheter versus bladder drainage. There was no significant difference between the group in terms of urinary retention following CS, duration of hospital stay or the outcome of UTI.[49, 50]

L Li, J wen and his collegues[40] from their study stated that serious preoperative complications such as postpartum hemorrhage are more critical than urinary tract infection(UTI).The main disadvantage of catheterization is that increased risk of UTI. Catheterization of the bladder for cesarean section is mainly to prevent any injury to the bladder, intraoperative difficulties and complications.

His study found that no catheter in cesarean section was associated with less UTI, no increase urinary retention or intraoperative difficulties. He states that it is difficult to confirm that non-catheterized group could cause more postpartum hemorrhage because no information is provided on the catheterized group.

Moreover hemorrhage might result from several causes and current evidence failed to certify between non-catheterization and hemorrhage.

S Acharya has done a prospective randomized controlled trial among 150 patients. In that study 75 were catheterized, considered as one group and in another group 75 were not catheterized.

They concluded that cesarean section can be done safely without urethral catheterization with reduced morbidities.[40, 46]

Joseph F and MD John [53] conducted a study in patients undergoing elective/repeat or emergent cesarean deliveries of 118 patients. All Patients encouraged to void within 30 minutes of the start of the surgery. They recorded the surgical time, time to first void and number of patients with urinary

retention requiring in-out catheterization or placement of indwelling urinary catheter

Results showed that 118 patients underwent cesarean section, none of the cases showed bladder distention interfering with exposure of lower uterine segment. All patients were ambulated to the bathroom for their first void. There were no cases of UTI reported. Patients undergoing cesarean delivery (elective/repeat, or emergent) can safely avoid the use of an indwelling catheter.

S Yong[47] from his study found that as most cesarean sections are now performed under regional anesthesia. So there is more chance of postoperative urinary retention which will continue to be a significant postnatal problem.

Li and colleagues concluded the paper, until newer regional anesthetic techniques are found to reduce post cesarean urinary retention, there will be still a role for routine catheterization, atleast in women undergoing regional anesthesia.

Li and Wen's[40] done a systematic review, data extraction from all studies that met the inclusion criteria were independently reviewed by two reviewers. Totally 821 relevant articles kept as inclusion criteria

He concluded that it doesn't show evidence of no effect, but only that there is no evidence of the effect of the placement of an indwelling catheter for

cesarean section. There is evidence that catheterization for no longer than 12 hours doesn't significantly increase the rate of urinary tract infections.[40]

Study by Akmal El Mazny, among 300 women who got admitted for primary or repeat elective cesarean sections were randomized into two equal groups. In Group A, the catheter was removed soon after the surgery, in Group II catheter delayed catheter removal was done (12hr postoperatively).

Results of the study showed that postoperative significant bacteriuria (p =0.020), were significantly lower in group A compared with group B.

So he concluded that immediate removal of urinary catheter after elective cesarean is associated with lower risk of urinary infection[30]

Ghoreishi performed a randomized study by randomly assigned 270 women delivered by cesarean section. Comparison between catheterization and uncatheterized women were taken.135 women did not receive an indwelling catheter after cesarean delivery, 6 patients needed postoperative urinary retention. The ambulation time was 6.8h in the cases and 12.9 hours in the control group.

He concluded that in uncatheterized group the hospital stay and ambulation time shortens.[32]

MATERIALS AND METHODS

The study was conducted in the department of Obstetrics and Gynecology, PSG hospitals, Coimbatore from June 2015 to May 2016.

STUDY DESIGN:

Prospective study

STUDY POPULATION:

This study consisted of prenatal women admitted to the antenatal wards for primary or repeat elective cesarean section.

SELECTION CRITERIA:

INCLUSION CRITERIA:

- All antenatal women for elective cesarean section. (Primary or repeat LSCS)

EXCLUSION CRITERIA:

- Urinary infection assessed clinically or by midstream urine samples
- Significant vaginal bleeding
- Preeclampsia or Eclampsia
- Gestational hytertension
- Other conditions where postoperative urine output monitoring is needed.

All the participants enrolled in this study for elective cesarean section were screened for inclusion.

For all participants informed consent is obtained written in the easier and eligible form.

A total of 180 women were participated in the study group. They were divide into two groups by random allocation table.

In Group I: catheter removal was done 18-24hours postoperatively in 100 women.

In Group II: Catheter removal was done immediately after the procedure in 80 women.

Patient preparation:

All the women who were included in the study, preoperative urine microscopy were sent and UTI was ruled out. Any patient under the exclusion criteria were excluded from the study.

In all participants, clinical examination was performed. Non stress test was performed on the day of admission. Recently performed hematocrit and serology, blood Grouping and typing is checked. Informed consent for cesarean section and anesthesia are obtained. They kept NPO atleast 8 hours prior to surgery. Antibiotic prophylaxis of 1g cefazolin is given 30 minutes prior to surgery after the test dose.

In all women who were undergoing elective cesarean section, a foley catheter (French size 16) was inserted under sterile precautions on the operating table immediately before starting cesarean section. Person who catheterized the patient was noted.

Cesarean sections were performed in the usual manner under spinal anesthesia. Abdomen opened by pfannensteil incision. Then dissecting through different layers of abdomen until the uterus is reached. While in the past a vertical incision was commonly used, this was associated with scar rupture during future pregnancies, as a result lower segment transverse incisions is preferred nowadays and the baby delivered. Uterus is closed with vicryl. Abdomen closure was done.

In all group II participants, catheter was removed immediately after surgery.

Patients are shifted to postoperative care unit and monitored for 4hours.

Immediately after catheter removal, women were encouraged to void. As ambulation is impossible they were trained to void in the bedpan. After 18-24hrs they were helped to ambulate and void in the bathroom. If even after 8 hrs of removal, if they are not able to void or if there is palpable bladder, recatheterization is necessary.

Urinary retention means – difficulty to void 8 hours after catheter removal or residual urine ≥200ml

OUTCOME MEASURES:

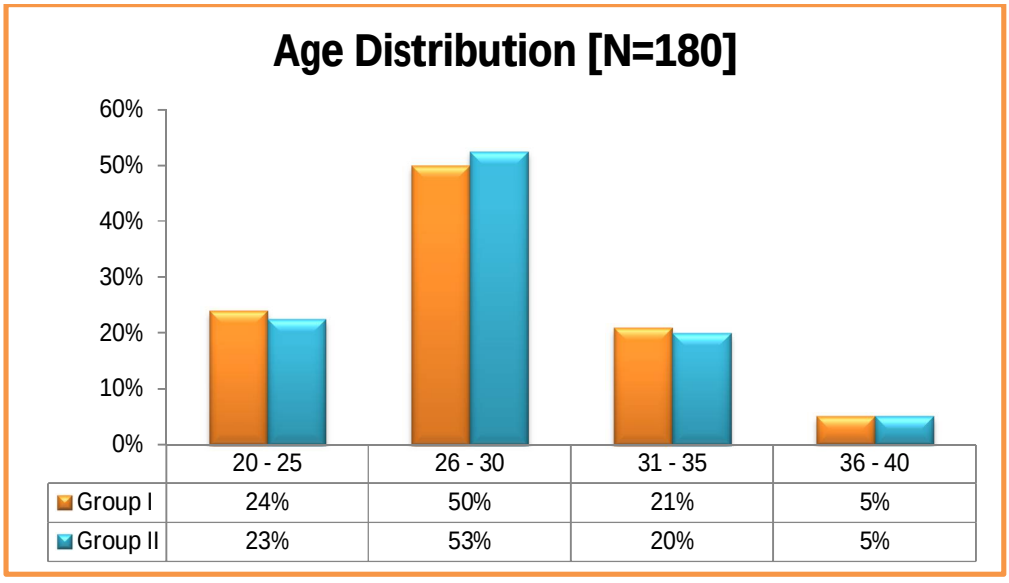
1. Significant bacteriuria (clean catch midstream urine sample postoperatively after 48-72hours)
2. 1st post operative voiding time (from the removal of catheter in hours)
3. Postoperative Ambulation time
4. Patient comfortness with catheter categorized as
    1. comfort
    2. mild discomfort
    3. significant discomfort
5. Other outcome measures measured are dysuria (defined as painful micturition); frequency (micturition more than 7 times during the day or more than twice during the night); urgency (severe irresistible urge to micturate).
6. Length of hospital stay – calculated from the day of surgery till discharge.

Our hypothesis was that immediate catheter removal would be safe as delayed catheter removal after elective cesarean section and reduces the incidence of post UTI, improves patient comfort and helps early ambulation.

RESULTS

During the study period, a sum of 180 women finally enrolled in this trial. Out of which, in 80 of them catheter removed immediately and in 100 women delayed catheter removal done. The two groups were matched and there were no significant differences between the two groups regarding maternal age, gestational age and parity.

AGE DISTRIBUTION OF PATIENTS



	20 - 25	26 - 30	31 - 35	36 - 40
Group I	24%	50%	21%	5%
Group II	23%	53%	20%	5%

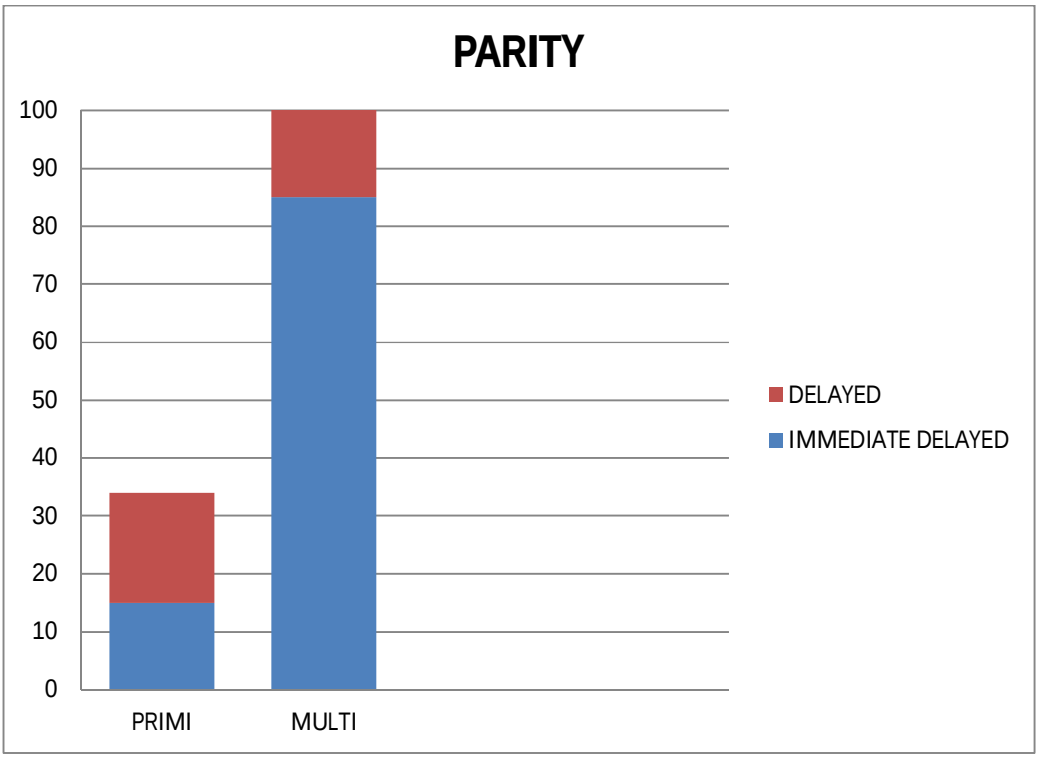
SAMPLES ARE MATCHED WITH p = 0.469

PARITY

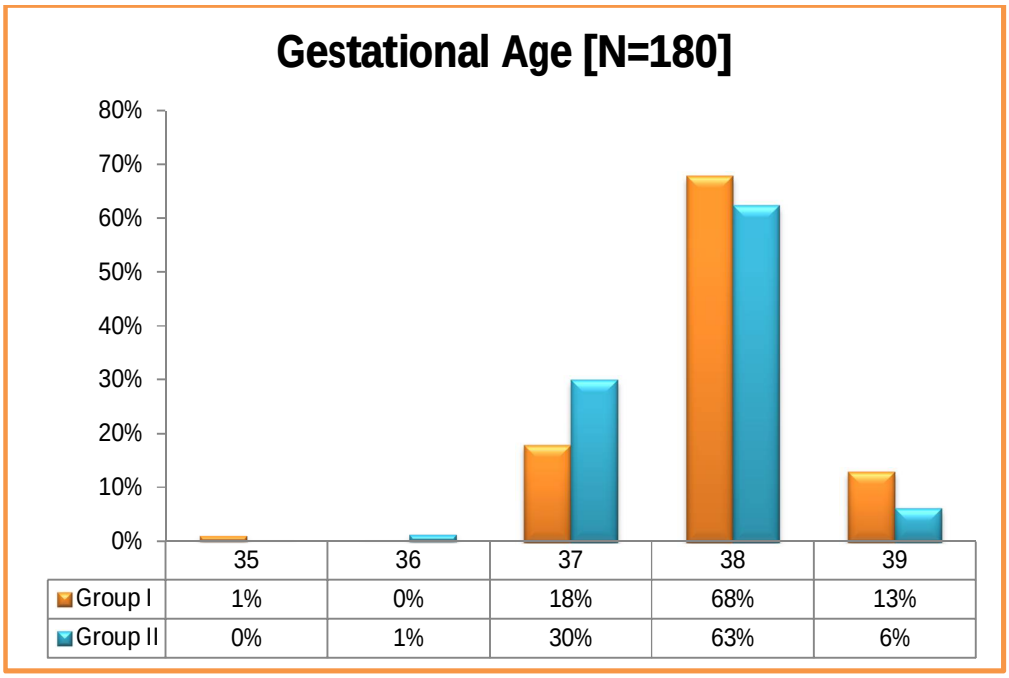
PARITY	Group I		Group II	
	NO	%	NO	%
PRIMI	19	19	12	15
MULTI	81	81	68	85
TOTAL	100		80	

Totally 15.5% and 19%were primi mothers and 85% and 81% were multi respectively.

VARIABLES	Group I n=100	Group II n=80	p-VALUE
PARITY	2.27±0.9	2.35 ±0.96	0.5



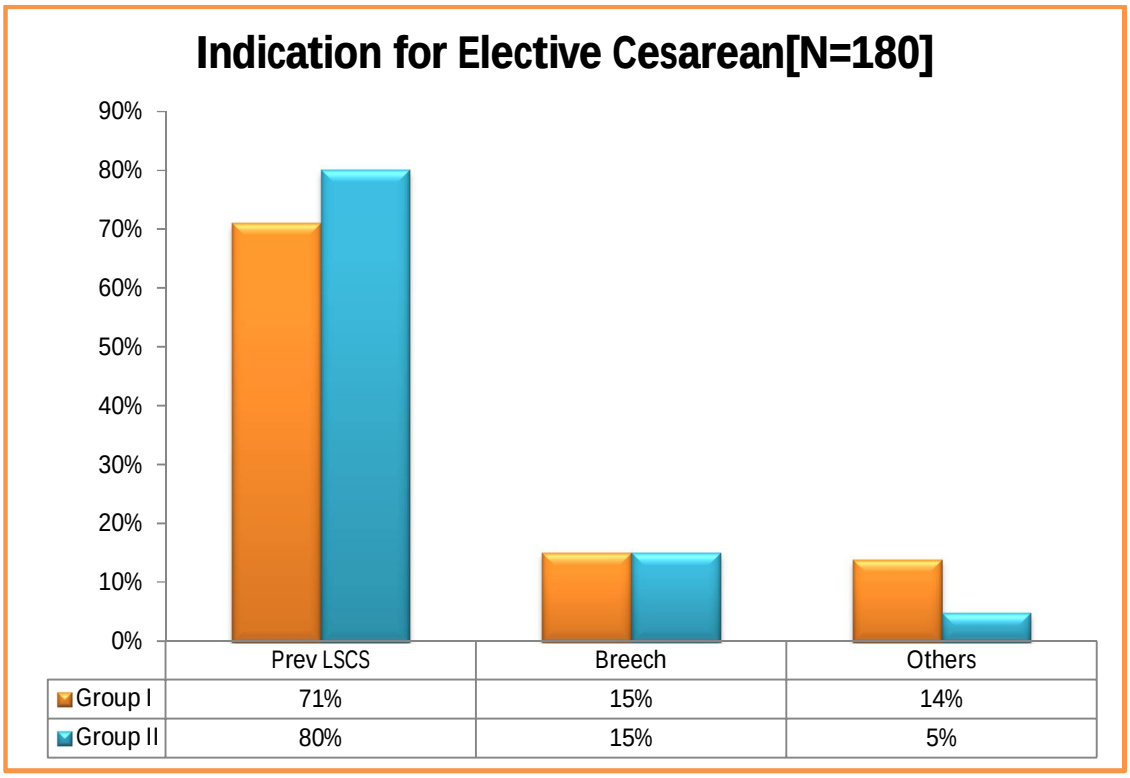
GESTATIONAL AGE IN WEEKS



	35	36	37	38	39
Group I	1%	0%	18%	68%	13%
Group II	0%	1%	30%	63%	6%

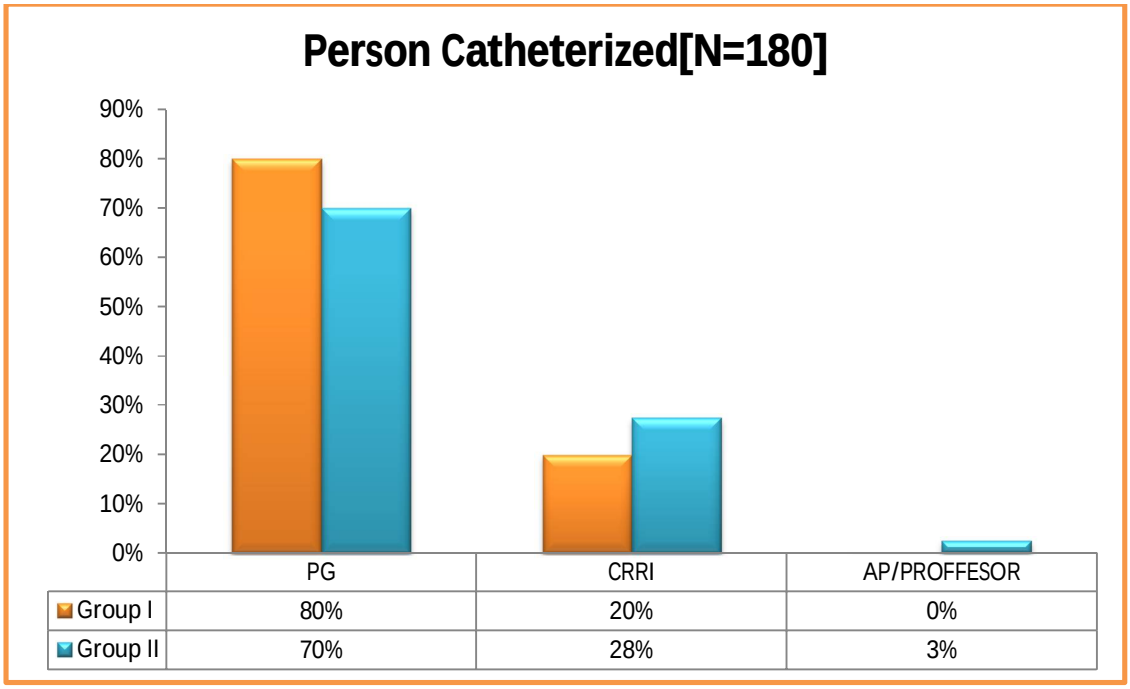
GESTATIONAL AGE IN BOTH GROUPS WAS MATHCHED WITH p=0.11

INDICATION FOR CESAREAN SECTION



In both the groups the common indication is previous cesarean section and there is no significant difference between them.

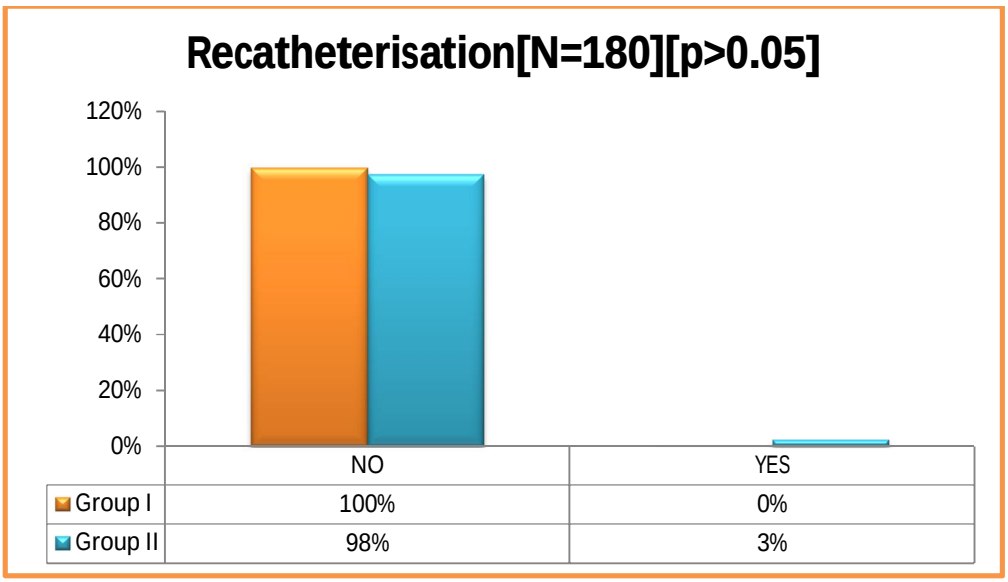
PERSON CATHETERIZED



In both the groups, most of the patients were catheterized by the postgraduate.

URINARY RETENTION

RECATHETERISATION	GROUP I	GROUP II	Total
NO	100	78	178
YES	0	2	2
Total	100	80	180

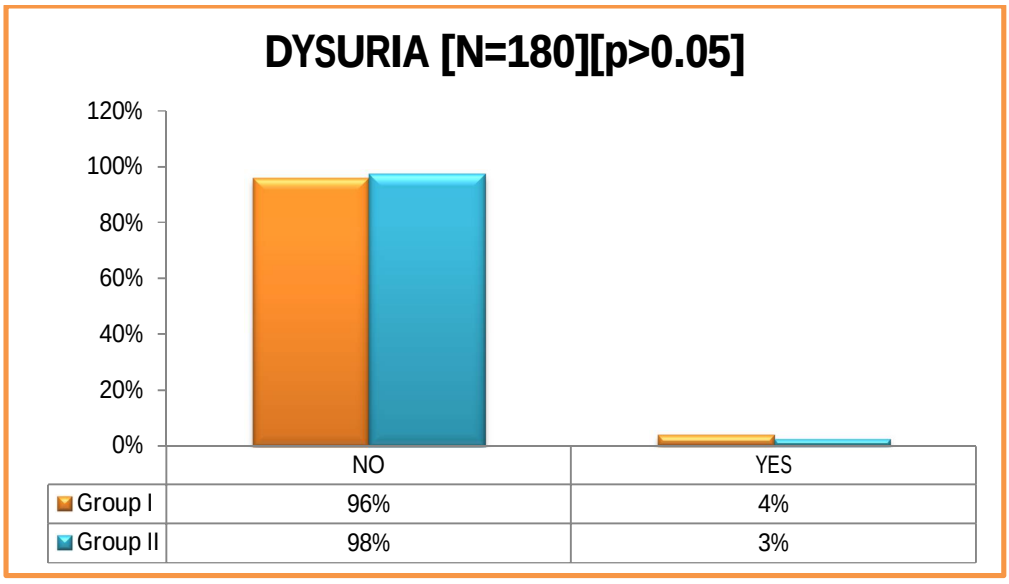


2 women in immediate catheter removal group had urinary retention necessitating recatheterization. But none of the women in delayed catheter removal group were recatheterized.

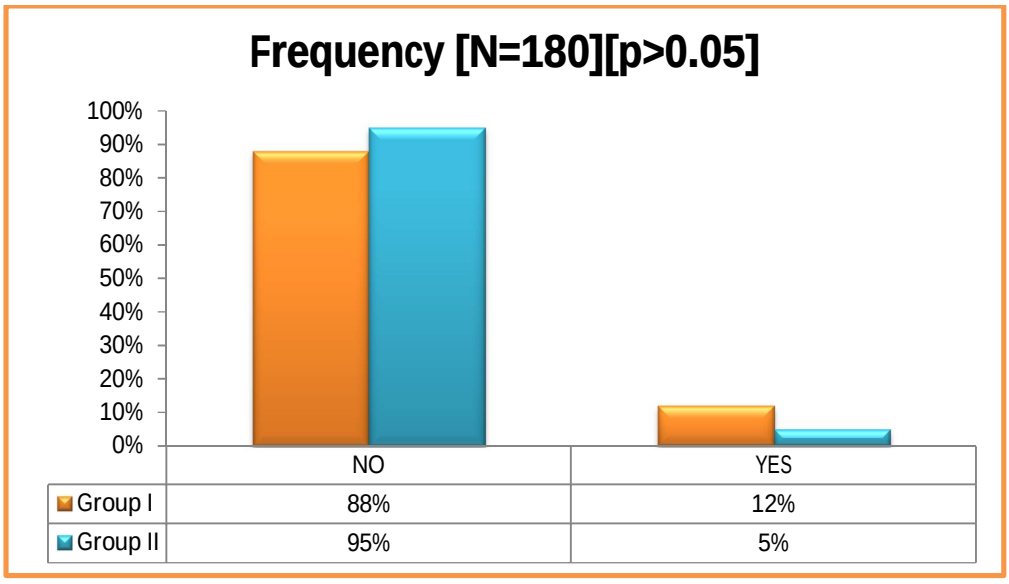
The p value is 0.196

POSTOPERATIVE URINARY COMPLICATIONS

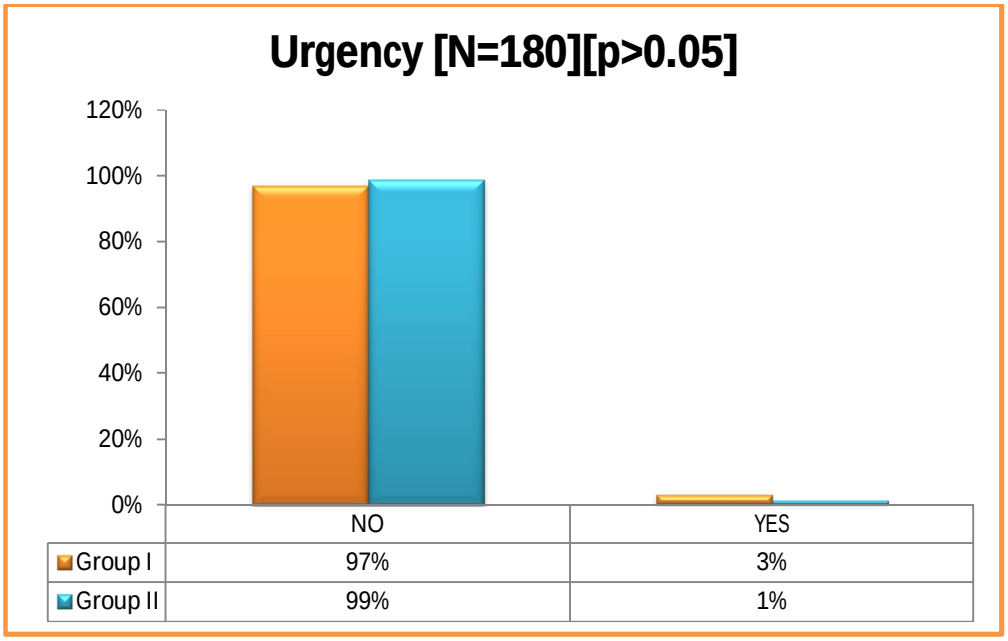
DYSURIA:



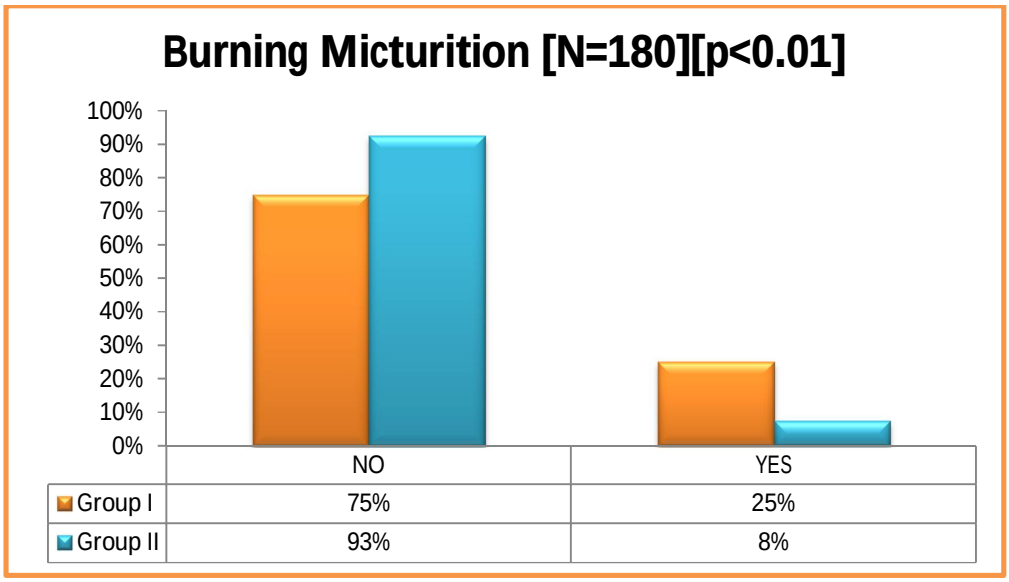
URINARY FREQUENCY:



URGENCY:


Urgency [N=180][p>0.05]
120%
100%
80%
60%
40%
20%
0%
NO
YES
Group I
97%
3%
Group II
99%
1%

BURNING MICTURITION:



Regarding urinary complications after catheter removal, burning micturition is lower in immediate catheter removal group.

PATIENT COMFORTNESS WITH CATHETER:

180 PATEINTS WERE REVIEWED ABOUT THE COMFORTNESS OF THE CATHETER.

In group I: 15% had significant discomfort.33% had mild discomfort

In group II: Immediate removal group does not have any discomfortness

FIRST POSTOPERATIVE VOIDING TIME

FIRST VOIDING TIME	DELAYED REMOVAL n=100	IMMEDIATE REMOVAL n=80
Mean ±SD	13.4±1.3	4.8±1.1

THE MEAN POSTOPERATIVE TIME TILL THE FIRST VOIDING IS STATISTICALLY SIGNIFICANT.

The p value is < 0.001

The first voiding time in immediate removal is shorter than delayed catheter removal patients.

POSTOPERATIVE AMBULATION

POSTOPERATIVE AMBULATION TIME	GROUP I	GROUP II
MEAN±SD	29±2	17±4
TOTAL	24	7

The mean postoperative ambulation time lower in immediate catheter removal group than delayed catheter removal .It is statistically significant p=<0.001.

DURATION OF HOSPITAL STAY

HOSPITAL STAY	Mean	SD	Sig
GROUP I	5.7	0.9	
GROUP II	4.8	1.0	<0.001
Total	5.3	1.0	

The p value =<0.001.The duration of hospital stay is significantly shorter in immediate catheter removal group.

LEUKOCYTES:

	LEUKOCYTE NEGATIVE	**LEUKOCYTE POSITIVE**
Group I	**76(76%)**	**24(24%)**
Group II	**72(90%)**	**8(10%)**

p value =< 0.01.The incidence of postoperative significant bacteriuria is statistically significant in immediate catheter removal groups.

Leukocyte Positive groups were sent culture.

URINE CULTURE:

Urine culture showed growth of E.COLI in 6 women in delayed catheter removal group and in 1 woman in immediate catheter removal group.

Other cultures were sterile.

P Value = 0.03

DISCUSSION

Cesarean section is the most common obstetric procedure in practice now with increasing rates .One of the prerequisite for cesarean delivery is the insertion of a urethral catheter before surgery. The catheter is placed to facilitate surgery by blunt dissection of underlying bladder.

It is a usual practice to leave the catheter for 24-48hours after the cesarean section. One of the complications of urethral catheter in cesarean section is CAUTI (catheter associated urinary tract infections).

CAUTI:

A catheter associated urinary infection is one of the most common infections a person can contract in the hospital. Catheter – related urinary tract infection are common because urethral catheters inoculate organisms into the bladder and promote colonization for bacterial adhesion and causing mucosal irritation.

Once a catheter is placed, the daily incidence of bacteriuria is 3-10%.Between 10% and 30% of patients who undergo short term catheterization (i.e. 2-4days) develop bacteriuria and are asymptomatic. Between 90% and 100% of patients who undergo long term catheterization develop bacteriuria

About 80% of nosocomial UTIs are related to urethral catheterization; only 5-10% is related to genitourinary manipulation.

The bacteria may gain entry into the bladder during insertion of the catheter, during manipulation of the catheter or drainage system.

Risk factors for bacteriuria in patients who are catheterized:

1. Longer duration of catheterization
2. Colonization of the drainage bag
3. Absence of antibiotics
4. Female gender
5. Renal insufficiency
6. Improper catheter care

   The 2009 centers for Disease Control and Prevention(CDC) guidelines for the prevention of catheter – associated urinary tract infections recommends catheter use only for appropriate indications.

Catheter use and duration should be minimized in all patients, especially those at higher risk for CAUTI (e.g. elderly persons, woman and patients with impaired immunity.

Urinary catheters coated with silver alloy also reduce the risk of infection.[73]

UTI IN PREGNANCY:

Urinary tract infections are more common in women and in pregnancy. The female anatomy makes it easy for bacteria from the vagina or rectal areas to get in the urinary tract because they are close together.

UTIs are common during pregnancy. That's because the growing fetus can put pressure on the bladder or causes urine to leak. There are also physical changes to consider. As early as six weeks gestation, almost all the pregnant women experience ureteral dilation, when the urethra expands and continues to expand until delivery.

The larger urinary tract, along with increased bladder volume and decreased bladder tone, all cause the urine to become more still in the urethra. This allows bacteria to grow. Pregnant woman's urine gets more concentrated. It also has certain types of hormones and sugar. These encourage bacterial growth and lower your body's ability to fight off bacteria.

Between 2-10% of pregnant women pregnant women experience a UTI. Women who have UTIs before are more prone to get them during pregnancy. The same goes for women who have had several children (multiparous).

Recent studies have refuted the use of urethral catheter for longer duration, especially in women undergoing elective cesarean delivery.

This study is undertaken to determine whether immediate catheter removal decreases the occurrence of urinary tract infection, shortens first postoperative voiding, ambulation time, duration of hospital stay and the need for recatheterization for urinary retention.

In this study, women admitted in the ward elective cesarean section were selected after screening for eligibility.

Totally 180 women participated in the study and in all participants. Foley catheter of is inserted immediately in all the women.

In Group I: In 100 women catheter removal was done 18-24hours postoperatively.

In Group II: In 80 women catheter removal was done immediately.

In Group I and II, we compared the **Age, Parity, Gestational age; Indication for cesarean section, Person catheterized the patient.**

Postoperatively: R**ecatheterization, dysuria, urgency, frequency, burning micturition, Patient comfortness, and significant bacteriuria.**

First voiding time, Postoperative ambulation time, Duration of hospital stay were compared postoperatively.

In the present study, we compared the age group, parity and gestational age between the two groups and they were matched and there is no significant difference.

If we compare the age distribution of patients in both the groups, 50-55% of them are between 26-30 years of age.

Comparing the parity 15% -20% are primi and 80-85% are multi in both the groups.

In both the groups, the gestational age of women in which elective cesarean section undergone is between 37-39 weeks.60% -70% of them are mostly 38 weeks. 20-30% is 37weeks.6-12% belongs to 39 weeks.

In both group I and II, the indication for elective cesarean section is because due to previous cesarean section which is of 70-80%.15% are done because of Breech presentation. Others like placenta previa, transverse lie are only 5-15%.

Similarly Anand Nikhil [74] analyzed the indications for elective and emergency cesarean in modern day practice, a study conducted GMERS medical collage sola, Ahmadabad, carried out over a period between June 2013 to December 2013.He concluded that frequency of LSCS was 25.1% during the study period and indications of LSCS in the order of frequency is a previous LSCS (42.09%).

In this study when we compare the person who catheterized, in both the groups 80% of the women are catheterized by postgraduate and 20-30% by Interns.

Comparing the urinary retention between the immediate and delayed catheter removal groups, only 2 of them in the immediate catheter removal group didn't void till 8 hours, so needed recatheterization.

None of them in the delayed catheter removal group needed catheterization.

Similar results shown by Divya Pandey and his colleagues[75] involves 150 participants, 75 are assigned to each group. Group I: were non-catheterized and Group II – catheterized for 24 hours postoperatively.

Postoperative retention is seen in one patient of non – catheterized group but statistically not significant (p=0.285).

We compared the postoperative urinary complications in Group I and Group II, dysuria, frequency and urgency, the incidence is lower in immediate catheter removal group but statistically not significant.

25% positive in Group I

8% positive in Group II

Burning micturition is statistically significant p =<0.01.

Similar results shown by Akmal El – Mazny, a study conducted in Cairo University, in which 300 women were allocated into two groups. Regarding urinary complications, it is significantly lower in immediate catheter removal group.[30]

All the180 participants on the first postoperative day were reviewed about the comfort of the catheter. In group I, 15% had significant discomfort and 33% had mild discomfort.

In group II, immediate catheter removal group none of them had discomfort. This helps in earlier ambulation.

A M Nasr and his colleague [45]conducted a study in which 420 gravid women undergoing cesarean were prospectively included and randomized into two groups. Group 1 - uncatheterized and group 2 – catheter removal done after 12hrs postoperatively

The level of pain and discomfort was recorded categorically using McGill Pain Questionnaire. There was a statistically significant association between the degree of discomfort and the use of indwelling catheter ($p<0.001$)

Postoperative voiding time is the first time voiding after catheter removal. Duration is from insertion of catheter to the first voiding time after catheter removal. The p value is statistically significant <0.001.

Comparing the ambulation time between immediate and delayed catheter removal group, the time shortens in Group II. **P value = <0.001.**

Group I: Mean 29±2hrs

Group II: Mean 17±4

Duration of hospital stay is shorter in immediate catheter removal group. p value = <0.001.

Ghoreishi conducted a randomized controlled study, in which 270 women are participated. Compared the ambulation time in UC 6.8H, vs. 12.9H in the control group.

Ghoreishi concluded that uncatheterized have less ambulation time and hospital stay.

Similarly by Nasr et al[45] concluded in his ambulation time was 7.7 ±3.42 hours in uncatheterized and 13.4±9.9 in catheterized group.

Comparing the Leukocytes in Group I and II, Group I had 24% positive and 8% positive in immediate catheter removal group. p value <0.01.

Urine culture showed E.coli growth in 6 women in delayed catheter removal group and in 1 woman in immediate catheter removal group.

Onile et al compared early versus delayed catheters for elective cesarean delivery. There was a non – significant, positive urine culture in early removal group. p=0.489.

Acharya S et al. conducted a study in Koirala institute, in which 150 patients participated in the study.75 patients were catheterized and 75 of them are not catheterized. Urine routine was done on 1st postoperative day and urine culture was sent on second day. He concluded that positive urine analysis for urinary tract infection was high in catheterized group ($p<0.001$).E.coli was isolated in 12.7% in catheterized group.

CONCLUSION

- In this study, 180 antenatal women consented for the study had an indication for elective cesarean section. In 80 women the catheter were removed immediately after the cesarean section and in 100 of them catheter removed 18-24hours later as in usual manner.
- The most common indications for cesarean is found to be because of previous cesarean section (80%) and Breech presentation (15%)
- In our study most of the catheterization was done by postgraduates.(80% of PGs in delayed removal and 70% of them in early removal group)
- In conclusion, immediate removal of catheter lowers the incidence of UTI compared with delayed catheter removal. Only 8% had significant bacteriuria compared with control group which is 24%
- Patient feels comfort and urinary complications like dysuria, urgency, frequency, burning micturition lowers with immediate removal of catheter.
- In delayed catheter removal group 33% had mild discomfort and 15% had significant discomfort reviewed on the day of surgery. Patient's satisfaction was assessed among both the groups and immediate removal helps them in breastfeeding the baby easier and helps in ambulation faster.
- Their first voiding time and ambulation time shortens compared to control group.

- There is also need of 3% recatheterization in immediate removal group though in delayed removal no one recatheterized.
- It is difficult to state that immediate removal group could cause complication of postpartum hemorrhage because no information is provided on the catheterized group.

Moreover hemorrhage might result from several causes so it is difficult to confirm it.

- The duration of hospital stay also decreases with immediate catheter removal.
- Compared with routine catheterization, the non- placement or immediate catheter removal is associated with a reduced incidence of UTIs, less discomfort, first voiding time, ambulation, shorter hospital stay.

Hereby we conclude that immediate postoperative removal of catheter after elective cesarean section is recommended, unless another indication necessitating prolonged catheterization.

STATISTICAL ANALYSIS

Descriptive and inferential statistical analysis is carried out in this study .Results on continuous measurements are represented as Mean +/- SD (min – max) and results on categorical measurements are represented as numbers (%).Significance between both the groups are assessed at 5% significance level. The following data assumptions are made: 1.Dependent variables are normally distributed among both the groups.2.Samples drawn from the population is random; cases of the samples are independent.

Student t test (independent, two tailed) was used to find the significance of the parameters in the study on a continuous scale between both the groups (inter group analysis) on metric parameters. Fisher exact test/ chi square test were used to find the significance among the parameters in this study on categorical scale between both the groups.

Significant figures:

+ Suggestive significance (p value: $0.05<p<0.01$)

*Moderately significant (p value: $0.01<p<0.05$)

**Strongly significant (p value: $p<0.01$)

Statistical software: The statistical software namely SPSS was used for the data analysis and Microsoft excel was used to generate tables, graphs and charts.

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PROFORMA

NAME:

AGE:

SNO:

OP NO:

IP NO:

ADDRESS:

UNIT:

SOCIOECONOMIC STATUS:

MENSTRUAL HISTORY:

OBSTETRIC HISTORY:

O/E:

PR:

BP:

TEMP:

PALLOR:

ICTERUS:

CVS:

RS:

P/A: UTERUS HEIGHT:

PRESENTING PART:

FETAL HEART :

ANTENATAL COMPLICATION :

INDICATION FOR CESAREAN SECTION:

PRE –OP URINE ROUTINE : (1 DAY PRIOR TO SURGERY)

PRE – OP HEMOGLOBIN :

DATE AND TIME OF CESAREAN SECTION:

TYPE OF ANAESTHESIA:

PERSON WHO CATHETERIZED:

INTRA OP FINDINDS:

TIME OF CATHETER REMOVAL:

GROUP A : IMMEDIATE FOLEYS CATHETER REMOVAL:

GROUP B : DELAYED FOLEYS CATHETER REMOVAL (18-24 HRS):

MEAN TIME TO PATIENT AMBULATION :

TIME OF FIRST POST OP VOIDING :

RECATHERISATION DONE /NOT:

PATIENTS COMFORT/DISCOMFORT DUE TO CATHETER:

COMFORTABLE/MILD DISCOMFORT/SIGNIFICANT DISCOMFORT:

DYSURIA:

URINARY FREQUENCY AND URGENCY:

BURNING MICTURITION:

POST-OP URINE ROUTINE (48-72 HOURS):

URINE CULTURE:

DURATION OF HOSPITAL STAY:

PSG Institute of Medical Science and Research, Coimbatore
Institutional Human Ethics Committee
INFORMED CONSENT FORMAT FOR RESEARCH PROJECTS

I ____ Dr. VIJAYA HARINI.V___, am are carrying out a study on the topic :

- A PROSPECTIVE STUDY OF COMPARING IMMEDIATE VERSUS DELAYED REMOVAL OF URINARY CATHETER FOLLOWING ELECTIVE CESAREAN SECTION

as part of my / our research project being carried out under the aegis of the Department of: OBSTETRICS AND GYNAECOLOGY, PSG IMSR

My research guide is : Dr. SEETHA PANICKER MD.,DGO.,DNB

The justification for this study is:

Elective cesarean is nowadays commonly performed with indwelling catheter mainly to decompress the bladder and to avoid injury. This study is mainly performed that immediate removal of catheter have various benefits from that of delayed removal.

The objectives of this study are:

Primary Objective: TO COMPARE THE OUTCOMES OF IMMEDIATE AND 18-24 HOURS REMOVAL OF URINARY CATHETER FOLLOWING ELECTIVE CESAREAN SECTION.

Secondary Objective: 1) TO IMPLEMENT IMMEDIATE CATHETER REMOVAL AS AN EFFECTIVE AND SAFE METHOD
2)TO DECREASE URINARY TRACT INFECTION
3)TO DECREASE THE DURATION OF HOSPITAL STAY
CONSENT FOR RECATHETERIZATION: IF THE PATIENT REPORTS URGE TO VOID WHEN MOBILISATION WAS IMPOSSIBLE A BADPAN WILL BE GIVEN.IF THE PATIENT HAD DIFFICULTY IN PASSING URINE AFTER 6 HOURS AND /OR IF ABDOMINAL EXAMINATION SHOWS PALPABLE URINARY BLADDER,RECATHETERIZATION WILL BE NEEDED.

Sample size: _____200_____

Study volunteers / participants are (specify population group & age group): Women admitted to the prenatal wards for primary or repeat cesarean section

Location: __PSG HOSPITAL ANTENATAL WARD ___.

We request you to kindly cooperate with us in this study. We propose collect background information and other relevant details related to this study. We will be carrying out:

Initial interview (specify approximate duration):___10_____ minutes.

Data collected will be stored for a period of fifteen years. We will / will not use the data as part of another study.

Final interview for 10 mts. If **photograph** is taken, purpose: no

Benefits from this study: DIRECT BENEFIT (To reduce urinary tract infection)

Risks involved by participating in this study: No major risks

How the **results** will be used: Can show positive correlation or negative correlation

If you are uncomfortable in answering any of our questions during the course of the interview or discomfort in removing catheter immediately or 18-24 hours, **you have the right to withdraw from the interview / study at anytime.** You have the freedom to withdraw from the study at any point of time. Kindly be assured that your refusal to participate or withdrawal at any stage, if you so decide, will not result in any form of compromise or discrimination in the services offered nor would it attract any penalty. You will continue to have access to the regular services offered to a patient. You will **NOT** be paid any remuneration for the time you spend with us for this interview / study. The information provided by you will be kept in strict confidence. Under no circumstances shall we reveal the identity of the respondent or their families to anyone. The information that we collect shall be used for approved research purposes only. You will be informed about any significant new findings - including adverse events, if any, – whether directly related to you or to other participants of this study, developed during the course of this research which may relate to your willingness to continue participation.

Consent: The above information regarding the study, has been read by me/ read to me, and has been explained to me by the investigator/s. Having understood the same, I hereby give my consent to them to interview me. I am affixing my signature / left thumb impression to indicate my consent and willingness to participate in this study (i.e., willingly abide by the project requirements).

Signature / Left thumb impression of the Study Volunteer / Legal Representative:

Signature of the Interviewer with date: Witness:

Contact number of PI: 7708559699

Contact number of Ethics Committee Office: 0422 2570170 Extn.: 5818

NO	AGE	GA	G	P	L	A	ANT.COMP	INDC	PREU	PERSC	CATIN	CATOU	1STVO	AMB	RECA	PTCON	DYSUR	URGEN	FREQU	BURNN	POSTW	POSTLE	NITRIT	CULTU	HOSPST
1	32	38+4	3	1	1	1	PREV.LSCS	1	2	1	12PM	1HR	6HRS	17HRS	0	0	0	0	0	0	8	0	0	0	5DAYS
2	28	37+2	4	1	1	2	PREV.LSCS	1	2	1	9AM	1HR	7HRS	20HRS	0	0	0	0	0	0	2	0	0	0	5DAYS
3	29	37+4	2	1	1	0	GDM	1	1	1	11.40AM	11/2HRS	0	28HRS	1	0	1	0	0	1	8	1	0	STERILE	7DAYS
4	26	38+2	4	1	1	2	HYPOTHYROID	1	1	1	11.40AM	1HR	3HRS	18HRS	0	0	0	0	0	0	1	0	0	0	5DAYS
5	34	38+3	3	1	1	1	PREV.LSCS	1	1	2	11.00AM	11/2HRS	5 1/2HRS	17HRS	0	0	0	0	0	1	8	1	0	STERILE	6DAYS
6	38	38+3	2	1	1	0	GDM	1	3	2	11.30AM	1HR	5 1/2HRS	19HRS	0	0	0	0	0	0	7	TRACE	0	0	6DAYS
7	27	38+0	3	1	1	0	PREV.LSCS	1	3	1	9.00AM	1HR	6HRS	20HRS	0	0	0	0	0	0	2	0	0	0	6DAYS
8	31	38+1	5	1	1	3	PREV.LSCS	1	4	1	9.30AM	1HR	7hrs	22hrs	0	0	0	0	0	0	9	0	0	0	5DAYS
9	20	38+0	2	1	1	0	GDM	1	3	2	1.00PM	1HR	6HRS	17HRS	0	0	0	0	1	1	22	2	0	STERILE	6DAYS
10	28	38+6	3	1	1	1	PREV.LSCS	1	2	1	11.30AM	1HR	4HRS	18HRS	0	0	0	0	0	0	1	0	0	0	4DAYS
11	21	39+2	1	0	0	0	GDM	1	0	1	10.00AM	1HR	6HRS	22HRS	0	0	1	0	1	1	38	1	0	STERILE	6DAYS
12	30	38+5	3	1	1	1	PREV.LSCS	1	1	2	1.00PM	1HR	5HRS	161/2HRS	0	0	0	0	0	0	1	0	0	0	5DAYS
13	30	38+2	2	1	1	0	PREV.LSCS	1	2	2	9.00AM	1HR	5HRS	20HRS	0	0	0	0	0	0	2	0	0	0	5DAYS
14	35	37+6	2	1	1	0	HYPOTHYROID	1	1	2	9.00AM	11/2HRS	61/2HRS	20HRS	0	0	0	0	0	0	2	0	0	0	4DAYS
15	21	38+2	2	1	1	0	PREV.LSCS	1	1	1	11.30AM	1HR	6HRS	12HRS	0	0	0	0	0	0	8	0	0	0	5DAYS
16	25	37+2	3	1	1	1	PREV.LSCS	1	1	1	9.00AM	11/2HRS	61/2HRS	19HRS	0	0	0	0	0	0	7	0	0	0	4DAYS
17	40	38+5	2	1	1	0	PREV.LSCS	1	2	1	8.00AM	1HR	5HRS	19HRS	0	0	0	0	0	0	2	0	0	0	5DAYS
18	26	37+6	2	1	1	0	ANEMIA	1	1	1	9.00AM	11/2HRS	71/2HRS	14HRS	0	0	0	0	0	0	5	0	0	0	5DAYS
19	23	38+0	3	1	1	1	RH NEGTIVE	1	1	1	11.00AM	1HR	10HRS	16HRS	0	0	0	0	0	0	7	0	0	0	4DAYS
20	25	38+1	2	1	1	0	PREV.LSCS	1	1	1	11.00AM	1HR	7HRS	17HRS	0	0	0	0	0	0	9	0	0	0	5DAYS
21	28	38+1	2	1	1	0	BREECH	2	1	1	12.00PM	1HR	7HRS	10HRS	0	0	0	0	0	0	6	0	0	0	6DAYS
22	25	38+2	2	1	1	0	PREV.LSCS	1	2	1	9.30AM	1HR	5HRS	15HRS	0	0	0	0	1	1	35	2	0	ECOLI	7DAYS
23	26	38+0	2	1	1	0	PREV.LSCS	1	2	1	10.30AM	1HR	7RHS	15HRS	0	0	0	0	0	0	0	0	0	0	5DAYS
24	25	37+0	3	2	2	0	PREV.LSCS	1	1	1	12.00PM	1HR	7HRS	16HRS	0	0	0	0	0	0	8	0	0	0	5DAYS
25	25	38+5	2	1	1	0	PREV.LSCS	1	1	1	11.00AM	11/2HRS	6HRS	14HRS	0	0	0	0	0	0	7	0	0	0	5DAYS
26	25	38+2	2	1	1	0	ANEMIA	1	2	1	1.00pm	1HR	7hrs	16hrs	0	0	0	0	0	0	7	0	0	0	6DAYS
27	27	38+3	2	1	1	0	GDM	1	1	1	1.00pm	1HR	5hrs	14hrs	0	0	0	0	0	0	8	0	0	0	4DAYS
28	27	37+2	2	1	1	0	GDM	1	4	1	12.00pm	1HR	4hrs	20hrs	0	0	0	0	0	0	2	0	0	0	5DAYS
29	30	37+5	5	1	1	3	PREV.LSCS	1	2	1	1.00pm	1HR	6hrs	12hrs	0	0	0	0	0	0	0	0	0	0	4DAYS
30	24	38+1	3	1	1	1	PREV.LSCS	1	6	1	10.30am	11/2HRS	6hrs	10hrs	0	0	0	0	0	0	6	0	0	0	5DAYS
31	34	37+0	2	1	1	0	BREECH	2	4	2	9.00AM	11/2HRS	7HRS	13HRS	0	0	0	0	0	0	5	0	0	0	6DAYS
32	27	38+0	1	0	0	0	TWIN	1	0	3	10.30AM	1HR	6HRS	12HRS	0	0	0	0	0	0	6	0	0	0	5DAYS
33	26	37+4	3	2	2	0	PREV.LSCS	1	5	1	9.00AM	1HR	6HRS	24HRS	0	0	0	0	0	0	8	0	0	0	6DAYS
34	31	37+0	2	1	1	0	BREECH	2	6	2	10.30AM	1HR	6HRS	18HRS	0	0	0	0	0	0	1	0	0	0	5DAYS
35	34	38+0	4	1	1	2	BOH	1	7	1	9.00AM	11/2HRS	0	27HRS	1	0	0	0	0	0	1	0	0	0	7DAYS
36	29	37+5	2	1	1	0	BREECH	2	1	1	12.00PM	1HR	5HRS	15HRS	0	0	0	0	0	0	8	0	0	0	5DAYS
37	29	38+6	2	1	1	0	PREV.LSCS	1	6	1	11.00AM	11/2HRS	7HRS	17HRS	0	0	0	0	0	0	10	0	0	0	4DAYS
38	27	38+5	2	1	1	0	PREV.LSCS	1	6	1	10.00AM	1HR	6HRS	19HRS	0	0	0	0	0	0	8	0	0	0	6DAYS
39	29	38+2	2	1	1	0	PREV.LSCS	1	6	1	11.00AM	1HR	7HRS	18HRS	0	0	0	0	0	0	6	0	0	0	5DAYS
40	37	38+0	2	1	1	0	PREV.LSCS	1	2	2	9.00AM	11/2HRS	5HRS	14HRS	0	0	0	0	0	0	0	0	0	0	4DAYS

41	25	37+2	2	1	1	0	HYPOTHYROID	1	0	1	12.30PM	11/2HRS	6HRS	16HRS	0	0	0	0	0	0	6	0	0	0	6DAYS
42	27	38+2	3	1	1	1	ANEMIA	1	1	2	11.00AM	1HR	7HRS	18HRS	0	0	0	0	0	0	6	0	0	0	4DAYS
43	27	37+4	2	1	1	0	PREV.LSCS	1	1	1	10.00AM	1HR	5HRS	20HRS	0	0	0	0	0	0	6	TRACE	0	0	5DAYS
44	28	38+1	3	1	1	0	GDM	1	2	2	9.30AM	11/2HRS	6HRS	20HRS	0	0	0	0	0	0	2	TRACE	0	0	4DAYS
45	27	38+1	2	1	1	0	PREV.LSCS	1	3	1	11.30AM	1HR	4HRS	19HRS	0	0	0	0	0	0	4	0	0	0	5DAYS
46	25	37+	3	1	1	1	HYPOTHYROID	1	1	2	10.00AM	11/2HRS	5HRS	17HRS	0	0	0	0	0	0	8	0	0	0	5DAYS
47	28	38+2	2	1	1	0	GDM	1	2	1	10.00AM	11/2HRS	7HRS	19HRS	0	0	0	0	0	0	3	0	0	0	5DAYS
48	27	38+5	2	1	1	0	PREV.LSCS	1	6	1	1.00pm	1hr	7hrs	16hrs	0	0	0	0	0	0	8	0	0	0	6DAYS
49	25	38+3	1	0	0	0	BREECH	2	8	1	9.00AM	1HR	7HRS	13HRS	0	0	0	0	0	0	4	0	0	0	5DAYS
50	27	39+0	1	0	0	0	TWIN	3	1	2	8.00AM	1HR	5HRS	10HRS	0	0	0	0	0	0	7	0	0	0	6DAYS
51	29	38+0	1	0	0	0	OLIGOHYDRAM	2	1	1	10.00AM	11/2HRS	7HRS	19HRS	0	0	0	0	0	0	3	0	0	0	5DAYS
52	28	39+0	2	1	1	0	PREV.LSCS	1	0	2	12.00PM	1HR	1HR	12HRS	0	0	0	0	1	0	10	0	0	0	3DAYS
53	35	38+2	2	1	1	0	PREV.LSCS	1	5	2	10.30AM	1HR	6HRS	12HRS	0	0	0	0	0	0	7	0	0	0	5DAYS
54	24	38+6	2	1	1	0	PREV.LSCS	1	7	1	10.30AM	1HR	6HRS	18HRS	0	0	0	1	0	0	4	0	0	0	5DAYS
55	34	37+3	4	1	1	2	IUGR	1	1	2	8.00AM	11/2HRS	7HRS	17HRS	0	0	0	0	0	0	7	0	0	0	3DAYS
56	26	37+4	3	2	2	0	PREV.LSCS	1	5	1	9.00AM	1HR	6HRS	24HRS	0	0	0	0	0	0	6	0	0	0	4DAYS
57	31	37+0	2	1	1	0	BREECH	2	3	1	11.00AM	1HR	7HRS	18HRS	0	0	0	0	0	0	1	0	0	0	4DAYS
58	35	37+6	1	0	0	0	TRANSVERSELIE	3	2	1	8.30AM	1HR	6HRS	17HRS	0	0	0	0	0	0	10	TRACE	0	0	5DAYS
59	26	38+4	2	1	1	0	PREV.LSCS	1	3	1	10.30am	11/2HRS	7hrs	18HRS	0	0	0	0	0	0	0	0	0	0	3DAYS
60	29	38+2	4	1	1	2	ANEMIA	1	5	1	11.00AM	1HR	6HRS	19HRS	0	0	0	0	0	0	6	0	0	0	4DAYS
61	27	38+5	2	1	1	0	PREV.LSCS	1	2	1	10.00AM	1HR	7HRS	15HRS	0	0	0	0	0	0	4	0	0	0	4DAYS
62	28	38+4	3	1	1	1	PREV.LSCS	1	1	1	12.00PM	11/2HRS	8HRS	24HRS	0	0	0	0	0	0	6	0	0	0	5DAYS
63	28	37+5	4	1	1	2	IUGR	2	1	1	8.00AM	1HR	7HRS	10HRS	0	0	0	0	0	0	11	TRACE	0	STERILE	6DAYS
64	29	37+4	2	1	1	0	PREV.LSCS	1	1	1	9.00AM	1HR	6HRS	13HRS	0	0	0	0	0	0	5	0	0	0	4DAYS
65	25	38+3	1	0	0	0	BREECH	2	1	2	1.00PM	11/2HRS	7HRS	10HRS	0	0	0	0	0	0	0	0	0	0	4DAYS
66	24	38+1	2	1	1	0	PREV.LSCS	1	3	2	10.30AM	11/2HRS	7HRS	18HRS	0	0	0	0	0	0	5	0	0	0	4DAYS
67	27	38+5	2	1	1	0	PREV.LSCS	1	0	2	12.00PM	1HR	5HRS	13HRS	0	0	0	0	0	0	1	0	0	0	3DAYS
68	29	37+4	1	0	0	0	HYPOTHYROID	3	6	1	10.00AM	1HR	6HRS	16HRS	0	0	0	0	0	0	7	0	0	0	4DAYS
69	28	38+3	5	1	1	3	BOH	1	4	1	8.00AM	11/2HRS	61/2HRS	14HRS	0	0	0	0	0	0	2	0	0	0	4DAYS
70	27	39+0	1	0	0	3	BREECH	2	3	1	2.00pm	1HR	5HRS	10HRS	0	0	0	0	0	0	8	0	0	0	5DAYS
71	29	38+0	2	1	0	0	PREV.LSCS	1	4	2	9.00AM	1HR	6HRS	12HRS	0	0	0	0	0	0	0	0	0	0	4DAYS
72	28	37+4	4	1	1	2	PREV.LSCS	1	2	3	10.00AM	1HR	7HRS	16HRS	0	0	0	0	0	1	6	0	0	0	5DAYS
73	30	38+0	1	0	0	0	OLIGOHYDRAM	2	1	1	10.00AM	11/2HRS	7HRS	19HRS	0	0	0	0	0	0	5	0	0	0	4DAYS
74	35	38+2	2	1	1	0	PREV.LSCS	1	5	1	3.00PM	1HR	5HRS	14HRS	0	0	0	0	0	0	1	0	0	0	3DAYS
75	25	39+0	1	0	0	0	BREECH	2	0	0	8.00AM	1HR	51/2HRS	16HRS	0	0	0	0	0	0	2	0	0	0	5DAYS
76	31	37+0	2	1	1	0	PREV.LSCS	1	3	2	11.00AM	1HR	7HRS	18HRS	0	0	0	0	0	0	5	0	0	0	4DAYS
77	38	38+3	3	1	1	1	PREV.LSCS	1	0	2	11.30AM	1HR	71/2HRS	18HRS	0	1	0	0	0	0	7	0	0	0	3DAYS
78	32	36+6	2	1	1	0	IUGR	1	5	1	8.00AM	1hr	6HRS	12HRS	0	0	0	0	0	0	0	0	0	0	5DAYS
79	35	38+6	3	1	1	1	ANEMIA	1	2	1	9.00AM	1HR	6HRS	15HRS	0	0	0	0	0	0	5	0	0	0	3DAYS
80	32	38+4	1	0	0	0	TRANSVERSELIE	3	5	1	10.30AM	11/2HRS	6HRS	16HRS	0	0	0	0	0	0	1	0	0	0	5DAYS

NO	AGE	GA	G	P	L	A	ANT.COMP	INDCS	PREUR	PERSCAT	CATIN	CATOUT	1STVOID	AMB	RECAT	PTCOMP	D			BURNMIC	POSTWBC	POSTLEUC	NITRITES	CULTURE	HOSPSTAY
1	36	38+1	3	1	1	1	PREVLSCS	1	2	1	9.00AM	24HRS	2HRS	30HRS	0	2				0	1	0	0	0	5DAYS
2	29	38+2	3	1	1	1	GDM	1	1	1	12.OOPM	21HRS	4HRS	28HRS	0	1	0	0	0	0	7	0	0	0	6DAYS
3	25	38+1	4	1	1	2	PREVLSCS	1	2	1	9.00AM	24HRS	3HRS	31HRS	0	3	0	0	0	0	4	TRACE	0	0	5DAYS
4	26	38+2	3	1	1	1	PREVLSCS	1	2	1	11.00AM	22HRS	2HRS	26HRS	0	2	0	0	0	1	1	0	0	0	5DAYS
5	26	38+4	3	1	1	1	PREVLSCS	1	1	1	3.30PM	19HRS	1HR	23HRS	0	1	0	0	0	0	1	0	0	0	5DAYS
6	28	37+5	3	1	1	1	ANEMIA	1	2	1	10.00AM	23HRS	2HRS	28HRS	0	3	0	0	1	1	11	1	0	STERILE	7DAYS
7	30	38+5	3	2	1	0	PREVLSCS	1	2	2	9.30AM	23HRS	3HRS	31HRS	0	2	0	0	0	0	1	0	0	0	5DAYS
8	23	38+4	2	1	1	0	PREVLSCS	1	2	1	9.30AM	231/2HRS	3HRS	30HRS	0	2	0	0	0	1	4	0	0	0	6DAYS
9	35	38+3	2	1	1	0	PREVLSCS	1	2	1	11.00AM	22HRS	2HRS	28HRS	0	3	1	0	1	1	29	3	0	ECOLI	8DAYS
10	32	38+0	2	1	1	0	HYPOTHYROID	1	2	1	9.30AM	23HRS	4HRS	33HRS	0	2	0	0	0	0	2	0	0	0	5DAYS
11	26	38+2	4	1	1	2	PREVLSCS	1	2	1	11.00AM	22HRS	4HRS	28HRS	0	3	0	0	1	1	28	3	0	ECOLI	7DAYS
12	27	38+4	3	1	1	1	PREVLSCS	1	1	2	9.30AM	23HRS	3HRS	32HRS	0	3	0	0	0	0	4	0	0	0	5DAYS
13	28	38+0	2	1	1	0	HYPOTHYROID	1	2	1	10.00AM	23HRS	5HRS	31HRS	0	1	0	0	0	0	8	0	0	0	5DAYS
14	28	39+0	1	0	0	0	BREECH	2	1	2	2.00PM	19HRS	4HRS	25HRS	0	3	0	0	0	0	3	0	0	0	5DAYS
15	36	38+6	2	1	1	0	PREVLSCS	1	2	1	10.00AM	23HRS	4HRS	31HRS	0	2	0	0	0	0	8	0	0	0	5DAYS
16	29	38+2	2	1	1	0	PLAC.PREVIA	3	2	1	11.00AM	22HRS	4HRS	30HRS	0	1	0	0	0	0	2	0	0	0	5DAYS
17	36	37+0	2	1	1	0	PREVLSCS	1	2	1	11.00AM	24HRS	2HRS	28HRS	0	1	0	0	0	0	2	0	0	0	5DAYS
18	32	38+0	4	1	1	2	GDM	1	1	2	12.00PM	21HRS	2HRS	25HRS	0	2	0	0	0	0	1	0	0	0	6DAYS
19	26	38+4	2	1	1	0	PREVLSCS	1	1	1	10.00AM	22HRS	4HRS	29HRS	0	1	0	0	0	0	4	0	0	0	5DAYS
20	28	39+2	1	0	0	0	BREECH	2	1	1	9.00AM	24HRS	6HRS	32HRS	0	1	0	0	0	0	8	0	0	0	5DAYS
21	26	37+0	4	1	1	2	IUGR	1	1	2	8.00AM	24HRS	1HR	31HRS	0	2	0	0	0	1	2	0	0	0	5DAYS
22	26	38+0	1	0	0	0	MYOMECTOMY	3	6	1	2.00PM	19HRS	3HRS	24HRS	0	1	0	0	0	0	8	0	0	0	5DAYS
23	22	39+4	2	1	1	0	BREECH	2	4	1	10.00AM	23HRS	7HRS	30HRS	0	2	1	0	0	1	8	TRACE	0	0	6DAYS
24	22	38+0	2	1	1	0	PREVLSCS	1	1	1	9.00AM	23HRS	3HRS	30HRS	0	2	0	0	1	1	12	TRACE	0	STERILE	5DAYS
25	35	37+0	3	1	1	1	IUGR	1	2	1	11.00AM	22HRS	5HRS	28HRS	0	1	0	0	0	0	5	0	0	0	7DAYS
26	31	38+0	2	1	1	0	PREVLSCS	1	5	1	12.00PM	21HRS	3HRS	29HRS	0	3	1	1	0	1	20	3+	0	ECOLI	6DAYS
27	23	39+0	1	0	0	0	TRANS.LIE	3	1	1	1.00PM	19HRS	4HRS	30HRS	0	1	0	0	0	0	0	0	0	0	6DAYS
28	35	38+5	1	0	0	0	BREECH	2	2	1	11.30AM	23HRS	3HRS	30HRS	0	3	0	0	0	0	1	0	0	0	5DAYS
29	35	35+3	1	0	0	0	TRANS.LIE	3	2	1	10.00AM	20HRS	6HRS	31HRS	0	3	1	0	0	1	15	1	0	STERILE	6DAYS
30	32	37+1	3	2	2	0	IUGR	1	6	1	11.00AM	20HRS	6HRS	26HRS	0	1	0	0	0	0	8	TRACE	0	0	6DAYS
31	28	37+5	2	1	1	0	RH NEGATIVE	1	1	2	2.00PM	18HRS	2HRS	23HRS	0	2	0	0	1	1	22	1	0	STERILE	9DAYS
32	27	38+2	1	0	0	0	PLAC.PREVIA	3	1	1	12.00PM	18HRS	2HRS	27HRS	0	1	0	0	0	0	1	0	0	0	6DAYS
33	25	38+0	4	1	1	2	PREVLSCS	1	4	1	12.00PM	24HRS	2HRS	30HRS	0	1	0	0	0	0	10	TRACE	0	0	5DAYS
34	20	38+1	2	1	1	0	PREVLSCS	1	2	1	9.20AM	24HRS	4HRS	30HRS	0	2	0	0	1	1	15	2	0	STERILE	8DAYS
35	34	37+0	3	1	1	1	IUGR	1	1	2	11.00AM	19HRS	5HRS	31HRS	0	1	0	0	0	0	1	0	0	0	5DAYS
36	25	38+3	3	1	1	1	GDM	1	1	1	11.00AM	21HRS	1HR	28HRS	0	1	0	0	0	0	1	0	0	0	7DAYS
37	30	38+3	2	1	1	0	GDM	1	1	2	12.00PM	22HRS	5HRS	27HRS	0	1	0	0	0	0	0	0	0	0	5DAYS
38	28	37+5	3	1	1	1	PREVLSCS	1	4	1	1.00PM	24HRS	3HRS	29HRS	0	2	0	0	1	1	28	2+	0	ECOLI	8DAYS
39	30	37+2	2	1	1	0	BREECH	2	4	1	9.30AM	21HRS	1HR	27HRS	0	1	0	0	0	0	1	0	0	0	5DAYS
40	29	38+0	3	2	1	0	PREVLSCS	1	9	1	10.00AM	24HRS	3HRS	30HRS	0	2	0	0	0	0	1	0	0	0	6DAYS
41	29	38+2	1	0	0	0	BREECH	2	2	1	3.00PM	19HRS	4HRS	26HRS	0	3	0	0	1	1	21	1	0	ECOLI	8DAYS
42	31	38+0	5	1	1	3	BREECH	2	1	1	9.00AM	21HRS	5HRS	33HRS	0	2	0	0	0	0	8	TRACE	0	0	7DAYS
43	32	38+6	2	1	1	0	PREVLSCS	1	2	1	10.30AM	20HRS	7HRS	31HRS	0	2	0	0	0	0	4	0	0	0	5DAYS
44	25	38+3	3	0	0	2	IUGR	3	1	2	11.00AM	23HRS	7HRS	27HRS	0	1	0	0	0	0	2	0	0	0	6DAYS
45	23	39+0	1	0	0	0	BREECH	2	1	2	8.30AM	21HRS	5HRS	30HRS	0	2	0	0	0	0	6	0	0	0	5DAYS
46	26	39+2	4	1	1	2	GDM	1	1	1	11.30AM	24HRS	2HRS	34HRS	0	1	0	0	0	0	2	0	0	0	6DAYS
47	29	38+3	1	0	0	0	BREECH	2	2	1	10.00AM	18HRS	2HRS	30HRS	0	1	0	0	0	0	2	0	0	0	5DAYS
48	30	38+4	3	1	0	1	BOH	1	1	2	11.00AM	24HRS	2HRS	31HRS	0	1	0	0	0	0	0	0	0	0	5DAYS
49	28	37+6	2	1	1	0	PREVLSCS	1	4	1	11.00AM	21HRS	2HRS	29HRS	0	2	0	0	0	0	8	0	0	0	6DAYS
50	32	38+1	2	1	1	1	PREVLSCS	1	1	1	10.00AM	19HRS	2HRS	28HRS	0	2	0	1	1	1	22	2	0	ECOLI	8DAYS
51	36	38+4	2	1	1	0	PREVLSCS	1	2	1	9.30AM	21HRS	3HRS	26HRS	0	1	0	0	0	0	2	0	0	0	5DAYS

edpstat:
1-with comfortable
2-mild discomfort
3-significant comfort

52	26	38+0	4	1	1	2	PREVLSCS	1	1	1	1.00PM	24HRS	2HRS	28HRS	0	2	0	0	0	1	4	0	0	0	6DAYS
53	27	38+0	2	1	1	0	PREVLSCS	1	1	1	11.00AM	24HRS	1HR	30HRS	0	3	0	0	0	1	11	1	0	STERILE	6DAYS
54	31	38+0	2	1	1	0	PREVLSCS	1	4	1	1.00PM	21HRS	5HRS	30HRS	0	2	0	0	0	0	3	0	0	0	5DAYS
55	26	38+3	2	1	1	0	GDM	1	5	1	11.OOAM	23HRS	6HRS	34HRS	0	1	0	0	0	0	5	TRACE	0	0	6DAYS
56	27	37+3	2	0	0	1	IUGR	3	4	2	11.30AM	24HRS	1HR	30HRS	0	3	0	1	1	1	8	1	0	STERILE	8DAYS
57	29	38+0	4	1	1	2	PREVLSCS	1	0	1	9.00AM	21HRS	4HRS	30HRS	0	3	0	0	0	1	11	1+	0	STERILE	6DAYS
58	23	38+2	2	1	1	0	PREVLSCS	1	2	1	10.00AM	23HRS	4HRS	29HRS	0	1	0	0	0	0	3	0	0	0	5DAYS
59	26	38+0	3	1	1	1	PREVLSCS	1	0	1	9.00AM	23HRS	3HRS	30HRS	0	1	0	0	0	0	2	0	0	0	5DAYS
60	28	37+3	1	0	0	0	BREECH	2	2	1	11.00AM	23HRS	5HRS	31HRS	0	1	0	0	0	0	0	0	0	0	5DAYS
61	31	38+3	2	1	1	0	PREVLSCS	1	1	2	9.30AM	21HRS	4HRS	28HRS	0	2	0	0	0	1	8	1	0	STERILE	6DAYS
62	26	38+4	2	1	0	0	PREVLSCS	1	1	1	8.00AM	22HRS	1HR	27HRS	0	1	0	0	0	0	2	0	0	0	5DAYS
63	27	38+0	1	0	0	0	BREECH	2	1	1	1.30PM	18HRS	2HRS	29HRS	0	1	0	0	0	0	1	0	0	0	5DAYS
64	22	38+0	2	1	1	0	PREVLSCS	1	2	1	10.00AM	23HRS	6HRS	34HRS	0	1	0	0	0	0	2	0	0	0	5DAYS
65	30	37+0	1	0	0	0	TWIN	3	2	1	1.00PM	24HRS	2HRS	29HRS	0	1	0	0	0	0	2	0	0	0	7DAYS
66	29	38+5	2	1	1	0	PREVLSCS	1	5	2	10.00AM	18HRS	2HRS	30HRS	0	3	0	0	0	0	6	0	0	0	5DAYS
67	24	39+0	1	0	0	0	BREECH	2	4	1	10.00AM	17HRS	4HRS	30HRS	0	1	0	0	0	0	8	0	0	0	6DAYS
68	30	38+1	2	1	1	0	PREVLSCS	1	3	1	11.00AM	23HRS	5HRS	31HRS	0	2	0	0	0	0	4	0	0	0	5DAYS
69	23	38+6	3	1	1	1	RH NEGATIVE	1	3	2	10.00AM	19HRS	2HRS	28HRS	0	2	0	0	0	0	15	1	0	STERILE	6DAYS
70	29	38+1	3	1	1	1	PREVLSCS	1	7	1	9.00AM	22HRS	1HR	27HRS	0	2	0	0	0	0	4	0	0	0	5DAYS
71	33	38+3	2	1	1	0	PREVLSCS	1	5	1	8.00AM	22HRS	1HR	27HRS	0	1	0	0	0	0	0	0	0	0	4DAYS
72	31	39+2	1	0	0	0	BREECH	2	3	2	9.30AM	21HRS	4HRS	28HRS	0	1	0	0	0	0	9	0	0	0	6DAYS
73	33	38+2	3	1	1	1	PREVLSCS	1	2	1	1.00PM	24HRS	1HR	27HRS	0	2	0	0	0	0	5	0	0	0	5DAYS
74	23	38+1	2	1	1	0	PREVLSCS	1	1	1	12.OOPM	22HRS	5HRS	27HRS	0	1	0	0	0	0	7	0	0	0	6DAYS
75	27	39+3	2	1	1	0	PREVLSCS	1	7	1	11.00AM	23HRS	5HRS	31HRS	0	1	0	0	0	0	9	0	0	0	5DAYS
76	29	37+1	3	1	1	1	TRANS.LIE	3	6	1	9.00AM	21HRS	4HRS	30HRS	0	3	0	0	0	1	11	1+	0	STERILE	7DAYS
77	23	38+2	2	1	1	0	PREVLSCS	1	2	1	10.00AM	23HRS	4HRS	29HRS	0	1	0	0	0	0	3	0	0	0	5DAYS
78	26	38+0	2	1	1	0	PREVLSCS	1	0	1	9.00AM	23HRS	3HRS	30HRS	0	1	0	0	0	0	0	0	0	0	5DAYS
79	23	37+5	2	1	1	0	IUGR	1	7	2	10.00AM	23HRS	6HRS	34HRS	0	1	0	0	0	0	2	0	0	0	5DAYS
80	27	38+2	1	0	0	0	TWIN	3	8	1	1.00PM	24HRS	1HR	27HRS	0	2	0	0	0	0	6	0	0	0	6DAYS
81	25	38+0	2	1	1	0	PREVLSCS	1	7	1	9.30AM	21HRS	4HRS	28HRS	0	1	0	0	0	0	9	0	0	0	5DAYS
82	30	38+1	2	1	1	0	GDM	1	4	1	10.00AM	19HRS	2HRS	28HRS	0	2	0	0	0	1	2	0	0	0	6DAYS
83	35	38+3	3	1	1	1	RH NEGATIVE	1	7	1	8.00AM	22HRS	1HRS	27HRS	0	2	0	0	1	0	9	0	0	0	6DAYS
84	22	37+3	2	1	0	0	PREVLSCS	1	8	1	11.30AM	21HRS	4HRS	30HRS	0	1	0	0	0	0	0	0	0	0	5DAYS
85	29	38+2	4	1	1	2	HYPOTHYROID	1	2	1	1.00PM	24HRS	2HRS	29HRS	0	1	0	0	0	0	2	0	0	0	6DAYS
86	29	38+5	2	1	1	0	TWIN	3	5	1	2.00PM	21HRS	6HRS	34HRS	0	2	0	0	1	1	3	0	0	0	6DAYS
87	30	39+3	1	0	0	0	BREECH	2	0	2	8.00AM	22HRS	1HR	27HRS	0	1	0	0	0	0	9	0	0	0	5DAYS
88	26	37+5	2	1	1	0	PREVLSCS	1	9	1	9.00AM	21HRS	3HRS	29HRS	0	1	0	0	0	0	21	2	0	STERILE	6DAYS
89	33	38+3	2	1	1	0	PREVLSCS	1	4	1	11.00AM	23HRS	5HRS	31HRS	0	1	0	0	0	0	2	0	0	0	5DAYS
90	36	38+6	4	1	1	2	PREVLSCS	1	8	1	10.30AM	23HRS	6HRS	34HRS	0	2	0	0	0	0	4	0	0	0	6DAYS
91	24	39+5	1	0	0	0	BREECH	2	1	1	8.00AM	22HRS	1HR	27HRS	0	1	0	0	0	0	3	0	0	0	5DAYS
92	26	38+2	2	1	1	0	PREVLSCS	1	0	1	9.30AM	21HRS	4HRS	28HRS	0	1	0	0	0	0	2	0	0	0	6DAYS
93	27	38+0	3	1	1	1	PREVLSCS	1	0	2	10.00AM	23HRS	6HRS	34HRS	0	1	0	0	0	0	5	0	0	0	5DAYS
94	23	38+5	2	1	1	0	GDM	1	1	1	9.00AM	23HRS	1HR	29HRS	0	1	0	0	0	0	7	0	0	0	5DAYS
95	22	39+2	1	0	0	0	TRANS.LIE	3	4	1	2.00PM	18HRS	2HRS	25HRS	0	1	0	0	0	1	1	0	0	0	6DAYS
96	31	38+5	2	1	1	0	PREVLSCS	1	1	1	8.00AM	22HRS	7HRS	32HRS	0	1	0	0	0	0	2	0	0	0	5DAYS
97	24	38+2	2	1	1	0	IUGR	1	0	2	9.30AM	21HRS	4HRS	28HRS	0	1	0	0	0	0	4	0	0	0	5DAYS
98	31	37+1	4	1	1	2	TRANS.LIE	3	8	1	8.00AM	22HRS	3HRS	29HRS	0	2	0	0	0	0	6	0	0	0	6DAYS
99	27	38+2	2	1	1	1	PREVLSCS	1	7	1	1.00AM	24HRS	1HR	27HRS	0	2	0	0	0	0	5	0	0	0	5DAYS
100	23	39	1	0	0	0	PLAC.PREVIA	3	3	1	10.00AM	19HRS	2HRS	25HRS	0	1	0	0	0	1	8	0	0	0	5DAYS