THE EFFICACY OF PARENTRAL TRANEXAMIC ACID IN REDUCING BLOOD LOSS IN NORMAL LABOUR

DISSERTATION

Submitted in Partial fullfillment of The Regulations of The Tamilnadu Dr.M.G.R Medical University for The Award of The Degree

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Reg. No. 221716656

DEPARTMENT OF OBSTETRICS AND GYNECOLOGY

GOVERNMENT THENI MEDICAL COLLEGE

TAMILNADU.

MAY 2020

CERTIFICATE

This is to certify that this dissertation titled **"THE EFFICACY OF PARENTRAL TRANEXAMIC ACID IN REDUCING BLOOD LOSS IN NORMAL LABOUR**" is a bonafide work done by **Dr. V. Shanmugapriya**, at the department of Obstetrics and Gynaecology, Government Theni Medical College, during her postgraduate study for MS Branch 2 obstetrics and Gynaecology (2017-2020). This dissertation is submitted to DR. MGR Medical University in partial fulfilment of the University rules and regulations for the award of MS degree in obstetrics and Gynaecology.

Prof. Dr. B.SHANTHI RANI MD., DGO.
HEAD OF DEPARTMENT,
DEPT OF OG,
GOVT THENI MEDICAL COLLEGE,
THENI.

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Prof . Dr. K.RAJENDRAN MS., D.Ortho,
DEAN
GOVT THENI MEDICAL COLLEGE.

CERTIFICATE BY THE GUIDE

This is to certify that this dissertation work entitled **"THE EFFICACY OF PARENTRAL TRANEXAMIC ACID IN REDUCING BLOOD LOSS IN NORMAL LABOUR"** of the candidate **Dr. V. SHANMUGAPRIYA**, with the **Registration Number : 221716656**, for the award of **Master of Surgery** in the branch of **OBSTETRICS and GYNAECOLOGY**, under the guidance of Dr.M.Thangamani, MD., DGO., and Dr.Shanthavibala, MD., OG., I personally verified the Urkund Website for the purpose of Plagiarism Check I found that the uploaded thesis file contains from introduction to conclusion pages and results shows 23percentage of plagiarism in the dissertation.

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I hereby declare that this dissertation entitled **"THE EFFICACY OF PARENTRAL TRANEXAMIC ACID IN REDUCING BLOOD LOSS IN NORMAL LABOUR"** was a bonafide and genuine work carried out by me under the direct guidance and supervision of **Prof.Dr.M.Thangamani,M.D.,DGO.,Dr.Shanthavibala, M.D., OG.,** The dissertation is submitted to the Dr. M.G.R. Medical University in partial fulfilment of the University regulations for the award of MS degree in Obstetrics and Gynaecology, Examination to be held in May 2020. This record of work has not been submitted previously by me for the award of any degree or diploma from any other university.

PLACE : THENI **Dr. V. SHANMUGAPRIYA**

DATE :

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LIST OF ABBREVIATIONS

PR	-	PULSE RATE
SBP	-	SYSTOLIC BLOOD PRESSURE
DBP	-	DIASTOLIC BLOOD PRESSURE
RR	-	RESPIRATORY RATE
HT	-	HEIGHT
WT	-	WEIGHT
BMI	-	BODY MASS INDEX
PPH	-	POST PARTUM HAEMORRHAGE
HB	-	HAEMOGLOBIN
POD	-	POST OPERATIVE DAY
NICU	-	NEONATAL INTENSIVE CARE UNIT
LFT	-	LIVER FUNCTION TEST
RFT	-	RENAL FUNCTION TEST
IUD	-	INTRA UTERINE FETAL DEATH
AMTSL	-	ACTIVE MANAGEMENT OF THIRD STAGE OF LABOUR
VWD	-	VON WILLEBRAND'S DISEASE
ITP	-	IDIOPATHIC THROMBOCYTOPENIC PURPURA
TTP	-	THROMBOTIC THROMBOCYTOPENIC PURPURA

DIC - DISSEMINATED INTRA VASCULAR COAGULATION

DUB - DYSFUNCTIONAL UTERINE BLEEDING

TXA - TRANEXAMIC ACID

CVS - CARDIO VASCULAR SYSTEM

RS - RESPIRATORY SYSTEM

HELLP - HEMOLYSIS, ELEVATED LIVER ENZYMES, LOW PLATELETS

CT - CLOTTINGTIME

BT - BLEEDING TIME

CBC - COMPLETE BLOOD COUNT

CVP - CENTRAL VENOUS PRESSURE

PCV - PACKED CELL VOLUME

TD - TIME OF DELIVERY

ABSTRACT

AIM OF THE STUDY

●To evaluate the efficacy of parentral tranexamic acid in reducing blood loss during normal labour

●To compare it with amount of blood loss in patients who did not receive tranexamic acid in third stage.

STUDY DESIGN -PROSPECTIVE RANDOMISED PLACEBO CONTROLLED STUDY

MATERIALS AND METHODS

●Subjects of this prospective randomized placebo controlled study are 200 pregnant women admitted in labour ward of Government Theni Medical college.

●In all patients detailed history – Medical history ,obstetrics history will be taken.

●Vital parameters and basic investigations will be done.

●Weight of the patient will be noted

●General examination ,obstetrics examination will be done.

●To confirm gestational age by USG

●100 patients will be placed in study group ●100 patients will be placed in control group●All patients will be counselled and inform consent will be obtained.

●Study group will receive injection oxytocin 10 units intramuscularly within one minute of delivery and injection Tranexamic acid 10mg/kg in 100ml normal saline over 20 minutes.

●Control group will receive injection oxytocin 10 units intramuscularly within one minute of delivery and placebo of 100ml normal saline over 20 minutes.

INCLUSION CRITERIA

●Primi and second gravida

●More than 38 weeks of gestation

●Spontaneous /induced labour

EXCLUSION CRITERIA

Women with risk factors for PPH are not included in the study

●Haemoglobin less than 8gm ●Twin pregnancy

●Polyhydraminos

●EFW more than 4kg

●Previous history of PPH

●Fibroid complicating pregnancy

●Preeclampsia

●Prolonged and obstructed labour ●Heart disease complicating pregnancy

●Renal/ liver disease complicating pregnancy

●Patients on anticoagulants

●Previous history of thromboembolism ●Gravida more than or equal to three

METHODS

●Both groups after receiving injections the following parameters will be noted

●Predelivery BP,Pulse rate,respiratory rate,spo2,urine output ,HB,PCV

●Blood loss from delivery of the baby to two hours post partum will be noted

●Side effects of the drugs will be noted

●Post partum BP,Pulse rate,respiratory rate,spo2,urine output ,Hb, PCV will be noted.

Maternal needs for blood transfusion will be noted

●Maternal outcome till discharge will be noted

REFERENCES

●1.Henry DA,carless PA,Moxey Aj et al.antifibronolytic use for minimising perioperative allogenic blood transfusion.Cochrane database syst Rev .2007;issue 4.Art no:CD001886.[PUBMED]

●2.Lethaby A,Farquhar C.antifibrinolytics for heavy menstrual bleeding .Cochrane Database syst Rev .2000;issue 4 .ARTno:CD000249.[pubmed]

3.Mac Mullen NJ,Dulsi LA,Meagher B.MCN

●4.Gai MY,Wu LF,Su QF,et al.clinical observation of blood loss reduced by tranexamic acid during and after caeserean section:a multi center randomiced

trial.Eur j Obstet Gynaecol Reprod Biol.2004;112(2):154-157.doi:10.1016/S0301-2115(03)00287-2.[pubmed] [cross ref]

●5.Pattinson RC.saving mothers-third report on confidential enquiries into maternal deaths insouth africa 2002-04 Pretoria

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INTRODUCTION

Child birth is one of the most cherished moment in a woman's life. Labour natural is a unique experience and child birth is celebrated not only by the mother but by the entire family. Although the incidence of caesarean section is increasing throughout the world, the art of vaginal birth has not lost its charm. Birth is a life changing event. The care that ought to be given to a woman during labour has the potential to affect her both physically and emotionally in the short and long term. Though labour is a physiological process, it is often associated with morbidity and mortality. The most common cause of maternal mortality is blood loss. According to CEMACH Confidential enquiries into maternal and child health report life threatening obstetric hemorrhage occurs in approximately 3.7 per 1000 deliveries with uterine atony being the commonest cause. Management of PPH is the critical point in saving a mothers life.A lot of drugs are being used in management of PPH . The recent ones being the anti fibrinolytics and recombinant factor VIIa.

The commonest cause of postpartum haemorrage is uterine atony due to the failure of the myometrium to contract and retract after the delivery of the fetus to stop bleeding from the raw placental site.Atonic PPH accounts for 80%of all cases of primary postpartum haemorrage.The other causes include genital tract trauma,retained placental bits and rarely coagulopathy. After delivery of the placenta ,there is rapid degradation of fibrinogen and fibrin occurs.There is increase in the activation of plasminogen activity and increased level of fibrin degrading products because of activation of fibrinolytic system.Hence

antifibrinolytics will be useful in reducing blood loss .Tranexamic acid is a synthetic derivative of amino acid lysine.it action is antifibrinolytic effect by its reversible blockade of lysine binding sites on plasminogen molecules.This study observes the efficacy of Tranexamic Acid, an antifibrinolytic agent in reducing blood loss during 3rd stage of labour.

AIM OF THE STUDY

1. To study the efficacy of parenteral Tranexamic Acid in reducing blood loss during normal labour.
2. To compare it with the amount of blood loss in patients who did not receive Tranexamic Acid in the 3rd stage of labour.

STUDY DESIGN

PROSPECTIVE RANDOMISED PLACEBO CONTROLLED STUDY

REVIEW OF LITERATURE

Postpartum haemorrage accounts for a quarter of maternal deaths worldwide and its incidence is increasing in the developing countries.worldwide ,PPH continues to be the leading cause for maternal mortality and morbidity mainly due to"too little being done too late"The recent advances are the conservative techniques for placenta percreta ,the use of tranexamic acid and changes in the ratio of blood and blood products.

Prendiville et al. in Bristol Third Stage Trial found an incidence of postpartum bleeding of 5.9% in actively managed group and 17.9% in physiologically managed group. They concluded that intervention in third stage of labour reduces the risk of PPH by 30 – 40%.

MrCormick et al. published a systematic review of studies that assessed the efficacy of intervention in 3rd stage – concluded that intervention reduced the incidence of PPH, decreased the need for blood transfusion and decreased the need for additional uterotonic drugs.

Malcolm Potts 2006 – Darwinian evolution is not about what is nice,safe or aesthetic, but about what works. Human beings are burdened with a highly invasive trophoblast and at delivery, the human placenta leaves a huge, 20cm diameter wound on the inside of the uterus. The potential of catastrophically heavy bleeding can be avoided only by powerful uterine contractions and a good coagulation mechanism.

Idara Udofia et al. 2008 – Any intervention aimed at preventing PPH will reduce maternal mortality by more than one quarter.

Blood loss during normal labour

Normal pregnancy is accompanied by changes in the haemostatic mechanisms leading to increase in the levels of factor VII, VIII, X and fibrinogen and fibrin degrading products and a pronounced decrease in fibrinolytic activity. Parturition presents a serious challenge to the vascular compartment, but it has been generally held **(Taylor, 1966; Donald, 1969)** that contraction and retraction of the crisscross myometrial filaments "the living ligatures" of the uterus ;causing occlusion of blood vessels leading to control of blood loss at delivery. The trauma to the female genital tract can cause significant disruption and tearing of blood vessels. blood loss need not always be visible as in the cases of broad ligament or vaginal hematomas.it should be suspected when there is severe pain and vitals are disproportionate to the amount of blood loss noted.

Retained placenta means the failure of the placenta to separate and expel within 30 minutes after delivey of the baby.it occurs in less than 3% of all vaginal deliveries.The mean duration of delivery to placenta expulsion is usually 8 to 9 minutes,if there is delay then there is increased risk of PPH.Coagulopathy refers to the disorders of coagulation abnormalities.These are rare causes of PPH.Most common causes of coagulopathy are idiopathic thrombocytopenic purpura,thrombotic thrombocytic purpura ,von willebrand disease and hemophilias.

Acquired causes of coagulopathy are HELLP AND Disseminated intravascular coagulation .The coagulation and fibrinolytic mechanisms are in a state of dynamic equilibrium keeping the vascular compartment intact and patent,the coagulation system lays down fibrin to seal the gaps in the vascular endothelium and the fibrinolytic mechanism removes the deposits of fibrin after they have served their haemostatic function. After the delivery of placenta there is degradation of fibrinogen and fibrin,increase in the activation of plasminogen activity and fibrin degrading products through activation of fibrinolytic system.

PHYSIOLOGICAL CHANGES IN PREGNANCY

There is increase in the maternal blood volume by 50%[from 40% to 60%]RBC volume increases by 20 to 30 %.There is increased uterine artery blood flow upto 500-800ml /min at term which is around 10-15% of a womens cardiac output.

Average blood loss in

Vaginal delivery – 500ml

Caesarean section – 1000ml

Caesarean hysterectomy – 1500ml

Emergency hysterectomy – 3500ml

Even a very small blood loss may be life threatening in cases of pregnancy complicated by anemia ,heart diseases.**Kongnyuy et al., 2009)**.

GREENTOP GUIDELINES (RCOG 2007) – defines PPH as

- 1 blood volume loss / 24 hrs
- 150 ml / minute blood loss
- 50% blood volume loss / 3 hrs

Some of the factors leading to increased blood loss in the third stage labour are as follows:

Mean vaginal blood loss is higher in multiparae than in primiparae

In primiparae, forceps delivery is associated with greater blood loss than spontaneous delivery; this is because of the episiotomies and other injuries to the genital tract.

Patients with an episiotomy and a laceration loose significantly more blood than those deliveries without episiotomies. Episiotomies contribute to 154 ml to the average blood loss.

Incidence of PPH

2% to 11% - when the blood loss is estimated visually **(Brent et al., 1967)**

20% - when the blood loss is estimated by quantitative methods **(Newton et al.,1961)**

Types of PPH

- 1°PPH / early PPH- this is defined as PPH within 24 hrs of delivery
- 2° PPH / late PPH – this is defined as PPH occuring 24 hrs to 6 weeks after delivery

  Most of the cases of PPH around 99% are due to 1° PPH.

Pathophysiology

At term the uterus and placenta receive 500 – 800 ml of blood per minute through their low resistance network of vessels. The high flow predisposes a gravid uterus to significant bleeding if it is not physiologically or medically controlled. By the third trimester, maternal blood volume increases by 40% - 50%,so that the body's tolerance of blood loss during delivery is increased. After the delivery of the fetus, the gravid uterus contracts significantly leading to reduction in volume. Because of this, the placenta separates from the uterine interface, exposing maternal blood vessels that interface with the placental surface. After separation and delivery of the placenta, there is contraction and retraction of uterus because of shortening of its fiber and kinking the supplying blood vessels, like physiologic sutures or "living ligatures. "If the uterus fails to contract, or the placenta fails to separate or deliver, then significant hemorrhage will occur. Uterine atony, or diminished myometrial contractility, accounts for 80% of postpartum hemorrhage. The other major causes are the abnormal placental attachment or retained placental tissue, laceration of tissues or blood vessels in the pelvis and genital tract, and maternal coagulopathies. In addition, though uncommon, is the uterine inversion during placental delivery.

Potential causes for increased blood loss during labour:

1. Tone loss
2. Trauma
3. Tissue retention
4. Thrombotic defect

Of these, tone loss is the commonest and thrombotic defect is the most difficult to treat.

1. TONE LOSS : 80%, the predisposing factors are

- Multiparity
- Uterine overdistension – multiple pregnancy, hydramnios, macrosomia
- Prolonged labour
- Precipitate labour
- Anemia
- Chorioamnionitis
- Uterine abnormalities or fibroids
- Previous H/O PPH
- Induced labour
- Inadvertent use of oxytocics
- Drugs – halogenated anaesthetics, MgSO4, nifidepine, beta agonists, diazoxide
- Placenta – accreta, praevia, abruption

2. TRAUMA : 20%

This is due to the lacerations and haematomas resulting from birth trauma which cause significant blood loss that can be lessened by haemostasis and timely repair.

Factors associated with increased blood loss are:

- Obstructed labour
- Big baby

- Face to pubis delivery
- Precipitate labour
- Instrumental delivery
- vaginal birth after caeserean

3. TISSUE RETENTION: 10%

Placenta accreta, increta, percreta, missed cotyledons and succenturiate placental lobe can lead to PPH

Risk factors

- Advanced maternal age
- High parity
- Previous invasive placenta
- Previous caesarean section
- Placenta praevia
- Previous H/O manual removal of placenta

4.**THROMBOTIC DEFECT: 5%**

- Coagulopathies – ITP, TTP, VWD, hemophilia
- Acquired – HELLP, abruption, IUD, DIC, septicemia

PPH is a life threatening complication of both vaginal and caesarean delivery. Associated morbidity is the result of blood loss as well as the potential complications of haemostatic and resuscitative interventions.

Consequence of uncontrolled haemorrhage include

- Hypovolemic shock and associated organ failure including renal failure,stroke, myocardial infarction

- Postpartum hypopituitarism (Sheehan syndrome): Acute blood loss and / or hypovolemic shock during and after childbirth can lead to hypoperfusion of the pituitary and subsequent necrosis. Mostly asymptomatic, it may present with an inability to breastfeed, fatigue, hypogonadism, amenorrhea and hypotension.
- Death can occur due to hypovolemic shock

Consequences of fluid resuscitation

- Fluid overload can lead to extremity edema and pulmonary edema. The latter is less common in young healthy women, but it should be suspected in cases of large fluid and blood product transfusions
- Dilutional coagulopathy will result when crystalloids and/or serum-poor blood products are transfused in large volume.

Risks from exposure to blood products

- Allergic or febrile reactions has incidence of about 1 case per 333 population.
- Anaphylactic reactions may happen in 1 in 20,000 to 1 in 47,000 blood products transfusion.
- Transfusion-related acute lung injury (TRALI) occurs in 1 out of every 5,000 transfusions, but incidence is high with high plasma containing products like fresh frozen plasma (FFP) and platelets. It often happens within 1-2 hours of the transfusion, but it can occur anytime up to 6 hours after a transfusion. The symptom complex includes severe bilateral

pulmonary edema, severe hypoxemia, tachycardia, cyanosis, hypotension, and fever.

- Acute immune hemolytic reaction is the most serious type of transfusion reaction but it is very rare. Symptoms are due to red blood cell hemolysis. Patients may have fevers, chills, chest and lower back pain,nausea, renal failure, and death if the transfusion is not stopped immediately.
- Delayed hemolytic reaction: This is a type of reaction happening when the body slowly attacks antigens (other than ABO antigens) on the transfused blood cells. Symptoms will occur days to weeks after a transfusion. Affected patients are either asymptomatic or have mild symptoms, which may include jaundice, low-grade fever, and a low hemoglobin or hematocrit

Infection

Hepatitis is the most common disease transmitted by blood transfusions. According to the American Red Cross, about 1 blood transfusion in 205,000 transmits a hepatitis B infection, and 1 blood transfusion in about 2million transmits hepatitis C.Other rare but other serious infections include HIV (risk of 1 in 2.5 million),Lyme disease, babesiosis, and malaria. Donors are to be screened for potential exposure so that transmission will be reduced . Rarely, blood may be contaminated with skin bacteria during the process of donation. Platelets are the most likely blood product that can be affected because of the contamination from skin flora.

- Metabolic reactions: In cases of large volume and rapid transfusions, patients are at risk of developing 3 metabolic reactions: hypothermia, hyperkalemia, and citrate toxicity.
- Hypothermia results from the transfusion of unwarmed crystalloid or colloid that lowers the body temperature. Hypothermia inhibits coagulation and will worsen postpartum hemorrhage. Citrate is a blood product additive that binds serum calcium and can cause hypocalcemia in cases of large-volume transfusions. Hemolysis will occur when red blood cell that are stored which will release the intracellular potassium with time. Transfusions of older red blood cells will increase the risk of hyperkalemia.

Risks associated with surgical intervention

- Intubation and anesthesia complications: Pregnant women have an increased risk for aspiration, failed intubation, and death from failed ventilation when they are compared with nonpregnant patients. Respiratory injury or infection, myocardial infarction, myocardial arrhythmia,stroke, or allergic reactions to anesthetic medications may also occur but are rare

Bleeding: may be associated with continous bleeding from the genital tract or a bleeding complication from the surgery may occur.

Infection: Sepsis, wound infection, or pneumonia may occur.

- Deep venous thrombosis and/or pulmonary embolism: Risk will be increased due to postpartum and postoperative associated

hypercoagulability and also from relative immobility during the operative and postoperati veperiod. If the bleeding cannot be controlled conservatively (removal of products of conception, suturing disrupted tissues, application of pressure) then surgical intervention is necessary.

In severe cases, the following can occur:

1. Hysterectomy
2. Asherman syndrome, which is secondary (non-hormone mediated) amenorrhea as the result of the uterine scarring that develops after infection and/orcurettage performed so as to remove placental fragments

BLOOD LOSS ASSESSMENT

In order to assess the efficiency of the drug, the blood loss assessment must be standardized.

Clinical methods

By subjective characters

1. Visual estimation

2. **Estimation by subjective characters**

Shock index

SI = HEART RATE / SYSTOLIC BP

NORMAL = 0.5 – 0.7, with significant hemorrhage, it increases to 0.9 – 1.1

Rule of 30

1. If systolic BP falls by 30 mmHg
2. Heart rate rises by 30 bpm
3. Respiratory rate rises by 30 breaths per minute
4. Hb or Hct drops by 30%
5. Urine output < 30 ml per hour

Then the blood loss is estimated to be atleast 30% of blood volume if all the above is present.

Measurement of CVP

Normal : 8 – 14 cm of water. If CVP is low 0-6 cm of water, it denotes the blood volume is low in relation to cardiac capacity. If CVP is high > 15 cm of water, it denotes the blood volume is high in relation to cardiac capacity.

Classification of haemorrhage

PARAMETER CLASS I CLASS II CLASS III CLASS IV

Blood loss (ml) < 750 750 – 1500 1500 - 2000 > 2000

Blood loss (%) < 15 15 – 30 30 – 40 > 40

Pulse rate/min < 100 > 100 > 120 > 140

Blood pressure N ↓ ↓ ↓

Respiratory rate/min 14 – 20 20 – 30 30 – 40 > 40

Urine output (ml/hr) > 30 20 – 30 5 – 15 Negligible

CNS symptoms Normal Anxious Confused Lethargic

1.**Visual estimation**

This is the most commonly practiced method. The incidence of PPH is underestimated in the visual estimation by 89% - **Brant & Duthie et al.Budny et al.** reported a strong positive association between calculated blood loss and blood loss estimated by junior and senior surgeons. It is inconsistent.

Dr. P. Bore et al. 2006

- 10 x10 cm swab = 60 ml
- 30 x30 cm swab = 140 ml
- 45 x45 cm swab = 350 ml
- 1 kg soaked swabs = 1000 ml
- 50 cm diameter floor spill = 500 ml
- 75 cm diameter floor spill = 1000 ml
- 100 cm diameter floor spill = 1500 ml

Gravimetric methods

- Patient weighing method
- Swab weighing method

By measuring the weight of the patient or swabs before and after delivery.

- Patient weighing method: allowance should be made for drain,dressings, infection, tissue removal and insensible water loss.

- Swab weighing method: 1 gm of weight gain = 1 ml of blood loss

(Bonica and Lyter et al. in 1951, Harding 1984). Swabs should be weighed immediately to avoid the loss due to evaporation. Inter observer variation or inconsistency can be avoided by following this method.

Calibrated obstetric drape

This comes in sterile packing and fold out to a 1 x1 metre sterile area for a woman to give birth. At the bottom of the sterile area there is a pouch that can hold more than 2500 ml of fluid, accurate measurement of postpartum blood loss can be done. The pouch itself also includes a flexible plastic filter to 'catch' material that is not liquid. The pouch includes a wire around its 'mouth' that keeps the pouch open.

Colorimetric method: (Roe et al., 1962, Thornton et al., 1963, Rustad etal., 1963)

The washing of the blood contaminated swabs is carried out in a known volume of tap water to which sufficient amount of ammonium hydroxide is added to give a 1 in 1000 dilution as a defoaming agent. The blood collected in the suction container has to be added to the water and the concentration of the resultant solution should be determined.

Blood loss in ml =Hb% of washing fluid× volume of washing fluid

Hb% of patient's blood×dilution factor of patient's Hb

Measurement of blood in the suction apparatus

Blood in the suction container should be measured. Inaccuracy in this method can be reduced by using measuring cylinder in the suction line and adding defoaming agent to the container.

Electrolyte conductivity method : (Leveen and Rubricius et al., 1958)

Using automated blood loss meter which is based on electrolyte conductivity.

Radioactivity method : (Murray and Dott's et al., 1960)

Intravenous injection of small amount of radio isotope is given and it is followed by measuring the radioactivity of blood on swabs collected during delivery.

Blood volume measurements

- Dye method: using evans blue dye which must neither be catabolised nor rapidly lost from the circulation

- Radio isotopes like I131 labelled albumin or Cr51 labelled RBC can be used before delivery and the post delivery radio activity is measured by Geiger – Muller counter. (**Mollison ans Veall et al., 1955**).

Among the above mentioned methods swab weighing method and blood collected in the calibrated obstetric drape measurement are practically possible and feasible methods that are used in our study.

REDUCING BLOOD LOSS

In order to reduce the blood loss the following measures are carried out

- Antenatal care
- First and Second stage measures
- Third stage measures
- Postpartum measures

Antenatal care

1. Develop a birth preparedness plan : the delivery of a women must be conducted by a skilled attendant who can provide interventions to prevent, identify and manage PPH
2. Antenatal anemia should be investigated and treated appropriately as this may reduce the morbidity associated with PPH
3. Blood grouping and Rh typing must be done.
4. Correction of coagulation abnormality in case of abruption, IUD, HELLP syndrome.

During first and second stage

1. A woman in established labour must receive supportive one to one care

2. Limit induction and augmentation use onlyfor medical and obstetric reasons

3. Do not encourage the patient to push before cervix is fully dilated

4. Do not apply fundal pressure to assist the birth of the baby

5. Perineal massage should not be performed by healthcare professionals

6. Encourage the woman to void and keep the bladder empty

7. Do not perform routine episiotomy

8. Either “hands on” or the “hands poised’ techniques can be used to facilitate spontaneous birth

During third stage : provide Active Management Of Third Stage Of Labour

Postpartum measures

It has been suggested that drainage of blood from the placenta would reduce its bulkiness, allowing the uterus to contract and retract and thus aiding delivery **(Roger et al., 1988)**.Placental cord drainage may be used in conjunction with other interventions such as routine administration of oxytocics, controlled cord traction or maternal effort (**Hinchongbrooks RCT Lancet, 1998)**.Placental cord drainage with or without prophylactic oxytocics is effective in reducing the blood loss in third stage thus preventing PPH (**Keirse,1998)**.Timing at cord clamping is also an important factor in the management of third stage of labour, influences the duration of third stage**(McDonald,2003).**These are evidences to indicate that there are benefits in active management of third stage of labour, but it may be associated with increased nausea, vomiting and raised blood pressure **(Prendiville et al., 2003)**.

The overall meta – analysis results of **Cochrane database systematic reviews 2004**, showed that there was a tendency for the active management group to have higher incidence of these complications. But this did not reach statistical significance. There was no statistically significant difference in neonatal outcome or breast feeding rates and no difference in long term maternal outcome.

TREATMENT

Most maternal deaths in PPH are due to the 3 delays:

1. Delay in recognition of complications

2. Delay in institution of definitive management

3. Delay in referral / accessing transportation

MANAGEMENT

General

Specific

i) medical

ii) surgical

General Management

- Proper Assessment of general condition of the patient, the amount of blood loss and degree of hypoxemia
- Vital parameters should be recorded accurately
- 100 % oxygen by face mask should be given
- 2 large bore iv cannula should be secured
- Blood should be sent for cross matching, CBC, RFT
- Cyrstalloids and colloids should be rushed in the mean time. It enhances the critical filling and improves the cardiac output. 250 – 500 ml of either a crystalloid or a colloid is administered over a period of 10 – 20 minutes as the urgency indicates. Cyrstalloids are preferred over colloids as they

distributed rapidly throughout the extracellular space,they are cheap, easily available and there is no risk of anaphylaxis

- Replace blood by blood
- Invasive hemodynamic monitoring by CVP measurement
- BT, CT should be measured and when it is prolonged FFP and cryoprecipitate should be given

The **Non-Pneumatic Anti-Shock Garment (NASG)** is a low technology first-aid device which is used to treat hypovolemic shock. It's efficacy for reducing maternal deaths due to obstetrical hemorrhage is being researched. When in shock, the brain, heart and lungs are deprived of oxygen because blood accumulates in the lower abdomen and legs. The NASG reverses shock by returning blood to the heart, lungs and brain.

This restores the woman's consciousness, pulse and blood pressure. Additionally, the NASG decreases bleeding from the parts of the body which is compressed under it.

Medical management

UTEROTONICS

i) **Oxytocin –** 10 units im / iv followed by 20 units iv infusion in 500 ml RL / NS

ii) **Methylergometrine –** 0.2 mg im / iv repeated for every 15 minutes to a maximum of 5 doses

iii) **15 methyl PG F2α -** 250 μgm im repeated every 15 minutes to a maximum of 8 doses

iv) **Misoprostol –** 400 - 1000 μgm vaginal, oral, rectal

v) **Recombinant factor VIIa –** 60 – 120 μgm / kg iv

vi) **Tranexamic acid** – 1gm iv 8th hourly

1. Oxytocin stimulates the upper segment of the myometrium to contract rhythmically, which constricts the blood vessels and reduces blood flow through the uterus (**Dreyfus M et al., 2004**). Produces rhythmic uterine contractions, can stimulate the gravid uterus, and has vasopressive and antidiuretic effects. Best used for controlling postpartum bleeding or hemorrhage. Some suggest its prophylactic use in the third stage of labor;one study of 1000 deliveries revealed a 32% reduction in the rate of PPH.**Pierre F, Mesnard L, Body G *Eur J Obstet Gynecol Reprod Biol*. 1992**.

Side effects – hypotension if given by rapid iv bolus. Water intoxication with larger volumes.

- Methylergometrine – ergot alkaloids cause generalized smooth muscle contraction in which both upper and lower segments of the uterus.

Side effects – hypertension, nausea, vomiting, headache.

- Syntometrine – 5 units oxytocin + 0.5 mg ergometrine.
- 15 methyl PG F2α - enhances uterine contractility and causes vasoconstriction. It has been shown to control PPH in upto 81% of patients.
- Side effects – nausea, vomiting, diarrhea, hypertension, headache, flushing, pyrexia. Contraindications – hypersensitivity, bronchial asthma.

- Misoprostol – it increases uterine tone.

Side effects – hyperpyrexia, diarrhea, shivering.

Recombinant factor VIIa – it is an enzyme of the serine protease class. It initiates the process of coagulation in conjunction with tissue factor.

(**Ahonen et al., 2007)**. It induces haemostasis at the site of vascular injury independent of the presence of factors VIII and IX by forming complexes with exposed tissue factor (TF). Administration of high-dose rFVIIa results in a huge increase in factor VIIa, well above that of the normal physiological levels, leading to faster and greater thrombin generation.

Anti fibrinolytics – Tranexamic acid potentates the blood clotting system and is used to treat and prevent bleeding. The mechanism of action of tranexamic acid is related to its antifibrinolytic effect, which makes this drug potentially very effective in the third stage of labour. During placental delivery, rapid degradation of fibrinogen and fibrin occurs, as well as an increase in the activation of plasminogen activators and fibrin degradation products due to activation of the fibrinolytic system. This activation can last up to six to 10 hours postpartum, which may cause more haemorrhage. The antifibrinolytic effect of tranexamic acid in the third stage of labour could make it a safe and effective alternative or adjunct to other regimens currently used in the third stage of labour for prevention of PPH. Tranexamic acid could reduce blood loss associated with complications such as placenta praevia and lower genital tract trauma, as well as bleeding from the upper segment placental site. Therefore, it may be particularly useful in preventing cases of PPH due to factors other than uterine atony,where

uterotonics will not be effective. Tranexamic acid is an effective agent for the reduction of blood loss, which has been widely used in various areas of medicine. It is an inhibitor of fibrinolysis that blocks the lysinebinding site of plasminogen to fibrin **(Astedt 1987; Longstaff, 1994)**.

It has been used to decrease blood loss for many years in cases of haemorrhage, and is reported to reduce intraoperative and postoperative blood loss **(Boylan, 1996; Karski, 1995; Katsaros, 1996; Reid, 1997; Vacharaksa,2002)**.

The side effects described with the use of tranexamic acid include gastrointestinal symptoms such as diarrhoea, nausea and vomiting that occur in about 10% of patients. Rare complications include hypotension, thrombosis,blurred vision, renal cortical necrosis and retinal artery obstruction **(Astedt,1987)**.

However, another study reported no side effects associated with tranexamic acid **(Bekassy, 1990)**.

A Cochrane review on the use of antifibrinolytics for heavy menstrual bleeding reported no rise in side effects with tranexamic acid in comparison to placebo, NSAIDS, oral luteal phase progestagens or ethamsylate **(Lethaby,2000)**.

There are concerns about the risk of thromboembolic events associated with the use of tranexamic acid; however, there are no data available from randomised controlled trials (RCTs) which record the frequency of thromboembolic events **(Lethaby, 2000)** as the fibrinolytic system gets activated

after placental delivery and in menorrhagia, antifibrinolytics are useful in treating PPH and DUB.

Single dose of 1 gm of tranexamic acid given intravenously reduces the mean blood loss within 2 hours of delivery (**Pili ferrer et al., 2009)**.

Tranexamic acid significantly reduces the mean blood loss by 92 ml compared to no treatment (**Gohel et al., 2007)**.

Tranexamic acid reduces blood loss without any side effects or complications like thrombosis (**Gai et al., 2004)**.

When tranexamic acid is used the need for additional uterotonic drugs is reduced (**Gakhan Yildirim et al., 2011)**.

Tranexamic acid given at a dose of 10 mg / kg iv immediately after delivery of baby, reduces blood loss **(Astedt et al., 1987)**.

Tranexamic acid acts immediately after iv administration **(Jurema et al., 2008)**.

Use of tranexamic acid could potentially have prevented some PPH cases, as reported in the Cochrane review in treatment of PPH (**Mousa 2007)**

Tranexamic acid is associated with a significant reduction in objective measurement of heavy menstrual bleeding when compared to placebo or other medical therapies **(Lethaby et al., 2000)**.

Blood loss of greater than 400 ml is not reported when Tranexamic acid is used during vaginal birth **(Yang et al., 2001)**.

Tranexamic acid is used safely and effectively to reduce bleeding resulting from caesarean section **(Gai et al., 2004)**.

Tranexamic acid statistically reduces the extent of bleeding from placental delivery to 2 hrs post partum during caesarean section and its use was not associated any side effects **(Ming - Ying Gai et al., 2003)**.

Tranexamic acid reduces blood loss and maternal morbidity in ongoing PPH **(Anne – Sophie Ducloy et al., 2011)**.

Tranexamic acid significantly reduces the amount of blood loss during and after caesarean section **(Patel Purvi et al., 2007)**.

Tranexamic acid reduces post-partum blood loss after vaginal birth and after caesarean section **(Novikova N. et al., 2010)**.

Tranexamic acid can be given antenatally by oral route for one week to treat women with history of recurrent abruption – to get successful neonatal outcome **(B Astedt et al., 1978)**.

Prophylactic tranexamic acid before surgery reduces allogenic blood transfusion **(Cochrane database, 2001)**.

Tranexamic acid can be used to decrease bleeding from menorrhagia and conisation of cervix **(Dunn CJ et al., 1999)**.

Tranexamic acid is an effective and safe option in DUB and operative interference is reduced **(Kriplani A. et al., 2006)**.

If bleeding persists even after removal of retained products of conception in missed abortion and secondary PPH, a fibrinolytic inhibitor such as tranexamic acid can be given to counteract fibrinolysis in uterus (**J Bonner et al., 2011)**.

Using tranexamic acid before caesarean section may reduce the blood loss as well. Use of tranexamic acid for preventing PPH may contribute to reduction in blood product use, which is associated with multiple risks(transfusion reactions, transmission of blood-borne viruses), is expensive and may be not available when it is needed. In South Africa, most of the maternal deaths due to PPH occur in level one hospitals which do not have emergency access to formal blood transfusion services.

Haleema Shakur1*, **Diana Elbourne**4, **Metin Gülmezoglu**2, **ZarkoAlfirevic**3, **Carine Ronsmans**5, **Elizabeth Allen**4 and **Ian Roberts**1

Author Affiliations

1 Clinical Trials Unit, London School of Hygiene & Tropical Medicine, Keppel Street, London WC1E 7HT, UK

2 Department of Reproductive Health and Research, World Health Organization, Avenue Appia 20, CH-1211 Geneva 27, Switzerland

3 Division of Perinatal and Reproductive Medicine, University of Liverpool, Liverpool Women's Hospital, Crown Street, Liverpool L8 7SS, UK

4 Medical Statistics Unit, London School of Hygiene & Tropical Medicine, Keppel Street, London WC1E 7HT, UK

5 Infectious Diseases Epidemiology Unit, London School of Hygiene & Tropical Medicine, Keppel Street, London WC1E 7HT,

This trial is a large, pragmatic, randomised, double blind, placebo controlled trial among 15,000 women with a clinical diagnosis of postpartum haemorrhage. All legally adult women with clinically diagnosed postpartum haemorrhage

following vaginal delivery of a baby or caesarean section are eligible. The fundamental eligibility criterion is the responsible clinician's 'uncertainty' as to whether or not to use an antifibrinolytic agent in a particular woman with postpartum haemorrhage. Treatment entails a dose of tranexamic acid (1 gram by intravenous injection) or placebo (sodium chloride 0.9%) given as soon as possible after randomisation. A second dose may be given if after 30 minutes bleeding continues, or if it stops and restarts within 24 hours after the first dose.Cost savings could also be gained from avoiding the use of expensive haematological agents such as Factor VIIa, which is establishing its place in the treatment of massive PPH in modern obstetrics despite the extreme cost**(Welsh, 2008)**.

SURGICAL MANAGEMENT

- Bimanual compression
- Uterine balloon tamponade
- Compression sutures
- Arterial ligation
- Aortic clamping
- Total / subtotal hysterectomy

A patient who fails to respond to uterotonic agents and continues to bleed will quickly become haemodynamically unstable and develop a cascade of clotting abnormalities. The spectre of maternal mortality can then only be prevented by initiating surgical haemostasis sooner rather than later. The nature,

timing and extent of these invasive interventions will depend on the sophistication of the health facility which handles this medical crisis.

INTERVENTIONAL RADIOLOGY

- Consider on stable patient with continued bleeding (**Clinical textbook of obstetric and gynaecology 2010)**.
- Evidence is equivocal (**Greentop guidelines 2009)**.
- Pelvic arterial embolsisation is a minimally invasive life-saving therapy that preserves patient quality of life and speeds recovery for patients with PPH.

PHARMACOLOGY OF TRANEXAMIC ACID

Tranexamic acid is an antifibrinolytic drug. It is a synthetic derivative of the amino acid lysine that exerts its anti fibrinolytic effect through the reversible blockade of lysine binding sites on plasminogen molecules.

CHEMICAL STRUCTURE

Molecular formula : C8H15NO2

It is a trans-4 aminomethyl cyclohexane 1-carboxylate

Molecular weight : 157.21

Melting point : 300oc

Water solubility : 1 gm / 6 ml

Pharmacodynamics

Fibrin is the basic framework for clot formation to maintain haemostasis. This clot has to be lysed after a particular period of time by fibrinolysis by any of the following way.

Endothelial cell

Thrombomodulin & Thrombin

Protein C Activated protein C

Activated VIII Inactive VIII Activated V Inactive V

Inactivates inhibition of tissue plasminogen activator

Plasminogen Plasmin

Fibrinolysis

FDP formation

(-)

TXA

(-)

TX

Tranexamic acid acts by its antifibrinolytic action by the following 2 ways:

1. Reversible, competitive blockage of lysine binding sites on plasminogen, so that plasminogen activator cannot bind with plasminogen at lower doses.

2. Non competitive inhibition of proteolytic action of plasmin similar to EACA. 8-10 times more potent than EACA as it binds strongly with both strong and weak receptors.

At therapeutic concentration (1mg/ml) it will not cause platelet aggregation.

Pharmacokinetics

- Oral absorption is 30-50%. It is not affected by food
- 100 % bioavailability with iv administration
- Only 3% is plasma protein (globulin) bound. Remaining binds with plasminogen. It will not bind with serum albumin
- Only 5% will be metabolized in liver. Remaining 95% of the drug willbe excreted via urine unchanged
- T ½ is 2- 10 hours. 90% of the drug is excreted in urine within 24 hours
- of administration. Duration of action in iv route is 7 – 8hrs
- Rapidly enter into joint fluid
- Crosses the placenta and blood brain barrier
- 1% of serum level will be achieved in breast milk.

Indications

Tranexemic acid can be used in all types of bleeding especially coagulopathic bleeding. It can also be used prophylactically before surgical procedures where excess bleeding will be anticipated

1. HELLP, DIC, Thrombaesthenia related bleeding
2. Postpartum haemorrhage
3. Dental extraction in haemophilia patients
4. Orthopaedic surgeries like spine surgery and total knee / hip replacement
5. Caesarean section
6. Cardiac surgeries
7. Trans urethral resection of prostate

8. Epistaxis

9. Liver transplantation surgery

10. First line nonhormonal treatment for menorrhagia in DUB / fibroid

11. Hereditary angioneurotic oedema where it decreases the attacks by decreasing plasmin induced complement activation.

Contraindications

1. Previous H/O thromboembolism or active intravascular clotting or patients with inherited or acquired thrombophiliac states.

2. Renal failure

3. Liver failure

4. Patients with defective colour vision

5. Subarachnoid haemorrhage – because cerebral oedema and infarction may occur rarely.

Side effects

1. Nausea, vomiting, diarrhoea –are the commonest side effect, occurring in > 10% cases

2. Giddiness and hypotension – if given by sudden rapid iv occurring in 1-10% of cases

3. Defective colour vision – when used for long time

4. Thromboembolism – is a very rare complication

5. Drug allergy –is a rare complication

Monitoring

LFT, RFT and colour vision should be checked periodically in cases where it is used for long time.

Should be used with caution in,

1. Drug allergy patients

2. Renal / liver disease patients

3. Elderly individuals with impaired renal function

4. Pregnancy – as this is a category B drug, Tranexamic acid can be safely used in lactating mothers, because

- 1% of maternal serum level reached in breast milk
- Only 30-50% absorption occur orally

PREPARATIONS AND DOSAGE

1. Oral - 500 mg tablets available

- 25 mg / kg thrice daily for one week

2. Intravenous

- Available preparations contain 100 mg / ml (5ml and 10ml ampoules)
- Dose – 10 mg /kg either direct slow IV or after diluting with 20 ml of 5% dextrose at a rate not more than 1 ml / min. This loading dose can be followed by 1mg / kg / hour IV infusion or 10 mg / kg – thrice daily IV.
- It can be mixed with aminoacids, electrolytes or carbohydrate solution but not with blood or solutions having penicillin.

3. Mouthwashes containing tranexamic acid are also available and used for haemophilia patients before and after dental extraction because oral mucosa and saliva are rich in plasminogen activator.

* Dose should be adjusted according to creatinine clearance, creative clearance

50 – 80 ml / min - 50% of total dose

10-50 ml/min - 25% of total dose

< 10 ml / min - 10% of total dose

Storage

Should be stored at 25oC (Room temperature) in a cool, dry place and must be kept away from heat or sunlight.

Drug Interactions

1. Chlorpromazine increases cerebral vasospasm when combined with Tranexamic Acid, so this combination must be avoided

2. Factor IX when given along with Tranexamic Acid there will be increased thrombosis risk. So it should not be combined.

MATERIALS AND METHODS

The subjects of this prospective randomised placebo controlled study are 200 pregnant women who were admitted in the labour ward of government theni medical college in the time period from july 2018 to june 2019.In all the patients, detailed history – medical history, obstetric history was taken. Vital parameters checked and basic investigations done. Weight of the patients was noted. Detailed general examination and obstetric examination was done.using ultrasound the gestational age was confirmed. 100 patients were placed in study group and 100 patients were placed in the control group. All the patients were counseled and wellinformed consent was obtained.

Study group will receive

1.Inj Oxytocin 10 units im within 1 minute of delivery.

2. Inj. Tranexamic acid 10 mg / kg in 1ooml normal saline IV over 20 minutes

Control group will receive

1.Inj Oxytocin 10 units im within 1 minute of delivery.

2. Placebo of 100ml normal saline over 20 minutes IV

Inclusion Criteria

1. Primi and 2nd gravida

2. More than 38 weeks of gestation.

3. spontaneous / induced labour

Exclusion Criteria

Women with risk factors for PPH were not included in this study.

1. Haemoglobin < 8gm%

2. Twin pregnancy

3. Polyhydramnios

4. EFW > 4 kg

5. Previous H/O PPH

6. Fibroid complicating pregnancy

7. Preeclampsia

8. Placenta previa

9. Abruptio placenta

10. Prolonged and obstructed labour

11.Heart disease complicating pregnancy

12.Renal / liver disease patients

13. Patients on anticoagulants

14. Previous H/O thromboembolism

15.Gravida more than or equal to 3

Methods

Both the study group and the control group after receiving the injections, the following parametes were noted.

1. Predelivery PR, BP, RR, SpO2, urine output in ml / hr, Hb gm%, PCV% was noted.
2. Blood loss from delivery of the baby to 2hrs post partum was noted.
3. The Apgar scores was noted
4. Side effects of the drug was noted
5. Post partum PR, BP, RR, SpO2, urine output in ml / hr, Hb gm%,PCV% was noted
6. Maternal needs for blood transfusion was noted.
7. Maternal outcome till discharge was noted.

Measurement of Blood loss

Immediately after delivery of the baby, when all the liquor was drained,the patient was brought to the edge of the table. The patient was placed over a blood drape, a disposable, conical, graduated plastic collection bag.

The amount of blood collected in the blood drape is measured. Then the patient was given pre-weighed pads, which was weighed 2 hrs postpartum. In our study blood loss was measured by measuring the blood collected in the drape and by weighing the swabs before and after delivery.

Total blood loss (ml) = blood in the drape (ml)+(swab weight postdelivery in gms – swab weight predelivery in gms)

After collecting all the data, the data were tabulated in a master chart and analysed. The collected questionnaire from the respondents was analysed. Using the software frequencies, percentage, mean, Standard Deviation, chi square and 'p' values were calculated. A 'p' value less than 0.05 is taken to denote significant relationship.

Standard Deviation

Standard deviation is defined as the square root of the arithmetic mean of the squared deviations of the various items from arithmetic mean.

RESULTS AND ANALYSIS

TABLE 1

Age group * Group Cross tabulation

		Group		Total	P value
		Control	Case		
Age group	<20	20	33	53	
	21-24	36	36	72	
	25-29	41	25	66	
	>30	3	6	9	
Total		100	100	200	0.045

Group Statistics

Group		N	Mean	Std. Deviation	P value
AGE	Control	100	23.79	3.25	.07400
	Case	100	22.94	3.45	

Majority of the patients belonged to age group 21 to 24 years.36% of them fall in that group.On an average 31% belong to group <20 and >30 years.

The mean age is 23.79 in control group and mean is 22.94 in study group.

Fig 1

AGE

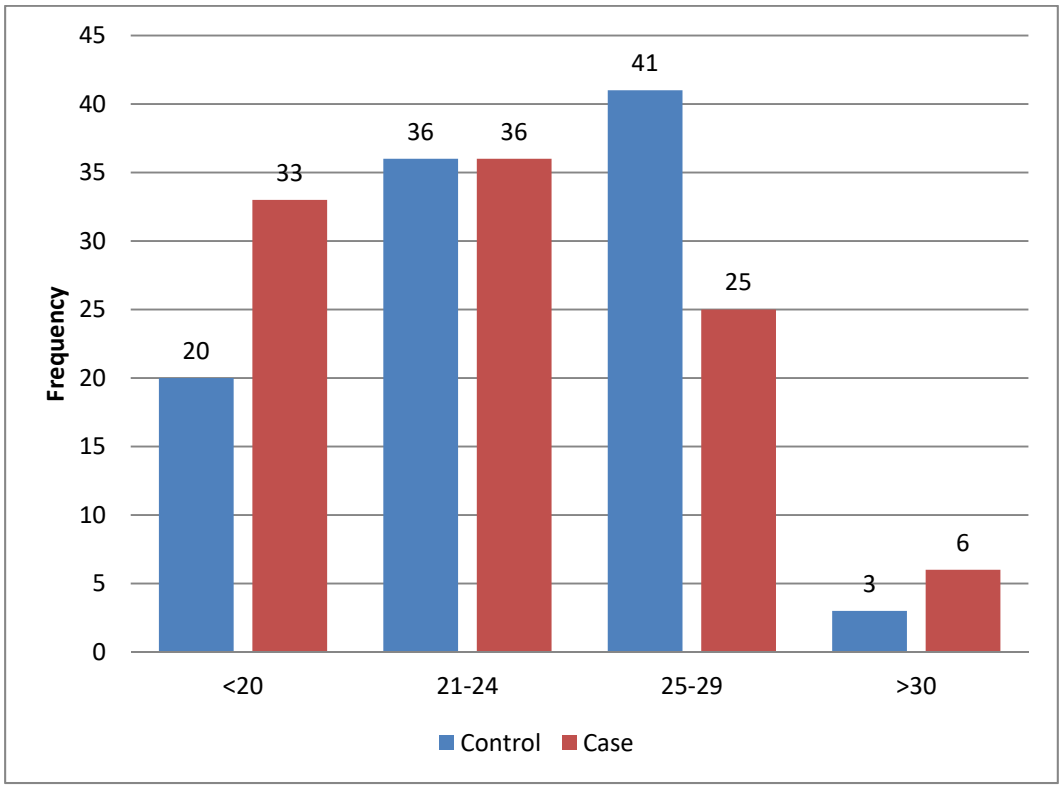


TABLE 2

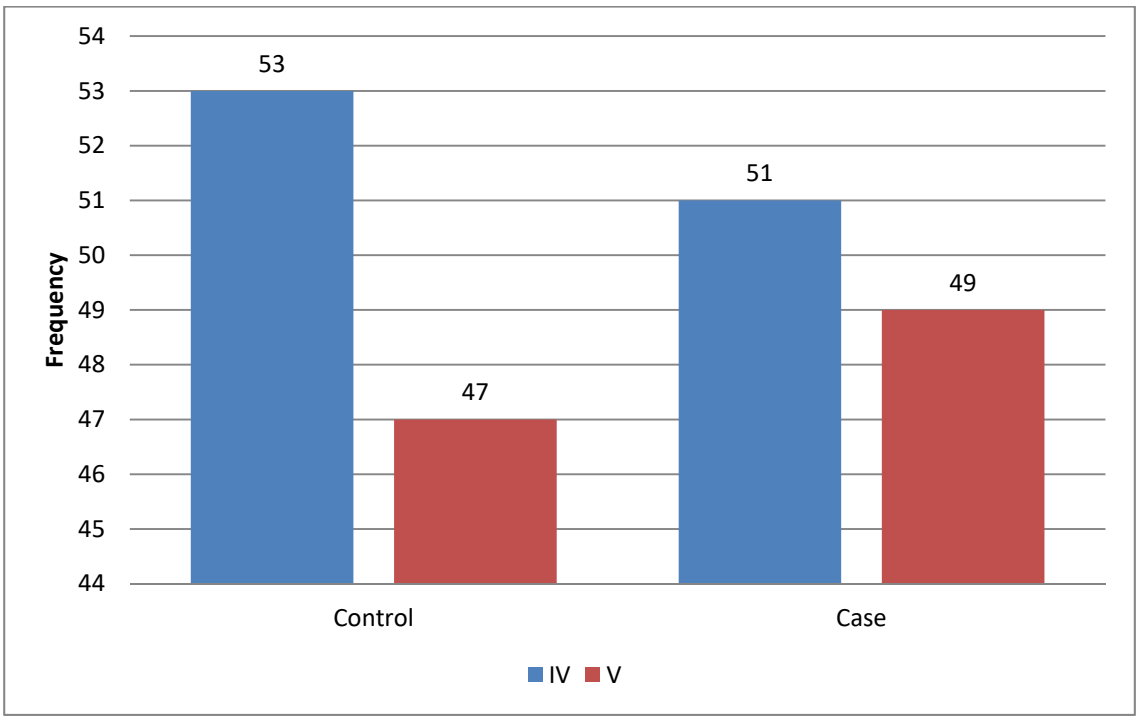
SOCIO ECONOMIC STATUS

		SE STATUS		Total	P value
		IV	V		
Group	Control	53	47	100	0.777
	Case	51	49	100	
Total		104	96	200	

In our study no patients belonged to class I ,II, III socioeconomic status. Most of the patients belonged to class IV socioeconomic status. There is no significant differences in socioeconomic status between the two groups In our study 49% of study group and 47% of control group belonged to class V socioeconomic status. 51% of the study group and 53% of the control group belonged to class IV socioeconomic status

FIG 2

SOCIOECONOMIC STATUS



BOOKING STATUS

In our study all patients in both control and study group are booked

TABLE 3

PARITY

		PARITY			
		PRIMI	**2nd Gravida**	**Total**	**P value**
Group	Control	59	41	100	0.668
	Case	56	44	100	
Total		115	85	200	

In our study,59 patients in the control group were primigravida and 56 patients in the study group were primi gravida.

41 patients in the control group were 2nd gravida and 44 patients in the study group were 2nd gravida.

Parity was insignificant in our study

FIG 3

PARITY

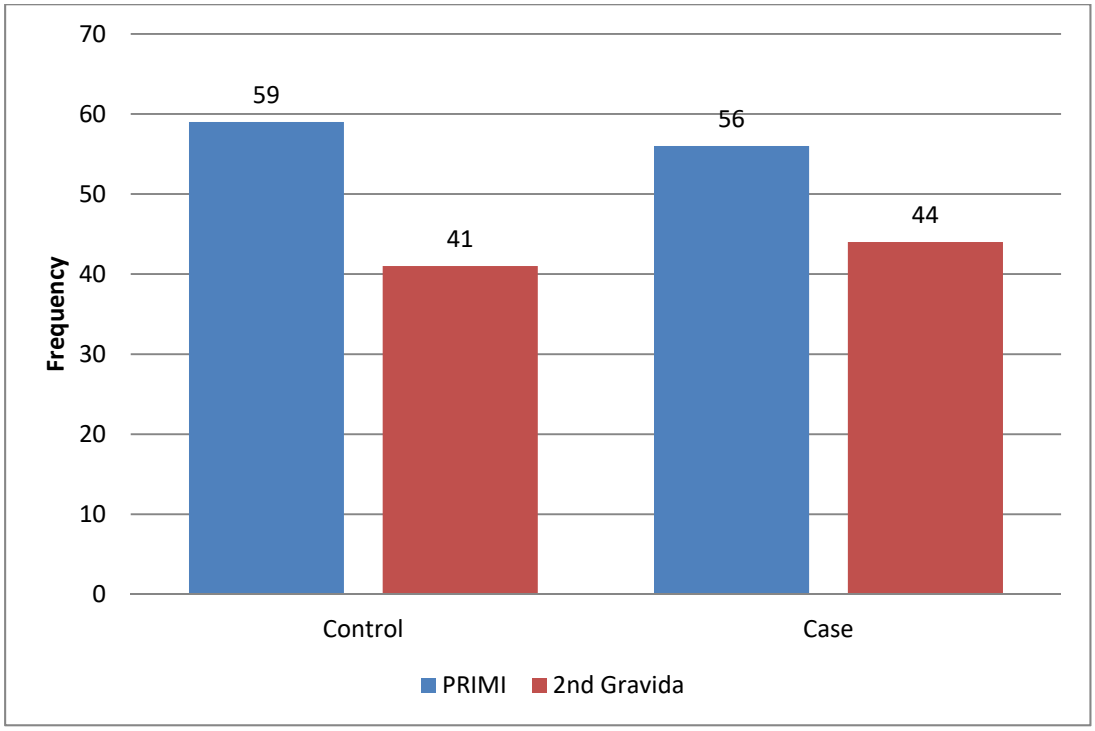


TABLE 4

HEIGHT AND WEIGHT

Group		N	Mean	Std. Deviation	P value
HEIGHT IN CMS	Control	100	154.46	5.25	0.162
	Case	100	153.35	5.93	
WEIGHT IN KGS	Control	100	54.17	4.99	<0.0001
	Case	100	59.67	10.39	

The average height in control group was 154.46 cm and the average weight is 54.17 KGS in the control group.

The average height in study group was 153.35 cm and the average weight in study group was 59.67 KGS .the subjective characters were comparable in both the groups.

FIG 4

HEIGHT

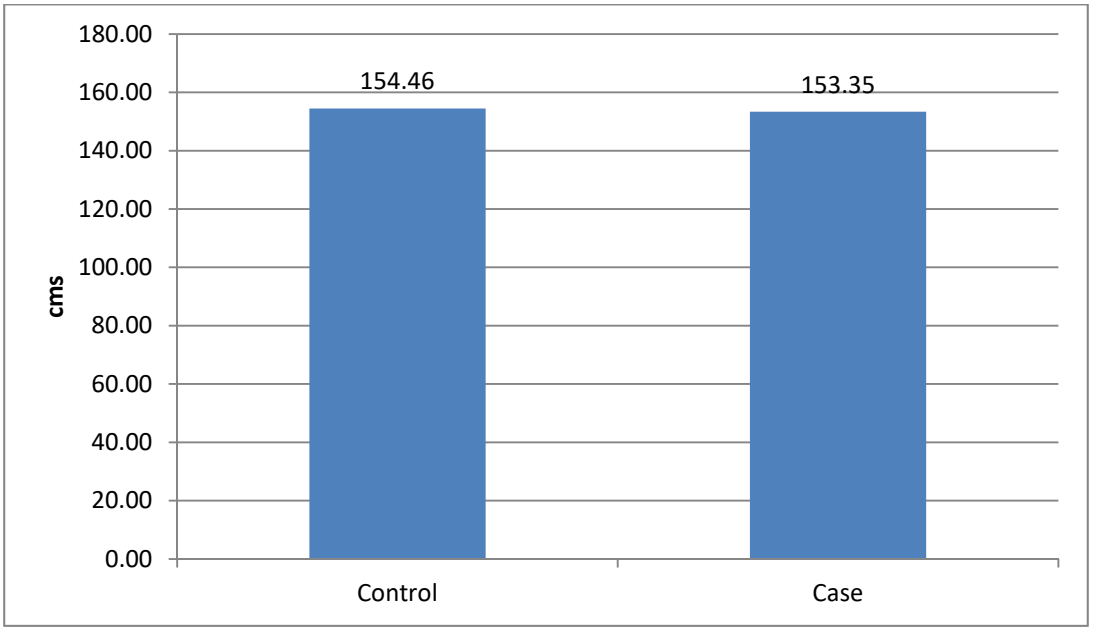
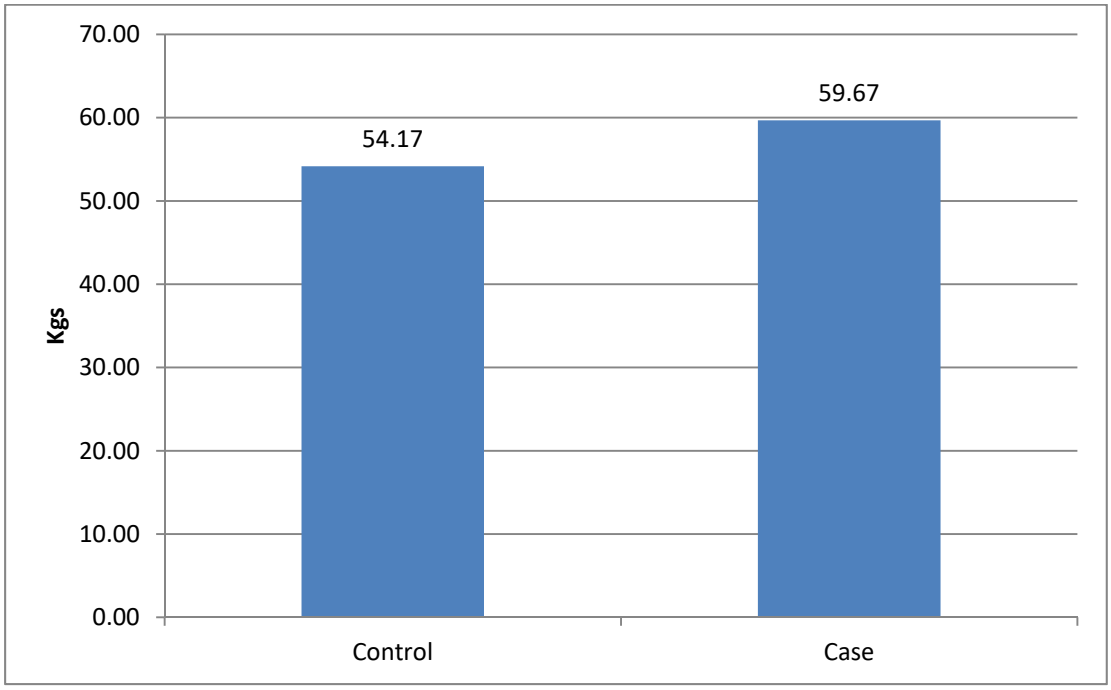


FIG -5

WEIGHT


70.00
60.00
50.00
40.00
30.00
20.00
10.00
0.00
Kgs
54.17
59.67
Control
Case

PREDELIVERY

TABLE 5-Subjective Characters

Group		N	Mean	Std. Deviation	P value
PR/MIN	Control	100	78.11	4.10	0.015
	Case	100	79.70	4.99	
SBP	Control	100	118.64	6.27	<0.0001
	Case	100	114.74	8.37	
DBP	Control	100	76.22	3.94	0.478
	Case	100	75.76	5.14	
RR/MIN	Control	100	18.15	1.49	0.011
	Case	100	17.63	1.37	
SPO2	Control	100	99.41	0.49	0.120
	Case	100	99.52	0.50	
U/O ML/HR	Control	100	93.75	9.22	0.022
	Case	100	97.25	11.98	

FIG 6

PREDELIVERY-PULSE RATE

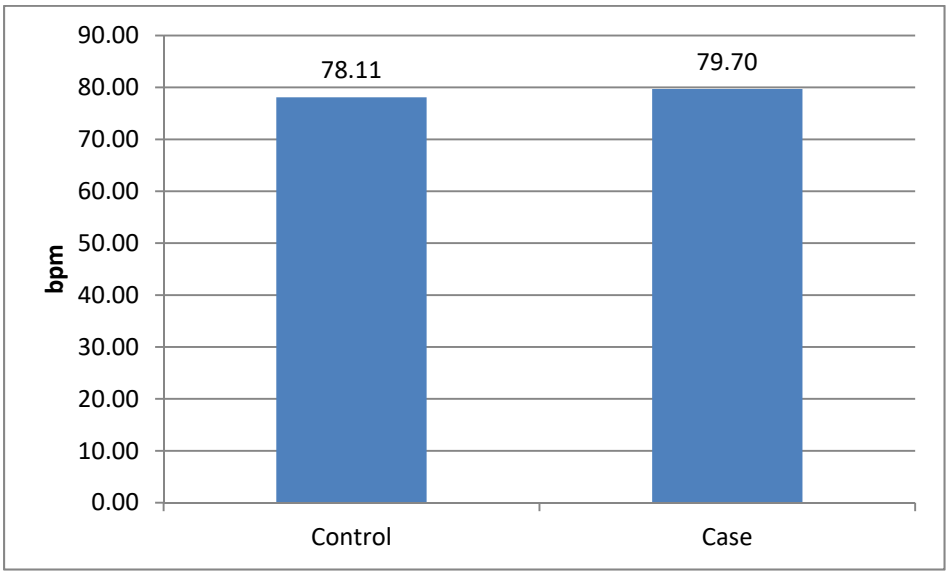


FIG 7

PREDELIVERY-SYSTOLIC BLOOD PRESSURE

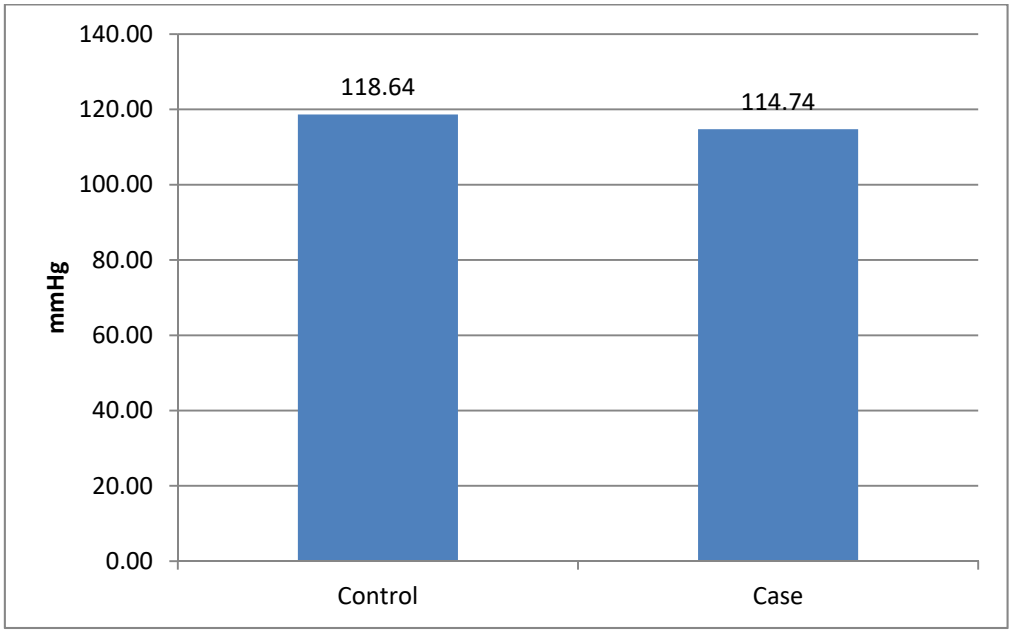


FIG 8

PREDELIVERY-DIASTOLIC BLOOD PRESSURE

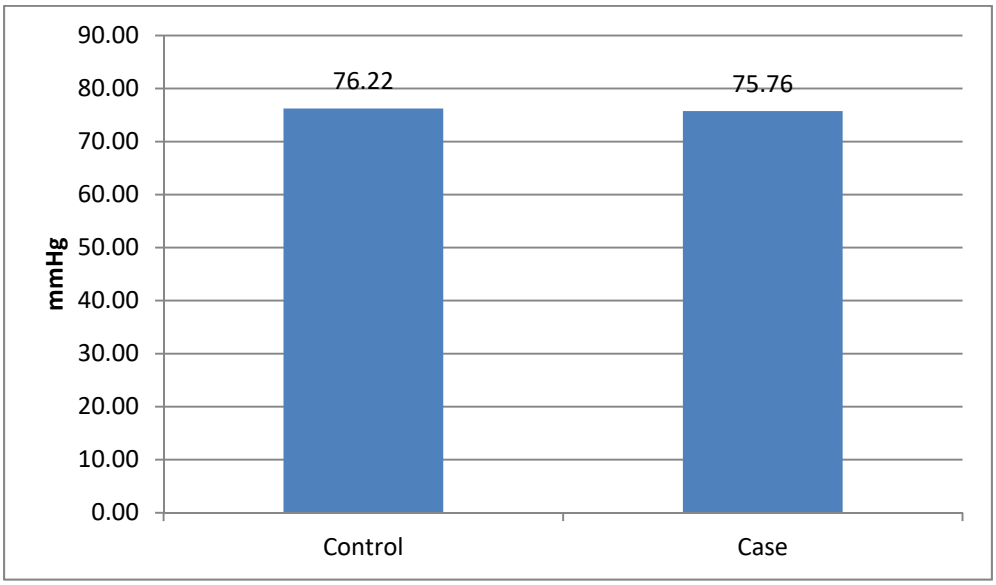


FIG9

PREDELIVERY-RESPIRATORY RATE

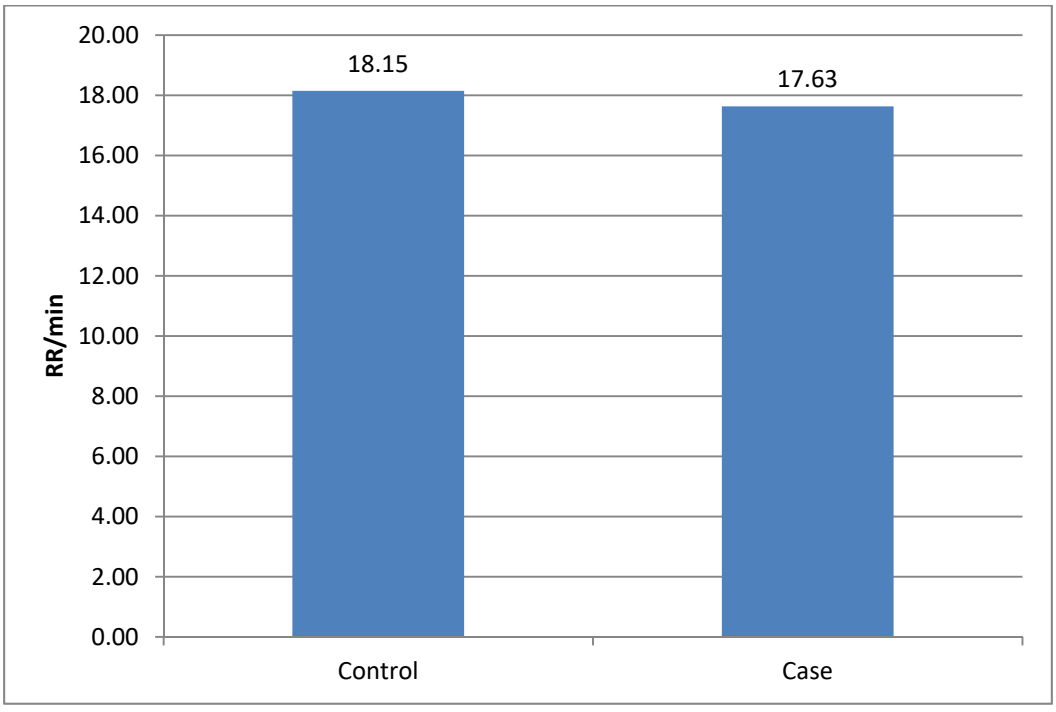


FIG 10

PREDELIVERY-SATURATION RATE

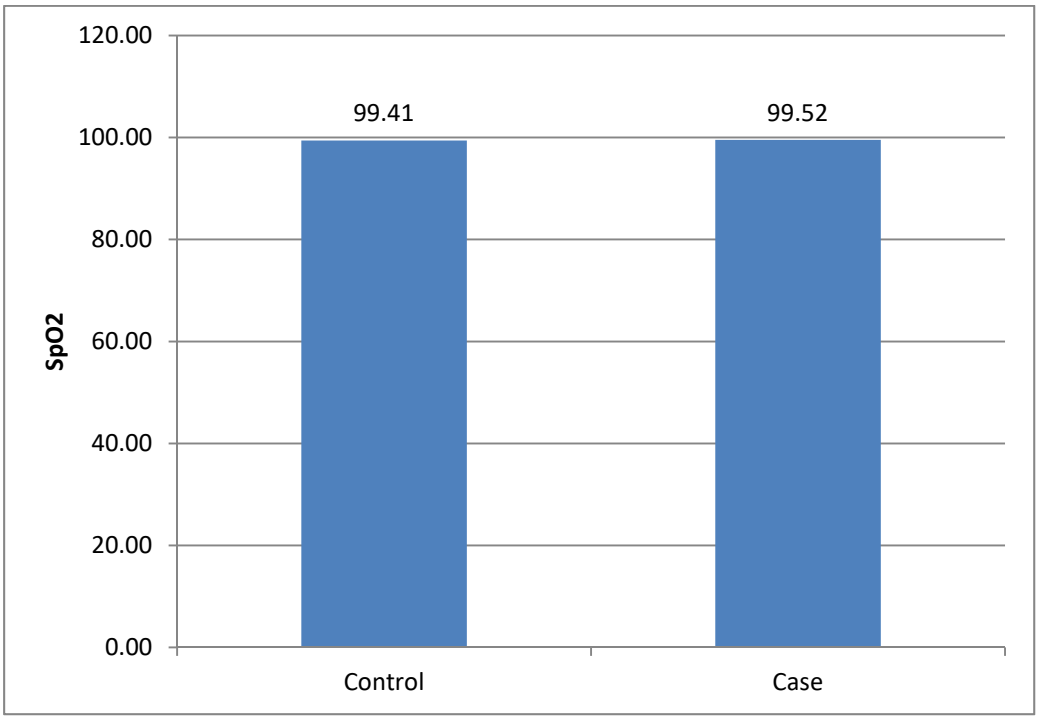
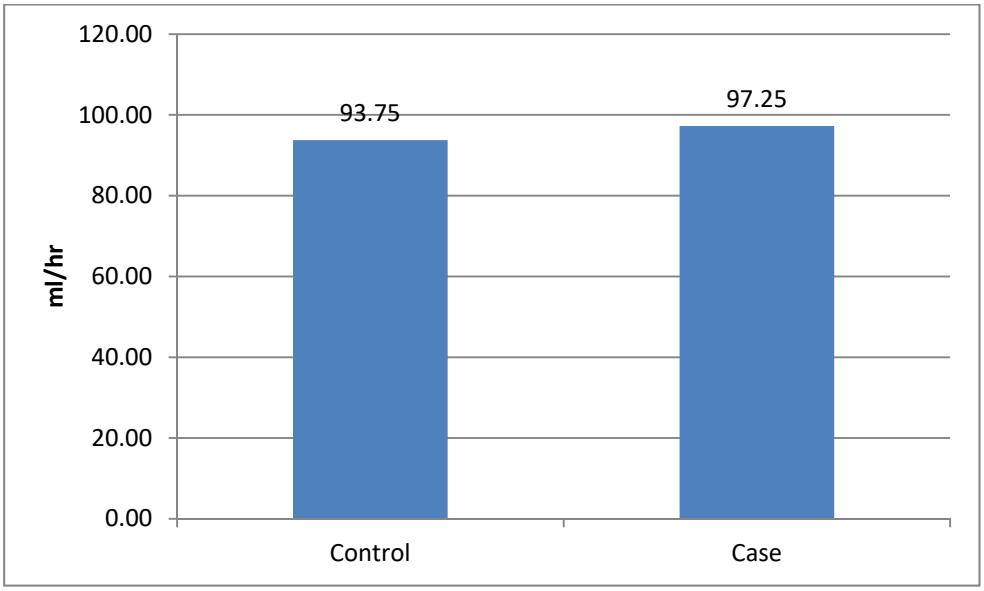


FIG 11

PREDELIVERY –URINE OUTPUT



POSTDELIVERY

TABLE 6 Subjective characters

Group		N	Mean	Std. Deviation	P value
PR/MIN	Control	100	79.62	5.15	0.976
	Case	100	79.60	4.19	
SBP	Control	100	118.14	6.38	<0.0001
	Case	100	114.52	7.50	
DBP	Control	100	75.42	3.99	0.211
	Case	100	76.18	4.56	
RR/MIN	Control	100	18.00	1.41	0.158
	Case	100	17.73	1.29	
SPO2	Control	100	99.35	0.48	0.032
	Case	100	99.50	0.50	
UO ML/HR	Control	100	95.00	9.61	0.246
	Case	100	93.40	9.84	

FIG 12

POST DELIVERY-PULSE RATE

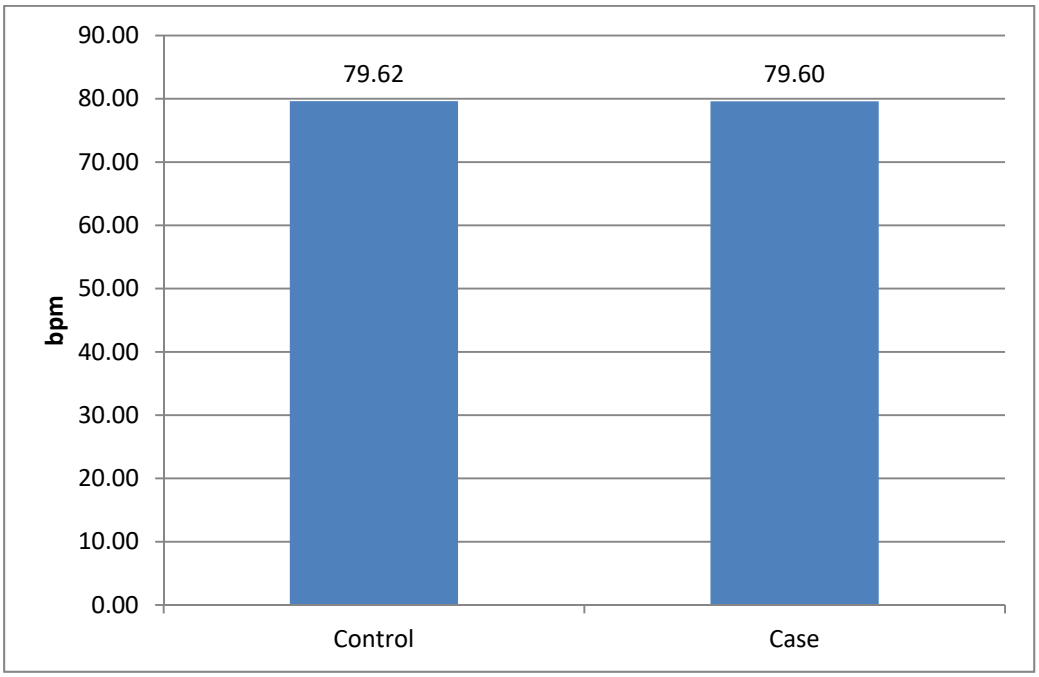


FIG 13

POST DELIVERY-SYSTOLIC BLOOD PRESSURE

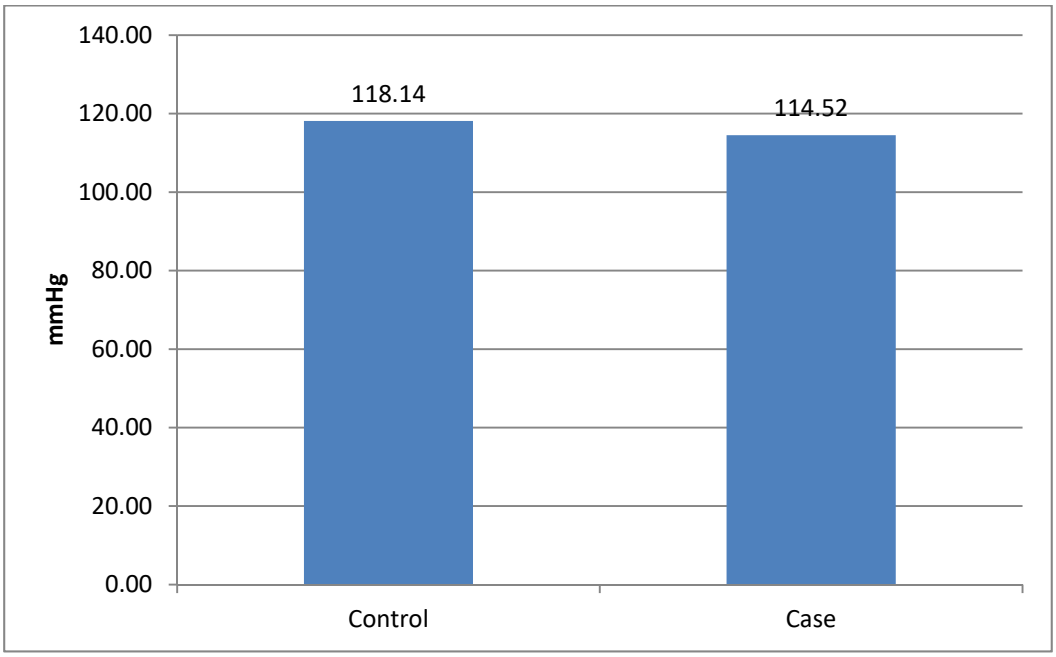


FIG 14

POST DELIVERY-DIASTOLIC BLOODPRESSURE

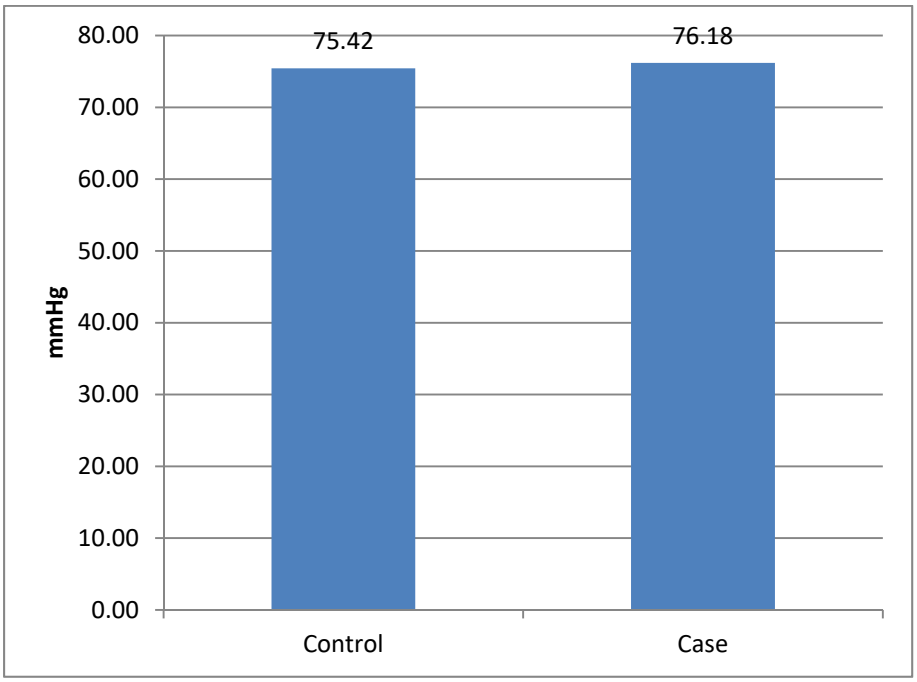


FIG 15

POSTDELIVERY-RESPIRATORY RATE

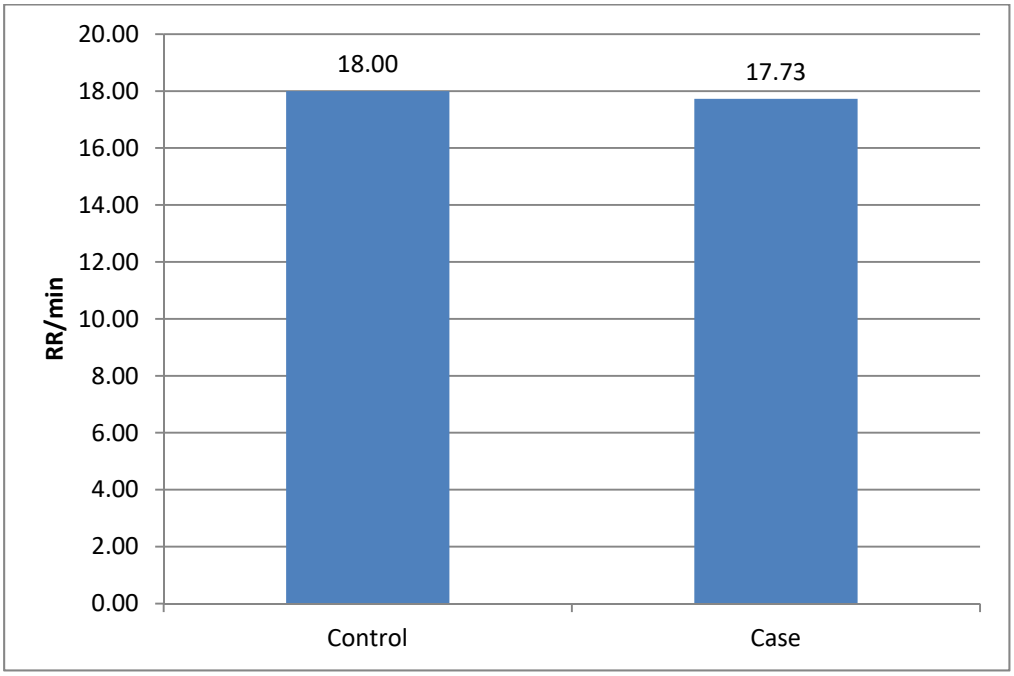


FIG 16

POSTDELIVERY –SATURATION

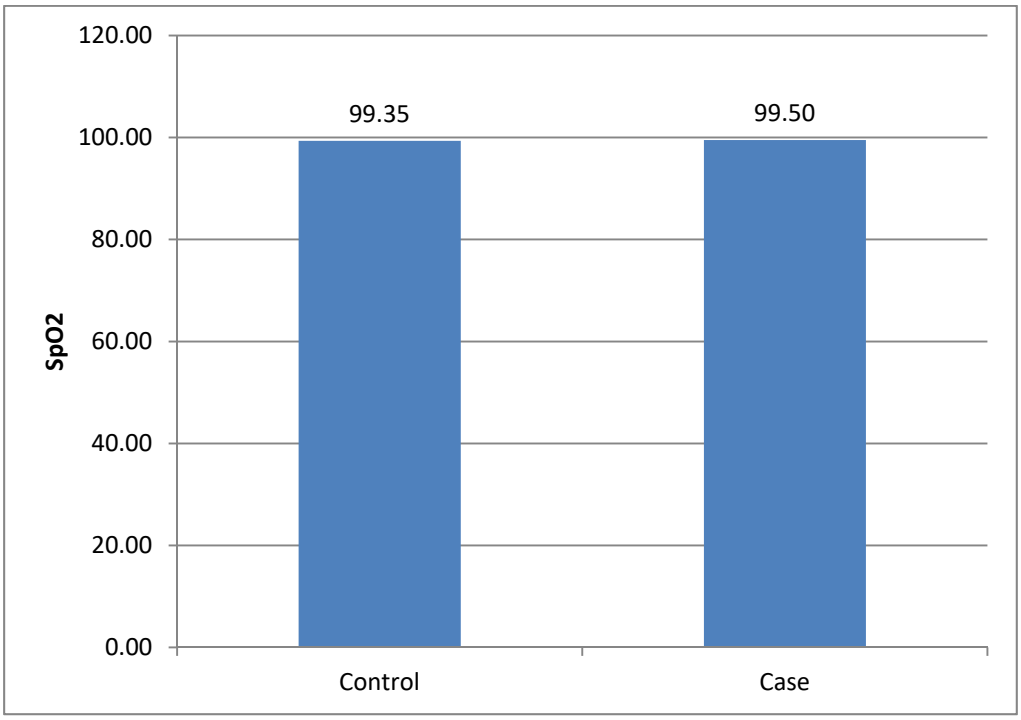


FIG 17

POSTDELIVERY-URINE OUTPUT

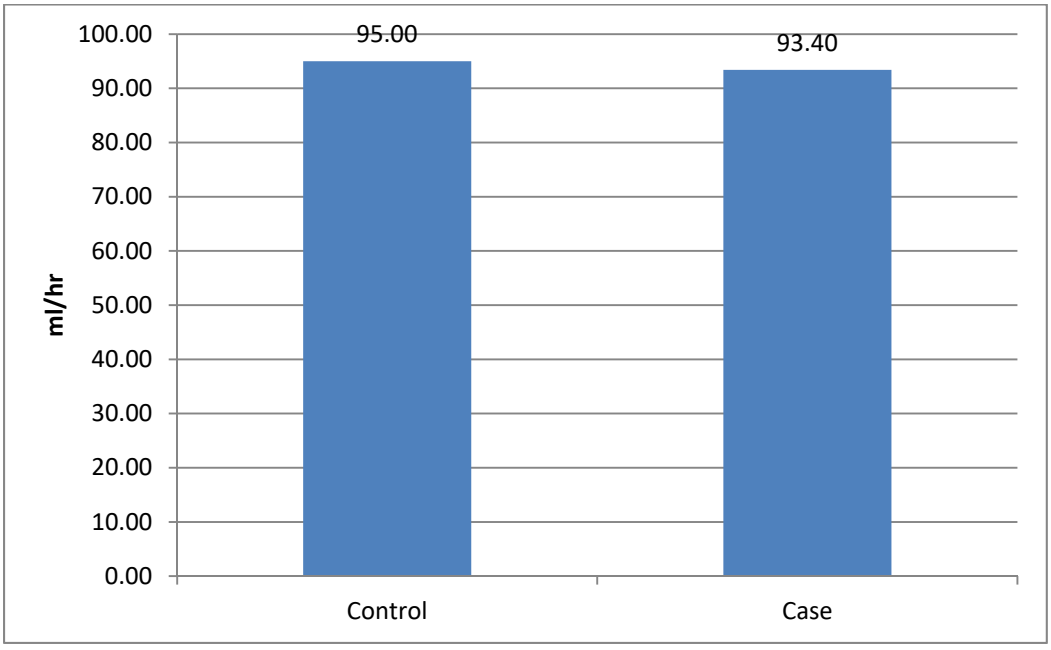


TABLE 7

PREDELIVERY

HEMOGLOBIN AND HAEMATOCRIT VALUES

Group		N	Mean	Std. Deviation	P value
HB IN GMS	Control	100	10.22	0.66	<0.0001
	Case	100	11.73	1.44	
PCV%	Control	100	31.79	2.47	<0.0001
	Case	100	35.30	4.26	

FIG 18

PREDELIVERY-HEMOGLOBIN

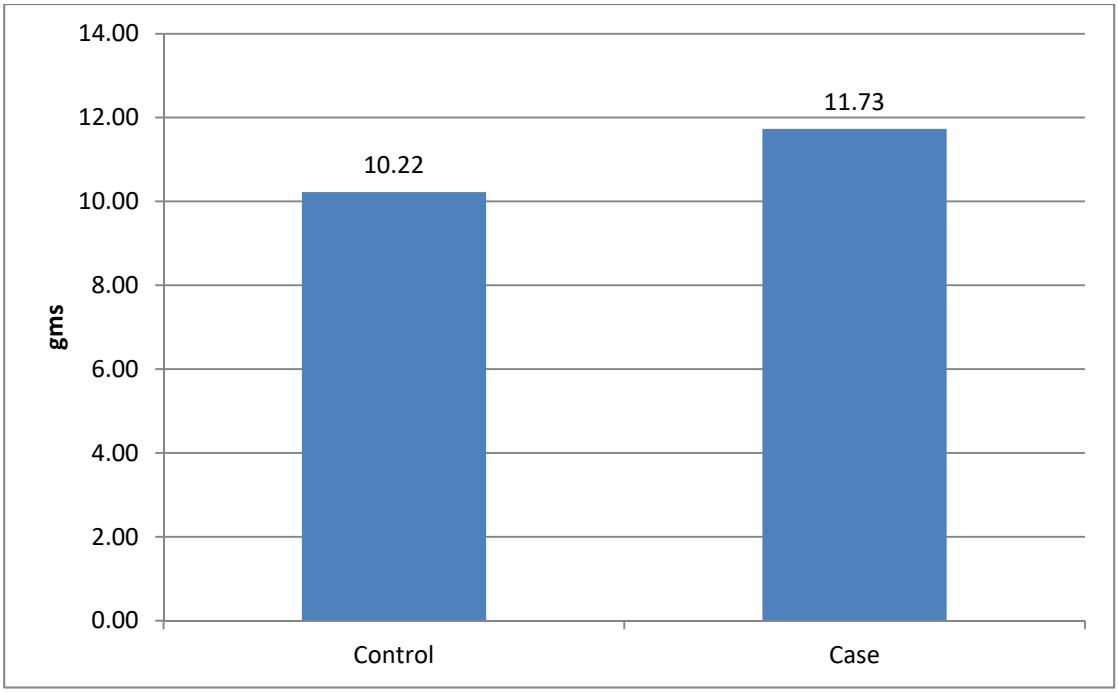


FIG 19

PREDELIVERY-HAMATOCRIT VALUES

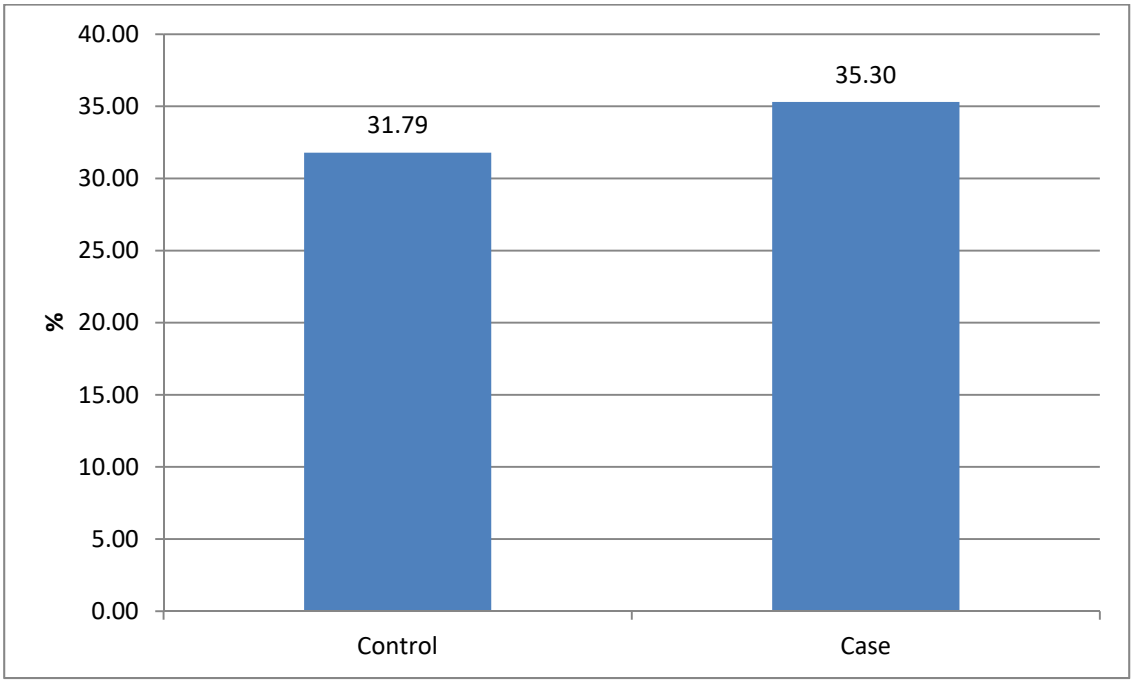


TABLE8

POSTDELIVERY HEMOGLOBIN AND HEMATOCRIT

Group		N	Mean	Std. Deviation	P value
HB IN GMS	Control	100	9.35	0.61	<0.0001
	Case	100	11.12	1.35	
PCV%	Control	100	28.69	3.74	<0.0001
	Case	100	33.49	3.75	

FIG 20

POSTDELIVERY-HEMOGLOBIN

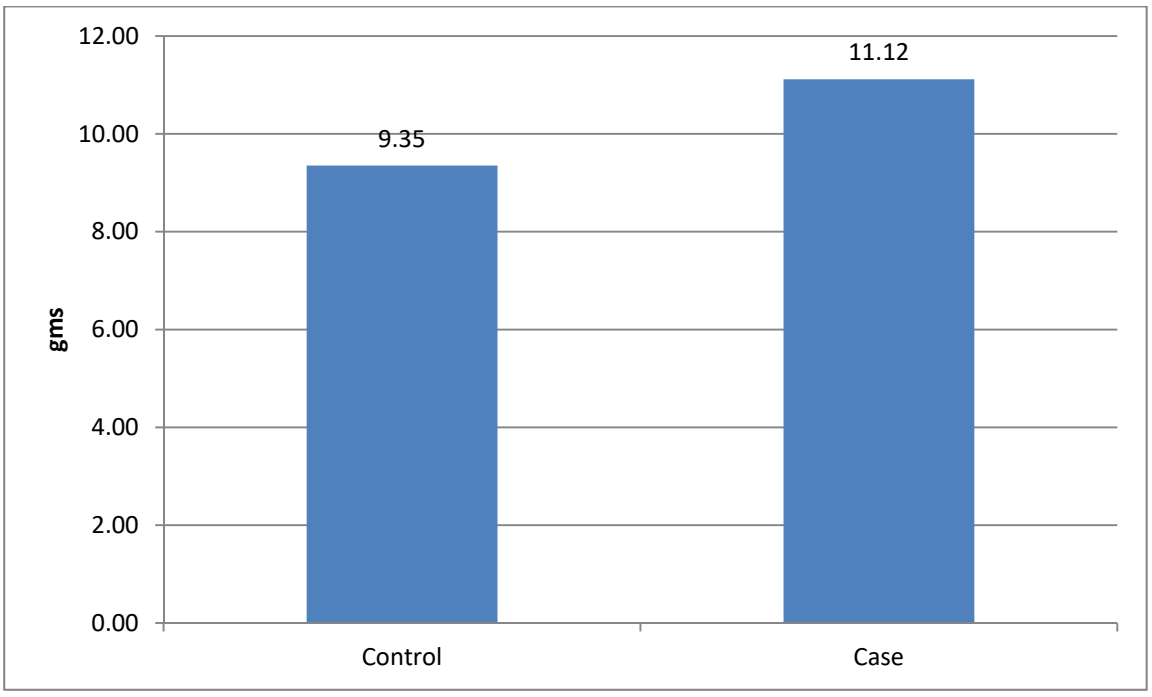
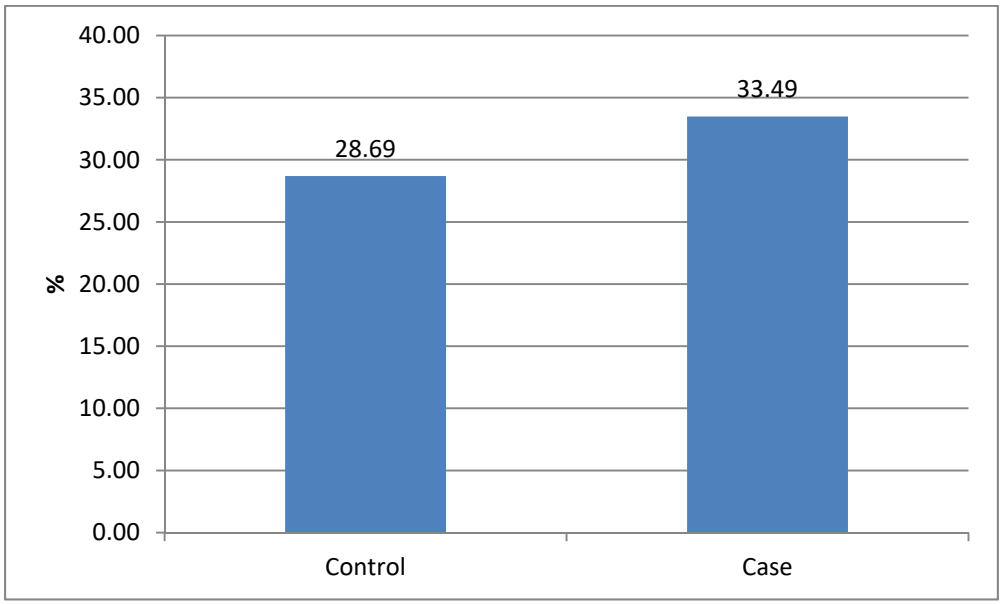


FIG 21

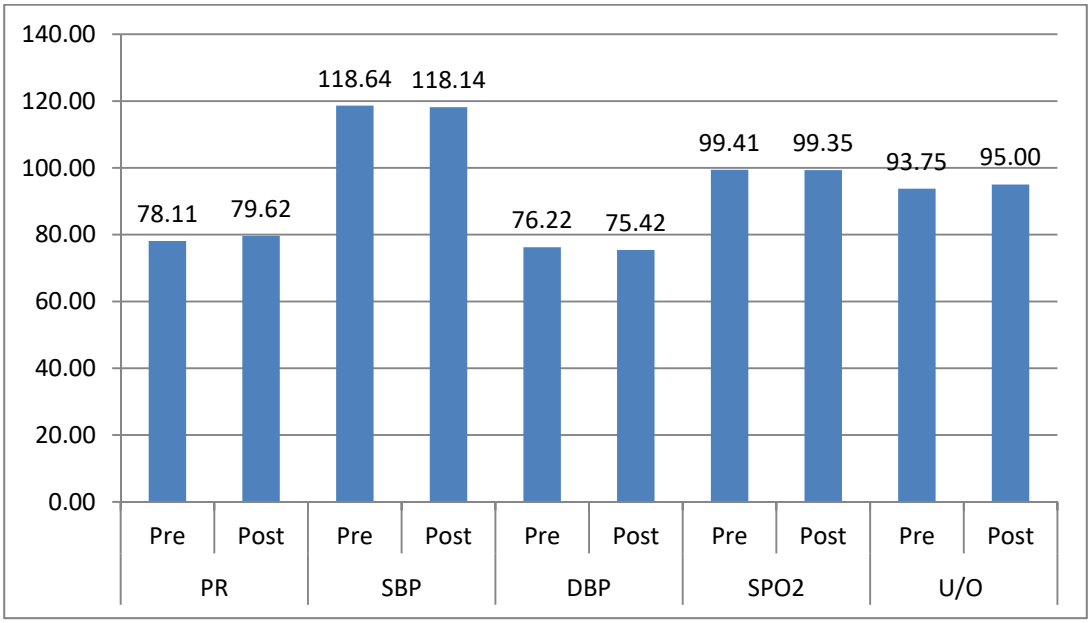
POSTDELIVERY-HEMATOCRIT



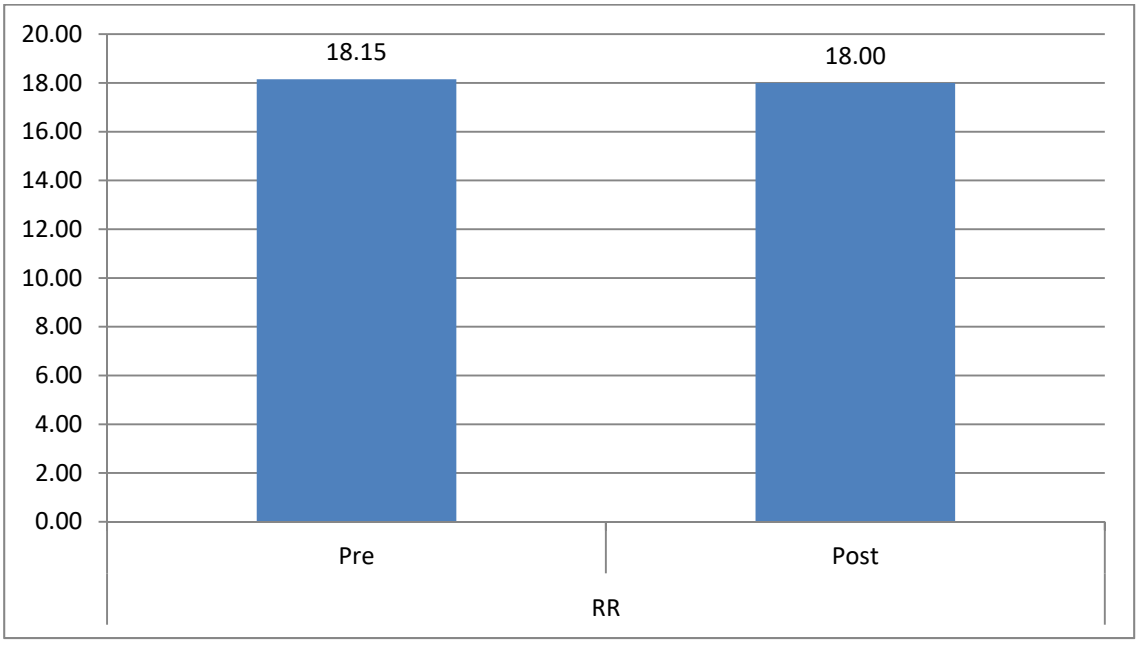
a. Group = Control

		Mean	Std. Deviation	P value
PR	Pre	78.11	4.10	0.024
	Post	79.62	5.15	
SBP	Pre	118.64	6.27	0.565
	Post	118.14	6.38	
DBP	Pre	76.22	3.94	0.154
	Post	75.42	3.99	
RR	Pre	18.15	1.49	0.407
	Post	18.00	1.41	
SPO2	Pre	99.41	0.49	0.345
	Post	99.35	0.48	
U/O	Pre	93.75	9.22	0.374
	Post	95.00	9.61	
HB	Pre	10.22	0.66	<0.0001
	Post	9.35	0.61	
PCV	Pre	31.79	2.47	<0.0001
	Post	28.69	3.74	

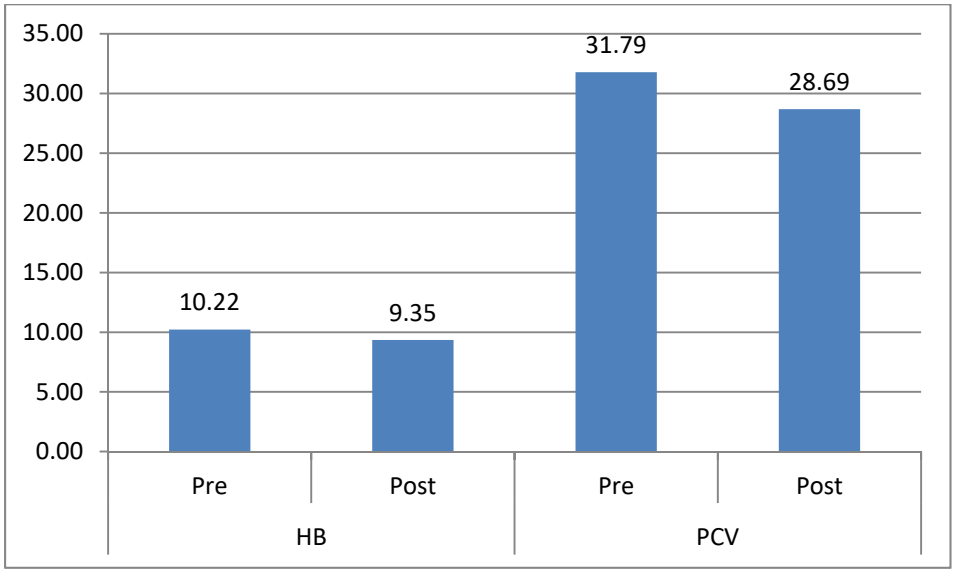
SUBJECTIVE CHARACTORS BETWEEN PRE AND POSTDELIVERY IN CONTROL GROUP



RESPIRATORY RATE- PRE AND POST DELIVERY IN CONTROL GROUP



HAEMOGLOBIN AND HEMATOCRIT –PRE AND POST DELIVERY IN CONTROL GROUP

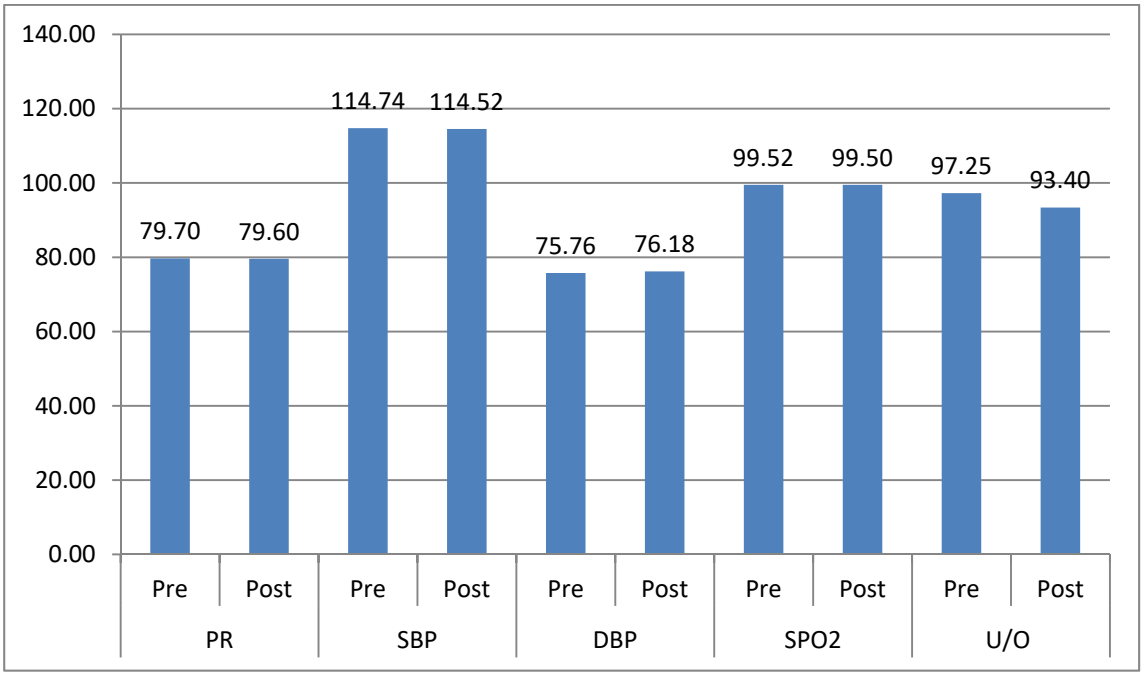


SUBJECTIVE CHARACTERS –PRE DELIVERY AND POSTDELIVERY IN STUDY GROUP

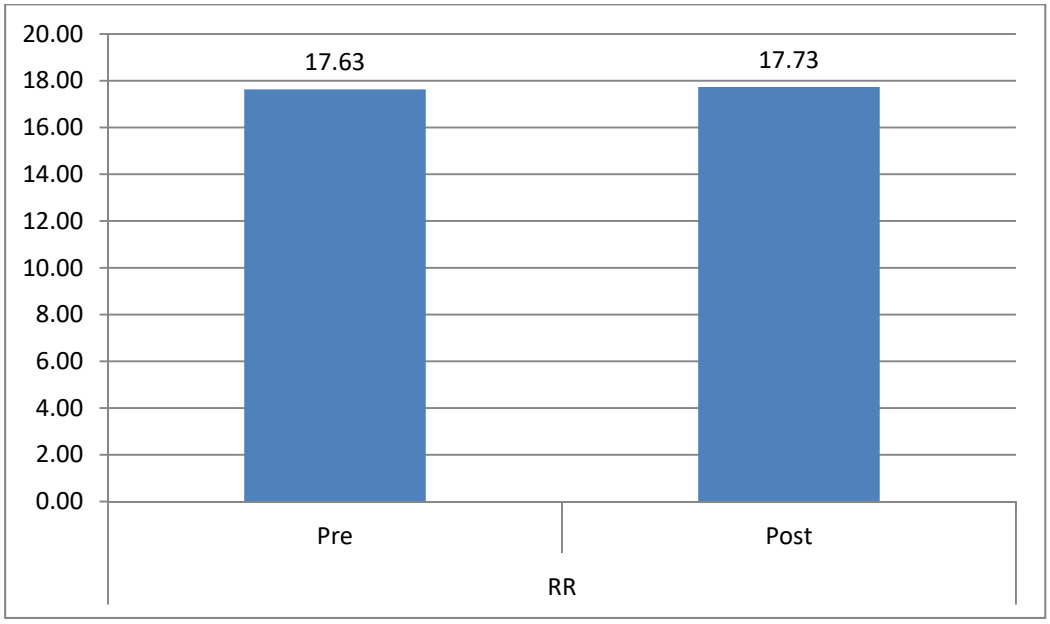
a. Group = Case

		Mean	Std. Deviation	P value
PR	Pre	79.70	4.99	0.856
	Post	79.60	4.19	
SBP	Pre	114.74	8.37	0.811
	Post	114.52	7.50	
DBP	Pre	75.76	5.14	0.516
	Post	76.18	4.56	
RR	Pre	17.63	1.37	0.604
	Post	17.73	1.29	
SPO2	Pre	99.52	0.50	0.741
	Post	99.50	0.50	
U/O	Pre	97.25	11.98	0.013
	Post	93.40	9.84	
HB	Pre	11.73	1.44	<0.0001
	Post	11.12	1.35	
PCV	Pre	35.30	4.26	<0.0001
	Post	33.49	3.75	

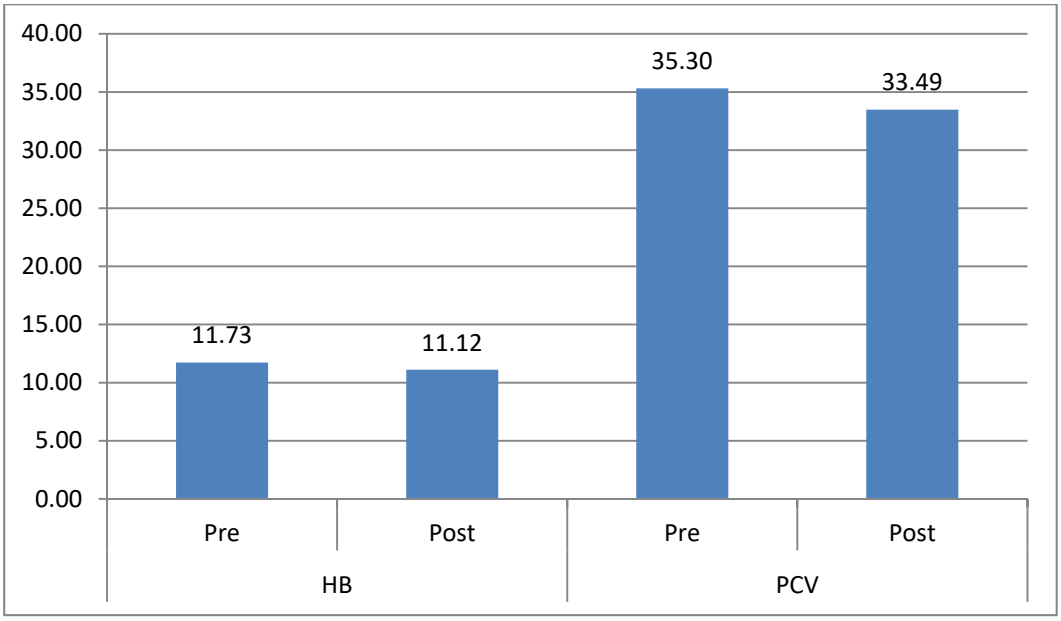
SUBJECTIVE CHARACTERS –PRE DELIVERY AND POSTDELIVERY IN STUDY GROUP



RESPIRATORY RATE –PRE AND POST DELIVERY IN STUDY GROUP



HEMOGLOBIN AND HEMATOCRIT –PRE AND POST DELIVERY IN STUDY GROUP



In our study, in the control group there is no significant increase in pulse rate post-delivery and no significant difference in pulserate in study group as well. other parameters are insignificant.

In our study statistically significant fall in Hb% occurred after delivery in control group than with study group. Mean fall of Hb% was 0.61gm% in study group and 0.87gm% in control group. Mean fall in hematocrit was 1.81 in the study group and 3.1 in the control group

TABLE 9

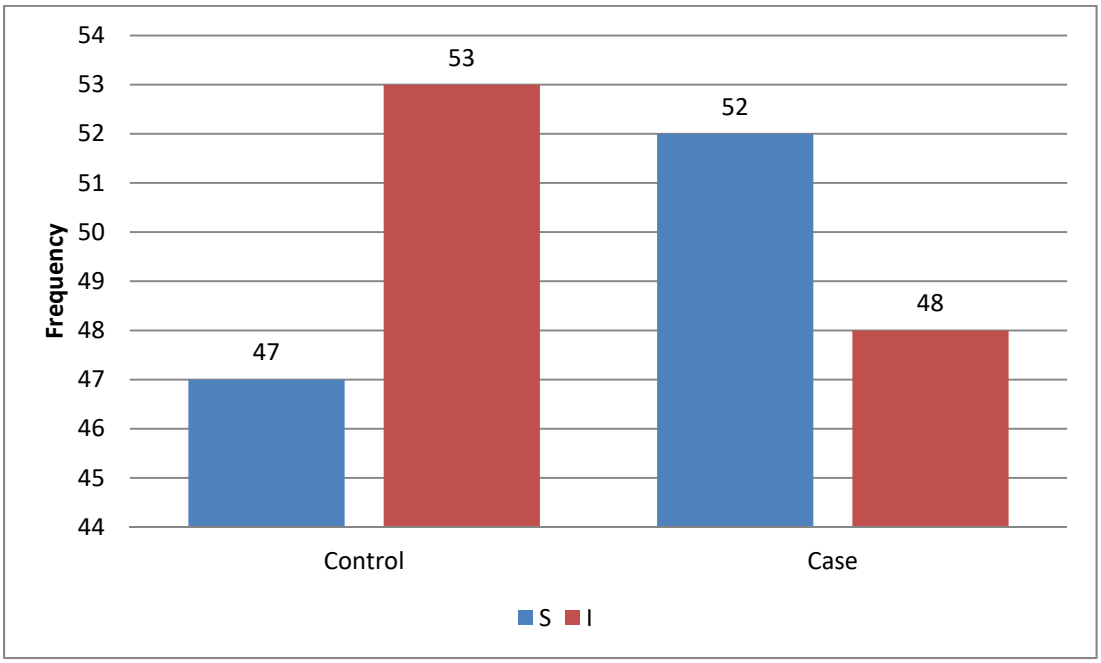
ONSET OF LABOUR

		ONSET OF LABOUR			**P value**
		S	**I**	**Total**	
Group	Control	47	53	100	
	Case	52	48	100	
Total		99	101	200	0.479

Onset of labour

In our study 48% in study group had induced labour and 53% in control group had induced labour. Both the groups were comparable

Fig 22- ONSET OF LABOUR



S-SPONTANEOUS

I-INDUCED

TABLE 11

MODE OF DELIVERY

		MODE OF DELIVERY			
		LN	**LN EPI**		
Group	Control	19	81	100	
	Case	18	82	100	
Total		37	163	200	0.856

Mode of delivery

In our study 18% in the study group and 19% in the control group had labour natural, 82% in the study group and 81% in the control group had labour natural with episiotomy

FIG 23

MODE OF DELIVERY

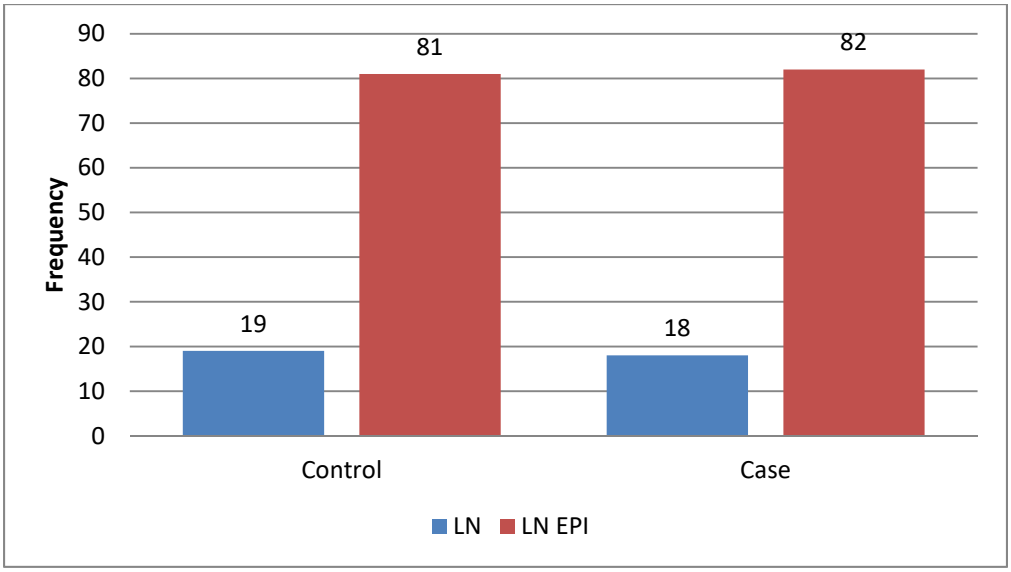


TABLE 11

TOTAL BLOOD LOSS

Group		N	Mean	Std. Deviation	P value
TOTAL BLOOD LOSS TD TO 2 HRS	Control	100	175.52	18.12	<0.0001
	Case	100	116.81	18.21	

Blood loss

In our study, there was a statistically significant reduction of blood loss. The mean blood loss in study group is116.81ml.The mean bloodloss in control group is 175.52 ml

FIG 24

TOTAL BLOOD LOSS

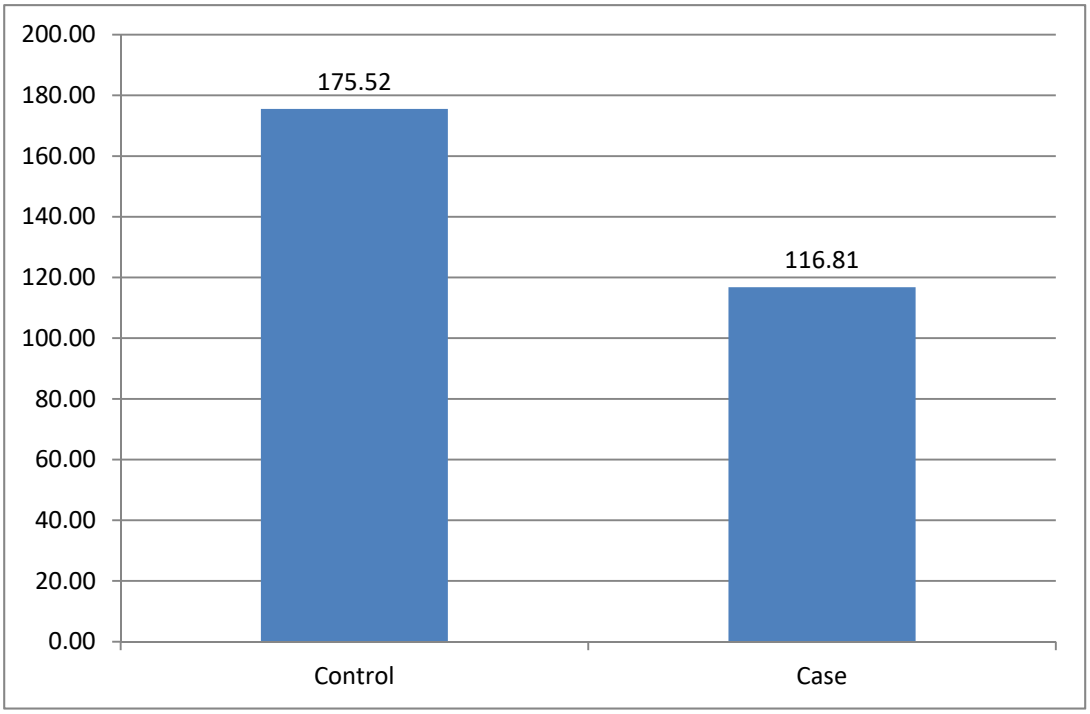


TABLE12

Group * ADDITIONAL UTEROTONICS 2/no

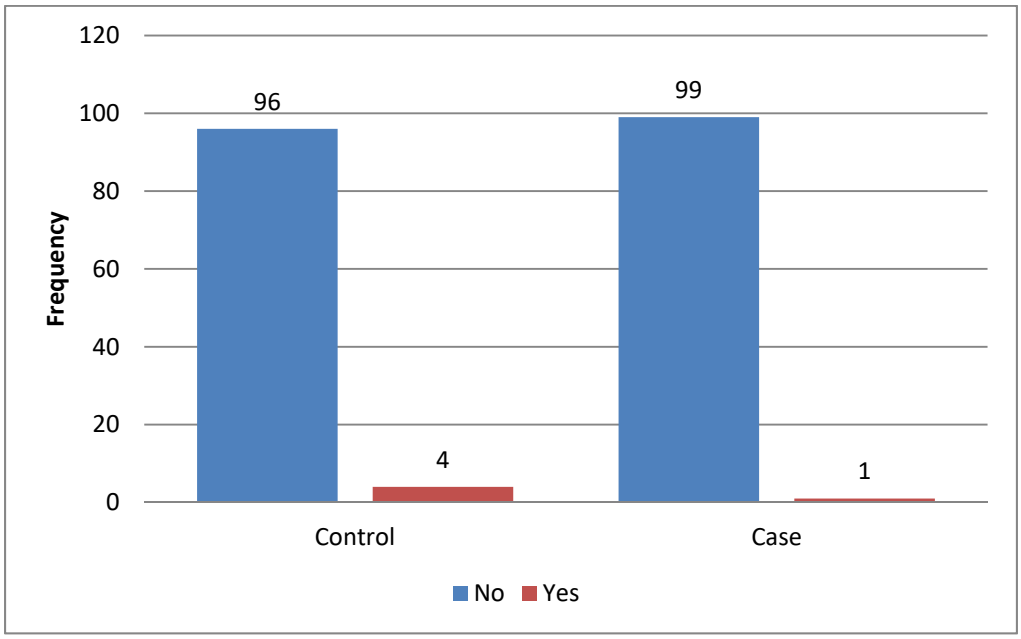
		ADDITIONAL UTEROTONICS		Total	P value
		No	Yes		
Group	Control	96	4	100	0.174
	Case	99	1	100	
Total		195	5	200	

Additional uterotonics

In our study, 4% of the patients in the control group needed additional uterotonics compared to only 1% in the study group. The drug significantly decreases the need for additional uterotonics

FIG 25

ADDITIONAL UTERO TONICS

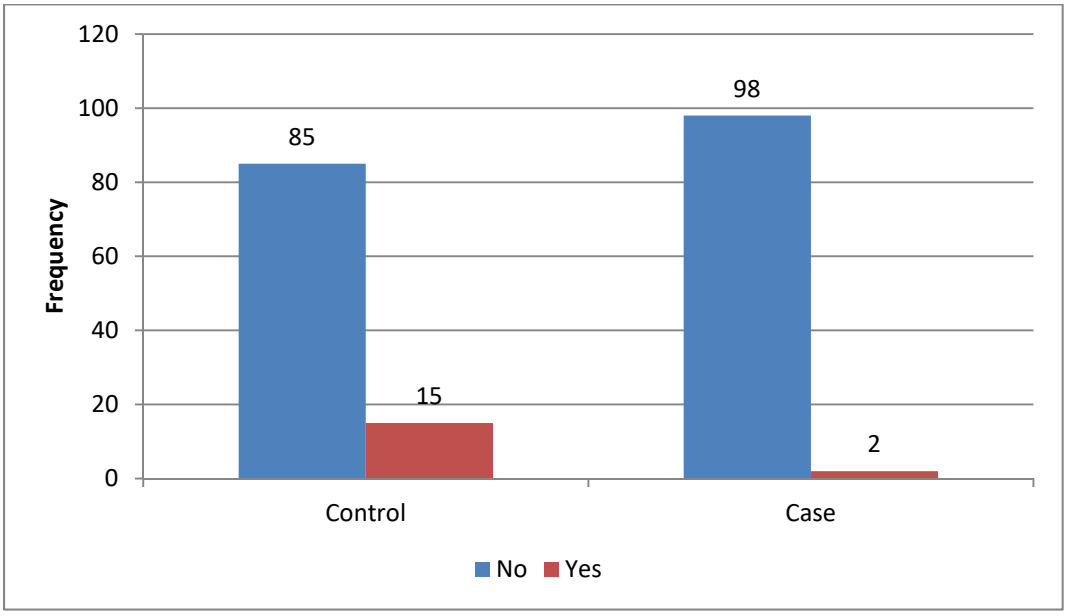


Maternal blood transfusion

		MATERNAL BLOOD TRANSFUSION			
		No	**Yes**	**Total**	**P value**
Group	Control	85	15	100	0.001
	Case	98	2	100	
Total		183	17	200	

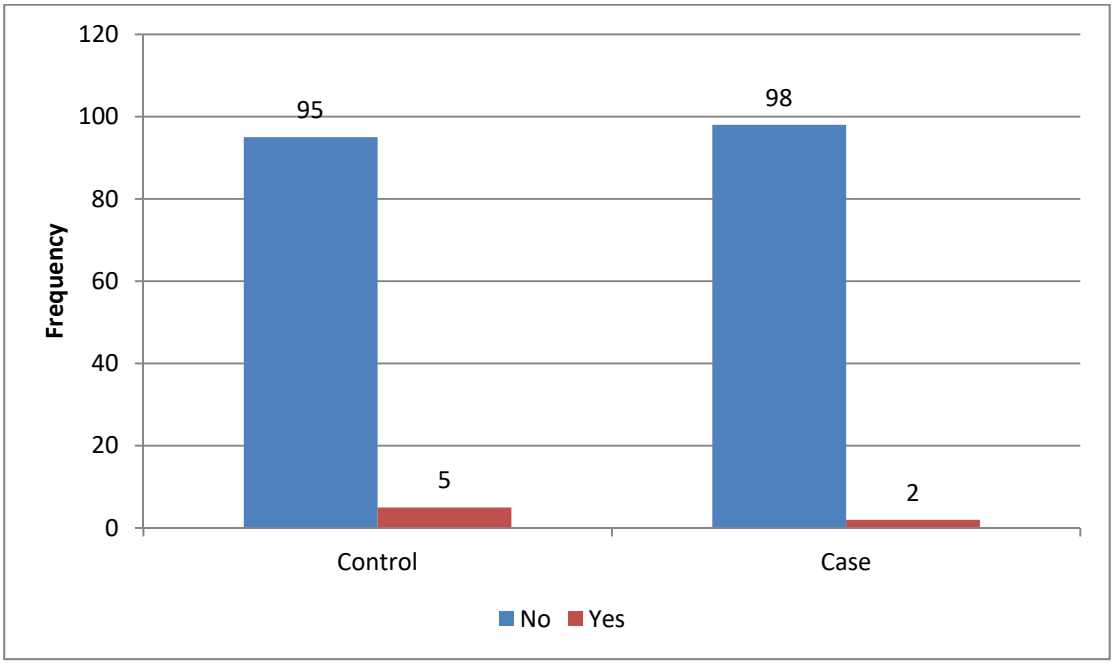
In our study, only 2% in the study group compared to 15% in the control group needed blood transfusion

Maternal blood transfusion



APGAR SCORES

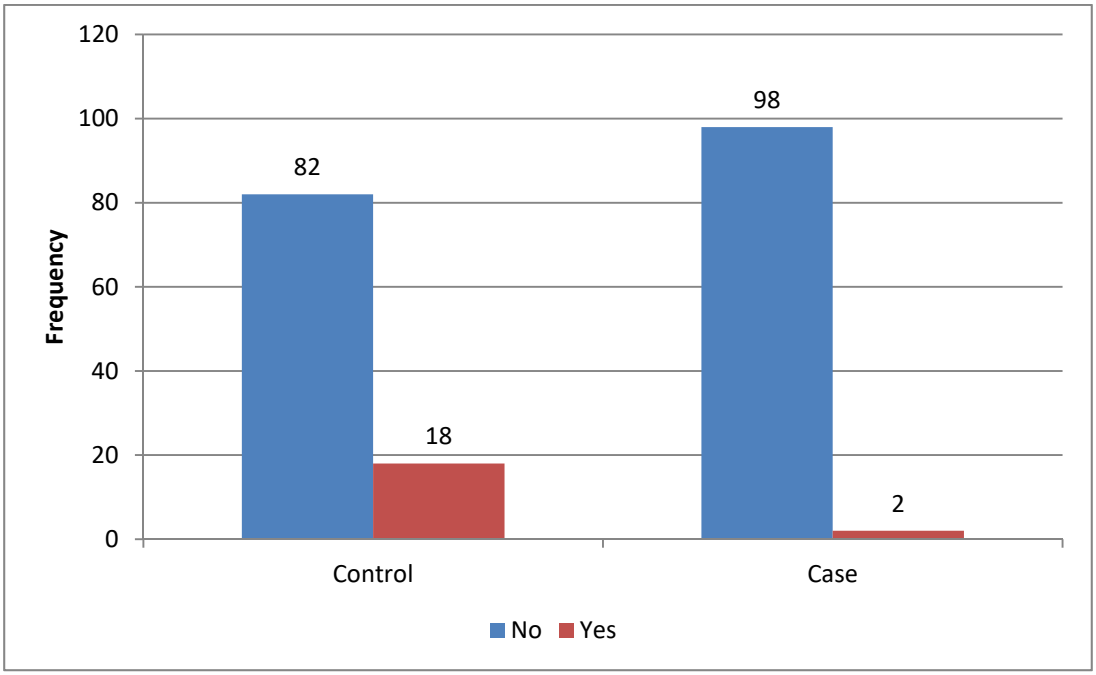
		APGAR <8/10		Total	P value
		No	Yes		
Group	Control	95	5	100	0.248
	Case	98	2	100	
Total		193	7	200	



The apgar scores and neonatal outcome was similar in both the groups.

Duration of stay

		DURATION OF STAY >2 DAYS			
		No	**Yes**	**Total**	**P value**
Group	Control	82	18	100	
	Case	98	2	100	<0.0001
Total		180	20	200	



Duration of stay

2 patients in the study group had to stay for more than 3 days as they were anemic and needed blood transfusion and parenteral iron. 15patients in the control group were anemic and were transfused blood and given parenteral iron. And 3 more patients in the control group were not discharged as they had fever with breast engorgement.

MATERNAL SIDE EFFECTS

There was no maternal side effects noted in both the groups.

DISCUSSION

Labour is a physiological process but it is often associated with morbidity and mortality. Death due to PPH should be avoided and it is the leading cause of maternal mortality. As the fibrinolytic system gets activated after placental delivery, antifibrinolytic agents can be used to reduce obstetric blood loss.The antifibrinolytic agent tranexamic acid is used prophylactically in our study to observe its efficacy in reducing blood loss during normal labour.

1. Maternal age

In our study, Majority of the patients belonged to age group 21 to 24 years.36% of them fall in that group.the mean age is 23.79 in control group and the mean age is 22.94 in study group.On an average 31% belong to group <20 and >30 years.. In a study conducted by Yang H, Shi C-Department of Obst & Gynaecology, first teaching hospital of Beijing University, Beijing, China in 2001 october – the mean age was 23.5 years.

2. Socio economic status

In our study 49% of study group and 47% of control group belonged to class V socioeconomic status. 51% of the study group and 53% of the control group belonged to class IV socioeconomic status**.** In a study conducted by the department of obstetrics and gynaecology – Ayub medical college, Pakistan, by Shamshad Bibi et al in 2009, 74% in the study group and 76% in the control group belonged to class V socioeconomic status.

3. Obstetric formula

In our study, primi gravida were more in both groups than secondgravida. All were Singleton pregnancies. In the study group 56% were Primigravidas and 44% were 2nd gravidas. In the control group 59% were Primigravidas and 41% were 2nd gravidas. In a similar study conducted by Yildrium M.D at Erzincan military hospital, Turkey in april 2011 – second gravidas were 72% and primigravidas were 28%.

4. Booking status

In our study all patients in both control and study group are booked. In a similar study conducted by Panagiotis and Rezan from Department of Obstetrics and Gynaecology, London in march 2011, 86% of study group and 88% of control group were booked. Proper antenatal care is important to identify the high risk factors in the antenatal period itself and to correct them thereby reducing the incidence of PPH.

5. Subjective characters

The average height in control group was 154.46 cm and the average weight is 54.17 KGS in the control group.The average height in study group was 153.35 cm and the average weight in study group was 59.67 KGS .the subjective characters were comparable in both the groups

In a similar study conducted by Shanghai International Pencematernity and child health hospital, Shanghai, China – mean height was 153 cm and mean weight was 62 kg.

6. Change in Vital parameters

In our study,in the control group there is no significant increase in pulse rate postdelivery and no significant difference in pulserate in study group as well.other parameters are insignificant. In a similar study conducted by Natalia Novikova et al in 2010, there was a statistically significant change in vital parameters.

7. Changes in blood indices

In our study statistically significant fall in Hb% occurred after delivery in control group than with study group. Mean fall of Hb% was 0.61gm% in study group and 0.87gm% in control group. Mean fall in hematocrit was 1.81 in the study group and 3.1 in the control group. In a study conducted in the Department of obstetrics and gynaecology, University of Manitoba, 2010, statistically significant drop in haemoglobin was observed in the control group.

8. Onset of labour

In our study 48% in study group had induced labour and 53% in control group had induced labour. Both the groups were comparable.

9. Mode of delivery

In our study 18% in the study group and 19% in the control group had a labour natural, 82% in the study group and 81% in the control group had labour natural with episiotomy

10. Blood loss

In our study, there was a statistically significant reduction of blood loss.The mean blood loss in study group is116.81ml.The mean bloodloss in control group is 175.52 ml in a study conducted at the Centre Hospitalier Regional Universitaire, France in 2010, the mean total blood loss in the study group was 120ml compared to 232.45ml in the control group.

11. Additional uterotonics

In our study, 4% of the patients in the control group needed additional uterotonics compared to only 1% in the study group. The drug significantly decreases the need for additional uterotonics. In a study conducted by Leila Shekhavat et al 2009, Department of obstetrics and gynaecology, Shahid Sedughi Hospital / Shahid Sedughi University of medical sciences and health services, Yazd, Iran – only 4% in the study group needed additional uterotonics.

12. Maternal blood transfusion

In our study, only 2% in the study group compared to 15% in the control group needed blood transfusion. This result was also observed in a similar study conducted by the Division of Obstetrics and gynaecology, University of Oslo, Norway in 2009.

13. Maternal complications

In our study there was no side effects noted in both the groups.

14. Apgar scores

In our study, the apgar scores were comparable in both groups. 2 babies in study group needed NICU admission for HIE stage I. 5 babies in group B needed NICU admission for HIE Stage I and two babies had sepsis. The inference was that tranexamic acid use was not associated with any impact on neonatal outcome in our study. In a similar study conducted by Department of Obs & Gyn King's College hospital, London, there was no significant difference in the Apgar scores between study and control groups.

15. Duration of stay

2 patients in the study group had to stay for more than 3 days as they were anemic and needed blood transfusion and parenteral iron. 15patients in the control group were anemic and were transfused blood and given parenteral iron. And 3 more patients in the control group were not discharged as they had fever with breast engorgement.

SUMMARY

- This study was conducted in the Department of Obstetrics and Gynaecology, THENI Government Medical college, THENI to clinically observe the blood loss reduced by tranexamic acid during normal labour.
- 200 patients were selected for the study, 100 as study group and 100 as Control group.
- 36% of the cases belonged to the age group 20 – 24 years.
- 49% of the cases belonged to class V socioeconomic status.
- 56% of the cases were primigravida and 44% of the cases were 2nd gravida.
- All the cases were booked cases.
- There was no statistically significant difference in the subjective characters in between the two groups.
- There was statistically no significant changes in blood pressure , PR, RR in the control group and the study group.
- Hb level and hematocrit was significantly reduced in the control group
- compared to the study group.
- Tranexamic acid significantly reduced the blood loss from the time of delivery to 2 hour post partum.
- The need for additional uterotonics and maternal blood transfusion is significantly reduced in the study group compared to the control group.
- There was no side effects noted in the study group.
- The apgar scores and neonatal outcome was similar in both the groups.

- The duration of stay was found to be reduced in the study group when compared to the control group.

CONCLUSION

Tranexamic acid injection, an antifibrinolytic agent when given prophylactically at the delivery of the anterior shoulder in 100 ml normal saline appears to reduce the blood loss during normal labour effectively. The need for blood transfusion is also reduced.

BIBLIOGRAPHY

- Henry DA et al – Antifibrinolytic use for minimizing perioperative allogenic blood transfusion : Cochrane Database of systematic reviews, 2007; Issue 4. Art NO : CD001886.
- Lethaby A, Farquhar – Antifibrinolytics for heavy menstrual bleeding. Cochrane Database of systematic reviews, 2000; Issue 4. Art NO: CD000249.
- Gai MY et al. clinical observation of blood loss reduced by Tranexamic acid during and after caesarean section : a multi center randomized trial,European Journal of Obstetrics and Gynaecology and Reproductive Biology, 2004, 112(2) : 154 – 157.
- As AK. Hagen P, Webb JB. Tranexamic acid in management of PPH.British Journal of Obstetrics and Gynaecology, 1996, 103(12):1250-1251.
- Clinical study on the efficiency of Tranexamic acid in reducing postpartum blood loss, a randomized multicentre trial by Zhonghua Fu Chan Zazhi, 2001 oct, 36(10) ; 590 – 2.
- Tranexamic acid in pregnancy and postpartum – Peitsidis P, Kadir RA, Expert opinion pharmacotherapy. 2011 March, 12(4) : 503 – 16.
- Active Management Of Third Stage Of Labour : prevention and treatment of PPH – Leduc D, SenikasV, Journal of Obstetrics and Gynaecology, Canada, 2009 oct ; 31(10) : 980 – 93.

- Timing of prophylactic uterotonics for third stage of labour after vaginal birth. Soltani H, Hutchon DR Cochrane Database of systematic reviews 2010 August 4 ; (8) : CD006173.
- Mac – Mullen NJ, Dulski LA, Meagher B. MCN American Journal 2005; 30:40 – 51.
- Tesseir V. Pierre F. Risk of PPH during labour and clinical and pharmacological prevention. Journal of Obstetrics and Gynaecology.2004; 33:4529 – 56.
- Litch JA. AMTSL. Seattle, WA : Program for Appropriate technology and health 2004. p.132.
- A La Londe, B.A.Daviss, PPH today : ICM / FIGO initiative 2004 –2006. International Journal of Obstetrics and Gynaecology (2006); 94:243 – 53.
- Sherman SJ, Greenspoon JS, Identifying the obstetric patient at high risk of multiple unit blood transfusions. Journal of reproductive medicine 1992; 37 : 649 – 52.
- Routine practice of using Tranexamic acid in AMTSL – NCT01338454Gokhan, Bakirkoy, 2011.
- Astedt B. Clinical pharmacology of Tranexamic acid. Scandinavian journal of gastroenterology 1987; 137 : 22 – 5.
- □□Bekarsy z, Astedt B. Treatment with Tranexamic acid – risk for thrombosis Acta Obstetricia et Gynaecologica Scandinivica 1990;69(4) : 353
- Boylan JF, Klinck et al Tranexamic acid reduces blood loss, transfusion requirements and coagulation factor use – 1996; 85(5): 1043 – 8.

- Pattinson RC. Saving mothers. Third report on confidential enquiries into maternal deaths in South Africa 2002 – 04 Pretoria, S.Africa : Department of health 2006.
- Higgins JPT, Green S, editors Cochrane Database of systematic reviews of Interventions Version 5.1.0 The Cochrane collaboration, 2011.
- Longstaff C. Studies on the mechanism of action of a protinin and Tranexamic acid as plasmin inhibitors and anti fibrinolytic agents. Blood coagulation and fibrinolysis 1994; 5(4) : 537 – 42.
- Moussa HA, Alfirevic Z. Treatment of primary PPH, Cochrane Database of systematic reviews 2007, Issue 1 (DOI : 10.1002 / 14651858. CD 003249,pub2).
- Ronsmons C, Grahane WJ. Maternal mortality : who, when, where and why. Lancet 2006; 368 (9542) : 1189 – 200.
- Ekeroma AJ, Blood transfusion in Obstetrics and Gynaecology. British Journal of Obstetrics and Gynaecology, 1997; 104(3) : 278 – 84.
- Taylor C, Cohen H et al Hazards of Transfusion annual report 2007,2008.
- Hellgren M. Haemostasis during normal pregnancy and puerperium. Semin Thromb Hemost 2003; 29(2) : 125 – 30.
- Prentice CR. Basis of antifibrinolytics therapy Journal of clinical pathology (Royal College of Pathology) 1980; 14 : 35 – 40.
- Horrow JC, Van Riper DF, Strong MD et al. The dose – response relationship of Tranexamic acid. 1995; 82(2): 383 – 92.

- Coombs CA, Murphy EL, Laros RK Jr. factors associated with PPH and vaginal birth 1991; 77: 69 – 76.
- Efficacy of Tranexamic acid in reducing blood loss after caesarean section 2009, Vol. 22, NO.1, Pg 72 – 75 by Leila Sekhavat, Afsar Tabatabaii.
- Dunn CJ, Goa KH: Tranexamic acid : a review of its use in surgery and other indications. Drugs 1999, 57(6): 1005 – 32.
- Ferrer PR, Sydenham EI et al Antifibrinolytic agents in obstetric haemorrhage : A Systematic review of pregnancy and child birth manuscript ID 4090955672420008, in press. ACOG , PPH practice bulletin NO. 76.2006, p 1 – 9.
- Novikova N, Hofmeyr GJ., Tranexamic acid for preventing postpartumhaemorrhage. Cochrane Database of Systematic Reviews 2010, Issue 7.
- Art. No.: CD007872. DOI: 10.1002/14651858.CD007872.pub2. Gobbur VR, Reddy SV, Bijapur UJ. Efficacy of tranexamic acid in reducing blood loss during lower segment caesarean section. 54th All India Congress of Obstetrics and Gynaecology; 2011 January 5-9; Hyderabad, Andhra Pradesh, India. 2011:

ANNEXURES

INFORMATION SHEET FOR THE PATIENT AND HER REPRESENTATIVE(S)

We welcome you and thank you for your keen interest in participation in this research project. Before you participate in this study, it is important for you to understand why this research is being carried out. This form will provide you all the relevant details of this research. It will explain the nature, the purpose, the benefits, the risks, the discomforts, the precautions and the informations about how the project will be carried out. It is important that you read and understand the contents of the form carefully. This form may contain certain scientific terms and hence, if you have any doubts or if you want more information, you are free to ask the study personnel or the contact person mentioned below before you give your consent and also at any time during the entire course of the project.

1. Project title

Efficacy of tranexamic acid in reducing blood loss in normal labour.

2. Department and institute

Department of obstetrics and gynaecology, THENI

GOVERNMENT MEDICAL COLLEGE, THENI

3. Name of the investigator

Dr. V.Shanmuga priya

4. What is the purpose of this project / study?

To compare the efficiency of tranexamic acid in reducing blood loss in normal labour.

5. What is the selection procedure of participants?

Inclusion Criteria: Primi and 2nd gravid, More than 38 weeks of gestation, spontaneous / induced labour

Exclusion Criteria: Haemoglobin < 8gm%**,** Twin pregnancy**,** Polyhydramnios, EFW > 4 kg**,** Previous H/O PPH**,** Fibroid complicating pregnancy**,** Preeclampsia, Placenta previa, Abruptio placenta, Prolonged and obstructed labour**,** Heart disease complicating pregnancy**,** Renal / liver disease patients**,** Patients on anticoagulants, Previous H/O thromboembolism, Gravidity ≥ 3.

6. What is the procedure of the study?

Both the study group and the control group will be placed on a calibrated obstetric drape during the delivery. The Study group will receive Oxytocin 10 units im within 1 minute of delivery and Inj. Tranexamic acid 10 mg / kg in 100ml NS at delivery of anterior shoulder. The control group will receive Oxytocin 10 units im within 1minute of delivery and Placebo of 100ML normal saline at delivery of anterior shoulder. Predelivery vital parameters will be noted. Pre-weighed pads are given to the participants. And it has to be returned to the investigator immediately 2 hrs after delivery. These pads are weighed immediately to assess the amount of blood loss. And the total amount of blood loss is calculated by adding the blood in the drape and in the pads.

Post- delivery vital parameters are noted. Side effects of the drug if any are noted.

7. What are the responsibilities of the participants?

The patients will be given the drug immediately after delivery. The participants are expected to use only the pre-weighed diapers given by the investigator and hand over the soiled diapers immediately 2 hrs after delivery.

8. What are the expected risks for the participants?

Tranexamic acid is NOT a new drug . There is no conclusive evidence of serious side effects with short term use.According to the studies which are previously done, side effects are shivering, vomiting and giddiness.

9. What are the expected benefits of the study to the participants?

The amount of blood loss will be reduced. Hence the need for blood Transfusion is reduced. Hence there will be no anemia during the post partum period. The duration of stay in the hospital is also reduced.

10. Will the participant be compensated for participation in this trial?

No

11. Whether any participation in this study be kept confidential?

Yes

12. Can I withdraw from the study at any time during the study period?

Yes

13. If there is any new findings / informations, would I be informed?

Yes

14. What happens in case of a study related injury?

Study related injuries are found to be very minimal

15. Is there any alternative to the treatment mentioned?

Yes they are available. But it is very expensive (recombinant factor VIIa).

16. Are there costs associated with this research study? Will I receive any payments?

This study is done free of cost to the participant, however one will not receive compensation of any kind for your participation in this research.

For any study related queries, you are free to contact.

Name of the contact person with official address: Dr. V.Shanmuga priya, junior resident, department of obstetrics and gynaecology, THENI

GOVERNMENT MEDICAL COLLEGE, THENI

Place: THENI Signature of the investigator :

Date : Witness

CONSENT FORM FOR THE PATIENT

1. I confirm that I have read and understood the information sheet for the study and have had the opportunity to ask questions.

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason and without my medical care or legal rights being affected.

3. I understand that sections of my medical notes and those of my baby/ies may be looked at by responsible individuals involved in the study. I give permission for these individuals to have access to these records.

4. I give permission for my personal doctor to be given information about my participation in this trail.

5. I agree to take part in this study.

Name of the patient : Date :

Signature / Thumbprint :

Name of the person taking consent : Date :

Signature :

INVESTIGATOR'S AND/OR ASSOCIATE'S STATEMENT

I have fully explained to _____

[participant / parent / guardian] the nature and purpose of the above-described procedures and the risks involved in its performance. I have answered and will answer all questions to the best of my ability. I will inform the participant of any changes in the procedures or the risks and benefits if any should occur during or after the course of the study.

Date (MM/DD/YEAR) Signature of Investigator or Associate

PROFORMA

Name : Age : IP NO :

Address:

Husband name: Qualification:

Occupation: Socio Economic Status : I II III IV V

Date of admission :

Obstetric formula : G P L A LMP: EDD:

GA BY LMP: GA BY USG:

Booking status : Booked / Unbooked

Past history :

Obstertric history :

General examination

Height : Weight : BMI : Pallor: Pedal edema:

CVS : RS :

Abdominal examination :

Vaginal examination :

PARAMETERS	PREDELIVERY	POSTPARTUM
PULSE RATE		
BLOOD PRESSURE		
RESPIRATORY RATE		
SPO2		
URINE OUTPUT IN ML/HR		
HAEMOGLOBIN		
PCV		
BLOOD LOSS FROM DELIVERY OF THE BABY TO 2 HOURS POSTPARTUM		
APGAR SCORES		
SIDE EFFECTS OF THE DRUG		
MATERNAL NEED FOR ANY BLOOD TRANSFUSION		
MATERNAL OUTCOME		

Date of delivery:

Onset of labour : Spontaneous Induced

Mode of delivery:

Additional uterotonics: yes/no

Duration of hospital stay:

URKUND

Urkund Analysis Result

Analysed Document:	priya thesis.docx (D56999526)
Submitted:	14/10/2019 16:36:00
Submitted By:	pritkmc@gmail.com
Significance:	23 %

Sources included in the report:

DISSERTATION new.docx (D31178826)
100001790-Diss-1178698.pdf (D17854216)
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5016452/
https://www.researchgate.net/publication/272893836_Role_of_tranexamic_acid_in_reducing_blood_loss_during_and_after_caesarean_section
https://www.medscape.com/viewarticle/716622_2
https://www.researchgate.net/publication/8899873_Clinical_observation_of_blood_loss_reduced_by_tranexamic_acid_during_and_after_caesarian_section_A_multi-center_randomized_trial
https://www.sciencedirect.com/science/article/pii/S0976566218301188
https://jcpsp.pk/archive/2013/Jul2013/03.pdf
https://www.ncbi.
https://cyberlenin
https://www.researchsquare.com/article/bcdfa5b1-8000-4a2e-af7b-faca98a3a8bf/v1
https://www.researchgate.net/publication/51069934_Tranexamic_Acid_Reduces_Blood_Loss_and_Blood_Transfusion_after_TKA_A_Prospective_Randomized_Controlled_Trial
57f6a9c9-bd5e-4f7e-bda2-c10d513c1470
8a6a22c3-f773-4a7b-b1e2-906e6d6a5e63
00256c19-525c-47ae-86bf-b323bdb4d0dc
https://www.ijrcog.org/index.php/ijrcog/article/download/2935/2563

https://www.sciencedirect.com/science/article/pii/S0976566218301188

Instances where selected sources appear:

103

Ref. No. 2544/ME1/18

Government Theni Medical College
Theni Dated: 07.06.2018

Institutional Ethical Committee:

Convenor:

Dr. T. Thirunavukkarasu, M.D., D.A.,
Dean
Govt. Theni Medical College
Theni

Sub: Medical Education – Govt. Theni Medical College,
Theni – Ethical Committee – Minutes – Communicated – Reg.

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The Ethical Committee Meeting of the Govt. Theni Medical College, Theni was held at 10.30 A.M. on 07.06.2018 at 150 Lecture Hall, Government Theni Medical College Hospital, Theni.

The following Members of the Committee have attended the Meeting.

1.	**Convener**	:	**Dr. T. Thirunavukkarasu, M.D., D.A., Dean**
2.	**Member Secretary**	:	**Dr. M. Ilangovan, M.S., Deputy Superintendent**
3	**Members**		
	Professor of Medicine	:	**Dr. P. K. Ganesh Babu, M.D.,**
	Professor of Surgery	:	**Dr. R. Murugesan, M.S.,**
	Professor of Obs. & Gynaec.	:	**Dr. Thangamani, M.D., O.G.,**
	Professor of Micro Biology	:	**Dr. K.M. Mythreyee, M.D.,**
4.	**Chairman (Private Consultant)**	:	**Dr. Paulraj, M.D.,** Ramya Clinic, Periyakulam Road, Theni.
5.	**Lawyer**	:	**Thiru.K.Murugesan, B.Com., B.L.,** S/o.Kamaraj, Ambedkar Nagar, Varusanadu, Theni District.
6.	**Sociologist**	:	**Sr. Anaestescia** Director, Jeevan Jothi Hospital Community Care Centre, Periyakulam Road, Kailasapatti, Theni Dist.
7.	**Public**	:	**Mr. P. Deenadhayalan, M.A.,** Land Lord, Koduvilarpatti, Theni District.

The following Project was approved by the Committee:

Name and Designation	Name of the Project	Remarks
Dr. V. Shanmugapriya First Year MS (OG) Post Graduate	The study of efficacy of parentral traneamic acid in reducing blood loss during normal labour	Approved

Please note that the investigator should adhere the following: He/she should get a detailed informed consent from the Patients/participants and maintain Confidentially.

1. He/she should carry out the work without detrimental to regular activities as well as without extra expenditure to the institution.
2. He/she should inform the Institution Ethical Committee in case of any change of study procedure site and investigation or guide.
3. He/she should not deviate for the area of the work for which applied for Ethical Clearance. He/She should inform the Institution Ethical Committee immediately, in case of any adverse events or any serious adverse reactions.
4. He/she should abide to the rules and regulations of the institution.
5. He/she should complete the work within the specific period and apply for if any extension of time is required. He/she should apply for permission again and do the work.
6. He/she should submit the summary of the research work to the Ethical Committee on completion of the work.
7. He/she should not claim any funds from the institution while doing the work or on completion.
8. He/she should understand that the members of Institutional Ethical Committee have the right to monitor the work with prior intimation.

Chairman

Convenor

DEAN
GOVT. THENI MEDICAL COLLEGE HOSPITAL
THENI-625 512.

To

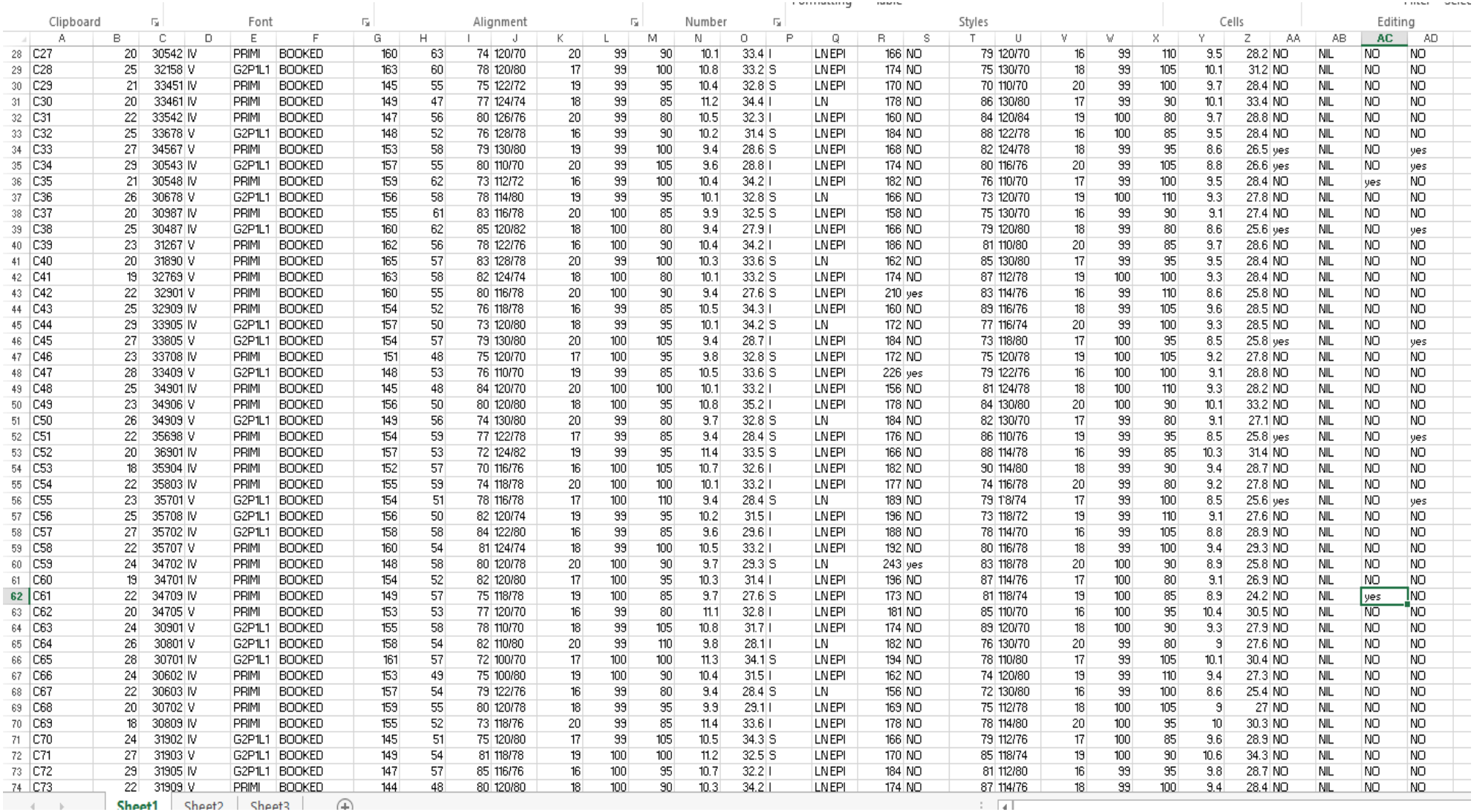
Dr.M. PALRAJ,M.D.,
Civil Surgeon Retd.,
RAMYA HOSPITAL
574, Periyakulam Road,
THENI - 625 531.
Regn. No: 28094

The above individual – through Head of the Department concerned.

MASTER CHART

	NAME CODE	AGE	IP NO	SE STATUS	PARITY	BOOKING STATUS	HEIGHT IN CMS	WEIGHT IN KGS	PR/MIN	BP/MMHG	RR/MIN	SPO2	U/O ML/HR	HB IN GMS	PCV%	ONSET OF LABOUR	MODE OF DELIVERY	TOTAL BLOOD LOSS TD TO 2	ADDITIONAL UTEROTONICS	PR/MIN	BP/MMHG	RR/MIN	SPO2	U/O ML/HR	HB IN GMS	PCV%	MATERNAL BLOOD TRANSFU	MATERNAL COMPLICATION	APGAR <8/10	DURATION OF STAY >2 DAYS
2	C1	25	32520	IV	PRIMI	BOOKED	160	58	78	110/70	16	99	80	9.6	27.3	S	LN EPI	280	yes	84	110/80	18	99	95	8.8	25.4	yes	NIL	NO	yes
3	C2	30	33757	IV	G2P1L1	BOOKED	154	52	80	120/70	19	99	90	9.1	29	I	LN EPI	180	NO	86	120/70	17	99	90	8.5	25.2	yes	NIL	NO	yes
4	C3	21	30527	IV	PRIMI	BOOKED	155	55	84	120/80	17	99	95	9.4	29	I	LN EPI	190	NO	80	116/76	18	99	85	8.9	25.4	yes	NIL	NO	yes
5	C4	26	32125	V	G2P1L1	BOOKED	160	58	76	130/80	18	99	85	10.2	33	I	LN EPI	175	NO	78	110/70	20	99	80	9.2	29.2	NO	NIL	NO	NO
6	C5	27	34176	V	G2P1L1	BOOKED	170	64	74	110/80	20	99	80	10.8	33.3	S	LN	120	NO	82	120/70	18	99	90	9.6	28.5	NO	NIL	yes	NO
7	C6	23	33125	V	PRIMI	BOOKED	156	54	76	130/70	16	99	100	11.1	34.3	I	LN EPI	170	NO	86	130/70	16	99	95	10	34	NO	NIL	NO	NO
8	C7	25	34126	IV	G2P1L1	BOOKED	148	50	79	110/74	18	99	105	9.4	28.6	I	LN	185	NO	80	120/80	19	99	100	8.5	25.2	NO	NIL	NO	NO
9	C8	27	34128	V	G2P1L1	BOOKED	149	48	75	116/78	17	99	80	10.3	33.2	S	LN EPI	170	NO	76	110/80	17	99	110	9.5	28.2	NO	NIL	NO	NO
10	C9	29	34127	IV	G2P1L1	BOOKED	154	52	73	120/78	20	99	85	10.8	33.6	I	LN EPI	165	NO	74	130/80	20	99	105	9.3	27.2	NO	NIL	NO	NO
11	C10	31	33135	V	G2P1L1	BOOKED	158	54	80	130/74	17	99	90	12.2	37.2	I	LN EPI	157	NO	70	112/78	17	99	100	11.3	34.6	NO	NIL	NO	NO
12	C11	24	34113	IV	PRIMI	BOOKED	160	56	84	122/76	19	99	95	11.4	34.2	S	LN EPI	174	NO	79	114/78	19	99	90	10.3	31.2	NO	NIL	NO	NO
13	C12	20	32145	V	PRIMI	BOOKED	158	56	86	116/74	20	99	105	9.3	28.2	I	LN	184	NO	73	116/76	16	99	80	8.3	24.2	NO	NIL	NO	NO
14	C13	19	32154	IV	PRIMI	BOOKED	156	54	90	122/74	16	99	110	9.8	29.2	S	LN EPI	190	NO	82	122/80	18	99	95	9.2	28.1	NO	NIL	NO	NO
15	C14	22	33142	IV	PRIMI	BOOKED	162	56	75	116/76	18	99	100	10.1	31	I	LN EPI	177	NO	87	120/80	20	99	85	9.3	29.3	NO	NIL	NO	NO
16	C15	26	34123	IV	PRIMI	BOOKED	165	62	79	118/78	19	99	90	9.8	28	I	LN EPI	185	NO	80	120/70	17	99	80	8.9	25.3	NO	NIL	NO	NO
17	C16	27	35142	V	G2P1L1	BOOKED	158	55	82	120/70	17	99	95	11.3	33.3	S	LN EPI	170	NO	79	110/70	19	99	90	10.2	31.2	NO	NIL	NO	NO
18	C17	23	33214	V	PRIMI	BOOKED	154	50	85	130/70	20	99	85	9	26.3	I	LN EPI	160	NO	73	114/72	16	99	105	8.2	24.3	NO	NIL	NO	NO
19	C18	26	33118	V	G2P1L1	BOOKED	150	46	78	120/80	16	99	80	10.4	31.3	I	LN	155	NO	70	112/74	18	99	100	9.8	27.8	NO	NIL	NO	NO
20	C19	23	33110	IV	PRIMI	BOOKED	148	56	80	130/80	19	100	90	11	34.2	S	LN EPI	167	NO	74	114/76	20	99	110	10.2	31.2	NO	NIL	yes	NO
21	C20	22	33129	IV	PRIMI	BOOKED	156	60	85	110/70	20	100	100	10.8	32	I	LN EPI	180	NO	79	116/78	17	99	90	9.8	28.2	NO	NIL	NO	NO
22	C21	25	32147	V	PRIMI	BOOKED	163	60	81	110/80	17	100	110	9.4	28	S	LN	175	NO	83	110/72	19	100	80	8.8	26.4	yes	NIL	NO	yes
23	C22	28	34218	V	G2P1L1	BOOKED	160	64	85	118/78	16	100	105	9.6	28.3	I	LN EPI	166	NO	86	112/74	16	100	85	8.8	25.4	yes	NIL	NO	yes
24	C23	24	34214	IV	PRIMI	BOOKED	148	56	76	112/72	20	100	100	10.2	32	S	LN EPI	172	NO	89	114/76	18	100	95	9.6	28.4	NO	NIL	NO	NO
25	C24	29	30421	V	G2P1L1	BOOKED	157	54	73	114/74	18	100	95	10.6	33.4	I	LN EPI	156	NO	81	116/78	20	100	90	9.8	29.1	NO	NIL	yes	NO
26	C25	23	30431	V	PRIMI	BOOKED	159	58	79	116/76	20	99	85	9.2	28.3	I	LN EPI	164	NO	73	114/78	17	100	80	8.5	25.6	yes	NIL	NO	yes
27	C26	22	30432	V	PRIMI	BOOKED	165	60	80	118/78	16	99	80	10.6	34.1	S	LN	182	NO	77	120/80	19	99	105	9.6	28.4	NO	NIL	NO	NO
28	C27	20	30542	IV	PRIMI	BOOKED	160	63	74	120/70	20	99	90	10.1	33.4	I	LN EPI	166	NO	79	120/70	16	99	110	9.5	28.2	NO	NIL	NO	NO
29	C28	25	32158	V	G2P1L1	BOOKED	163	60	78	120/80	17	99	100	10.8	33.2	S	LN EPI	174	NO	75	130/70	18	99	105	10.1	31.2	NO	NIL	NO	NO
30	C29	21	33451	IV	PRIMI	BOOKED	145	55	75	122/72	19	99	95	10.4	32.8	S	LN EPI	170	NO	70	110/70	20	99	100	9.7	28.4	NO	NIL	NO	NO
31	C30	20	33461	IV	PRIMI	BOOKED	149	47	77	124/74	18	99	85	11.2	34.4	I	LN	178	NO	86	130/80	17	99	90	10.1	33.4	NO	NIL	NO	NO
32	C31	22	33542	IV	PRIMI	BOOKED	147	56	80	126/76	20	99	80	10.5	32.3	I	LN EPI	160	NO	84	120/84	19	100	80	9.7	28.8	NO	NIL	NO	NO
33	C32	25	33678	V	G2P1L1	BOOKED	148	52	76	128/78	16	99	90	10.2	31.4	S	LN EPI	184	NO	88	122/78	16	100	85	9.5	28.4	NO	NIL	NO	NO
34	C33	27	34567	V	PRIMI	BOOKED	153	58	79	130/80	19	99	100	9.4	28.6	S	LN EPI	168	NO	82	124/78	18	99	95	8.6	26.5	yes	NIL	NO	yes
35	C34	29	30543	IV	G2P1L1	BOOKED	157	55	80	110/70	20	99	105	9.6	28.8	I	LN EPI	174	NO	80	116/76	20	99	105	8.8	26.6	yes	NIL	NO	yes
36	C35	21	30548	IV	PRIMI	BOOKED	159	62	73	112/72	16	99	100	10.4	34.2	I	LN EPI	182	NO	76	110/70	17	99	100	9.5	28.4	NO	NIL	yes	NO
37	C36	26	30678	V	G2P1L1	BOOKED	156	58	78	114/80	19	99	95	10.1	32.8	S	LN	166	NO	73	120/70	19	100	110	9.3	27.8	NO	NIL	NO	NO

Sheet1 Sheet2 Sheet3

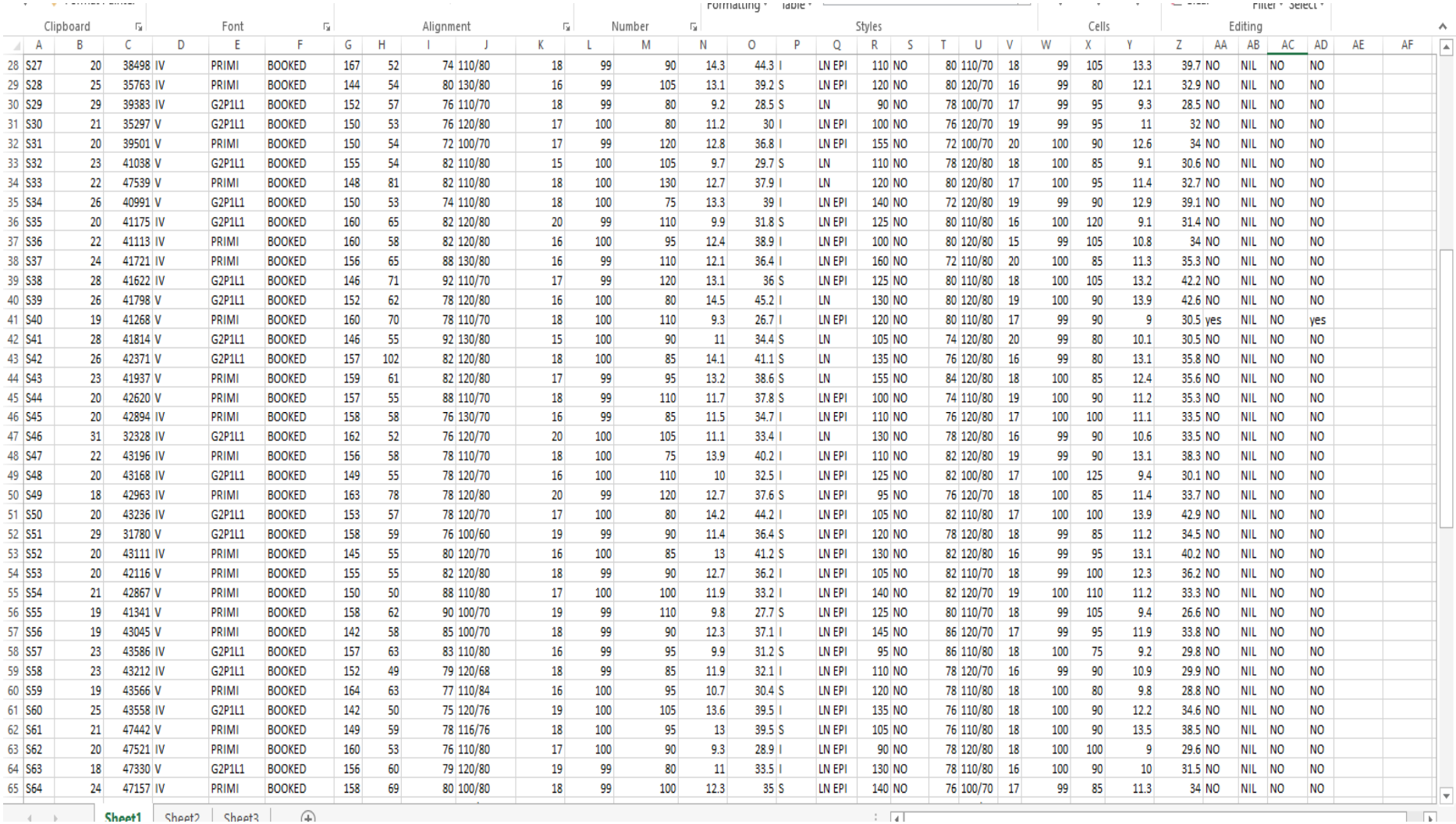


	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
28	C27	20	30542	IV	PRIMI	BOOKED	160	63	74	120/70	20	99	90	10.1	33.4	I	LN EPI	166	NO	79	120/70	16	99	110	9.5	28.2	NO	NIL	NO	NO
29	C28	25	32158	V	G2P1L1	BOOKED	163	60	78	120/80	17	99	100	10.8	33.2	S	LN EPI	174	NO	75	130/70	18	99	105	10.1	31.2	NO	NIL	NO	NO
30	C29	21	33451	IV	PRIMI	BOOKED	145	55	75	122/72	19	99	95	10.4	32.8	S	LN EPI	170	NO	70	110/70	20	99	100	9.7	28.4	NO	NIL	NO	NO
31	C30	20	33461	IV	PRIMI	BOOKED	149	47	77	124/74	18	99	85	11.2	34.4	I	LN	178	NO	86	130/80	17	99	90	10.1	33.4	NO	NIL	NO	NO
32	C31	22	33542	IV	PRIMI	BOOKED	147	56	80	126/76	20	99	80	10.5	32.3	I	LN EPI	160	NO	84	120/84	19	100	80	9.7	28.8	NO	NIL	NO	NO
33	C32	25	33678	V	G2P1L1	BOOKED	148	52	76	128/78	16	99	90	10.2	31.4	S	LN EPI	184	NO	88	122/78	16	100	85	9.5	28.4	NO	NIL	NO	NO
34	C33	27	34567	V	PRIMI	BOOKED	153	58	79	130/80	19	99	100	9.4	28.6	S	LN EPI	168	NO	82	124/78	18	99	95	8.6	26.5	yes	NIL	NO	yes
35	C34	29	30543	IV	G2P1L1	BOOKED	157	55	80	110/70	20	99	105	9.6	28.8	I	LN EPI	174	NO	80	116/76	20	99	105	8.8	26.6	yes	NIL	NO	yes
36	C35	21	30548	IV	PRIMI	BOOKED	159	62	73	112/72	16	99	100	10.4	34.2	I	LN EPI	182	NO	76	110/70	17	99	100	9.5	28.4	NO	NIL	yes	NO
37	C36	26	30678	V	G2P1L1	BOOKED	156	58	78	114/80	19	99	95	10.1	32.8	S	LN	166	NO	73	120/70	19	100	110	9.3	27.8	NO	NIL	NO	NO
38	C37	20	30987	IV	PRIMI	BOOKED	155	61	83	116/78	20	100	85	9.9	32.5	S	LN EPI	158	NO	75	130/70	16	99	90	9.1	27.4	NO	NIL	NO	NO
39	C38	25	30487	IV	G2P1L1	BOOKED	160	62	85	120/82	18	100	80	9.4	27.9	I	LN EPI	166	NO	79	120/80	18	99	80	8.6	25.6	yes	NIL	NO	yes
40	C39	23	31267	V	PRIMI	BOOKED	162	56	78	122/76	16	100	90	10.4	34.2	I	LN EPI	186	NO	81	110/80	20	99	85	9.7	28.6	NO	NIL	NO	NO
41	C40	20	31890	V	PRIMI	BOOKED	165	57	83	128/78	20	99	100	10.3	33.6	S	LN	162	NO	85	130/80	17	99	95	9.5	28.4	NO	NIL	NO	NO
42	C41	19	32769	V	PRIMI	BOOKED	163	58	82	124/74	18	100	80	10.1	33.2	S	LN EPI	174	NO	87	112/78	19	100	100	9.3	28.4	NO	NIL	NO	NO
43	C42	22	32901	V	PRIMI	BOOKED	160	55	80	116/78	20	100	90	9.4	27.6	S	LN EPI	210	yes	83	114/76	16	99	110	8.6	25.8	NO	NIL	NO	NO
44	C43	25	32909	IV	PRIMI	BOOKED	154	52	76	118/78	16	99	85	10.5	34.3	I	LN EPI	160	NO	89	116/76	18	99	105	9.6	28.5	NO	NIL	NO	NO
45	C44	29	33905	IV	G2P1L1	BOOKED	157	50	73	120/80	18	99	95	10.1	34.2	S	LN	172	NO	77	116/74	20	99	100	9.3	28.5	NO	NIL	NO	NO
46	C45	27	33805	V	G2P1L1	BOOKED	154	57	79	130/80	20	100	105	9.4	28.7	I	LN EPI	184	NO	73	118/80	17	100	95	8.5	25.8	yes	NIL	NO	yes
47	C46	23	33708	IV	PRIMI	BOOKED	151	48	75	120/70	17	100	95	9.8	32.8	S	LN EPI	172	NO	75	120/78	19	100	105	9.2	27.8	NO	NIL	NO	NO
48	C47	28	33409	V	G2P1L1	BOOKED	148	53	76	110/70	19	99	85	10.5	33.6	S	LN EPI	226	yes	79	122/76	16	100	100	9.1	28.8	NO	NIL	NO	NO
49	C48	25	34901	IV	PRIMI	BOOKED	145	48	84	120/70	20	100	100	10.1	33.2	I	LN EPI	156	NO	81	124/78	18	100	110	9.3	28.2	NO	NIL	NO	NO
50	C49	23	34906	V	PRIMI	BOOKED	156	50	80	120/80	18	100	95	10.8	35.2	I	LN EPI	178	NO	84	130/80	20	100	90	10.1	33.2	NO	NIL	NO	NO
51	C50	26	34909	V	G2P1L1	BOOKED	149	56	74	130/80	20	99	80	9.7	32.8	S	LN	184	NO	82	130/70	17	99	80	9.1	27.1	NO	NIL	NO	NO
52	C51	22	35698	V	PRIMI	BOOKED	154	59	77	122/78	17	99	85	9.4	28.4	S	LN EPI	176	NO	86	110/76	19	99	95	8.5	25.8	yes	NIL	NO	yes
53	C52	20	36901	IV	PRIMI	BOOKED	157	53	72	124/82	19	99	95	11.4	33.5	S	LN EPI	166	NO	88	114/78	16	99	85	10.3	31.4	NO	NIL	NO	NO
54	C53	18	35904	IV	PRIMI	BOOKED	152	57	70	116/76	16	100	105	10.7	32.6	I	LN EPI	182	NO	90	114/80	18	99	90	9.4	28.7	NO	NIL	NO	NO
55	C54	22	35803	IV	PRIMI	BOOKED	155	59	74	118/78	20	100	100	10.1	33.2	I	LN EPI	177	NO	74	116/78	20	99	80	9.2	27.8	NO	NIL	NO	NO
56	C55	23	35701	V	G2P1L1	BOOKED	154	51	78	116/78	17	100	110	9.4	28.4	S	LN	189	NO	79	118/74	17	99	100	8.5	25.6	yes	NIL	NO	yes
57	C56	25	35708	IV	G2P1L1	BOOKED	156	50	82	120/74	19	99	95	10.2	31.5	I	LN EPI	196	NO	73	118/72	19	99	110	9.1	27.6	NO	NIL	NO	NO
58	C57	27	35702	IV	G2P1L1	BOOKED	158	58	84	122/80	16	99	85	9.6	29.6	I	LN EPI	188	NO	78	114/70	16	99	105	8.8	28.9	NO	NIL	NO	NO
59	C58	22	35707	V	PRIMI	BOOKED	160	54	81	124/74	18	99	100	10.5	33.2	I	LN EPI	192	NO	80	116/78	18	99	100	9.4	29.3	NO	NIL	NO	NO
60	C59	24	34702	IV	PRIMI	BOOKED	148	58	80	120/78	20	100	90	9.7	29.3	S	LN	243	yes	83	118/78	20	100	90	8.9	25.8	NO	NIL	NO	NO
61	C60	19	34701	IV	PRIMI	BOOKED	154	52	82	120/80	17	100	95	10.3	31.4	I	LN EPI	196	NO	87	114/76	17	100	80	9.1	26.9	NO	NIL	NO	NO
62	C61	22	34709	IV	PRIMI	BOOKED	149	57	75	118/78	19	100	85	9.7	27.6	S	LN EPI	173	NO	81	118/74	19	100	85	8.9	24.2	NO	NIL	yes	NO
63	C62	20	34705	V	PRIMI	BOOKED	153	53	77	120/70	16	99	80	11.1	32.8	I	LN EPI	181	NO	85	110/70	16	100	95	10.4	30.5	NO	NIL	NO	NO
64	C63	24	30901	V	G2P1L1	BOOKED	155	58	78	110/70	18	99	105	10.8	31.7	I	LN EPI	174	NO	89	120/70	18	100	90	9.3	27.9	NO	NIL	NO	NO
65	C64	26	30801	V	G2P1L1	BOOKED	158	54	82	110/80	20	99	110	9.8	28.1	I	LN	182	NO	76	130/70	20	99	80	9	27.6	NO	NIL	NO	NO
66	C65	28	30701	IV	G2P1L1	BOOKED	161	57	72	100/70	17	100	100	11.3	34.1	S	LN EPI	194	NO	78	110/80	17	99	105	10.1	30.4	NO	NIL	NO	NO
67	C66	24	30602	IV	PRIMI	BOOKED	153	49	75	100/80	19	100	90	10.4	31.5	I	LN EPI	162	NO	74	120/80	19	99	110	9.4	27.3	NO	NIL	NO	NO
68	C67	22	30603	IV	PRIMI	BOOKED	157	54	79	122/76	16	99	80	9.4	28.4	S	LN	156	NO	72	130/80	16	99	100	8.6	25.4	NO	NIL	NO	NO
69	C68	20	30702	V	PRIMI	BOOKED	159	55	80	120/78	18	99	95	9.9	29.1	I	LN EPI	169	NO	75	112/78	18	100	105	9	27	NO	NIL	NO	NO
70	C69	18	30809	IV	PRIMI	BOOKED	155	52	73	118/76	20	99	85	11.4	33.6	I	LN EPI	178	NO	78	114/80	20	100	95	10	30.3	NO	NIL	NO	NO
71	C70	24	31902	IV	G2P1L1	BOOKED	145	51	75	120/80	17	99	105	10.5	34.3	S	LN EPI	166	NO	79	112/76	17	100	85	9.6	28.9	NO	NIL	NO	NO
72	C71	27	31903	V	G2P1L1	BOOKED	149	54	81	118/78	19	100	100	11.2	32.5	S	LN EPI	170	NO	85	118/74	19	100	90	10.6	34.3	NO	NIL	NO	NO
73	C72	29	31905	IV	G2P1L1	BOOKED	147	57	85	116/76	16	100	95	10.7	32.2	I	LN EPI	184	NO	81	112/80	16	99	95	9.8	28.7	NO	NIL	NO	NO
74	C73	22	31909	V	PRIMI	BOOKED	144	48	80	120/80	18	100	90	10.3	34.2	I	LN EPI	174	NO	87	114/76	18	99	100	9.4	28.4	NO	NIL	NO	NO

Clipboard				Font					Alignment				Number				Styles								Cells				Editing		
A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	
C63	24	30901	V	G2P1L1	BOOKED	155	58	78	110/70	18	99	105	10.8	31.7	I	LNEPI	174	NO	89	120/70	18	100	90	9.3	27.9	NO	NIL	NO	NO		
C64	26	30801	V	G2P1L1	BOOKED	158	54	82	110/80	20	99	110	9.8	28.1	I	LN	182	NO	76	130/70	20	99	80	9	27.6	NO	NIL	NO	NO		
C65	28	30701	IV	G2P1L1	BOOKED	161	57	72	100/70	17	100	100	11.3	34.1	S	LNEPI	194	NO	78	110/80	17	99	105	10.1	30.4	NO	NIL	NO	NO		
C66	24	30602	IV	PRIMI	BOOKED	153	49	75	100/80	19	100	90	10.4	31.5	I	LNEPI	162	NO	74	120/80	19	99	110	9.4	27.3	NO	NIL	NO	NO		
C67	22	30603	IV	PRIMI	BOOKED	157	54	79	122/76	16	99	80	9.4	28.4	S	LN	156	NO	72	130/80	16	99	100	8.6	25.4	NO	NIL	NO	NO		
C68	20	30702	V	PRIMI	BOOKED	159	55	80	120/78	18	99	95	9.9	29.1	I	LNEPI	169	NO	75	112/78	18	100	105	9	27	NO	NIL	NO	NO		
C69	18	30809	IV	PRIMI	BOOKED	155	52	73	118/76	20	99	85	11.4	33.6	I	LNEPI	178	NO	78	114/80	20	100	95	10	30.3	NO	NIL	NO	NO		
C70	24	31902	IV	G2P1L1	BOOKED	145	51	75	120/80	17	99	105	10.5	34.3	S	LNEPI	166	NO	79	112/76	17	100	85	9.6	28.9	NO	NIL	NO	NO		
C71	27	31903	V	G2P1L1	BOOKED	149	54	81	118/78	19	100	100	11.2	32.5	S	LNEPI	170	NO	85	118/74	19	100	90	10.6	34.3	NO	NIL	NO	NO		
C72	29	31905	IV	G2P1L1	BOOKED	147	57	85	116/76	16	100	95	10.7	32.2	I	LNEPI	184	NO	81	112/80	16	99	95	9.8	28.7	NO	NIL	NO	NO		
C73	22	31909	V	PRIMI	BOOKED	144	48	80	120/80	18	100	90	10.3	34.2	I	LNEPI	174	NO	87	114/76	18	99	100	9.4	28.4	NO	NIL	NO	NO		
C74	27	31907	IV	PRIMI	BOOKED	151	56	76	110/80	20	100	80	10.1	30.6	S	LN	162	NO	83	110/70	20	99	105	9.3	28.1	NO	NIL	NO	NO		
C75	19	32976	IV	PRIMI	BOOKED	157	52	72	130/80	17	100	85	10.6	32.1	S	LNEPI	168	NO	80	120/70	17	99	100	9.8	28.5	NO	NIL	NO	NO		
C76	25	32876	IV	G2P1L1	BOOKED	153	48	70	110/70	19	100	105	9.5	29.3	S	LNEPI	178	NO	74	130/70	19	99	110	8.6	25.6	yes	NIL	NO	yes		
C77	20	32654	V	PRIMI	BOOKED	152	49	74	110/80	16	99	110	9.2	29.1	I	LNEPI	164	NO	72	120/80	16	99	100	8.5	25.7	yes	NIL	NO	yes		
C78	23	32432	IV	G2P1L1	BOOKED	158	54	78	110/76	18	99	100	10.3	34.2	S	LN	183	NO	79	110/80	18	99	105	9.5	28.8	NO	NIL	NO	NO		
C79	28	32321	IV	G2P1L1	BOOKED	154	49	82	110/78	20	99	105	11.2	34.4	I	LNEPI	180	NO	76	130/80	20	100	95	10.5	32.4	NO	NIL	NO	NO		
C80	25	31139	V	PRIMI	BOOKED	158	53	85	120/70	17	99	95	10.5	32.9	I	LNEPI	164	NO	82	114/78	17	100	85	9.6	28.6	NO	NIL	NO	NO		
C81	22	31310	IV	PRIMI	BOOKED	155	55	77	120/80	19	99	85	10.9	32.8	S	LNEPI	158	NO	88	116/76	19	100	80	9.9	33.2	NO	NIL	NO	NO		
C82	20	34810	IV	PRIMI	BOOKED	152	49	75	130/80	16	100	90	9.8	32.5	S	LNEPI	173	NO	84	118/78	16	100	90	8.9	26.8	NO	NIL	NO	yes		
C83	18	34219	V	PRIMI	BOOKED	158	52	76	116/76	18	100	80	10.6	32.5	S	LNEPI	170	NO	80	118/78	18	99	100	9.7	29.8	NO	NIL	NO	NO		
C84	23	34216	IV	G2P1L1	BOOKED	155	51	79	118/78	20	100	105	10.1	31	I	LNEPI	156	NO	75	118/74	20	99	110	9.5	28.8	NO	NIL	NO	NO		
C85	19	34215	IV	PRIMI	BOOKED	153	26	74	114/76	17	100	85	10.6	34.2	S	LNEPI	168	NO	73	120/70	17	99	95	9.8	32.6	NO	NIL	NO	NO		
C86	21	33451	V	G2P1L1	BOOKED	151	48	72	120/70	19	100	95	9.2	28.4	I	LNEPI	160	NO	79	130/70	19	100	85	8.6	56.4	NO	NIL	NO	NO		
C87	25	33641	V	PRIMI	BOOKED	150	53	70	122/86	16	100	100	9.6	29.4	S	LNEPI	174	NO	77	110/70	16	100	90	8.8	26.7	NO	NIL	NO	NO		
C88	21	33431	V	PRIMI	BOOKED	152	55	78	120/70	18	99	105	10.4	34.4	S	LNEPI	186	NO	72	120/80	18	100	80	9.6	32.6	NO	NIL	NO	yes		
C89	23	33241	IV	G2P1L1	BOOKED	148	56	74	120/80	20	99	110	11.3	34.3	I	LNEPI	170	NO	70	130/78	20	100	100	10.5	34.3	NO	NIL	NO	NO		
C90	26	36781	IV	G2P1L1	BOOKED	149	49	80	114/78	20	99	95	10.8	35.6	S	LNEPI	182	NO	78	130/76	17	99	110	9.9	32.8	NO	NIL	NO	NO		
C91	29	35769	V	G2P1L1	BOOKED	152	56	78	118/78	17	99	85	10.2	33.6	I	LNEPI	190	NO	75	118/76	19	99	105	9.6	28.8	NO	NIL	NO	NO		
C92	27	30128	V	PRIMI	BOOKED	156	52	72	116/76	19	100	90	11.4	34.4	S	LNEPI	178	NO	79	110/70	16	99	100	10.6	32.4	NO	NIL	NO	NO		
C93	28	34152	IV	G2P1L1	BOOKED	154	51	79	120/70	16	100	100	9.9	32.6	I	LNEPI	160	NO	83	112/70	18	99	95	9	27.2	NO	NIL	NO	NO		
C94	30	34012	V	G2P1L1	BOOKED	152	56	73	122/80	18	100	110	10.4	34.2	I	LNEPI	168	NO	85	116/70	20	100	85	9.5	32.6	NO	NIL	NO	NO		
C95	25	35014	IV	PRIMI	BOOKED	150	55	75	118/78	20	100	105	9.2	28.4	S	LN	182	NO	87	118/72	17	100	90	8.4	25.8	yes	NIL	NO	yes		
C96	28	36564	IV	G2P1L1	BOOKED	154	58	77	120/70	17	99	95	9.7	28.8	S	LNEPI	175	NO	78	116/76	19	100	80	8.8	26.6	NO	NIL	NO	NO		
C97	20	35231	V	PRIMI	BOOKED	147	52	82	120/80	19	99	85	10.6	34.8	I	LNEPI	164	NO	76	120/70	16	100	100	8.8	25.8	NO	NIL	NO	NO		
C98	22	33968	IV	PRIMI	BOOKED	145	45	80	110/78	16	100	90	10.1	34.2	I	LNEPI	178	NO	74	130/70	18	99	110	9.3	28.4	NO	NIL	NO	NO		
C99	18	33490	V	PRIMI	BOOKED	148	54	82	120/70	18	100	80	9.5	28.8	S	LN	166	NO	79	120/76	20	99	100	8.6	25.8	NO	NIL	NO	NO		
C100	21	32709	V	G2P1L1	BOOKED	150	56	78	122/78	20	99	105	10.3	34.4	I	LNEPI	168	NO	82	120/78	17	99	90	9.6	28.8	NO	NIL	NO	yes		

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
1	name code	age	IP no	SE STATUS	PARITY	booking status	height in cm	weight in kg	PR/min	BP in mmHG	RR/min	SPO2	U/O in ml/hr	Hbin gms	PCV	Onset of labour	Mode of delivery	Total blood loss TD to 2	additional uterotonics	PR/min	BP in mmHg	RR/min	SPO2	Urine output in ml/hr	HB in gms	PCV%	Maternal blood transfu	Maternal complications	Apgar <8/10	duration of stay more t
2	S1	20	10752	IV	PRIMI	BOOKED	155	52	72	100/70	16	99	100	9.8	31.2	S	LN EPI	102	NO	82	110/70	20	99	100	9.4	28.2	NO	NIL	NO	NO
3	S2	20	22111	IV	PRIMI	BOOKED	145	40	88	120/80	20	100	120	10.7	32.5	S	LN EPI	180	NO	92	110/80	20	100	110	10.4	33.5	NO	NIL	NO	NO
4	S3	32	22071	V	G3P1L1A1	BOOKED	160	66	80	110/80	18	100	100	11.6	37.6	S	LN EPI	120	NO	82	110/70	16	100	100	11.4	37.4	NO	NIL	NO	NO
5	S4	19	22958	V	PRIMI	BOOKED	150	57	90	110/80	16	99	125	10.8	35.3	S	LN EPI	80	NO	88	110/80	18	100	100	10.4	35.2	NO	NIL	NO	NO
6	S5	23	22916	V	PRIMI	BOOKED	152	53	78	120/70	16	100	100	9.6	27.3	S	LN EPI	180	NO	80	110/80	18	100	110	9	27.2	NO	NIL	NO	NO
7	S6	24	22588	IV	G2P1L1	BOOKED	154	55	72	100/80	18	99	100	12.6	37.7	S	LN EPI	110	NO	76	100/70	18	100	95	12	36.2	NO	NIL	NO	NO
8	S7	20	23060	IV	PRIMI	BOOKED	155	60	78	120/80	18	100	90	12.6	40.3	S	LN EPI	101	NO	80	100/70	16	100	105	11.8	37.2	NO	NIL	NO	NO
9	S8	21	22864	V	PRIMI	BOOKED	147	45	80	120/70	18	100	110	11.4	35.5	S	LN EPI	90	NO	76	110/70	18	100	100	10.8	33	NO	NIL	NO	NO
10	S9	25	23011	V	G2P1L1	BOOKED	156	52	74	110/80	16	100	90	9.3	33.5	S	LN EPI	95	NO	76	100/80	16	100	100	9	32	NO	NIL	NO	NO
11	S10	19	37608	V	PRIMI	BOOKED	148	61	72	120/80	18	100	110	10.8	33.8	I	LN EPI	110	NO	76	110/80	18	100	95	9.9	31.2	NO	NIL	NO	NO
12	S11	24	37429	IV	PRIMI	BOOKED	148	52	80	100/70	18	100	90	12.9	39.7	I	LN EPI	120	NO	84	110/70	18	100	105	12.7	37.9	NO	NIL	yes	NO
13	S12	24	38131	IV	PRIMI	BOOKED	160	67	86	130/80	18	100	110	12	35.9	I	LN EPI	140	NO	82	110/70	18	100	90	11.2	33.5	NO	NIL	NO	NO
14	S13	20	38498	V	PRIMI	BOOKED	150	65	76	120/80	18	100	110	14.3	44.3	S	LN EPI	130	NO	80	110/70	18	100	95	13.3	39.7	NO	NIL	NO	NO
15	S14	24	31558	IV	G2P1L1	BOOKED	153	48	72	100/70	16	99	90	12.2	37.9	S	LN	98	NO	74	100/70	18	100	105	12	35.4	NO	NIL	NO	NO
16	S15	25	37659	V	G2P1L1	BOOKED	148	49	80	130/80	20	99	95	12.9	38	I	LN EPI	100	NO	76	120/70	18	100	90	11.3	33.1	NO	NIL	NO	NO
17	S16	19	38185	V	PRIMI	BOOKED	145	52	76	120/80	16	100	120	11	34	I	LN EPI	120	NO	76	130/80	16	100	80	10.8	32.2	NO	NIL	NO	NO
18	S17	25	37563	IV	PRIMI	BOOKED	144	54	74	100/70	18	100	85	13.1	39.2	I	LN EPI	95	NO	78	110/70	18	100	90	11.1	32.9	NO	NIL	NO	NO
19	S18	21	37889	IV	PRIMI	BOOKED	160	68	74	100/70	18	99	80	11.4	36.5	I	LN EPI	98	NO	76	100/70	18	99	85	10.2	33	NO	NIL	NO	NO
20	S19	21	39177	IV	PRIMI	BOOKED	145	59	84	130/70	16	100	100	12.7	35.4	I	LN EPI	125	NO	82	120/80	18	100	90	11.2	33.1	NO	NIL	NO	NO
21	S20	25	39195	V	PRIMI	BOOKED	160	82	90	110/80	16	100	80	12.8	39.2	I	LN EPI	100	NO	90	100/80	16	100	85	11.8	35.3	NO	NIL	NO	NO
22	S21	20	39223	IV	G2P1L1	BOOKED	148	84	80	110/80	18	99	110	12.3	37	S	LN	85	NO	82	120/80	18	99	85	11	31.3	NO	NIL	NO	NO
23	S22	32	38604	V	G2P1L1	BOOKED	168	64	84	110/80	20	100	110	12.4	38.1	I	LN	115	NO	82	110/70	18	100	85	11.7	30.8	NO	NIL	NO	NO
24	S23	19	38437	IV	PRIMI	BOOKED	145	44	76	120/70	16	100	90	12	33	I	LN EPI	145	NO	80	110/70	18	100	75	11.6	31.7	NO	NIL	NO	NO
25	S24	22	39090	V	G2P1L1	BOOKED	154	60	78	100/70	18	100	115	14.2	40.4	I	LN EPI	125	NO	78	110/70	18	100	85	12	33.7	NO	NIL	NO	NO
26	S25	19	37608	V	PRIMI	BOOKED	148	61	86	120/70	18	100	115	10.8	33.8	I	LN EPI	115	NO	86	120/80	18	100	90	9.9	31.2	NO	NIL	NO	NO
27	S26	26	38460	IV	PRIMI	BOOKED	157	54	80	100/70	16	99	105	11.8	35.6	I	LN EPI	145	NO	82	100/70	16	99	85	11.3	34.1	NO	NIL	NO	NO
28	S27	20	38498	IV	PRIMI	BOOKED	167	52	74	110/80	18	99	90	14.3	44.3	I	LN EPI	110	NO	80	110/70	18	99	105	13.3	39.7	NO	NIL	NO	NO
29	S28	25	35763	IV	PRIMI	BOOKED	144	54	80	130/80	16	99	105	13.1	39.2	S	LN EPI	120	NO	80	120/70	16	99	80	12.1	32.9	NO	NIL	NO	NO
30	S29	29	39383	IV	G2P1L1	BOOKED	152	57	76	110/70	18	99	80	9.2	28.5	S	LN	90	NO	78	100/70	17	99	95	9.3	28.5	NO	NIL	NO	NO
31	S30	21	35297	V	G2P1L1	BOOKED	150	53	76	120/80	17	100	80	11.2	30	I	LN EPI	100	NO	76	120/70	19	99	95	11	32	NO	NIL	NO	NO
32	S31	20	39501	V	PRIMI	BOOKED	150	54	72	100/70	17	99	120	12.8	36.8	I	LN EPI	155	NO	72	100/70	20	100	90	12.6	34	NO	NIL	NO	NO

Sheet1 Sheet2 Sheet3



	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD	AE	AF
28	S27	20	38498	IV	PRIMI	BOOKED	167	52	74	110/80	18	99	90	14.3	44.3	I	LN EPI	110	NO	80	110/70	18	99	105	13.3	39.7	NO	NIL	NO	NO		
29	S28	25	35763	IV	PRIMI	BOOKED	144	54	80	130/80	16	99	105	13.1	39.2	S	LN EPI	120	NO	80	120/70	16	99	80	12.1	32.9	NO	NIL	NO	NO		
30	S29	29	39383	IV	G2P1L1	BOOKED	152	57	76	110/70	18	99	80	9.2	28.5	S	LN	90	NO	78	100/70	17	99	95	9.3	28.5	NO	NIL	NO	NO		
31	S30	21	35297	V	G2P1L1	BOOKED	150	53	76	120/80	17	100	80	11.2	30	I	LN EPI	100	NO	76	120/70	19	99	95	11	32	NO	NIL	NO	NO		
32	S31	20	39501	V	PRIMI	BOOKED	150	54	72	100/70	17	99	120	12.8	36.8	I	LN EPI	155	NO	72	100/70	20	100	90	12.6	34	NO	NIL	NO	NO		
33	S32	23	41038	V	G2P1L1	BOOKED	155	54	82	110/80	15	100	105	9.7	29.7	S	LN	110	NO	78	120/80	18	100	85	9.1	30.6	NO	NIL	NO	NO		
34	S33	22	47539	V	PRIMI	BOOKED	148	81	82	110/80	18	100	130	12.7	37.9	I	LN	120	NO	80	120/80	17	100	95	11.4	32.7	NO	NIL	NO	NO		
35	S34	26	40991	V	G2P1L1	BOOKED	150	53	74	110/80	18	100	75	13.3	39	I	LN EPI	140	NO	72	120/80	19	99	90	12.9	39.1	NO	NIL	NO	NO		
36	S35	20	41175	IV	G2P1L1	BOOKED	160	65	82	120/80	20	99	110	9.9	31.8	S	LN EPI	125	NO	80	110/80	16	100	120	9.1	31.4	NO	NIL	NO	NO		
37	S36	22	41113	IV	PRIMI	BOOKED	160	58	82	120/80	16	100	95	12.4	38.9	I	LN EPI	100	NO	80	120/80	15	99	105	10.8	34	NO	NIL	NO	NO		
38	S37	24	41721	IV	PRIMI	BOOKED	156	65	88	130/80	16	99	110	12.1	36.4	I	LN EPI	160	NO	72	110/80	20	100	85	11.3	35.3	NO	NIL	NO	NO		
39	S38	28	41622	IV	G2P1L1	BOOKED	146	71	92	110/70	17	99	120	13.1	36	S	LN EPI	125	NO	80	110/80	18	100	105	13.2	42.2	NO	NIL	NO	NO		
40	S39	26	41798	V	G2P1L1	BOOKED	152	62	78	120/80	16	100	80	14.5	45.2	I	LN	130	NO	80	120/80	19	100	90	13.9	42.6	NO	NIL	NO	NO		
41	S40	19	41268	V	PRIMI	BOOKED	160	70	78	110/70	18	100	110	9.3	26.7	I	LN EPI	120	NO	80	110/80	17	99	90	9	30.5	yes	NIL	NO	yes		
42	S41	28	41814	V	G2P1L1	BOOKED	146	55	92	130/80	15	100	90	11	34.4	S	LN	105	NO	74	120/80	20	99	80	10.1	30.5	NO	NIL	NO	NO		
43	S42	26	42371	V	G2P1L1	BOOKED	157	102	82	120/80	18	100	85	14.1	41.1	S	LN	135	NO	76	120/80	16	99	80	13.1	35.8	NO	NIL	NO	NO		
44	S43	23	41937	V	PRIMI	BOOKED	159	61	82	120/80	17	99	95	13.2	38.6	S	LN	155	NO	84	120/80	18	100	85	12.4	35.6	NO	NIL	NO	NO		
45	S44	20	42620	V	PRIMI	BOOKED	157	55	88	110/70	18	99	110	11.7	37.8	S	LN EPI	100	NO	74	110/80	19	100	90	11.2	35.3	NO	NIL	NO	NO		
46	S45	20	42894	IV	PRIMI	BOOKED	158	58	76	130/70	16	99	85	11.5	34.7	I	LN EPI	110	NO	76	120/80	17	100	100	11.1	33.5	NO	NIL	NO	NO		
47	S46	31	32328	IV	G2P1L1	BOOKED	162	52	76	120/70	20	100	105	11.1	33.4	I	LN	130	NO	78	120/80	16	99	90	10.6	33.5	NO	NIL	NO	NO		
48	S47	22	43196	IV	PRIMI	BOOKED	156	58	78	110/70	18	100	75	13.9	40.2	I	LN EPI	110	NO	82	120/80	19	99	90	13.1	38.3	NO	NIL	NO	NO		
49	S48	20	43168	IV	G2P1L1	BOOKED	149	55	78	120/70	16	100	110	10	32.5	I	LN EPI	125	NO	82	100/80	17	100	125	9.4	30.1	NO	NIL	NO	NO		
50	S49	18	42963	IV	PRIMI	BOOKED	163	78	78	120/80	20	99	120	12.7	37.6	S	LN EPI	95	NO	76	120/70	18	100	85	11.4	33.7	NO	NIL	NO	NO		
51	S50	20	43236	IV	G2P1L1	BOOKED	153	57	78	120/70	17	100	80	14.2	44.2	I	LN EPI	105	NO	82	110/80	17	100	100	13.9	42.9	NO	NIL	NO	NO		
52	S51	29	31780	V	G2P1L1	BOOKED	158	59	76	100/60	19	99	90	11.4	36.4	S	LN EPI	120	NO	78	120/80	18	99	85	11.2	34.5	NO	NIL	NO	NO		
53	S52	20	43111	IV	PRIMI	BOOKED	145	55	80	120/70	16	100	85	13	41.2	S	LN EPI	130	NO	82	120/80	16	99	95	13.1	40.2	NO	NIL	NO	NO		
54	S53	20	42116	V	PRIMI	BOOKED	155	55	82	120/80	18	99	90	12.7	36.2	I	LN EPI	105	NO	82	110/70	18	99	100	12.3	36.2	NO	NIL	NO	NO		
55	S54	21	42867	V	PRIMI	BOOKED	150	50	88	110/80	17	100	100	11.9	33.2	I	LN EPI	140	NO	82	120/70	19	100	110	11.2	33.3	NO	NIL	NO	NO		
56	S55	19	41341	V	PRIMI	BOOKED	158	62	90	100/70	19	99	110	9.8	27.7	S	LN EPI	125	NO	80	110/70	18	99	105	9.4	26.6	NO	NIL	NO	NO		
57	S56	19	43045	V	PRIMI	BOOKED	142	58	85	100/70	18	99	90	12.3	37.1	I	LN EPI	145	NO	86	120/70	17	99	95	11.9	33.8	NO	NIL	NO	NO		
58	S57	23	43586	IV	G2P1L1	BOOKED	157	63	83	110/80	16	99	95	9.9	31.2	S	LN EPI	95	NO	86	110/80	18	100	75	9.2	29.8	NO	NIL	NO	NO		
59	S58	23	43212	IV	G2P1L1	BOOKED	152	49	79	120/68	18	99	85	11.9	32.1	I	LN EPI	110	NO	78	120/70	16	99	90	10.9	29.9	NO	NIL	NO	NO		
60	S59	19	43566	V	PRIMI	BOOKED	164	63	77	110/84	16	100	95	10.7	30.4	S	LN EPI	120	NO	78	110/80	18	100	80	9.8	28.8	NO	NIL	NO	NO		
61	S60	25	43558	IV	G2P1L1	BOOKED	142	50	75	120/76	19	100	105	13.6	39.5	I	LN EPI	135	NO	76	110/80	18	100	90	12.2	34.6	NO	NIL	NO	NO		
62	S61	21	47442	V	PRIMI	BOOKED	149	59	78	116/76	18	100	95	13	39.5	S	LN EPI	105	NO	76	110/80	18	100	90	13.5	38.5	NO	NIL	NO	NO		
63	S62	20	47521	IV	PRIMI	BOOKED	160	53	76	110/80	17	100	90	9.3	28.9	I	LN EPI	90	NO	78	120/80	18	100	100	9	29.6	NO	NIL	NO	NO		
64	S63	18	47330	V	G2P1L1	BOOKED	156	60	79	120/80	19	99	80	11	33.5	I	LN EPI	130	NO	78	110/80	16	100	90	10	31.5	NO	NIL	NO	NO		
65	S64	24	47157	IV	PRIMI	BOOKED	158	69	80	100/80	18	99	100	12.3	35	S	LN EPI	140	NO	76	100/70	17	99	85	11.3	34	NO	NIL	NO	NO		

	Clipboard				Font					Alignment				Number			Styles											Cells	
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z	AA	AB	AC	AD
66	S65	24	46237	IV	PRIMI	BOOKED	153	75	82	100/70	17	99	95	13.3	39.8	I	LNEPI	110	NO	74	110/80	16	99	80	12.3	38	NO	NIL	NO	NO
68	S66	20	47409	IV	G2P1L1	BOOKED	153	66	81	120/80	18	100	105	9.8	30.5	I	LNEPI	110	NO	78	118/78	16	99	90	9.4	27.5	NO	NIL	NO	NO
69	S67	25	47517	V	G2P1L1	BOOKED	162	54	80	110/78	16	100	95	9.8	36	s	LN	98	NO	84	120/76	18	99	95	9.5	35.1	NO	NIL	NO	NO
70	S68	25	47055	IV	G2P1L1	BOOKED	155	40	78	120/70	19	99	95	9.1	27.6	S	LN	105	NO	90	120/78	19	100	85	9	27	yes	NIL	NO	yes
71	S69	25	47178	IV	G2P1L1	BOOKED	148	59	73	110/80	18	100	100	11	27.7	S	LN	125	NO	78	114/78	20	100	95	10	26.2	NO	NIL	NO	NO
72	S70	24	46836	V	G2P1L1	BOOKED	152	50	76	120/68	18	99	105	11.2	35.6	S	LN	108	NO	80	116/78	17	100	100	10.8	33.4	NO	NIL	NO	NO
73	S71	22	47310	IV	PRIMI	BOOKED	149	65	76	118/78	16	100	80	12.3	38.1	I	LNEPI	122	NO	78	120/78	19	100	105	11.9	37.1	NO	NIL	NO	NO
74	S72	23	46861	V	PRIMI	BOOKED	163	56	77	120/70	18	100	90	11.2	33.4	S	LNEPI	116	NO	74	116/78	16	100	75	10.6	31.6	NO	NIL	NO	NO
75	S73	22	45828	V	PRIMI	BOOKED	166	81	79	118/70	17	99	105	12	37.3	I	LNEPI	125	NO	70	110/74	18	99	80	11	36.4	NO	NIL	NO	NO
76	S74	23	46530	V	G2P1L1	BOOKED	162	57	80	122/80	19	99	85	11.6	35.8	S	LNEPI	118	NO	79	130/78	19	99	90	11.2	34.6	NO	NIL	NO	NO
77	S75	19	47382	V	PRIMI	BOOKED	154	50	74	126/84	20	99	90	12.6	35.3	I	LNEPI	122	NO	84	120/78	17	100	95	12	32.3	NO	NIL	NO	NO
78	S76	27	46352	V	G2P1L1	BOOKED	145	50	84	130/80	16	100	100	13.1	39.1	S	LN	112	NO	88	112/80	19	100	85	12.6	33.3	NO	NIL	NO	NO
79	S77	28	41831	IV	G2P1L1	BOOKED	148	45	80	118/78	18	100	95	12.2	36.6	S	LNEPI	118	NO	86	110/74	18	100	100	11.8	35.3	NO	NIL	NO	NO
80	S78	27	45787	IV	G2P1L1	BOOKED	153	66	76	120/70	19	100	85	9.4	28.8	S	LNEPI	128	NO	80	126/72	16	99	105	9	27.6	NO	NIL	yes	NO
81	S79	21	46455	IV	PRIMI	BOOKED	157	60	82	118/80	17	99	95	13.2	38.9	I	LNEPI	108	NO	77	120/74	19	99	95	12.5	36.5	NO	NIL	NO	NO
82	S80	19	45923	V	PRIMI	BOOKED	148	69	70	120/76	20	99	100	13	38.2	S	LNEPI	126	NO	79	116/80	20	99	105	12.4	36.2	NO	NIL	NO	NO
83	S81	20	45816	IV	PRIMI	BOOKED	153	76	78	116/78	16	99	85	10.9	33.3	S	LN	105	NO	74	118/80	16	99	100	10.2	31.3	NO	NIL	NO	NO
84	S82	24	46724	V	PRIMI	BOOKED	154	66	84	118/88	20	100	90	12	37.2	S	LNEPI	108	NO	79	116/80	15	99	90	11.5	36.4	NO	NIL	NO	NO
85	S83	20	46250	IV	PRIMI	BOOKED	155	53	83	110/80	18	100	105	10	29	S	LNEPI	118	NO	80	126/76	18	99	80	9.8	28.8	NO	NIL	NO	NO
86	S84	28	46533	IV	G2P1L1	BOOKED	155	64	87	114/74	16	99	90	14.8	44.3	I	LNEPI	126	NO	85	130/80	19	99	85	14	43	NO	NIL	NO	NO
87	S85	30	46047	V	G2P1L1	BOOKED	150	90	79	110/70	19	99	85	10.4	34.4	S	LN	120	NO	83	120/76	17	99	95	10	32.1	NO	NIL	NO	NO
88	S86	22	45691	V	PRIMI	BOOKED	150	65	74	120/80	17	99	95	12.8	36.5	I	LNEPI	115	NO	80	120/80	20	99	105	12.4	35.6	NO	NIL	NO	NO
89	S87	22	46732	IV	G2P1L1	BOOKED	140	50	79	116/82	20	99	105	9.5	27.3	S	LNEPI	118	NO	78	118/70	18	99	95	9.4	26.3	NO	NIL	NO	NO
90	S88	21	47105	V	G2P1L1	BOOKED	150	64	80	118/80	17	99	90	12	36.4	S	LNEPI	122	NO	77	118/84	16	99	85	11.8	34.4	NO	NIL	NO	NO
91	S89	18	47391	IV	PRIMI	BOOKED	148	62	84	118/74	19	100	85	10.9	34.6	I	LNEPI	115	NO	74	114/70	19	99	90	10.6	33.7	NO	NIL	NO	NO
92	S90	28	46986	IV	G2P1L1	BOOKED	152	62	87	114/80	16	100	100	11.3	34	S	LNEPI	98	NO	80	120/80	17	99	80	11	33.6	NO	NIL	NO	NO
93	S91	25	47028	IV	G2P1L1	BOOKED	156	70	85	120/78	18	100	95	11.5	33.7	I	LNEPI	130	YES	76	130/80	20	99	100	10	32.6	NO	NIL	NO	NO
94	S92	23	40808	V	PRIMI	BOOKED	160	58	88	118/70	19	100	85	12.8	35.5	S	LNEPI	120	NO	80	120/70	18	99	110	12.2	34.5	NO	NIL	NO	NO
95	S93	20	46443	IV	G2P1L1	BOOKED	156	70	79	116/76	16	100	100	9.3	29.3	S	LNEPI	90	NO	74	118/78	16	99	105	9.2	28.7	NO	NIL	NO	NO
96	S94	30	46432	V	G2P1L1	BOOKED	153	62	83	120/74	19	99	85	10.3	31.7	S	LNEPI	114	NO	79	110/74	19	99	90	9.8	30.4	NO	NIL	NO	NO
97	S95	21	47038	V	PRIMI	BOOKED	155	54	70	110/76	20	99	95	9.7	29	S	LNEPI	112	NO	78	118/80	17	99	80	9.4	28	NO	NIL	NO	NO
98	S96	30	47385	V	PRIMI	BOOKED	157	72	76	110/70	16	99	105	13.6	39.2	I	LNEPI	98	NO	84	114/78	20	99	85	13.4	38.6	NO	NIL	NO	NO
99	S97	22	46647	IV	PRIMI	BOOKED	155	51	73	120/80	18	99	90	12.2	34.9	I	LNEPI	104	NO	86	110/80	19	99	105	12	33.6	NO	NIL	NO	NO
100	S98	25	47239	IV	G2P1L1	BOOKED	147	51	77	100/80	17	99	85	11.9	33.2	S	LNEPI	106	NO	80	120/70	17	99	100	11.6	33	NO	NIL	NO	NO
101	S99	21	46945	IV	PRIMI	BOOKED	160	50	80	110/70	19	99	100	10.6	31.3	I	LNEPI	104	NO	82	130/80	18	99	95	10.4	33.6	NO	NIL	NO	NO
102	S100	27	44648	V	G2P1L1	BOOKED	150	45	84	110/80	20	99	110	9.9	27.3	S	LNEPI	118	NO	86	114/78	16	99	105	9.3	26.2	NO	NIL	NO	NO
103																														
104																														
105																														