

## ORIGINAL ARTICLE

# Does an Increase in Maternal Age Affect the Placental Delivery Method in Cesarean Section

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**Background:** A caesarean section is a medical operation that involves making incisions in the belly and uterus to deliver a baby. This operation is typically carried out when specific complications arise during pregnancy or labour. Placental removal is one such technique that may affect the results of caesarean deliveries. Although there is currently no research on this, it is speculated that an increase in maternal age may have an impact on how the placenta is delivered.

**Methodology:** After ethical approval, this study was carried out at the gynaecology section of the Post Graduate Medical Institute at Lady Reading Hospital in Peshawar. The study involved 196 patients in total. The patients were split into two groups, A and B, at random using a lottery system. Group A involved those patients in whom the placenta was delivered spontaneously by controlled cord traction, whereas in Group B the placenta was removed manually. Based on age, patients were subcategorized as; 15-25; 26-35; 36-45 years. The approach utilised to acquire the samples was non-probability sequential sampling.

**Results:** Our study showed that in Group A, 34 (35%) patients were in the age range of 15-25 years; 42 (43%) patients were in the age range 26-35 years; 22 (22%) patients were in age range of 36-45 years. Mean age in group A was 25±2.77 years. Whereas in Group B, 34 (35%) patients were in the age range of 15-25 years; 44 (45%) patients were in age range of 26-35 years; 20 (20%) patients were in age range of 36-45 years. Mean age was 27±3.12 years. A significant difference was found when the effect of age on the method of placental delivery was evaluated in females aged 36-45 years.

**Conclusion:** Our study concluded that increase in maternal age decreases the rate of spontaneous removal of the placenta during cesarean deliveries.

**Keywords:** Placenta, Cesarean section, Term pregnancy, Spontaneous delivery.

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**Introduction**

When specific issues during pregnancy and childbirth emerge, a caesarean section (CS) is a life-saving treatment. It is the operation that is performed on women the most frequently.

The frequency of CS has increased globally, substantially above the rate of 10–15% of total births recommended by World Health Organization (WHO)(1, 2).

Being one of the most frequently performed obstetric operation does not mean that it's without any threat and danger(3). Morbidity associated with this procedure comprises of maternal anemia, hemorrhage, blood loss, infection, and other associated risks. In severe cases, major obstetric hemorrhage may result in hysterectomy, admission in intensive care unit (ICU), and in certain cases, even maternal death(4). The method of removing the placenta is one such technique that can greatly affect the outcomes of cesarean deliveries. Other factors influencing the occurrence of CS include the amount of blood lost both intra and postoperatively, the time required to perform CS, and the occurrence of postoperative endometritis. Cord traction and manual removal are the two

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common methods used by the obstetrician to deliver the placenta at CS. Controlled cord traction is a procedure in which the obstetrician performs gentle external uterine massage and traction on the exposed umbilical cord to ease placental delivery. Manual placental removal is a technique in which the obstetrician introduces her hand into the uterine cavity to separate the placenta from the decidua basalis as shortly as possible after the delivery of the infant(5)

Previously, a lot of studies were conducted on the correlation of advanced maternal age with the rate of CS, but no single study was conducted to find out the effect of an increase in maternal age on the method of placental delivery (6, 7). Usually, it is hypothesized that with increasing age and gravity, the rate of spontaneous delivery of the placenta in a cesarean section decreases. In Pakistan and other developing countries, the majority of couples want more children, especially in rural areas, and females even in their late thirties or mid-forties still get pregnant. Therefore, the aim of the present study was to determine the effect of age on the method of placental delivery in CS.

### Methodology

After ethical approval, this study was carried out in the Gynecology Department of the Post Graduate Medical Institute, Lady Reading Hospital, Peshawar. The study involved 196 patients in total. Following factors were used to determine sample size: P1 (spontaneous placenta removal) = 11.9%, P2 (manual placenta removal) = 28.57%, power of test = 90%, level of significance = 5%, and n=196.7 The patients were split into two groups, A and B, at random using a lottery system. Patients in Group A had controlled cord traction to deliver the placenta naturally, whereas those in Group B underwent manual placenta removal. Patients were divided into age groups based on their ages: 15–25; 26–35; and 36–45. The technique of non-probability sequential sampling was employed to acquire samples. All the pregnant ladies, who underwent CS, having age 15-45 years and period of gestation more than 37 weeks were included in the study. The study excluded patients with placenta previa, placental accrete, placental abruption, severe anemia, prolonged rupture of membranes, fever, hypertension, hepatic, renal, and clotting disorders. The confidentiality of the patients will be maintained(8-10)

### Statistical Analysis:

SPSS 20 was used to analyse the data. The mean and standard deviation of age were described (SD). The mechanism of placental delivery between the two study groups was compared using the Chi-Square test. A p-value of 0.05 or less was regarded as significant. Age stratification was used to examine effectiveness.

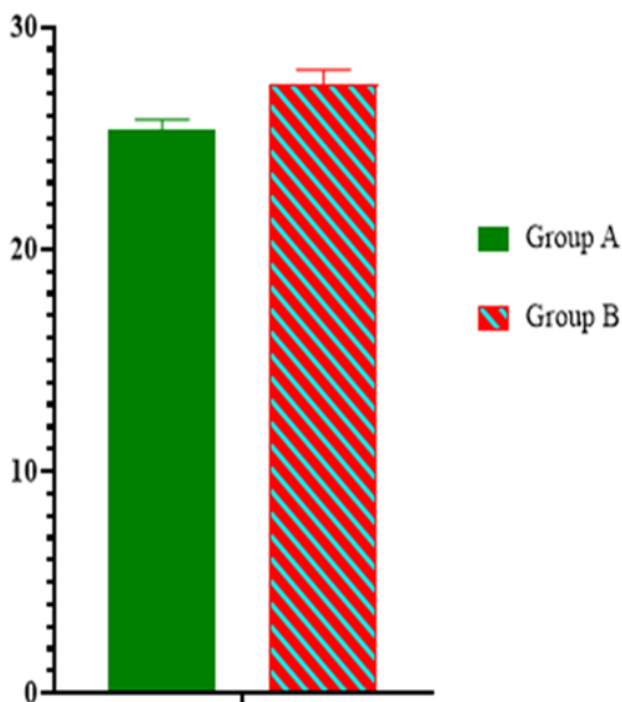
### Result

The effect of age was assessed on the technique of placental delivery in CS in this study, which was carried out at the Gynecology Department at Lady Reading Hospital with a total of 196 patients (98 in each group).

The age distribution of the two groups was analyzed as follows: 34 (35%) patients in Group A were between the ages of 15 and 25, 42 (43%) patients were between the ages of 26 and 35, and 22 (22%) patients were between the ages of 36 and 45 years. In Group B, 34 (35%) of the patients were between the ages of 15 and 25; 44 (45%) were between the ages of 26 and 35; and 20 (20%) were between the ages of 36 and 45 (Table 1).

When the effect of age on the method of placental delivery was evaluated in females aged 36-45 years, a significant difference was found, whereas the difference in method of placental delivery in females aged 15-25 and 26-35 years was not significant (Table 2). Mean age was  $25 \pm 2.77$  years in group A while it was  $27 \pm 3.12$  years in group B (Figure 1). Stratification of efficacy with respect to age is given in table 2.

**Figure 1:** Mean age of the participants



**Table 1:** Age of participants of the two groups, Group A - Cord traction method, Group B – Manual removal of Placenta.

Age (years)	Group A	Group B
15-25	34(35%)	34(35%)
26-35	42(43%)	44(45%)
36-45	22(22%)	20(20%)
<b>Total</b>	98(100%)	98(100%)
<b>Mean±SD</b>	25±2.77	27±3.12

**Table 2:** Stratification of efficacy with respect to age, Group A - Cord traction method, Group B – Manual removal of Placenta.

Age (years)	Efficacy	Group -A	Group -B	P-value
15-25	Effective	31	30	0.105
	Ineffective	3	4	
26-35	Effective	37	34	0.186
	Ineffective	5	10	
36-45	Effective	20	13	0.0410
	Ineffective	2	7	

### Discussion

This study's goal was to assess how age affected the way the placenta was delivered during CS. A significant difference was found when the effect of age on the method of placental delivery was evaluated in females of 3-45 years, indicating that an increase in maternal age decreases the rate of spontaneous delivery of placenta in CS, while the difference in females of 15-25 and 26-35 years was not significant.

It is previously established that older women have a higher risk of maternal morbidity than younger ones. CS typically poses greater risks than vaginal delivery. In comparison to women of the same age who give birth vaginally, researchers discovered that women 35 and older who have planned CS may have a double the risk for severe maternal morbidity. Hemorrhage, stroke, blood clots in the lungs, kidney, liver, and heart malfunction, as well as admission to the intensive care unit are among the maternal morbidities in the aforementioned age category (11).

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The advanced maternal age also has an impact on spontaneous placenta removal in CS. A deterioration in physiological processes, including those of the uterine musculature, genital tract, and hormonal system, is implied by an increase in maternal age in and of itself (12). There is evidence to suggest that the physical capacity to carry out sufficient uterine contractions continuously declines with age, thus raising the risk of labour dystocia (13, 14). As a result, the increased CS rate and decrease in the rate of spontaneous placental removal may be a result of associated comorbidities related with increased maternal age.

When compared to younger groups, women of advanced maternal age are more likely to utilise medical augmentation to treat labour dystocia, which denotes a uterus' diminished capacity to progress labour satisfactorily (15). Women between the ages of 35 and 39 had a twofold higher risk of labour dystocia than do women under the age of 25, according to Waldenstrom et al. When stratified by the women's first, second, and third pregnancies, this tendency persisted (16). Another factor that may contribute to the failure of spontaneous placental removal during CS in older women is labor dystocia.

Women with asthma are typically treated with a 2-agonist, which not only affects uterine smooth muscle 2-receptors but also those in the respiratory system. These medications frequently extend pregnancy when preterm labour develops or poses a concern because they also have tocolytic properties. In the human myometrium, the 2-adrenergic receptor (ADRB<sub>2</sub>) is predominant. Ritodrine and other beta-2 agonists reduce the activity of the myometrium by activating adenylyl cyclase via ADRB<sub>2</sub>. The outcome is the production of cytosolic cyclic adenosine monophosphate (cAMP), which activates protein kinases and phosphorylates membrane and cytosolic proteins. As a result, the connection between actin and myosin, a crucial component of cell contraction, is reduced, which lowers contractility (17, 18).

### **Conclusion**

Based on the results of the study it can be concluded that an increase in maternal age affects the spontaneous removal of placenta during cesarean deliveries.

### **Ethical approval and consent**

The study was approved by the institutional board of studies and informed consent was obtained from each participants included in the study.

### **Acknowledgment**

We thank the study subjects for participating in this study.

### **Disclosure**

The authors report no conflicts of interest.

### **Author's contributions**

LS was involved in the execution of the project. RN designed, executed the study. MS and AA helped in organization of data and did the statistical analysis. RF helped in the editing. All named authors have read and approved the final version of the manuscript.

### **Data availability**

Available from the corresponding author on reasonable request.

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