

## EFFICACY OF TRANEXAMIC ACID IN DECREASING BLOOD LOSS DURING AND AFTER CAESAREAN SECTION IN MULTIGRAVIDA PARTURIENTS: A CASE CONTROLLED PROSPECTIVE STUDY

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### ABSTRACT

#### OBJECTIVES

To study the efficacy of Tranexamic acid in reducing blood loss during and after the lower segment caesarean section in Multigravida parturients.

#### METHODOLOGY

A case controlled prospective study was conducted in 50 multigravida parturient women undergoing elective lower segment caesarean section in our hospital after getting Institutional Ethical Committee approval, over a period of two months. 25 of them were given Tranexamic acid 15 mg/kg immediately before caesarean section. Blood loss was collected and measured during two periods. The first period was from placental delivery to end of LSCS and the second from the end LSCS to 2 hours postpartum.

#### RESULTS

Tranexamic acid significantly reduces the quantity of blood loss from the end of LSCS to 2 hours post-partum in multigravida parturients. No complications or side effects are noted in both the groups.

#### CONCLUSION

Tranexamic acid significantly reduces the amount of blood loss during and after the lower segment caesarean section in multigravida parturients and its use was not associated with any side effects or complications.

#### KEYWORDS

Tranexamic Acid, Multigravida Parturients, Blood Loss, Caesarean Section.

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**INTRODUCTION:** Caesarean section rates have increased over 20-30% in many areas of the world.<sup>1</sup> Delivery by caesarean section can cause more complications than normal vaginal delivery<sup>2</sup> and one of the most common complication is primary or secondary post-partum haemorrhage.<sup>3</sup> It leads to increased maternal morbidity and mortality.<sup>4</sup> Post-partum haemorrhage is more common in multigravid parturients than in primigravid parturients.<sup>5</sup> It is important to reduce the amount of bleeding during and after caesarean section in these population.

Tranexamic acid (TCX) is a synthetic derivative of amino acid lysine that exerts its antifibrinolytic effect through the reversible blockade of lysine binding sites on plasminogen molecule.<sup>6</sup> Intravenous administration of Tranexamic acid has been found to reduce blood loss during and after surgical procedures like coronary artery bypass, scoliosis surgery, liver transplantation, arthroplasty and urinary tract

surgeries.<sup>7</sup> Tranexamic acid has shown to be useful in reducing blood loss in these surgeries.

Recently, many studies have found Tranexamic acid to be efficient to prevent severe haemorrhage during lower segment caesarean delivery(LSCS). Many of the studies have been conducted in primigravida parturients.<sup>8,9</sup> Our study has been conducted in multigravida parturients to assess its efficacy in reducing blood loss during and after caesarean section.

**OBJECTIVES:** To study the efficacy of Tranexamic acid in reducing blood loss during and after the lower segment caesarean section in Multigravida parturients.

#### METHODOLOGY:

**DESIGN:** Prospective double blinded case control study. Blinding was done using closed envelope method.

After getting the Ethical Committee approval from the institution, fifty parturients were enrolled in this study. Informed written consent was obtained from all patients who enrolled in this study. 25 subjects were given Tranexamic acid 15 mg/kg diluted in 100 mL normal saline approximately 10 min. before spinal anaesthesia and the

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blood loss was compared with that in 25 others to whom 100 mL normal saline alone was given.

**Inclusion Criteria:** Full term multigravida parturients with history of previous LSCS were included in the study.

**Exclusion Criteria:**

- Severe medical/surgical complications involving the heart, liver, kidney, brain and endocrine glands.
- Haematologic disorders.
- Allergy to drugs.
- History of thromboembolism.
- Abnormal placenta: placenta praevia, abruption placenta, placental adhesion.
- Pregnancy complications like PIH.
- Multiple pregnancy, macrosomia, polyhydramnios.
- Myoma complicating pregnancy.

**MEDICATIONS:**

**Study Group:**

- Inj. Tranexamic acid 15 mg/kg diluted in 100 mL saline given intravenously approximately 10 minutes before spinal anaesthesia.
- Patients were preloaded with 10 mL/kg of crystalloids.
- Subarachnoid block was given with 1.8 cc of 0.5% Bupivacaine in L3-L4 intervertebral level.
- After delivery of the neonate 20 units of oxytocin administered as infusion.
- Inj. Ephedrine as 6 mg bolus was given when Mean arterial pressure (MAP) decreases 25% from preoperative level or systolic BP less than 100 mmHg.

**Control Group:**

- 100 mL saline slow IV approximately 10 min. before spinal anaesthesia.
- Patients were preloaded with 10 mL/kg of crystalloids.
- Subarachnoid block was given with 1.8 cc of 0.5% bupivacaine in L3-L4 intervertebral level.
- After delivery of the neonate 20 units of oxytocin administered as infusion.
- Inj. Ephedrine as 6 mg bolus when MAP decreases 25% from preop level or systolic BP less than 100 mmHg.

**CLINICAL OBSERVATIONS:**

- Vital Signs: Heart rate, respiratory rate, blood pressure were checked immediately after placental delivery, after 1 hour and 2 hours post-operative period.
- The extent of post-partum haemorrhage – the blood was measured by weight and volume during two periods – following placental delivery to the end of the surgery and from the end of the surgery to 2 hours after birth.
- Neonatal manifestations.
- Side effects of Tranexamic acid.

**Blood Collection and Measurements:** Blood was collected via a suction catheter, the volume was weighed and soaked gauze, pads were also weighed using an electronic weighing machine with 1 g deviation range. Blood measurements were obtained post-partum during two separate periods from placental delivery to 2 hours post-partum. The study ignored estimates of amniotic fluid and bleeding that occurred prior to placental delivery.

The quantity of blood in mL = quantity of blood in g/1.05.

**STATISTICAL ANALYSIS:** Data from all the patients were used in the analysis. Excel 2007 was used for data input. NCSS-PASS 2004 software used for statistical analysis, t test used to compare the differences between two groups.

**OBSERVATION:** Demographic profile (age, height, weight, ASA status, number of patients, gravida) in both the groups are identical. [Table 1].

Mean Heart rate in the control group during placental delivery, 1 hour and 2 hours post-operative period is 88.6, 86, 83.2 respectively. Mean Heart rate in the study group during placental delivery, 1 hour and 2 hours post-operative period is 87.8, 86.4, 81.4 respectively. P value is < 0.05 which is statistically insignificant. [Table 2]

Mean systolic blood pressure in the control group during placental delivery, 1 hour and 2 hours period is 112, 113.4, 118.9 respectively. Mean systolic pressure in the study group during placental delivery, 1 hour and 2 hours post-operative period is 114.5, 113.7, 119.6 respectively. P value is < 0.05 which is statistically insignificant. [Table 2]

Mean diastolic blood pressure in the control group during placental delivery, 1 hour and 2 hours post-operative period is 57.4, 57.0, 57.9 respectively. Mean diastolic pressure in the study group during placental delivery, 1 hour and 2 hours post-operative period is 58.6, 61.8, 58.2 respectively. Except in first hour postoperative period P value is < 0.05 which is statistically insignificant. [Table 2].

Blood loss during placental delivery in control group is 260.1 mL and in study group is 200.8. A p value is >0.05 which is statistically significant. Blood loss during 2 hours post-operative period in control group is 50.3 mL and in study group is 27.6 mL. P value is >0.05 which is statistically significant difference. Total blood loss in control group is 310.1 mL and study group is 228.5 mL and the p value is >0.05 which is statistically significant. [Table 2].

Mean Apgar score in both the groups are similar. No complications are noted in both the groups. [Table 2].

**RESULTS:**

**Patients' Characteristics:** The patient characteristics (Age, height, weight, gravida.) were similar in both the groups with no statistical difference.

There was no statistical difference between two groups in surgery duration.

There was no statistical difference between vital parameters measured at the time of placental delivery, 1 hour and 2 hours post-operative period at 95% confidence

interval. There was significant increase in diastolic BP compared to control group only at 99% confidence interval.

- There was no difference in Apgar score between two groups.
- There was no difference in episodes of hypotension and vasopressor usage between two groups.
- There were no episodes of thrombosis.
- There was significant decrease in blood loss in study group in both periods (95% and 99% confidence interval).
- In study group, blood loss was reduced by 26% from the control group.

**DISCUSSION:** Tranexamic acid was first reported by Okamoto in 1962<sup>10</sup> and exerts its antifibrinolytic effects by blocking the lysine binding locus of the plasminogen and plasmin molecules thereby preventing the binding of plasminogen and plasmin to fibrin substrate.<sup>11</sup> Tranexamic acid also inhibits conversion of plasminogen to plasmin by the plasminogen activators.<sup>12</sup> This activation of plasminogen to plasmin can last up to 6-10 hours in the post-operative period and thereby causing more bleeding. Our study shows that single dose of TXA significantly reduces this blood loss by inhibiting this conversion.

TXA has been widely used to treat heavy menstrual bleeding<sup>6</sup> and to reduce blood loss in elective surgery where it reduces blood transfusion by about one-third.<sup>13,14</sup> More recently, the Clinical Randomization of an Antifibrinolytic in Significant Haemorrhage (CRASH-2) trial has shown that the early administration of TXA significantly reduces mortality in bleeding trauma patients.<sup>15</sup> Indeed, on the basis of the results of the CRASH-2 trial, TXA has been included in the WHO list of essential medicines.<sup>16</sup>

It crosses the placenta and the peak foetal concentration occurs after approximately 36 min.<sup>17</sup> after administration, so it can be used safely just before

subarachnoid block for LSCS. It is secreted in breast milk about 1/100 of the maternal concentration. No significant side effects noted in breastfed infant after single dose administration to mother.<sup>18</sup> Many studies have proved that Tranexamic acid is effective when given in 15 mg/kg.<sup>19</sup> So in our study, 15 mg/kg is given and no adverse foetal outcome was noted. Apgar score in both control and study group is not significantly changed.

The incidence of thrombosis during pregnancy and puerperium is 5-6 times higher than general population.<sup>20</sup> When the antifibrinolytic is used, the increased risk of thrombosis to be considered. But increased incidence is seen only with chronic administration and not with single use of Tranexamic acid. Our study showed no significant thrombosis when used in pregnant patients.

Assessing blood loss during and after CS or vaginal delivery is actually not easy because blood is mixed with amniotic fluid during LSCS. After LSCS, blood loss is estimated by inspecting vaginal towels and sheets. Actually, visual estimation of bleeding during and after LSCS or vaginal delivery is not accurate; it tends to overestimate at lower blood loss or underestimate at higher blood loss. Calibrated blood collection drapes are a simple and accurate means to measure blood loss when available<sup>21</sup>. Most of the studies have used visual estimation, which is very inaccurate. In our study, electronic calibration scale is used to maximise the accuracy of the study.

**CONCLUSION:** This study demonstrates that a single intravenous dose of Tranexamic acid when given intraoperatively significantly reduces the blood loss both during and after the lower segment caesarean section in multigravida parturients and its use was not associated with any side effects or complications. Thus, Tranexamic acid can be considered in lower segment caesarean section for reducing blood loss.

| Sl. No. | Control Group |            |             |             | Study Group |            |             |             |
|---------|---------------|------------|-------------|-------------|-------------|------------|-------------|-------------|
|         | Gravida       | Age (yrs.) | Weight (kg) | Height (cm) | Gravida     | Age (yrs.) | Weight (kg) | Height (cm) |
| 1       | G2            | 25         | 59          | 159         | G2          | 21         | 56          | 156         |
| 2       | G3            | 21         | 62          | 166         | G3          | 25         | 59          | 169         |
| 3       | G2            | 20         | 67          | 161         | G2          | 23         | 62          | 163         |
| 4       | G2            | 23         | 69          | 160         | G2          | 27         | 65          | 160         |
| 5       | G2            | 21         | 56          | 154         | G2          | 19         | 69          | 164         |
| 6       | G2            | 25         | 60          | 150         | G2          | 23         | 63          | 159         |
| 7       | G2            | 21         | 62          | 153         | G2          | 24         | 60          | 162         |
| 8       | G2            | 23         | 59          | 161         | G2          | 21         | 58          | 166         |
| 9       | G2            | 21         | 61          | 172         | G2          | 25         | 61          | 162         |
| 10      | G2            | 24         | 64          | 159         | G2          | 24         | 60          | 170         |
| 11      | G3            | 18         | 62          | 164         | G3          | 24         | 59          | 160         |
| 12      | G2            | 23         | 60          | 160         | G2          | 26         | 62          | 155         |
| 13      | G2            | 21         | 70          | 154         | G2          | 25         | 63          | 157         |
| 14      | G2            | 23         | 62          | 162         | G2          | 24         | 49          | 160         |
| 15      | G3            | 27         | 59          | 155         | G3          | 22         | 53          | 162         |
| 16      | G2            | 19         | 68          | 160         | G2          | 23         | 59          | 160         |
| 17      | G2            | 24         | 61          | 160         | G2          | 22         | 62          | 163         |

|    |      |      |      |       |      |      |      |     |
|----|------|------|------|-------|------|------|------|-----|
| 18 | G2   | 21   | 53   | 156   | G2   | 22   | 64   | 165 |
| 19 | G3   | 24   | 59   | 163   | G3   | 24   | 62   | 162 |
| 20 | G2   | 23   | 55   | 154   | G2   | 26   | 58   | 161 |
| 21 | G2   | 26   | 64   | 157   | G2   | 24   | 55   | 163 |
| 22 | G3   | 23   | 58   | 160   | G3   | 20   | 61   | 157 |
| 23 | G2   | 27   | 60   | 158   | G2   | 21   | 58   | 155 |
| 24 | G3   | 24   | 62   | 160   | G3   | 25   | 62   | 153 |
| 25 | G2   | 26   | 62   | 162   | G2   | 20   | 66   | 165 |
|    | 2.24 | 22.9 | 61.4 | 159.2 | 2.24 | 23.2 | 60.2 | 161 |

**Table 1: Demographic Variables**

| Sl. No. | Measured Variables                 | Control Group | Study Group | P @ 0.05 95% C.I       | P @ 0.01 99% C.I       |
|---------|------------------------------------|---------------|-------------|------------------------|------------------------|
| 1       | Age (yrs.)                         | 22.9          | 23.2        | No difference          | No difference          |
| 2       | Height (cm)                        | 159.2         | 161.2       | No difference          | No difference          |
| 3       | Weight (kg)                        | 61.36         | 60.2        | No difference          | No difference          |
| 4       | HR @ Placental delivery (bpm)      | 88.6          | 87.8        | No difference          | No difference          |
| 5       | HR @ 1 hr. postop (bpm)            | 86            | 86.4        | No difference          | No difference          |
| 6       | HR @ 2 hr. postop (bpm)            | 83.2          | 81.4        | No difference          | No difference          |
| 7       | RR @ Placental delivery            | 21.6          | 21.9        | No difference          | No difference          |
| 8       | RR @ 1 hr. postop                  | 20.9          | 21.3        | No difference          | No difference          |
| 9       | RR @ 2 hr. postop                  | 19.92         | 20.1        | No difference          | No difference          |
| 10      | SYS BP @ Placental delivery (mmHg) | 112           | 114.5       | No difference          | No difference          |
| 11      | SYS BP @1 hr. postop (mmHg)        | 113.4         | 113.7       | No difference          | No difference          |
| 12      | SYS BP @2 hr. postop (mmHg)        | 118.9         | 119.6       | No difference          | No difference          |
| 13      | DIA BP @ placental delivery (mmHg) | 57.4          | 58.6        | No difference          | No difference          |
| 14      | DIA BP @ 1 hr. postop (mmHg)       | 57            | 61.8        | No difference          | Significant difference |
| 15      | DIA BP @ 2 hr. postop (mmHg)       | 57.9          | 58.2        | No difference          | No difference          |
| 16      | Blood loss (mL)                    | 260.1         | 200.8       | Significant difference | Significant difference |
| 17      | Blood loss 2 hr. postop (mL)       | 50.3          | 27.6        | Significant difference | Significant difference |
| 18      | Total blood loss (mL)              | 310.1         | 228.5       | Significant difference | Significant difference |
| 19      | Surgery duration (min)             | 49            | 51          | No difference          | No difference          |
| 20      | Apgar                              | 9.6           | 9.6         | No difference          | No difference          |
| 21      | Hypotension (Episodes)             | 1.7           | 1.8         | No difference          | No difference          |
| 22      | Other Complication                 | -             | -           | -                      | -                      |

**Table 2: P values of measured variables**

| Sl. No. | Gravida | HR (bpm) |     |     | RR (Cycles/min) |     |     | SYS BP (mmHg) |     |     | DIAS BP (mmHg) |     |     | BLOOD LOSS (mL) |     |     |
|---------|---------|----------|-----|-----|-----------------|-----|-----|---------------|-----|-----|----------------|-----|-----|-----------------|-----|-----|
|         |         | PL       | 1hr | 2hr | PL              | 1hr | 2hr | PL            | 1hr | 2hr | PL             | 1hr | 2hr | 1hr             | 2hr | tot |
| 1       | G2      | 69       | 90  | 94  | 20              | 20  | 18  | 115           | 110 | 110 | 63             | 60  | 64  | 255             | 23  | 278 |
| 2       | G3      | 122      | 100 | 96  | 26              | 20  | 18  | 94            | 114 | 110 | 41             | 58  | 56  | 318             | 16  | 334 |
| 3       | G2      | 86       | 90  | 94  | 24              | 22  | 20  | 123           | 114 | 126 | 69             | 60  | 66  | 265             | 41  | 306 |

|    |             |           |           |           |           |           |           |            |            |            |           |           |           |            |           |            |
|----|-------------|-----------|-----------|-----------|-----------|-----------|-----------|------------|------------|------------|-----------|-----------|-----------|------------|-----------|------------|
| 4  | G2          | 92        | 76        | 80        | 20        | 24        | 22        | 113        | 100        | 116        | 55        | 48        | 60        | 282        | 32        | 314        |
| 5  | G2          | 99        | 90        | 82        | 18        | 18        | 20        | 116        | 104        | 122        | 56        | 50        | 64        | 264        | 61        | 325        |
| 6  | G2          | 101       | 92        | 90        | 22        | 26        | 20        | 101        | 114        | 120        | 42        | 51        | 60        | 279        | 40        | 319        |
| 7  | G2          | 104       | 87        | 94        | 20        | 21        | 18        | 108        | 112        | 120        | 53        | 56        | 54        | 275        | 31        | 306        |
| 8  | G2          | 96        | 90        | 90        | 26        | 24        | 20        | 109        | 118        | 124        | 56        | 54        | 62        | 256        | 28        | 284        |
| 9  | G2          | 82        | 90        | 86        | 18        | 22        | 18        | 121        | 120        | 122        | 61        | 60        | 60        | 304        | 44        | 348        |
| 10 | G2          | 89        | 94        | 90        | 24        | 20        | 22        | 99         | 112        | 124        | 44        | 62        | 64        | 285        | 43        | 328        |
| 11 | G3          | 94        | 110       | 86        | 24        | 18        | 20        | 103        | 110        | 110        | 51        | 58        | 50        | 284        | 56        | 240        |
| 12 | G2          | 72        | 84        | 76        | 20        | 24        | 22        | 119        | 110        | 114        | 60        | 60        | 48        | 267        | 67        | 334        |
| 13 | G2          | 76        | 80        | 72        | 22        | 20        | 20        | 124        | 116        | 114        | 59        | 64        | 56        | 273        | 41        | 314        |
| 14 | G2          | 82        | 80        | 76        | 20        | 22        | 20        | 121        | 126        | 120        | 63        | 52        | 54        | 236        | 79        | 315        |
| 15 | G3          | 90        | 92        | 90        | 18        | 20        | 18        | 113        | 118        | 124        | 57        | 56        | 56        | 292        | 54        | 346        |
| 16 | G2          | 78        | 96        | 80        | 16        | 20        | 18        | 117        | 110        | 120        | 58        | 50        | 50        | 252        | 83        | 335        |
| 17 | G2          | 81        | 82        | 86        | 26        | 18        | 22        | 114        | 112        | 130        | 62        | 56        | 62        | 209        | 24        | 233        |
| 18 | G2          | 85        | 90        | 80        | 20        | 22        | 20        | 111        | 110        | 128        | 49        | 54        | 60        | 247        | 68        | 315        |
| 19 | G3          | 79        | 86        | 76        | 24        | 22        | 20        | 109        | 98         | 114        | 56        | 46        | 54        | 248        | 72        | 320        |
| 20 | G2          | 83        | 90        | 70        | 22        | 18        | 18        | 115        | 124        | 110        | 47        | 68        | 50        | 216        | 70        | 286        |
| 21 | G2          | 80        | 84        | 86        | 20        | 18        | 20        | 118        | 120        | 116        | 58        | 60        | 52        | 206        | 49        | 255        |
| 22 | G3          | 84        | 80        | 72        | 24        | 20        | 20        | 125        | 116        | 124        | 65        | 62        | 52        | 310        | 59        | 369        |
| 23 | G2          | 92        | 100       | 80        | 24        | 22        | 18        | 101        | 110        | 108        | 49        | 60        | 54        | 249        | 55        | 304        |
| 24 | G3          | 90        | 94        | 82        | 20        | 20        | 20        | 107        | 110        | 122        | 54        | 56        | 60        | 209        | 76        | 285        |
| 25 | G2          | 89        | 90        | 80        | 22        | 18        | 16        | 104        | 126        | 118        | 58        | 62        | 58        | 221        | 38        | 259        |
|    | <b>2.24</b> | <b>89</b> | <b>86</b> | <b>83</b> | <b>22</b> | <b>21</b> | <b>20</b> | <b>112</b> | <b>113</b> | <b>119</b> | <b>57</b> | <b>57</b> | <b>58</b> | <b>260</b> | <b>50</b> | <b>310</b> |

**Table 3.1: Control Group**

| Sl. No. | Gravida     | Surgery   | Apgar      | Complications |
|---------|-------------|-----------|------------|---------------|
| 1       | G2          | 50        | 10         | 1             |
| 2       | G3          | 46        | 10         | 4             |
| 3       | G2          | 32        | 6          | 0             |
| 4       | G2          | 44        | 9          | 1             |
| 5       | G2          | 45        | 10         | 1             |
| 6       | G2          | 60        | 10         | 2             |
| 7       | G2          | 55        | 10         | 1             |
| 8       | G2          | 40        | 7          | 0             |
| 9       | G2          | 43        | 10         | 4             |
| 10      | G2          | 47        | 10         | 3             |
| 11      | G3          | 52        | 10         | 2             |
| 12      | G2          | 50        | 10         | 1             |
| 13      | G2          | 53        | 10         | 3             |
| 14      | G2          | 56        | 9          | 1             |
| 15      | G3          | 42        | 10         | 2             |
| 16      | G2          | 47        | 10         | 1             |
| 17      | G2          | 42        | 10         | 0             |
| 18      | G2          | 40        | 10         | 3             |
| 19      | G3          | 43        | 10         | 1             |
| 20      | G2          | 50        | 10         | 2             |
| 21      | G2          | 44        | 10         | 2             |
| 22      | G3          | 52        | 9          | 1             |
| 23      | G2          | 50        | 10         | 1             |
| 24      | G3          | 46        | 10         | 2             |
| 25      | G2          | 46        | 10         | 1             |
|         | <b>2.24</b> | <b>49</b> | <b>9.6</b> | <b>1.7</b>    |

**Table 3.2: Control Group**

| Sl. No. | Gravida     | HR (bpm)    |             |             | RR (cycles/min) |             |             | SYS BP (mmHg) |              |              | DIAS BP (mm Hg) |             |             | Blood Loss (mL) |             |              |
|---------|-------------|-------------|-------------|-------------|-----------------|-------------|-------------|---------------|--------------|--------------|-----------------|-------------|-------------|-----------------|-------------|--------------|
|         |             | PI          | 1hr         | 2hr         | PI              | 1hr         | 2hr         | PI            | 1hr          | 2hr          | PI              | 1hr         | 2hr         | 1hr             | 2hr         | Total        |
| 1       | G2          | 96          | 86          | 80          | 20              | 22          | 20          | 104           | 112          | 110          | 56              | 62          | 60          | 126             | 25          | 151          |
| 2       | G3          | 84          | 85          | 86          | 24              | 20          | 18          | 119           | 104          | 124          | 62              | 54          | 66          | 258             | 10          | 268          |
| 3       | G2          | 78          | 91          | 82          | 20              | 20          | 18          | 123           | 112          | 120          | 60              | 60          | 60          | 242             | 22          | 264          |
| 4       | G2          | 99          | 94          | 80          | 26              | 22          | 22          | 102           | 120          | 110          | 51              | 64          | 54          | 178             | 44          | 222          |
| 5       | G2          | 112         | 85          | 74          | 22              | 22          | 18          | 98            | 114          | 110          | 45              | 60          | 60          | 192             | 36          | 228          |
| 6       | G2          | 98          | 82          | 72          | 20              | 20          | 16          | 111           | 110          | 114          | 54              | 60          | 52          | 216             | 16          | 232          |
| 7       | G2          | 82          | 87          | 90          | 24              | 21          | 24          | 118           | 112          | 124          | 59              | 64          | 58          | 235             | 4           | 239          |
| 8       | G2          | 85          | 86          | 68          | 22              | 18          | 20          | 119           | 126          | 124          | 63              | 66          | 64          | 181             | 38          | 219          |
| 9       | G2          | 82          | 80          | 74          | 18              | 26          | 24          | 109           | 114          | 118          | 65              | 70          | 60          | 185             | 30          | 215          |
| 10      | G2          | 80          | 84          | 76          | 22              | 22          | 20          | 117           | 116          | 118          | 61              | 62          | 62          | 257             | 25          | 282          |
| 11      | G3          | 86          | 90          | 80          | 20              | 24          | 22          | 112           | 104          | 130          | 58              | 60          | 54          | 150             | 36          | 186          |
| 12      | G2          | 90          |             | 80          | 18              |             | 18          | 103           |              | 126          | 49              |             | 58          | 195             | 48          | 243          |
| 13      | G2          | 91          | 92          | 72          | 24              | 26          | 24          | 115           | 112          | 110          | 55              | 62          | 50          | 261             | 33          | 294          |
| 14      | G2          | 89          | 100         | 76          | 24              | 20          | 16          | 121           | 104          | 128          | 56              | 64          | 60          | 209             | 27          | 226          |
| 15      | G3          | 90          | 83          | 90          | 20              | 22          | 14          | 119           | 114          | 124          | 61              | 62          | 62          | 191             | 24          | 215          |
| 16      | G2          | 90          | 96          | 100         |                 | 24          | 22          | 121           | 112          | 120          | 62              | 72          | 58          | 163             | 25          | 188          |
| 17      | G2          | 94          | 91          | 90          | 22              | 20          | 18          | 118           | 100          | 128          | 66              | 52          | 60          | 185             | 22          | 207          |
| 18      | G2          | 92          | 80          | 76          | 26              | 18          | 20          | 112           | 108          | 124          | 62              | 50          | 64          | 177             | 28          | 205          |
| 19      | G3          | 88          | 82          | 82          | 22              | 22          | 24          | 113           | 118          | 106          | 64              | 58          | 58          | 208             | 28          | 236          |
| 20      | G2          | 76          |             | 80          | 18              |             | 22          | 134           |              | 122          | 59              |             | 60          | 178             | 25          | 203          |
| 21      | G2          | 72          | 86          | 74          | 26              | 20          | 20          | 125           | 114          | 118          | 61              | 60          | 64          | 231             | 29          | 260          |
| 22      | G3          | 86          | 80          | 96          | 20              | 22          | 26          | 116           | 110          | 120          | 55              | 60          | 60          | 174             | 34          | 208          |
| 23      | G2          | 90          | 78          | 82          | 24              | 20          | 20          | 115           | 120          | 110          | 57              | 64          | 50          | 202             | 35          | 237          |
| 24      | G3          | 74          | 84          | 94          | 24              | 20          | 20          | 110           | 122          | 116          | 61              | 66          | 54          | 167             | 24          | 191          |
| 25      | G2          | 92          | 84          | 82          | 20              | 22          | 16          | 109           | 120          | 126          | 62              | 68          | 60          | 160             | 26          | 186          |
|         | <b>2.24</b> | <b>87.8</b> | <b>86.4</b> | <b>81.4</b> | <b>21.9</b>     | <b>21.3</b> | <b>20.1</b> | <b>114.5</b>  | <b>113.7</b> | <b>119.6</b> | <b>58.6</b>     | <b>61.8</b> | <b>58.2</b> | <b>200.8</b>    | <b>27.6</b> | <b>228.5</b> |

**Table 4.1: Study Group**

| Sl. No. | Gravida     | Surgery Time (Mins) | Apgar      | Complications |
|---------|-------------|---------------------|------------|---------------|
| 1       | G2          | 47                  | 9          | 2             |
| 2       | G3          | 62                  | 10         | 2             |
| 3       | G2          | 50                  | 9          | 3             |
| 4       | G2          | 54                  | 10         | 2             |
| 5       | G2          | 43                  | 10         | 5             |
| 6       | G2          | 62                  | 10         | 3             |
| 7       | G2          | 45                  | 7          | 2             |
| 8       | G2          | 76                  | 10         | 0             |
| 9       | G2          | 36                  | 10         | 1             |
| 10      | G2          | 42                  | 9          | 2             |
| 11      | G3          | 45                  | 10         | 2             |
| 12      | G2          | 47                  | 10         | 1             |
| 13      | G2          | 52                  | 10         | 0             |
| 14      | G2          | 50                  | 10         | 1             |
| 15      | G3          | 40                  | 10         | 0             |
| 16      | G2          | 48                  | 9          | 1             |
| 17      | G2          | 62                  | 10         | 1             |
| 18      | G2          | 56                  | 10         | 2             |
| 19      | G3          | 53                  | 10         | 2             |
| 20      | G2          | 44                  | 10         | 1             |
| 21      | G2          | 60                  | 10         | 1             |
| 22      | G3          | 50                  | 8          | 2             |
| 23      | G2          | 54                  | 10         | 1             |
| 24      | G3          | 48                  | 10         | 2             |
| 25      | G2          | 50                  | 9          | 2             |
|         | <b>2.24</b> | <b>51</b>           | <b>9.6</b> | <b>1.8</b>    |

**Table 4.2: Study Group**

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