PLACENTAL BLOOD DRAINAGE AFTER SPONTANEOUS VAGINAL DELIVERY AS A PART OF THE ACTIVE MANAGEMENT OF THIRD STAGE OF LABOUR

DISSERTATION SUBMITTED FOR

M.D DEGREE (OBSTETRICS AND GYNAECOLOGY) BRANCH III

MARCH 2009

THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY

CHENNAI

CERTIFICATE

This is to certify that the dissertation titled “Placental Blood Drainage after spontaneous vaginal delivery as a part of the active management of third stage of labour” submitted by Dr. P. Vinothini to the Faculty of Obstetrics and Gynaecology, The Tamilnadu Dr. M.G.R. Medical university, Chennai in partial fulfillment of the requirement for the award of M.D. Degree (Obstetrics and Gynaecology) is a bonafide research work carried out by her under our direct supervision and guidance.

Dr. Revathy Janakiram M.D.D.G.O., M.N.A.M.S.

Professor and Head of the Department,
Department of Obstetrics and Gynaecology,
Madurai Medical College,
Madurai.

D E C L A R A T I O N

I. ***Dr. P. Vinothini,*** *solemnly declare that the dissertation titled* ***"Placental Blood Drainage after spontaneous vaginal delivery as a part of the active management of third stage of labour"*** *has been prepared by me.*

This is submitted to the ***Tamilnadu Dr. M.G.R. Medical University****, Chennai in partial fulfillment of the rules and regulations for the M.D. Degree Examination in Obstetrics and Gynaecology.*

Place : Madurai

Date : ***Dr. P. Vinothini***

C O N T E N T S

ACKNOWLEDGEMENT

I acknowledge my deep indebtedness to the Professor and Head of the Department of Obstetrics and Gynaecology **Dr. Revathy Janakiram M.D, D.G.O, MNAMS** whose guidance and encouragement has made this study possible.

I am immensely grateful to **Dr. Dilshath M.D, D.G.O, Dr. Parvadhavarthini M.D, D.G.O, Dr. Subbulakshmi M.D, D.G.O, Dr. Ambigai Meena M.D, D.G.O,** the Additional Professors of Obstetrics and Gynaecology for there guidance and valuable suggestions in bringing out this dissertation in proper shape.

I thank the Dean, Madurai Medical College, for permitting me to carry out this study in the Department of Obstetrics & Gynaecology at GRH, Madurai.

I thank all the Assistant Professors of Obstetrics & Gynaecology for their valuable support.

The co-operation of the patients is gratefully acknowledged.

INTRODUCTION

INTRODUCTION

The third stage of labour commences after the delivery of the fetus / fetuses and ends with the delivery of the placenta and its membranes. In view of the maternal risks involved the third stage of labour forms the most important phase of parturition. Although it occupies a very short period of time when compared to the several hours devoted to labour, this crucial period involves many hazards to the maternal life and health.

"Women are not dying because of a disease we cannot treat. They are dying because societies have yet to make the decision that their lives are worth saving"

- Fathalla, World Congress at Copenhagen, 1997.

Postpartum Hemorrhage is the most common cause of maternal mortality, and accounts for the 25% of maternal deaths in our country. The optimal solution for the vaste majority, if not all, of these tragedies is prevention both before birth, by assuring that women are sufficiently healthy to withstand postpartum hemorrhage should it occur and at the time of birth, by the use of physiological (or) active management of third stage of labour.

The active management of third stage of labour, as approved by FIGO in 2003, acts prompt to time to combat postpartum haemorrhage, should it occur so that the valuable lives of pregnant mother can be saved in long way.

The present study was designed to evaluate and compare the efficacy of placental blood drainage after spontaneous vaginal delivery as a part of active management of third stage of labour, versus no placental blood drainage done.

AIM OF THE STUDY

AIM OF THE STUDY

1. To assess the effectiveness of placental Blood Drainage as a part of active management of third stage of labour.

2. To study the effectiveness of placental blood drainage in III stage critical events.
    (i) Duration of III stage.
    (ii) Blood loss of III stage.
    (iii) Complications of III stage.

REVIEW OF LITERATURE

REVIEW OF LITERATURE

Signs of placental separation

1. The uterus becomes globular, and as a rule firmer. This is the earliest sign to appear.

2. There is often a sudden gush of fresh blood.

3. The uterus rises in the abdomen because the placenta, having separated passes down into the lower uterine segment and vagina, where its bulk pushes the uterus upward.

4. The umbilical cord protrudes farther out of the vagina, indicating, that the placenta has descended.

These signs sometimes appear within about 1 minute after the delivery of newborn and usually within 5 minutes (William's Obstetrics, 431 – 434).

Methods of placental separation: (Oxorn 5th edition)

There are two ways of placental separation of placenta.

(1) Central separation (Schultze)

Detachment of placenta from its uterine attachments starts at the centre resulting in opening up of few uterine sinuses and accumulation of blood behind the placenta (retroplacental

hematoma) with increasing contraction, more and more detachment occurs facilitated by weight of the placental and retroplacental blood until the whole placenta gets detached.

(2) Marginal Separation (Mathew – Duncan)

Separation starts at the margin as it is mostly unsupported with progressive uterine contraction, more and more areas of the placenta get separated. Marginal separation is found more frequently.

Physiological Mechanisms

Recognition of the physiological events taking place during normal labour is important in the correct management of obstetric complications. At term the normal volume of blood flow through the placenta is 500-800 ml / minute. At placental separation, this has to be arrested within seconds, otherwise serious haemorrhage will occur. There are three inter related physiological mechanisms for this:-

(i) Retraction of the oblique uterine muscle fibres in the upper uterine wall. This acts as a ligature to the torn blood vessels, which intertwine through the muscle.

(ii) Following separation, the strong uterine contraction brings the uterine walls into opposition, so that further pressure is exerted on the placental site.

(iii) There is evidence to support that there is transitory increased activation of the coagulation and fibrinolytic systems around the placental site so clot formation in the torn vessels is intensified. Following separation, the placental site is rapidly covered

with fibrin mesh utilizing 5-10% of circulating fibrinogen.

Following delivery of the infant, there is an immediate lowering of the uterine fundus due to so called retraction. This is facilitated by the typical arrangement of uterine circular muscle fibres. The retraction reduces the area of the uterine surface to which the relatively incompressible placenta is attached therefore separation occurs.

Manual Removal of placenta

Adequate analgesia (or) anesthesia is mandatory. Aseptic surgical technique should be used. After grasping the fundus through the abdominal wall with one hand, the other hand is introduced into the vagina and passed into the uterus, along the umbilical cord. As soon as the placenta is reached, its margin is located and the ulnar border of the hand insinuated between it and the uterine wall.

Then with the back of the hand, the placenta is peeled off its uterine attachment by gentle to and fro motion. After complete separation, the placenta is grasped with the entire hand and gradually withdrawn. The fundus of the uterus then palpated to note whether the uterus is well contracted. If not vigorous uterine massage with oxytocics administration is indicated.

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 1998).

Placental cord drainage may be used in conjunction with other interventions such as routine

administration of oxytocic, controlled cord traction or maternal effort (Hinchongbrooks Randomised controlled trial Lancet 1998).

Placental cord drainage with (or) without prophylactic oxytocics is effective in reducing the blood loss in III stage thus preventing postpartum haemorrhage (Keirse 1998).

Cord drainage was found to have significant benefits in reducing the number of placentas retained at 30mts after birth. The length of third stage of labour was also significantly shorter in the group who had cord drainage (Razmkhah et al 1999).

Timing at cord clamping is also an important factor in the management of third stage of labour; influences the duration of III stage (McDonald 2003).

Delayed cord clamping in preterm infants increased the risk for hyper bilirubinemia and increased the need for treatment with phototherapy – and lessens the incidence of RDS (Mercer 2001).

Placental blood drainage is a simple, safe and non-invasive method which reduces the duration of blood loss in third stage thereby preventing postpartum haemorrhage. (Sharavage and Silpa 2007).

Cochrane database of systematic reviews studied the effect of placental cord drainage on third stage of labour – selection of randomized trials with cord drainage as a variable, result in

statistically significant reduction in the length of third stage of labour.

There 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).

Bristol Third Stage Trial: - The active management of third stage of labour is effective in combating postpartum haemorrhage in a low-resource setting.

The need for blood transfusion was significantly less and the tendency towards an increase in the need for manual removal of placenta was noted in actively managed group (Roger et al 1998).

Active versus Expectant Management

Prendiville (2002) summarized the five major trials exploring active versus expectant management in the Cochrane database of systematic reviews, aiming to determine which line of management is most likely to prevent post partum haemorrhage.

Routine active management was found to be superior in that there was a statistically significant reduction in

(i) The incidence of moderate haemorrhage of 500 – 1000 ml.

(ii) Incidence of severe hemorrhage over 1000 ml.

(iii) Reduction on post partum maternal Hb < 9 gm/dl

(iv) Requirement of postnatal blood transfusion

(v) The need for therapeutic oxytocics.

(vi) The duration of third stage lasting more than 20 minutes.

Women were more satisfied in the third stage if they had active management.

Disadvantages

(i) The active management resulted in a statistically significant increase in the incidence of maternal diastolic BP greater than 100 mm of Hg.

(ii) Increase in maternal vomiting, nausea and headache post delivery. (Dublin Trial).

(iii) There is increased tendency towards manual removal of placenta. (Bristol III stage trial).

(iv) There is an increase in incidence of secondary PPH. (Bristol III Stage Trial)

The over all meta-analyses 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.

ACTIVE MANAGEMENT OF THE THIRD STAGE OF LABOUR

ACTIVE MANAGEMENT OF THE

THIRD STAGE OF LABOUR

Joint statement of the international conference of midwives and International federation of Gynaecology and Obstetrics (FIGO) – November 2003 – The components of active management of third stage of labour are

(i) Administration of uterotonic agents (Oxytocin when available is the drug of choice).

(ii) Early cord clamping

(iii) Controlled cord traction

(iv) Uterine massage after delivery of the placenta.

The expectant / pure physiological management involves waiting for the clinical signs of placental separation and allowing the placenta to deliver unaided using gravity (or) with the aid of nipple stimulation. (FOGSI, Special Edition – Postpartum Haemorrhage)

Uterotonics

Oxytocin

Synthetic cyclical nanopeptide stimulates the smooth muscle of the uterus, more powerfully towards the end of pregnancy, during labour and immediately postpartum. Oxytocin coupled to its receptors activates phospholipase C – that triggers the release of calcium from intracellular stores and thus leads to myometrial cell contraction.

Oxytocin acts rapidly, latency period of less than 1min after intravenous injection and 2-4 minutes after intra muscular injection. When administered as infusion, the uterine response begins gradually and reaches a steady state within 20 – 40 minutes. Prophylactic use of oxytocin had clear benefits in terms of postpartum haemorrhage (Cochrane Review, Elbourne et al)

Ergometrine

Naturally occurring ergot alkaloid stimulates the contractions of uterine and vascular smooth muscle. It increases the amplitude and frequency of uterine contractions and tone and thus impedes the blood flow. The vasoconstriction caused involves mainly the capacitance vessels, leading to an increase in central venous pressure and blood pressure. It produces intense vasoconstriction by stimulation of v-adrenergic and serotonin receptors.

It acts rapidly – the contractions are initiated within 1 minute after intra venous injection and lasts for upto 45 minutes, with the intra muscular injection the contractions are initiated within 2-3 minutes and lasts for 3 hours or longer.

Ergometerine was associated with more manual removal of the placenta (RR – 0.57, 95% confidence interval 0.41 – 0.79) and a statistically insignificant tendency towards hypertension (RR 0.53, 95% CI 0.19 – 1.58).

Oxytocin agonists

Carbetocin appears to be the most promising of these agents in preventing postpartum

haemorrhage. (Chong et al 2004).

Long acting synthetic octapeptide analogue of oxytocin, intramuscular injections of carbetocin provide similar responses to tetanic contractions (in 2 minutes), but with longer duration of activity. Oxytocin agonists for the prevention of postpartum haemorrhage are currently the subject of additional review (Cochrane Review 2005).

Syntometrine

Syntometrine is a mixture of 5u of oxytocin and 0.5 mg of ergometrine maleate. A statistically significant lower rate of postpartum haemorrhage was observed with syntometrine regardless of the dose of oxytocin used (OR – 0.82) (The salford third stage trial – 1993).

The use of syntometrine was associated with a greater rise in blood pressure. A greater incidence of side effects was noted with syntometrine compared to oxytocin alone. The incidence of blood transfusion and manual removal of placenta was not statistically significant in two groups.

Prostaglandins

Prostaglandins ripen the cervix by altering the extracellular ground substance, by increasing the activity of collagenases and by increasing the elastase, glycosaminoglycans, dermatan sulphate and hyaluronic and levels in cervix.

Misoprostol

Misoprostol is the synthetic analogue of naturally occurring PGE1. Rapidly absorbed following oral / vaginal administration and its bioavailability exceed 80%. Peak plasma levels are reached in 30-60 minutes and it is converted into active metabolite – misoprostol acid. The area under the misoprostol concentration Vs time curve is increased implying greater exposure time.

The studies have shown that oral misoprostol as a prophylactic agent for third stage of labour to be less effective at preventing postpartum haemorrhage than parenteral oxytocin. The more prolonged time interval required to achieve peak serum levels may make it a more suitable agent for protracted uterine bleeding.

Rectal misoprostol in a dose of 800 µg could be a useful first line drug for the treatment of primary postpartum haemorrhage. Misoprostol has the significant advantage of low cost, thermo stability, light stability and lack of requirement for sterile needles and syringes for administration, makes it an attractive option for use in the developing countries. It has a shelf life of several years. (Cochrane Review – 2005)

Early Cord Clamping

In the active management of the third stage of labour, early cord damping is carried out in the first 30 seconds after birth, regardless of the presence (or) absence of cord pulsations (McDonald 1996). The duration of third stage is reduced by cord clamping (Enkin 1995).

Late cord clamping constitutes expectant management, wherein clamping is deferred until the

cord pulsations have ceased. Delayed clamping facilitates placental transfusion. This results in an increase in infant blood volume by 30% and an increase in hematocrit and Hb levels – hence less anemia in infancy. However it is short lived, effect lasts no longer than 6 months – A delay of cord clamping of as little as 30 seconds while holding the baby below the level of placenta, may therefore be an advantage in theory (Mercer 2001).

Controlled Cord traction (Brandt Andrews Method)

- Clamp the cord close to the perineum and hold in the right hand.
- The other hand is placed just above the pubic symphysis and the uterus is stabilized by applying the counter – pressure during controlled cord traction.
- Slight tension kept on the cord and the strong uterine contraction is awaited for.
- With the strong uterine contraction, the mother is encouraged to push and very gently downward pull on the cord is applied to deliver the placenta.
- If the placenta does not descend during 30-40 seconds of controlled cord traction, stop pulling on the cord and wait for the next uterine contraction. Controlled traction on the cord repeated.
- As the placenta is delivered, it is held in two hands and gently turned round until the membranes are twisted.
- If the membranes are about to tear / torn, the cervix and upper vagina are examined to remove any pieces of membrane that are present.
- The placenta is examined carefully for its entirety. If a portion of the maternal

surface is missing or there are torn membranes with vessels, retained placenta is suspected and appropriate action is instituted.

POSTPARTUM HAEMORRHAGE

POSTPARTUM HAEMORRHAGE:

Postpartum haemorrhage was defined by WHO in 1990 as any blood loss from the genital tract during delivery above 500 ml.

Two Varieties

Early / Primary PPH

Haemorrhage in the first 24 hours of vaginal delivery in excess of 500 ml is designated as Primary PPH.

Late / Secondary PPH

Haemorrhage that occurs any time after wards upto six weeks after delivery of the baby is designated as Secondary PPH.

Globally worldwide, PPH, is the major killer of maternal lives, accounting for 25% of maternal deaths.

Causes of primary PPH

The broad basic 4 ‘T’s of primary PPH are

Tonus (Uterine atony)

Tissue

Trauma

Thrombin

Uterine Atony

Uterine atony accounts for about 80% of the cases of primary PPH. A soft boggy uterus on palpation with uterine bleeding after the delivery of the infant and placenta is characteristic of uterine atony.

Predisposing factors includes

1. Uterine over distention - Multiparity
   Polyhydramnios
   Macrosomia
2. Prolonged II stage.
3. Precipitate labour.
4. Antepartum Haemorrhage.
5. Presence of uterine fibroids especially intramural / submucous fibroids.
6. Presence of uterine abnormalities.
7. Chorioammonitis.
8. Excessive /prolonged use of oxytocics in labour.
9. Use of halogenated anaesthetics.
10. Use of Magsulf, nifedipine, betamimetics.

Tissue 10%

1. Placental abnormalities – placenta accreta, succenturiate lobe.

2. Prior uterine surgery.

3. Excessive traction on cord.

4. Retained placenta

Trauma 20%

Episiotomy / Cervical tears.

Vulvovaginal injury

Uterine rupture

Inversion of uterus.

Thrombin 5%

Acquired Coagulopathies - HELLP syndrome

DIC – Eclampsia

Intrauterine fetal death

Septicaemia

Abruptio placentae

Amniotic fluid embolism

Anti coagulant therapy

Congenital – Von wille brand's disease

ITP

Measurement of Blood loss

Accurate measurement of blood loss at delivery is necessary as a means of early detection of postpartum haemorrhage. Visual assessment of blood loss in the presence of a contracted uterus may diagnose traumatic PPH late and therefore result in delayed referrals. The blood let down from the unclamped cord is collected separately and discarded. The mops used for episiotomy are discarded separately after weighing. The blood from the genital tract is let to collect into clean metal bowl placed in between the women's thighs and left in place to collect the blood loss over the next few minutes.

Blood and clots from the metal bowl are measured in measuring cylinder. Blood loss was calculated as 1g = 1ml (Harding 1984). This gives only the approximate blood loss during the third stage.

Blood clot of the size of a fist is roughly equal to 500 ml clinically.

Clinical signs and symptoms pertaining to blood loss

Blood loss (% volume lost)	10 – 15%	15 – 30%	30 – 40%	> 40%
Consciousness	Alert, mild thirst	Anxious restless	Confused agitated	drowsy unconscious
Respiratory rate	normal	mildly elevated	raised	raised
Pulse rate	normal	normal	elevated	fast & thready
systolic blood pressure	normal	normal	slightly low 80mm Hg	< 60 mm Hg
Extremities	normal	cool	pale & cool	cold
Capillary refill	normal	slow (>2sec)	Slow (>2 sec)	absent
Urine output	normal	reduced	reduced	obigoanuric

(Source : Baskett, BMJ, 1990 300: 1453 – 1457).

Treatment

Most maternal deaths in PPH are due to THE THREE DELAYS

1. Delay in recognition of complications:
    a. Under estimation of blood loss – the women already hypovolemic, are not afford to loss 500 ml to label as PPH. Individualise the treatment.
    b. Inadequate volume replacement.
2. Delay in institution of definitive management
3. Delay in referral / accessing transportation.

Management:

General

Specific – Medical

Surgical

General Management

1. Assessment of general condition of the patient, the amount of blood loss and degree of hypoxaemia.

2. Vital parameters recorded – level of consciousness, pulse rate, respiratory rate, blood pressure, degree of pallor, urine output continuous bladder drainage.

3. 100% oxygenation by face mask.

4. Two large bore peripheral intravenous access secured.

5. Blood sent for complete blood count, RFT & cross matching.

6. Crystalloid & colloids rushed in the meantime. It enhances the atrial filling and improves the cardiac output. 250 – 500 ml of either a crystalloid or a colloid is administrated over a period of 10 – 20 minutes as the urgency indicates. Crystalloids are preferred over colloids as they quickly become distributed throughout the extracellular space; cheap; easily available; no risk of anaphylaxis.

7. Replace the blood loss which is calculated by visual means according to the loss and by percentage of blood loss in body volume.

8. Invasive hemodynamic monitoring – central venous pressure measurement via jugular approach – for accurate measurement of fluid balance where feasible.

9. Bleeding time and clotting time to be monitored at the patient's bed side – when prolonged; to be treated with fresh frozen plasma, cryoprecipitate.

10. Once the patient is stabilized, a quick P/A, per vaginal examination to be done to assess the cause for PPH.

11. Bimanual compression of the uterus prevents an increase in the radius of the uterus due to bleeding in the uterus. Simultaneously the uterus is pushed cephalad, which puts the uterus under tension and reduces the blood flow to the uterus.

Medical Management

Uterotonic agents in PPH – in atonicity of the uterus

Agent	Dose	Route of Administration	Side effects
Oxytocin	10u/im/iv followed by 20 iv infusion in 500ml RL/NS crystalloid titrated versus response.	Intravenous	Hypotension if given by rapid iv Bolus. Water intoxication with larger volumes.
Methyl ergometrine	0.2 mg 6th hourly	Intramuscular / Intravenous	Vasoconstriction – in creased blood pressure, head ache, nausea, vomiting.
Misoprostol	Vaginal, rectal oral	400 – 1000 µg	GI disturbances, shivering,

			pyrexia
15Methyl PGF2α	IM/Intra myometrial	0.25 mg can be repeated every 15 mts. max 2 mg	bronchospasm
Tranexamic Acid	IV	1g 8th Hourly	can increase the risk of thrombosis
Recombinant factor VII a	IV	60 – 120 µg / kg	Fever, hypertension.

Surgical Management of PPH

Surgical Management of PPH has traditionally relied on hysterectomy and ligation of internal liac arteries but over the last few years a number of new and simple techniques have come into use prior to restoring to complex and risky major surgical procedures.

(i)Under suturing of placental bed – where PPH follows placenta praevia / low lying placenta the large sinuses may not effectively retract, under sewing the uterine cavity can be done, taking care not to obliterate the cervical canal and the internal os (Arulkumaran 1999).

(ii) Balloon Tamponade - A Sengstaken Blake more tube is inserted into the uterine cavity, the esophageal / stomach balloon is filled with 75-450 ml of saline until it just becomes visible at cervical canal. If the bleeding is controlled, upper vagina is packed with roller gauze to prevent expulsion of balloon, and the bladder catheterised. It can be left for a period of 24 hours – Positive Tamponade Test.

Johnson et al (2001) described the use of urological. Rusch Hydrostatic balloon catheter to

control intractable PPH.

(iii) Uterine BRACE Sutures: B Lynch

B-Lynch suturing technique involves a pair of vertical brace sutures around the uterus essentially to oppose the anterior and posterior walls and to apply continuing compression.

(iv) Multiple square suturing techniques: Chos

These brace sutures work by direct application of pressure on the placental bed bleeding and also by reducing blood flow to the uterus. Four or five square sutures are placed evenly from the fundus through to the lower segment of the uterus. The advantage is that it is technically easy to perform and requires a short operating time.

(v) Stepwise devascularisation of the uterus: MAL ABDRABOS

Uterine artery is identified at the base of broad ligament at (or) just below the level of UV peritoneal reflection

Ligation of utero ovarian anastamosis near the ovarian ligament after the branch to the round ligament.

(vi) Internal Iliac Artery ligation :

Bilateral Internal iliac artery ligation results in 85% reduction in the pulse pressure in the arteries distal to the ligation and the blood flow by 50% in the distal vessels – turning an arterial pressure system into the one with pressures approaching that in the venous system.

Internal iliac artery is ligated after the posterior branch has formed.

(vii) Uterine Artery Embolisation :

Under LA and fluoroscopic control, the catheter is advanced above the bifurcation of the aorta and the bleeding point is identified by contrast injection. The feeding artery is catheterized and embolised with polyvinyl alcohol particles, which will be reabsorbed in ten days.

(viii) Hysterectomy :

Reserved where all other avenues available have been exhausted, but bleeding continues with a severely shocked patient.

MATERIALS AND METHODS

MATERIALS AND METHODS

The Study was conducted at Government Rajaji Hospital, Madurai from September 2007 to September 2008.

200 patients with pregnancy at or beyond 37 weeks with a single live fetus in cephalic presentation who had a spontaneous vaginal delivery were included in the study.

It was a prospective comparative evaluation of two groups –the study group consisted of 100 patients - in whom the placental blood was drained. The rest of the 100 patients were placed as controls where the cord blood was not drained.

Group – A (Study) 100 patients - Placental Blood was drained.

Group – B (control) 100 patients - Placental Blood was not drained

Inclusion criteria

1. Singleton pregnancy
2. Vertex presentation
3. Gestational Age of 37 weeks (or) more.
4. No major medical (or) obstetric complications.
5. Spontaneous vaginal delivery

Exclusion Criteria

1. HB % < 7 gm / dl
2. History of APH

3. Instrumental delivery
4. Multiple pregnancy
5. Malpresentations
6. Large Baby (more than 3.5 kg)
7. Polyhydramnios
8. Known coagulations disorders
9. Previous surgeries on the uterus.

Procedure

After a detailed History taking including complications of present pregnancy, general physical examination & obstetric examinations were made.

Gestational age was confirmed by menstrual history, clinical examination and ultrasound.

Routine Hematological and urine examinations were done

All women were monitored carefully through the first and the second stages of labour with vital parameters and fetal heart rate.

Those with ineffective uterine contractions received augmentation with oxytocin as intravenous infusion or ARM or a combination of these as per the individual needs. Induction of labour where necessary, was done with PGE2 gel.

All the patients in the study group were counseled regarding the procedure of cord drainage and

an informed consent was obtained. Immediately after spontaneous vaginal delivery, after clamping and cutting the cord- the cord was unclamped and the blood was drained until the flow ceased.

Prophylactic oxytocic- intravenous methergine 0.2 mg for active management of the III stage of labour was given.

In the control group, the clamped cord was not released.

After the signs for placental separation appeared, the placenta was delivered by Brandt-Andrews method of controlled cord traction in the both the groups.

Blood lost in the third stage of labour was measured by collecting the blood in a clean metal bowl taking care, that the blood from episiotomy wound did not get mixed with the uterine loss. If there was excessive bleeding due to uterine atony, appropriate measures were instituted.

The mops used for episiotomy were separated & discarded. The duration of the third stage was calculated using a stop watch.

Once the uterus was well contracted and the active bleeding had stopped, the remaining blood in the vagina was removed and a sterile sanitary pad was given.

The blood collected in the metal bowl was measured using a measuring jar.

The pulse rate, blood pressure and the state of uterus were noted immediately after delivery.

The women were kept under observation for the next two hours to watch for complications if any.

Blood transfusion was given whenever the blood loss was more than 1000 ml (or) if indicated by the clinical status of the patient. Blood Hb% was measured after 48 hours of delivery in both the groups and difference from that of the antenatal value was observed.

The patients were carefully watched in the post natal ward for 48 hours for any morbidity.

RESULTS

RESULTS

Profile of cases studied

Table 1

Age Distribution

Age group	Study Cases		Controls	
	No.	%	No.	%
Less than 20 years	11	11	6	6
20-24 years	57	57	72	72
25-29 years	28	28	17	17
30 years & above	4	4	5	5
Total	100	100	100	100
Mean S.D.	23.05 yrs 3.11 yrs		22.72 yrs 2.87 yrs	
p	0.3981 Not significant			

Comparing the age distribution in both the groups, 85% (85/100) of the patients in the study group and 89% (89/100) of the patients in the control group were in the age group of 20 – 29 years T 00) in the study popula of 30 years and above. oth the groups.

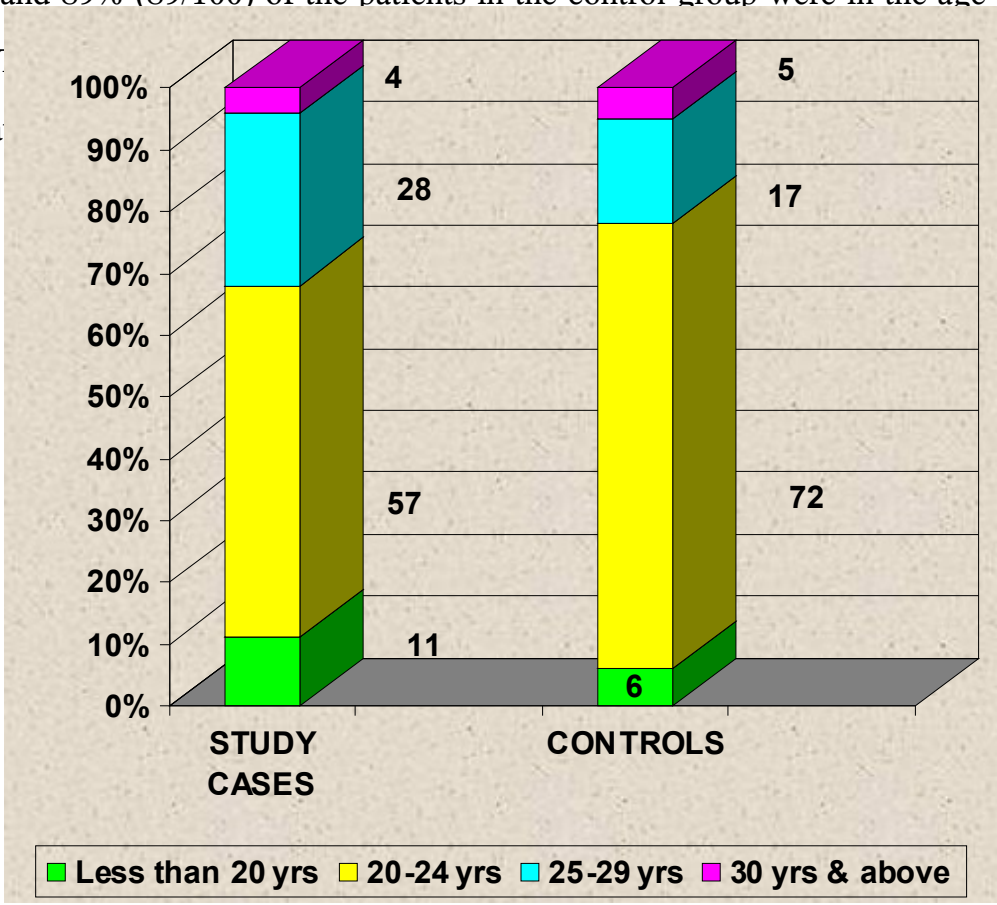


Table 2

Antenatal care

Antenatal Care	Study Cases		Controls	
	No.	**%**	**No.**	**%**
Booked	79	79	83	83
Unbooked	21	21	17	17
'p'	0.5887 Not significant			

In the study group – 79% (79/100) were booked cases and had atleast five antenatal check ups and the rest were unbooked cases.

In the control group – 83% (83/100) were booked cases and the rest were unbooked cases.

The antenatal care received by the two groups did not exhibit statistically significant difference.

Table 3

Parity

Parity	Study Cases		Controls	
	No.	**%**	**No.**	**%**
Booked	63	63	46	46
Unbooked	37	37	34	34
'p'	0.7676 Not significant			

In the study group- 68% (68/100) were primigravidae, the rest were multigravidae.

In the control group – 66% (66/100) were primigravidae, the rest were multigravidae.

The parity of the two groups did not show any significance.

PARITY

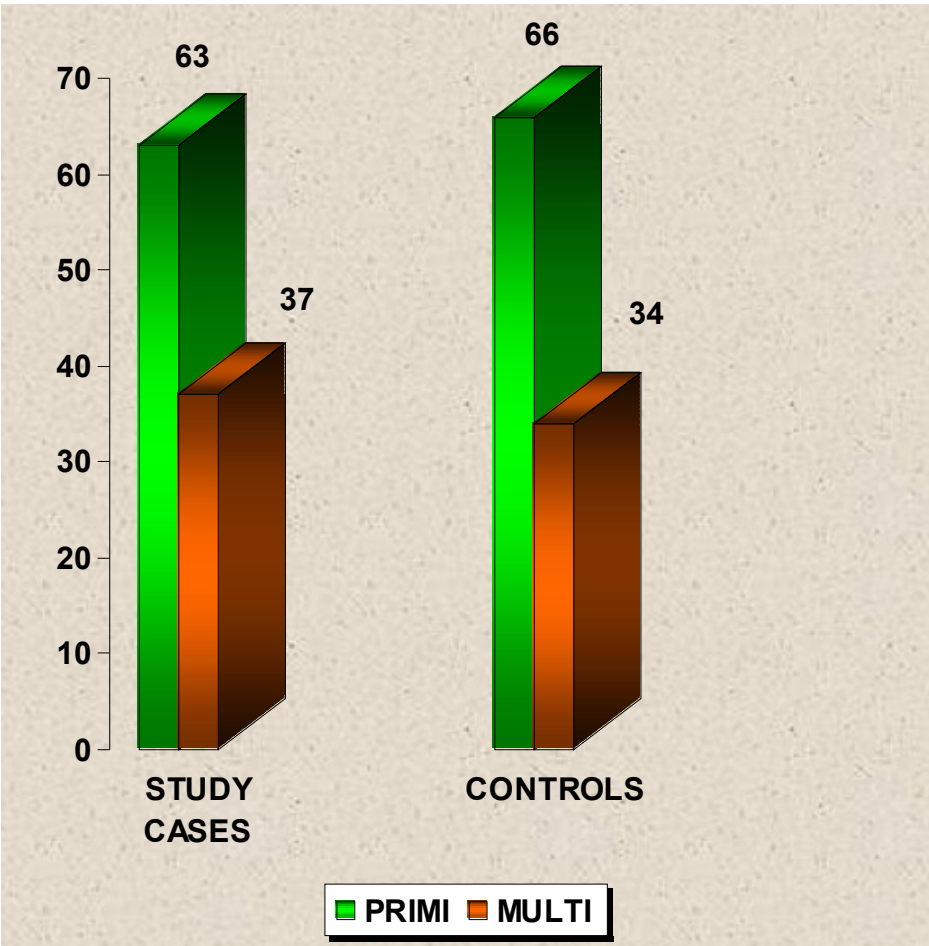

63
66
70
60
50
40
30
20
10
0
37
34
STUDY CASES
CONTROLS
PRIMI
MULTI

Table 4

Period of Gestation

Gestation (in weeks)	**Study Cases**	**Controls**
Mean	39.3	37.16
S.D.	1.3	1.24
'p'	0.1898 Not significant	

Patients with term gestation (37- 42 weeks) were selected for the study.

In the study group, the mean gestational age was 39.3 weeks and in the control group, it was 39.16 weeks.

The period of gestation in the two groups did not differ significantly.

Table 5

Quantitative parameters

Parameters	Study Cases		Controls		P Value
	Mean	S.D	Mean	S. D	
Height (in cms)	152.5	3.6	151.6	3.4	0.0665 Not significant
Weight (in kgs)	57.62	3.07	58.55	6.08	0.4615 Not significant
B.M.I.	24.83	1.72	25.46	2.31	0.0732 Not significant

The mean height and the weight of the patients were 152.5 cms and 57.62 kg respectively in the study group, 151.6 cms and 58.55 kg in the control group. The mean BMI was 24.83 in the study group and 25.46 in the control group.

The two groups did not differ statistically in terms of height, weight & BMI.

QUANTITATIVE PARAMETERS

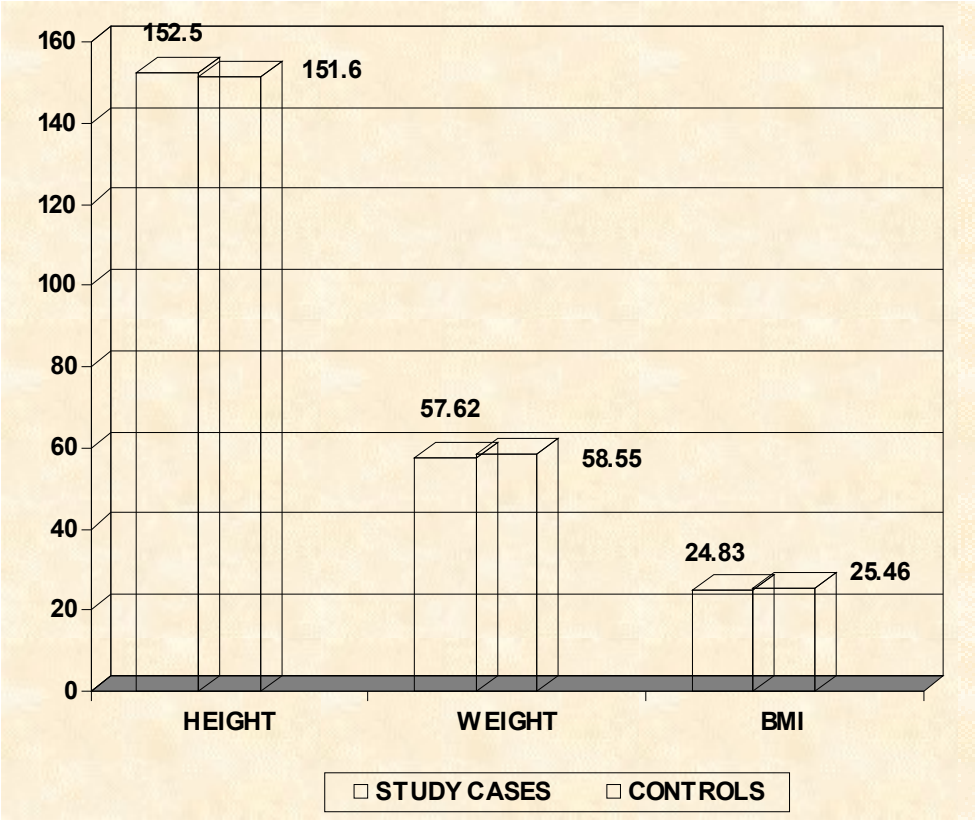


Table 6

Interventions

Intervention	Study Cases		Controls	
	No.	**%**	**No.**	**%**
Induction of labour	22	22	23	23
Acceleration of labour	48	48	56	56
Spontaneous labour	30	30	21	21
TOTAL INTERVENTIONS	70	70	79	79
NO INTERVENTIONS	30	30	21	21
'p'	0.1943 Not significant			

In the study group, 30% (30/100) had spontaneous onset of labour and in the control group, it was 21% (21/100).

The labour was induced with PGE2 gel in 22% (22/100) of the patients in the study group. In the control group it was 23% (23/100).

The labour was accelerated for ineffective uterine contractions in 48% (48/100) in the study group and in 56% (56/100) of the patients in the control group.

No interventions were used for 30% in study group & 21% in control group.

The mode of interventions did not differ statistically in both the groups.

INTERVENTIONS

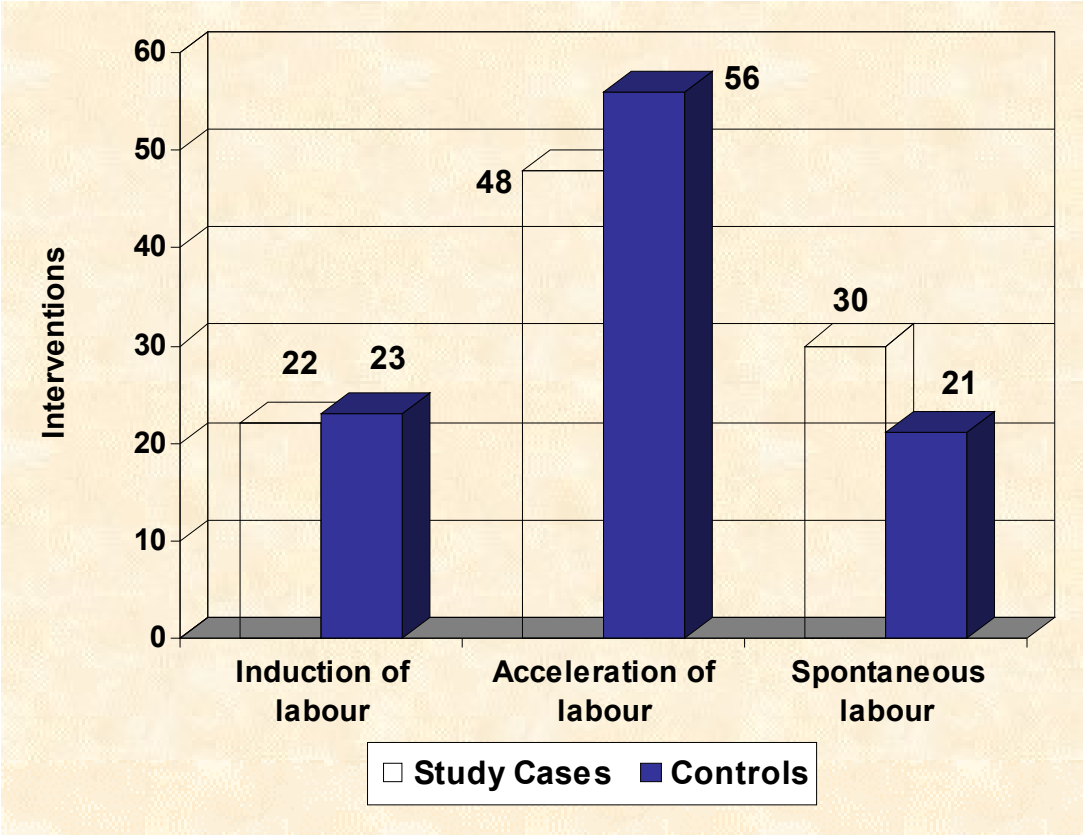


Table 7

Birth Weight

Birth Weight (in kg)	**Study Cases**	**Controls**
Mean	2.84	2.88
S.D.	0.29	0.31
'p'	0.4115 Not significant	

The mean birth of the baby in study group was 2.84 kg and that in the control group was 2.88 kg.

The both groups were comparative, without any significance.

BIRTH WEIGHT (in kgs)

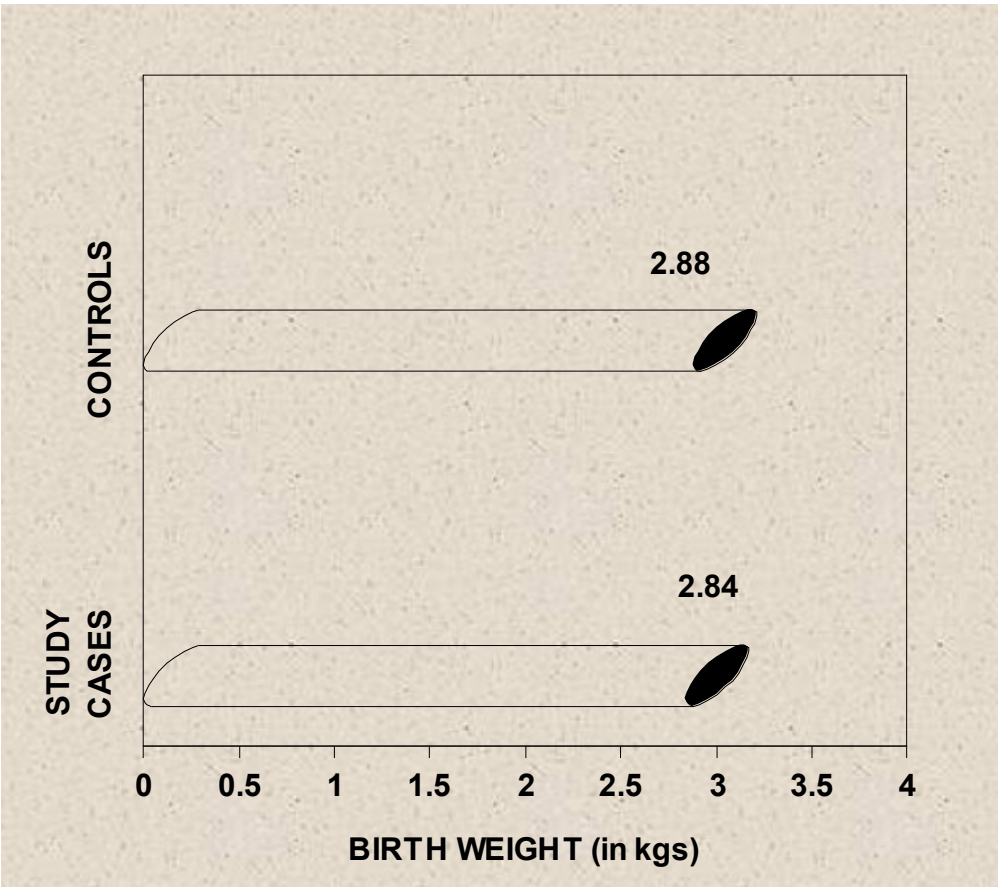


Table 8

Mean Duration of III stage of Labour

Duration of III stage in seconds	**Study Cases**	**Controls**
Mean	210.5	318.5
S.D.	143.4	83.8
'p'	**0.0001 Significant**	

In the study group, the mean duration of third stage of labour was 210.5 seconds (3.5 minutes).

In the control group,, the mean duration of III stage is 318.5 seconds (5.3 minutes).

'p' value was 0.0001- the result being statistically significant.

DURATION OF III STAGE OF LABOR
(in seconds)

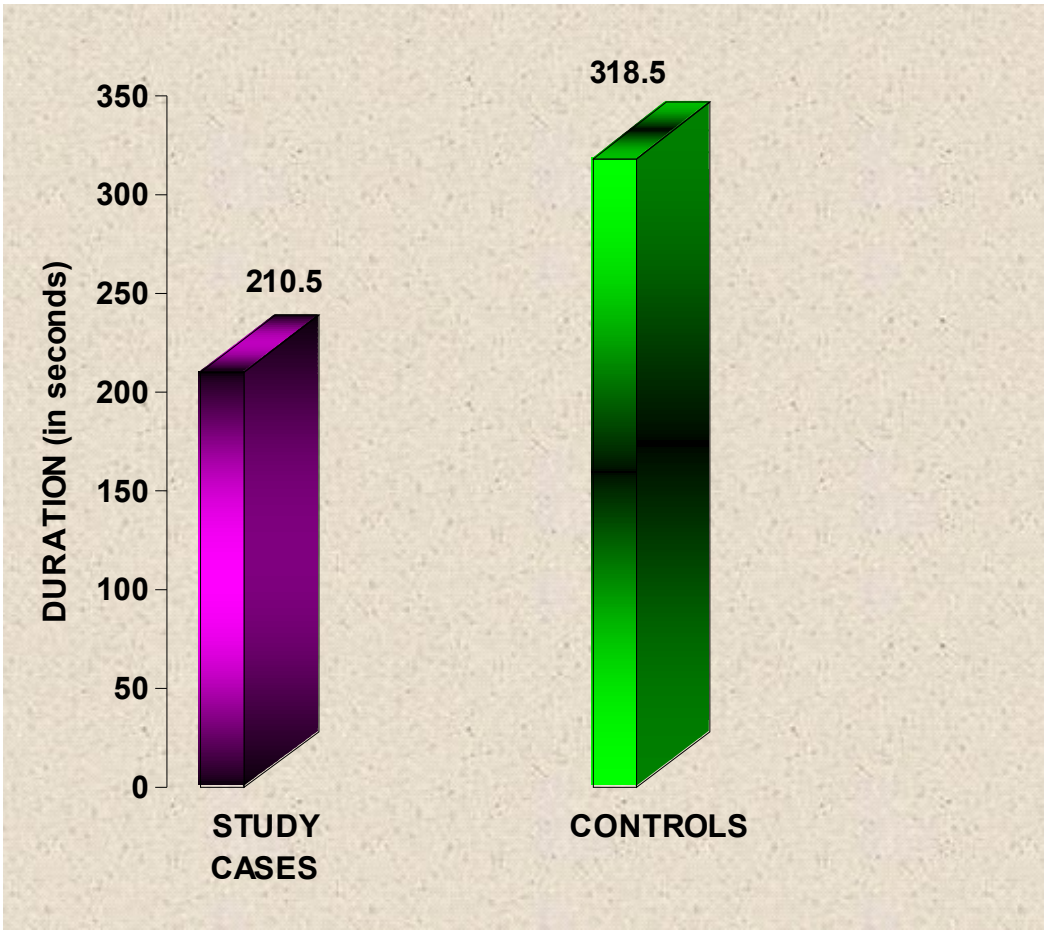


Table 9

Blood loss

Blood loss in m1	Study Cases		Controls	
	No.	%	No.	%
0-100	4	4	-	-
101-200	45	45	13	13
201-300	38	38	47	47
301-400	9	9	27	27
401-500	2	2	3	3
Above 500	2	2	10	10
Total	100	100	100	100
Mean S.D.	232.5 88.6		310.1 103.3	
'p'	**0.0001** **Significant**			

In group A 4 % had blood loss less than 100 ml.

In group B none had blood loss less than 100 ml.

49 % of group A patients had blood loss of less than 200 ml.

13% of group B patients had blood loss of less than 200 ml.

Upto 300 ml of Blood loss is noted in 87 % of patients in group A and 60% of patients in group B.

Only 13 % of patients in group A had blood loss of more than 300 ml.

The mean blood loss was 232.5 ml in group A.

The mean blood loss was 310.1ml in group B.

The result is statistically significant.

BLOOD LOSS

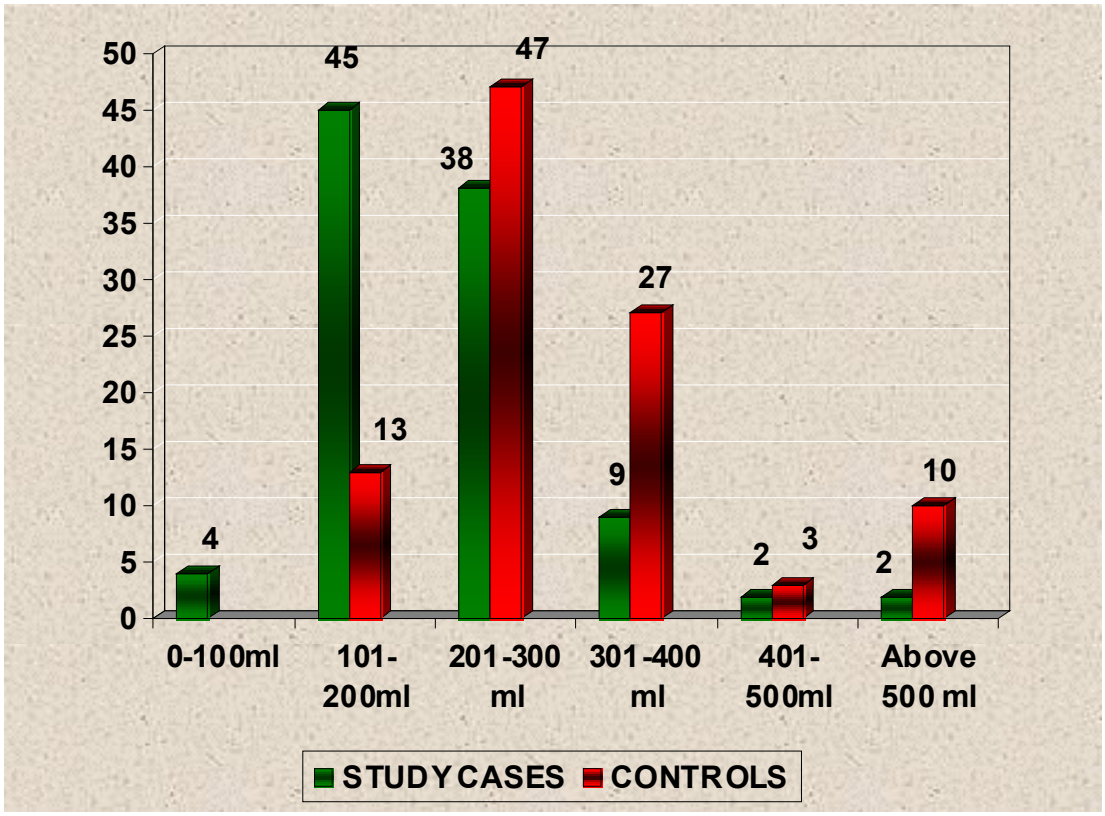

50
45
40
35
30
25
20
15
10
5
0
4
45
13
38
47
9
27
2
3
2
10
0-100ml
101-200ml
201-300 ml
301-400 ml
401-500ml
Above 500 ml
STUDY CASES
CONTROLS

Table 10

Post Partum Haemorrhage

Post Partum Hemorrhage	Study Cases		Controls	
	No.	%	No.	%
Yes	2	2	10	10
No	98	98	90	90
'p'	**0.0371 Significant**			

The incidence of post partum haemorrhage was calculated as a blood loss of more than 500ml in both the groups.

2% (2/100) of the study group and 10% (10/100) of the control group patients had post partum haemorrhage.

The incidence of post partum haemorrhage between the two groups was statistically significant.

POST PARTUM HEMORRHAGE

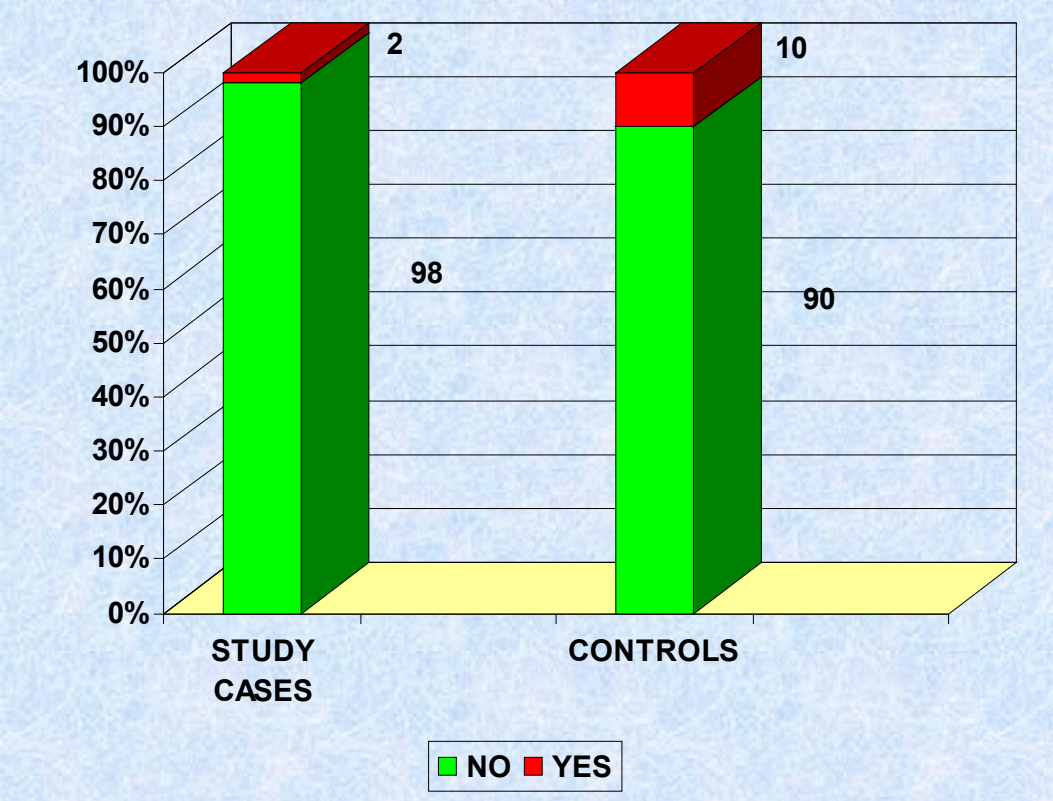


Table 11

Manual Removal of Placenta

Manual removal of placenta	Study Cases		Controls	
	No.	%	No.	%
Done	2	2	2	2
Not done	98	98	98	98
'p'	-			

2% (2/100) of study group patients and 2% (2/100) of the control group patients required manual removal of placenta. In all these cases placenta remained unseparated that was cleaved and removed in toto.

The incidence being similar in both the groups, there was no significance.

MANUAL REMOVAL OF PLACENTA

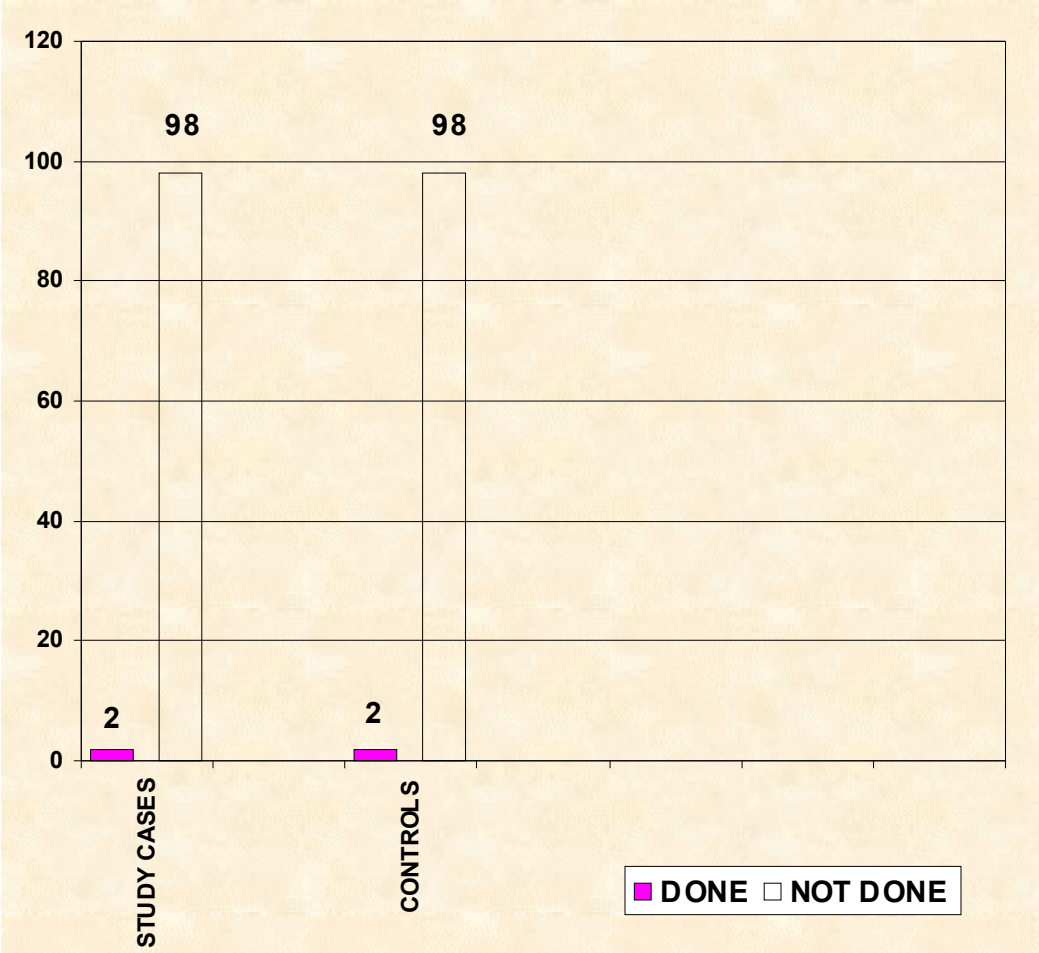


Table 12

Blood Transfusion

Blood Transfusion	Study Cases		Controls	
	No.	%	No.	%
Given	5	5	6	6
Not given	95	95	94	94
'p'	0.757 Not significant			

The requirement of Blood transfusion was decided by the clinical status of the patient (or) if the blood loss was more than 100ml in both the control and the study groups.

BLOOD TRANSFUSION

5% (5/100) of patients in the study group and 6% (6/100) of patients in the control group required blood transfusion.

'p' va

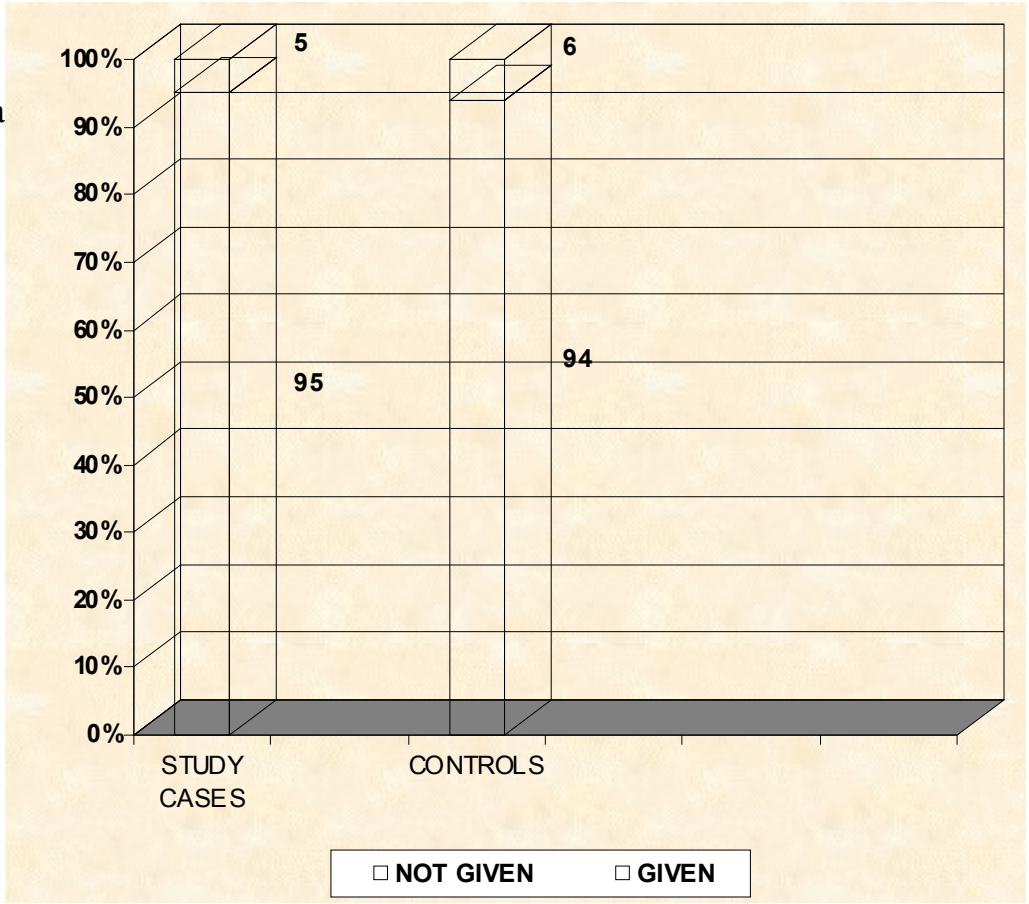


Table 13

Changes in Hb%

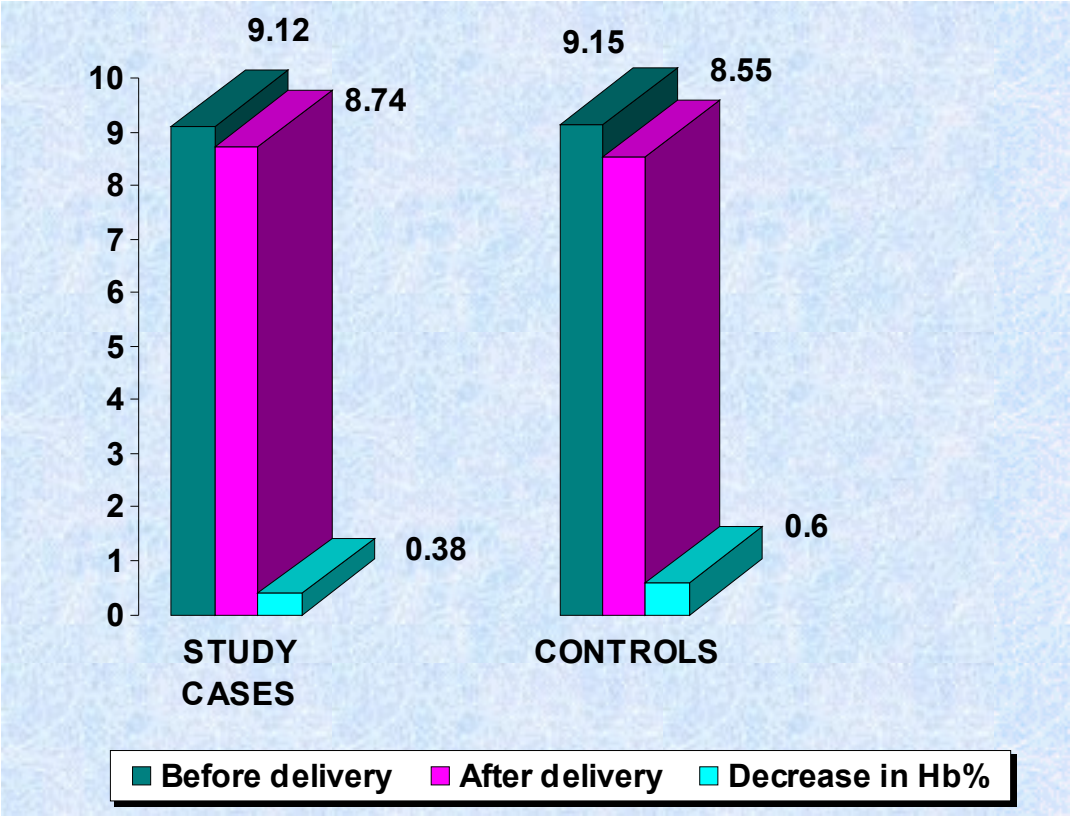
Hb%	Study Cases		Controls	
	Mean	**S.D.**	**Mean**	**S.D.**
Before delivery	9.12	0.58	9.15	0.56
After delivery	8.74	0.65	8.55	0.68
Decrease in Hb.%	0.38	0.24	0.59	0.27
'p'	**0.0001** **Significant**			

The maternal Hb% level before delivery was compared with changes in Hb% level after delivery.

The mean decrease in Hb% was 0.38 gm/d1 in the study group whereas it was 0.6 gm/d1 in the control group.

The result was statistically significant.

CHANGE IN HB.%


9.12
8.74
0.38
9.15
8.55
0.6
10
9
8
7
6
5
4
3
2
1
0
STUDY CASES
CONTROLS
Before delivery
After delivery
Decrease in Hb%

Statistical Tools

The information collected regarding all the selected cases were recorded in a Master Chart. Data analysis was done with the help of computer using ***Epidemiological Information Package (EPI 2002).***

Using this software, frequencies, percentages, means, standard deviations, chi square and 'p' values were calculated. Kruskul Wallis chi-square test was used to test the significance of difference between quantitative variables and Yate's test for qualitative variables. A 'p' value less than 0.05 is taken to denote significant relationship.

DISCUSSION

DISCUSSION

Patients undergoing normal progression of labour can become abnormal within few minutes and even a successful delivery can turn swiftly into a disaster if post partum hemorrhage enters the scene.

As the saying goes “A stitch in time saves nine” prompt recognition and appropriate management of third stage of labour and it’s complications should be done, or else it may even land up in maternal death in no time.

This study was conducted in the Department of obstetrics & Gynaecology, Government Rajaji Hospital, Madurai to study the efficacy of placental Blood Drainage versus none in patients with spontaneous vaginal delivery as a part of active management of III stage of labour.

In this study, of the placenta was drained by unclamping the previously clamped cord in 100 patients.

In another 100 patients, the cord was kept clamped and the placenta was not drained.

Discussion of Profile of cases studied

Age group and Patients selection

In our study, the age group of patients included varied between 18-32 years. Maximum percentage of patients belonged to the age group of 20-24 years.

85% of the study group was between 20-29 years.

89% of the control group was between 20-29 years.

The mean age in both the groups was comparable.

In a similar randomized controlled trial by Giacalone et al, 2000, Great Britain-the mean age of patients who entered the study was 25 years and in a randomized controlled trial conducted at the Medical College Belgaum, Department of Obstetrics & Gynaecology by Shravage et al, the mean age of patients was 23 years.

Antenatal care

In our study, in both the study and the control groups, the proportion received antenatal care was greater than those who did not.

79% received antenatal care in the study group & 83% in the control group, 'p' valve being not significant.

Parity

In our study, the primigravidae were more in both the groups compared to the multi gravidae. All were singleton pregnancies.

In the study group – 63% were primigravide ; 37% were multigravidae.

In the control group - 66% were primigravidae; 34 % were multigravidae

In a similar study by Sharma et al, 2005, the primigravidae constituted to the majority 58% and the rest were multigravidae.

Period of gestation

In our study, the patients with term gestation between 37 – 42 weeks were selected and randomised. The preterm labour & the post term pregnancies were excluded from the study.

The mean age of gestation was 39.3weeks in the study group & 39.16 weeks in the control group.

In a similar study by Sharma et al, 2005, the mean age of gestation in group A and group B were 38.78 weeks and 38.54 weeks respectively.

Quantitative parameters

In our study, the patients with Hb < 7.0 gm/dl were excluded.

Patients with hypertension – Blood pressure of more than 140/90 mm Hg were excluded.

The routine urine & blood examinations were normal in the study and the control groups.

Obese patients with BMI of more than 30 were excluded from the study.

Interventions used

200 patients with spontaneous onset of labour were selected for the study. Those with ineffective uterine contractions (or) premature rupture of membranes received induction or augmentation of labour either with artificial rupture of membranes, oxytocin, PGE2 gel, stripping (or) a combination of these.

Maximum percentage of patients in both the study & the control groups received interventions- 70% in the study group & 79% in the control group.

Majority of patients in both the study and control groups received augmentation with oxytocin- 40% in the study group & 48% in the control group.

The both groups were comparable in respect to the interventions used and 'p' value was not significant.

Birth Weight

Patients who delivered macrosomic babies, cut off taken for this study was 3.5 kg, were excluded from the study. Those with SGA babies were also excluded; the cut off taken in our study was 2.5 kg.

The mean birth weight of the babies in the study group was 2.84 kg and in the control group was 2.88 kg, the both groups being comparable.

This was similar to the large randomized controlled trial done by Sharma et al, 2005 involving 958 patients where the mean birth weight was 2.9kg in the study group and 2.83 kg in the control group.

Comparison of outcome parameters

Changes in Hemoglobin

In our study, Hemoglobin level was measured at admission before delivery and 48 hours after the birth of the baby. The hemoglobin was measured using Sahli's hemoglobinometer in the GRH laboratory.

The mean Hb% in the study group

Before delivery - 9.12

After delivery - 8.74

The mean Hb% in the control group

Before delivery - 9.15

After delivery - 8.55

The fall in the Hb% is 0.38 in the study group and 0.6 in the control group. The 'p' value is 0.0001 which is significant.

However in study by Soltani et al, there was no significant change in mean Hb% after birth. It was 1.3 in the control group & 1.2 in the study group.

Duration of III Stage of labour

The duration of III stage of labour from the delivery of the baby to the delivery of the placenta with its membranes was calculated in seconds using a stop watch.

In our study, in the study group 80% of patients had duration of III stage upto 5 minutes. In the control group, 50% had duration of III stage upto 5 minutes.

The mean duration of the third stage of labour in the study group was 3.5 minutes and in the control group was 5.3 minutes.

The result was statistically significant. Several authors had noted similar significance. In a randomized controlled trial on 200 patients by Shravage et al the mean duration of the III stage was 5.02 minutes in the study group and 7.42 minutes in the control group.

In the study by Giacalone et al 2000, a randomized controlled trial involving 500 patients, the median value of duration of III stage of labour was 8 minutes in the cord drainage group and 15 minutes in the control group.

Gulati et al, on his study on 200 pregnant women to evaluate placental blood drainage, found a significance of mean duration of 5.72 minutes in the control group and 2.94 minutes in the study group.

Sharma et al on his randomized controlled trial involving 958 women concluded that the mean duration of third stage of labour was 3.24 minutes and 3.2 minutes in the placental drainage

group in contrast to 8.57 minutes and 6.2 minutes in no drainage group in primigravida and multigravida respectively, which was of statistical significance.

Blood Loss

In our study, collecting the blood on to a clean metal bowl, taking care not to include the blood from cord drainage, assessed the blood losses. Great efforts were taken to measure the blood loss carefully, by using separate mops for episiotomy wounds, but the measurement remained open to inaccuracies due to inclusion of some amount of amniotic fluid and omission of some blood that can spatter on to the gowns and drapes. This could especially affect the measurement of blood loss. However the likely measurement error should be random and would therefore reduce the power, but not bias the result.

The major confounding factor in such studies could be the variation in practice of the use of oxytocic drugs both in relation to the type of drug used and the timing of its administration. This issue might have a significant effect on the duration and successful completion of the third stage of labour.

It was avoided in our study by the practice of active management in all cases in both the study and the control groups who received uterotonics at the delivery of the anterior shoulder of the baby. Intravenous methergine 0.2mg was given.

Similarly the timing of cord clamping may also confound the result in terms of the duration of III stage. Fortunately in our study, all patients in both the groups had immediate clamping of the cord (or) within 30 seconds after birth.

Early clamping of the cord would deprive the babies of a natural source of extra blood volume, from which they could otherwise benefit.

The Hinching brooke trial by Rogers showed a higher mean birth weight of babies in no drainage group, which they suggested was probably due to the extra blood received prior to delayed cord clamping.

In our study the mean blood loss was 232.5 ml in the study group & 310.1 ml in the control group, 'p' value <0.001. The result was comparable to that obtained in various trials.

In the similar study by Gulati et al, the amount of blood lost in the III stage of labour was 193.63 ml in the study group and 247.59 ml in the control group.

Shravage et al reported that the average blood loss in the study group was 175.05 ml. Average blood loss in the control group was 252.05 ml.

Postpartum Haemorrhage

In our study, the post partum haemorrahge was calculated as any blood loss of greater than 500 ml, in otherwise hemodynamically stable women as per the definition of WHO.

In our study 2% of women in the study group developed post partum haemorrhage & 10% in the control group.

The blood losses were 600 ml & 580 ml among the two in the study group. The maximum blood loss in the control group was 610 ml.

Among the controls who developed PPH, 60% were primigravidae, 40% were multigravidae. Among the study group all 100% were multigravidae

All the patients who developed PPH were managed with general measures, medical management and blood transfusion. None of the patients required surgical management of PPH.

2 patients in the study group and 7 patients in the control group had their postpartum haemorrahge arrested with intramuscular 15 methyl PGF2α. The other three patients required infusion of 20 units of oxytocin in addition to intramuscular 15 methyl PGF2α to arrest the postpartum haemorrahge. Blood transfusion was required in both the patients in the study group and six patients in the control group.

In a similar study by Gulati et al, the incidence of postpartum haemorrhage was 12% in the control group and 6% in the study group. There was a statistically significant incidence of PPH noted by Shravage et al with 3% in the study group & 10% in the control group.

Manual removal of placenta

In our study, the arbitrary time limit set to interfere in cases of retention of placenta in 30

minutes. If the placenta was not separated at 30 minutes after birth, manual removal was done. In our study, 2% of the study group and 2% of the control group patients underwent manual removal of the placenta. One patient of study group had manual removal under GA and the other three patients had manual removal under regional anesthesia.

In a similar study by Soltani et al, 2005 there was no significant difference in manual removal of placenta in both the groups. 18/250 patients from the study group and 20/250 patients from the control group required manual removal of placenta. The actual percentage is little higher in the study because the arbitrary time limit set in this study for placental separation to occur was 20 minutes.

There were no cases of retained placenta in the randomized controlled trial by Shravage et al.

In contrast, in the study by Gulati et al, on 200 pregnant women, manual removal was observed the study group in 4% of in the control group, none in the study group, which was statistically significant.

Again, in our study there was no difference in the patients with regard to the parity who had retained placenta. The incidence was equal among the primigravidae & multigravidae.

Blood Transfusion

In our study, 5% of the study group & 6% of the control group required blood transfusion, there was not any significance between the two groups.

In a similar study by Soltani et al, the requirement of blood transfusion did not differ significantly in two groups. None required blood transfusion in the study group and 1/250 required blood transfusion in the control group. The ‘p’ value was 0.5, hence not significant.

SUMMARY

S U M M A R Y

200 patients admitted in the labour room at Government Rajaji Hospital between September 2007 to September 2008 in labour, had spontaneous vaginal delivery, who met the criteria laid under inclusion categories, were taken for this prospective comparative study.

They were allocated into two groups of 100 each, group A patients had the placental blood drained and group B served as control.

In each group, the duration of III Stage, amount of blood loss, complications of III stage were recorded.

The results of the study were tabulated, analyzed and summarized as follows:-

1. Majority of the patients 85-90% in both the study and the control groups were between 20-29 years.
2. Two-thirds of the study and the control groups were constituted by primigravidae, rest were multigravidae.
3. The mean period of gestational age, in weeks was similar in both the groups 38 - 39 weeks.
4. 70% of the study group and 79% of the control group received interventions during labour.
5. The mean birth weight among both the groups were comparable - 2.84 kg in the cases; 2.88 kg in the controls.
6. The duration of third stage of labour was 3.5 minutes in the study group and 5.3 minutes in the control group. The 'p' value being < 0.0001 the result was statistically significant.
7. The mean drop in Hb% level was 0.3 gm/dl in the study group and 0.6 gm/dl in the control group, this difference was also significant.
8. The mean blood loss in study group was 232.5 ml and 310.1 ml in the control group ($p < 0.0001$).
9. The maximum blood loss among the study and the controls were 600 ml and 610 ml respectively.
10. The incidence of postpartum haemorrhage was 2% in study group and 10% in the control group.
11. Analyzing the parity in incidence of PPH, 60% were primigravidae, 40% were multigravidae in the controls, whereas all were multigravidae among the cases.

12. None of the patients required surgical management for PPH.

13. The incidence of manual removal of placenta in both the groups was similar.

14. The need for blood transfusion was 5% in the study group and 6% in the control group.

CONCLUSION

CONCLUSION

1. Placental blood drainage is effective in reducing the duration of III stage of labour.
2. It reduces the mean blood loss during the III stage of labour.
3. The decrease in Hb% is less in the placental drainage group than the control group.
4. The incidence of PPH is decreased with using placental blood drainage.
5. The need for medical and surgical management of PPH is decreased with placental blood drainage on critical evaluation.
6. The need for manual removal of placenta does not differ significantly.
7. Placental blood drainage is a simple, safe and non-invasive method of managing the third stage of labour, that can be practiced even by midwives and para medical workers to reduce the complications of the III stage of labour in rural settings too.

BIBLIOGRAPHY

BIBLIOGRAPHY

1. Arulkumaran S, Symonds I – 1999. Recent advances in management of post partum haemorrhage. In Recent Advances in Obstetrics and Gynaecology, ed S Dasgupta, vol 4, 32-48. New Delhi, Jaypee Brothers.

2. Arunkumaran S, Penna LK, Rao KB – 2005. The third stage of labour. In The management of Labour, ed M Georgiou, Penna LK, 2nd edition, 195-208.Chennai, Orient Longman.

3. Baskett T, Arulkumaran S – 2002. Post haemorrhage. In intrapartum care, 145-160. London: RCOG Press.

4. B-Lynch C, Keith LG, Lalonde AB, Karoshi M – 2006. Postpartum Hemorrhage: A comprehensive guide to evaluation, management and surgical intervention. Special FOGSI edition. New Delhi, Jaypee Brothers.

5. Begley CM. A comparison of active and physiological management of the third stage of labour. Midwifery 1990; 6: 3-17.
6. Carroli G, Bergel E – 2003. Umbilical vein injection for management of retained placenta. The Cochrane Database of Systematic Reviews 2001, Issue 4.

7. Chong YS, Su LL, Arunlkumaran S. Current strategies for the prevention of postpartum

haemorrhage in the third stage of labour. Curr Opin Obstet Gynecol 2004; 16: 143-150.

8. Clarke M, Oxman AD - 2003. Cochrane Reviewers Handbook 4.2.0. The Cochrane Library 2003, Issue.2.

9. Cunningham FG, Grant NF, Levano KJ, Gilstrap LC, Hauth JC, Wenstrom KD – 2001. William's Obstetrics. 22nd Edition. London: McGraw Hill.

10. De Groot AN. Prevention of postpartum haemorrhage. Bailliere's Clin Obstet Gynaecol 1995; 9(3): 619-631.

11. Elbourne DR. Prendivillle WJ, Carroli G, Wood J, McDonald S – 2003. Prophylactic use of oxytocin in the third stage of labour. The Cochrane Database of Systematic Reviews 2001. Issue 4.

12. Enkin M, Keirse MJNC, Renfew M, Neilson J – 1995. A guide to effective care in pregnancy and childbirth. 2nd ed. Oxford: Oxford University Press.

13. Fraser DM, Cooper MA – 2003. Myles Textbook for Midwives. 14th Edition, Edinburgh: Churchill Livingstone.

14. Giacalone PL, Vignal J, Daures JP et al. A randomized evaluation of two techniques of management of third stage of labour in women at low risk of postpartum hemorrhage. Br

J Obstet Gynaecol 2000; 107 (3): 396 - 400.

15. Gulati N, Chauhan MB, Rana M. Placental blood drainage in management of third stage of labour. J Obstet and Gynacol India 2001; 51:46-48.

16. Gyte GML. Evaluation of the meta-analyses on the effects, on both mother and baby, of various components of active management of the third stage of labour. Midwifery 1994; 10: 183 - 199.

17. Herman A, Weinraub Z, Bukovsky I, Arieli S, Zabow P, Caspi E, et al. Dynamic ultrasonographic imaging of the third stage of labour; new perspectives into third-stage mechanisms. Am J Obstet Gynaecol 1993; 168 (5): 1496 - 1499.

18. Higgins JPT, Thompson SG, Deeks JJ, Altman DG. Measuring inconsistency in meta-analyses. BMJ 2003; 327: 557 - 560.

19. Joshi N et al. – 2006. Placental blood Drainage in the management of third stage of Labour.

20. Keirse M. What does prevent postpartum hemorrhage?. Lancet 1998; 351:690 - 692.

21. McDonald SJ – 1996. Management in the third stage of labour. Western Australia: University of Western Australia.

22. McDonald S, Abbott JM, Higgins SP – 2003. Prophylactic ergometrine-oxytocin versus oxytocin for the third stage of labour. The Cochrane Database of systematic Reviews 2004. Issue l.

23. Mercer JS. Current best evidence: a review of the literature on umbilical cord clamping. J midwifery women's health 2001; 46(6): 402- 414.

24. Oxorn, H – 2001. Clinical course of normal labour. In Human labour and birth. 5th edition, 113-151. New York, McGraw-Hill.

25. Prendiville WJ, Elbourne D, McDonald S – 2003. Active versus expectant management in the third stage of labour. The Cochrane Database of Systematic Reviews 2000, Issue 3; 693 - 699.

26. Prendiville WJ, Harding JE, Elbourne DR, Stirrat GM. The Bristol third stage trial: Active versus physiological management of the third stage of labour. BMJ 1988; 297: 1295-1300.

27. Rabe H, Reynolds G – 2002. Delayed cord clamping in preterm infants. The Cochrane Library, Issue 3. Oxford: update software.

28. Radnam SS, Rauf M – 1989. Postpartum haemorrhage and abnormalities of the third

stage. In Obstetrics ed A Turnbull, G Chamberlain, 867-875. London: Churchill Livingstone.

29. Razmkhah N, Kordi M, Yousophi Z. The effects of cord drainage on the length of third stage of labour. Scientific Journal of Nursing and Midwifery of Mashed University 1999; 1: 10 – 14.

30. Rogers J, Wood J, McCandlish R, Ayers S, Truesdale A, Eldourne D. Active vs expectant management of the third stage of labour: the Hinchingbrooke randomized controlled trial. Lancet 1998; 351: 693 - 699.

31. Sharavage JC, Silpa P. Randomized controlled trial of placental blood drainage for the prevention of postpartum hemorrhage. J Obstet and Gynacol India 2007; 57(3): 213-215.

32. Sharma JB, Pundir P, Malhotra et al. Evaluation of placental drainage as a method of placental delivery in vaginal deliveries. Arch Gynecol Obstet 2005; 271 (4): 343 - 345.

33. Soltani H, Dickinson F, Leung TN. Placental cord drainage in the third stage of labour on feto–maternal transfusion: a systematic review. Evidence based midwifery 2005; 3(2): 64-68.

34. Stables D – 1999. Physiology in childbearing with anatomy and related biosciences. London: Bailliere Tindall..

35. Still DK – 1999. Postpartum haemorrhage and other third stage problems. In High Risk pregnancy – management options, ed DK James, PJ Steer, B Gonik. London: WB Saunders.

36. Walraven G, Blum J, Dampha V et al. Misoprostol in the management of the third stage of labour in the home delivery setting in rural Gambia: A randomized controlled trial. Br J Obstet Gynaecol 2005; 112: 1277-1283.

PROFORMA

PROFORMA

Case No : Control No :

Name : Date of Admission :

Age :

Address : IP No :

Urban : Rural

Type of cases : Booked / Unbooked

LMP : EDD :

Menstrual History :

Regular / Irregular

Period of Gestation :

Obstetric Code : Gravida Para Live Abortion

Inclusion criteria

1. Singleton pregnancy.
2. Vertex presentation
3. Gestational Age of 37 weeks (or) more
4. No major medical (or) obstetric complications.
5. Spontaneous vaginal delivery.

Exclusion Criteria:

1. HB < 7 gm / dl
2. History of APH
3. Instrumental delivery
4. Multiple pregnancy
5. Malpresentations
6. Large Baby
7. Polyhydramnios
8. Known coagulation disorders
9. Previous surgeries on the uterus

History :

Relevant past history :

General Examination :

Height Weight Temperature

Anemia Pedal edema

PR BP

CVS RS

Obstetric Examination

P/A

P/V

Maternal Hemoglobin before birth :

Time of Delivery of the Baby :

Mode of Delivery :

Spontaneous / Instrumental

Interventions if any :

Time of separation of placenta with membranes:

Duration of III stage of labour

Total amount of Blood loss

Manual Removal of Placenta : Needed / Not any

Retained placenta (> 30 minutes after birth): Yes / No

Blood transfusion at Birth : Yes / No

Maternal Hemoglobin after birth :\

ABBREVIATIONS

Group A	-	Study Group		
Group B	-	Control Group		
U	-	Urban		
R	-	Rural		
B	-	Booked		
UB	-	Unbooked		
LAM	-	Lactational Amenorrhea		
Hb	-	Hemoglobin		
HT	-	Height		
WT	-	Weight		
BMI	-	Body mass index		
PR	-	Pulse Rate		
SBP	-	Systolic Blood Pressure		
DBP	-	Diastolic Blood Pressure		
ARM	-	Artificial Rupture of membranes		
Anemia	-	Present	-	1
	-	Nil	-	2
Pedal Edema	-	Present	-	1
	-	Nil	-	2