

## Original Research

### Comparison of different doses of oxytocin in augmentation of delayed labour

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#### ABSTRACT:

**Background:** Delayed labour progress is common in nulliparous women, and is among the leading indications for emergency caesarean section. The present study compared different doses of oxytocin in augmentation of delayed labour.

**Materials & Methods:** 76 pregnant females with gestational age between 37 weeks to 41 weeks were divided into two groups such as group I with high oxytocin (33.2mg) and group II with low oxytocin (16.6mg) in isotonic saline. Parameters such as fetal heart rate, cervical dilation, and uterine contractions were recorded. Spontaneous and instrumental vaginal births, labour duration, fever, hemorrhage, placenta removal and sphincter injury, tachysystole, total duration of infusing oxytocin, NICU admission and duration, metabolic acidosis, fetal distress, Apgar score of less than 4 or 7 at 5 minutes, and intrapartum thick meconium-stained amniotic fluid was recorded in both groups. **Results:** Group I used 33.2 mg high oxytocin and group II used 16.6 mg low oxytocin. Each group had 39 patients. Indication for caesarean section was fetal distress seen in 10 in group I and 12 in group II, progress failure in 29 in group I and 27 in group II. Vaginal birth was spontaneous seen 12 in group I and 15 in group II and instrumental seen 27 in group I and 24 in group II. Need for manual placenta removal was seen in 2 in group I and 4 in group II. NICU admission was seen in 4 in group I and 3 in group II, NICU stay was seen in 4.90 in group I and 5.16 in group II, mortality was seen in 1 in group I, metabolic acidosis in 3 in group I and 2 in group II, Apgar score less than 7 was seen in 1 in each group. The difference was non- significant ( $P > 0.05$ ).

**Conclusion:** There was no difference in the rates of the caesarean section for the high oxytocin or low oxytocin dose used in females with delayed labour.

**Key words:** Caesarean section, oxytocin, delayed labour

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#### INTRODUCTION

Delayed labour progress is common in nulliparous women, and is among the leading indications for emergency caesarean section (CS). Synthetic oxytocin is one of the most frequently used medications in obstetric care and the common routine for augmentation of labour.<sup>1</sup> However, the effectiveness of oxytocin for treating abnormal progress has been questioned. Despite that, over time an increased use of oxytocin during labour has been noted. An unstructured manner of using the drug prevails, and its use can lead to hyperactive uterine contractions, which have been associated with negative effects on the fetus.<sup>2</sup>

The physiological ways for atonic dystocia is labour augmentation using oxytocin. Augmentation of labour

refers to uterine contraction stimulation in subjects where spontaneous labour onset fails to affect cervix dilatation and effacement.<sup>3</sup> Titration is the only method to achieve oxytocin concentration for an individual uterus. High oxytocin dose relates to the lower rate of caesarean sections. However, safety concerns are associated with the use of high oxytocin doses. Low oxytocin doses are comparatively safe to high doses, but the efficacy of low dose oxytocin is questioned.<sup>4</sup> There is a great controversy regarding the optimal dose of oxytocin for its administration in labor augmentation. Although high dose oxytocin reduces the duration of labor, it can lead to uterine hypertonicity, uterine rupture, and fetal hypoxia. On the other hand, although low dose oxytocin seems to be safer, it may be not efficient enough for labor delay

management.<sup>5</sup> The present study compared different doses of oxytocin in augmentation of delayed labour.

**MATERIALS & METHODS**

This study consisted of 76 pregnant females with gestational age, between 37 weeks to 41 weeks. They were made part of the study with the approval form institutional ethical committee and written consent from all females.

Demographic data was recorded. Patients were divided into two groups such as group I with high oxytocin (33.2mg) and group II with low oxytocin

(16.6mg) in isotonic saline. Parameters such as fetal heart rate, cervical dilation, and uterine contractions were recorded. Spontaneous and instrumental vaginal births, labour duration, fever, hemorrhage, placenta removal and sphincter injury, tachysystole, total duration of infusing oxytocin, NICU admission and duration, metabolic acidosis, fetal distress, Apgar score of less than 4 or 7 at 5 minutes, and intrapartum thick meconium-stained amniotic fluid was recorded in both groups. Results were compared in both groups. P value less than 0.05 was considered significant.

**RESULTS**

**Table I Distribution of patients**

Groups	Group I	Group II
Dose	33.2 mg high oxytocin	16.6 mg low oxytocin
Number	39	39

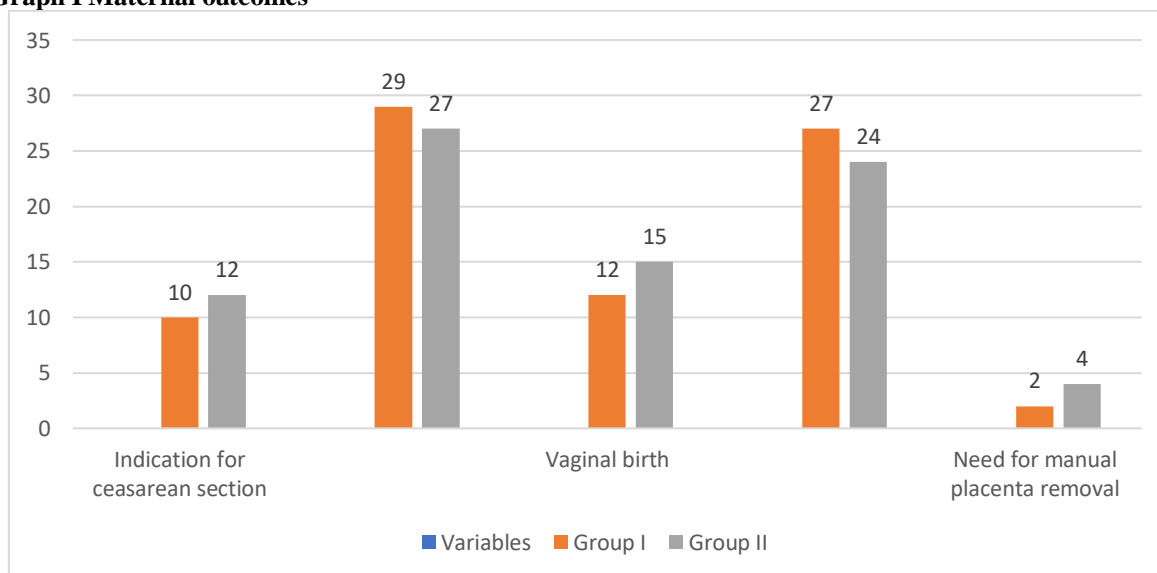
Table I shows that group I used 33.2 mg high oxytocin and group II used 16.6 mg low oxytocin. Each group had 39 patients.

**Table II Maternal outcomes**

Parameters	Variables	Group I	Group II	P value
Indication for cesarean section	Fetal distress	10	12	0.93
	Progress failure	29	27	
Vaginal birth	Spontaneous	12	15	0.81
	Instrumental	27	24	
Need for manual placenta removal		2	4	0.01

Table II, graph I shows that indication for cesarean section was fetal distress seen in 10 in group I and 12 in group II, progress failure in 29 in group I and 27 in group II. Vaginal birth was spontaneous seen 12 in group I and 15 in group II and instrumental seen 27 in group I and 24 in group II. Need for manual placenta removal was seen in 2 in group I and 4 in group II. The difference was non-significant (P> 0.05).

**Graph I Maternal outcomes**



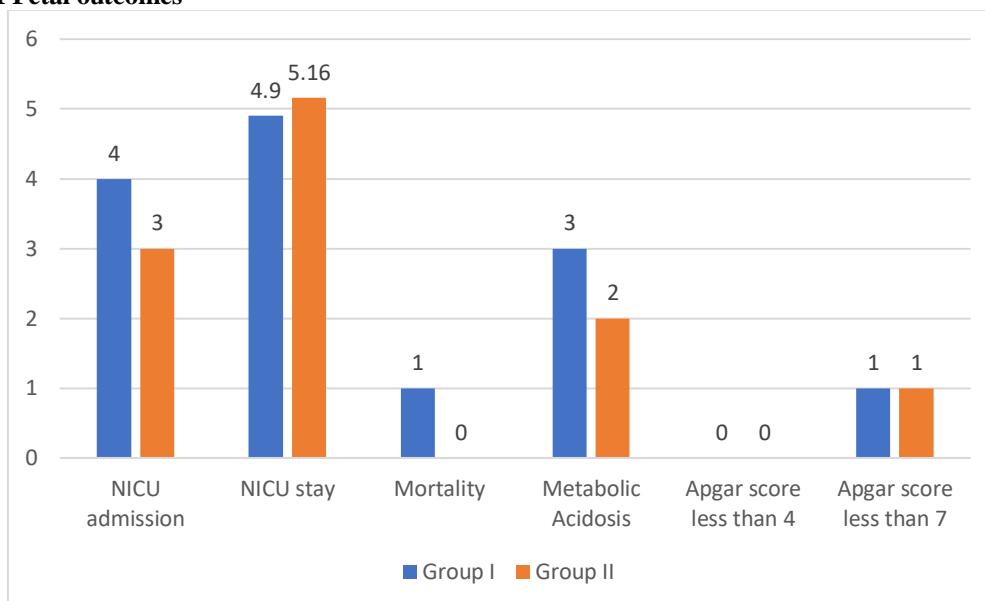
**Table III Fetal outcomes**

Variables	Group I	Group II	P value
NICU admission	4	3	0.80
NICU stay	4.90	5.16	0.16
Mortality	1	0	0.08
Metabolic Acidosis	3	2	0.12

Apgar score less than 4	0	0	0
Apgar score less than 7	1	1	1

Table III, graph II shows that NICU admission was seen in 4 in group I and 3 in group II, NICU stay was seen in 4.90 in group I and 5.16 in group II, mortality was seen in 1 in group I, metabolic acidosis in 3 in group I and 2 in group II, Apgar score less than 7 was seen in 1 in each group. The difference was non- significant ( $P > 0.05$ ).

**Graph II Fetal outcomes**



**DISCUSSION**

Caesarean section has increased in various countries recently with double rates in the past 10 years. This increase is more than what is recommended (5-15%). As per the data of 1998 caesarean section in India had a rate of 7.1% with the annual changes of 16.7%. These changes are among one the highest changes in any country.<sup>6</sup> These increases in the caesarean section are seen in both in developed as well as developing countries. This has warranted various interventions to limit caesarean sections globally without compromising fetal or maternal health.<sup>7</sup> This increasing trend can be owing to uterine atony, which is the most common cause of labour dystocia.<sup>8</sup> Delay in the labour comprises the major factor leading to emergency intervention by caesarean section and is commonly seen in the nulliparous females. Despite the questionable efficacy of its use, as time passes, oxytocin use in labour has increased. In Obstetrics and Gynaecology, routinely administered medication for augmentation of labour is synthetic oxytocin.<sup>9,10</sup> The present study compared different doses of oxytocin in augmentation of delayed labour.

In present study, group I used 33.2 mg high oxytocin and group II used 16.6 mg low oxytocin. Each group had 39 patients. Irrinki et al<sup>11</sup> in their study in 80 nulliparous females, Caesarean sections were carried out in 80% (n=32) females in both low and high oxytocin groups. The main reason for C-section was the failure to progress to labour in both low oxytocin (62.5%, 25) and high oxytocin (55%, 22) groups. Labour duration was short for the high oxytocin group

(742±207) by 24 minutes. No difference was seen in the two groups concerning the fetal outcomes concerning any assessed parameter. A significantly lower dose was used in the low oxytocin group (5.72±5.56) than the high oxytocin group (7.96±8.31). We found that indication for caesarean section was fetal distress seen in 10 in group I and 12 in group II, progress failure in 29 in group I and 27 in group II. Vaginal birth was spontaneous seen 12 in group I and 15 in group II and instrumental seen 27 in group I and 24 in group II. Need for manual placenta removal was seen in 2 in group I and 4 in group II. Selin et al<sup>12</sup> assessed effect on caesarean section rate of high-dose versus low-dose oxytocin for augmentation of delayed labour in nulliparous women. 1295 women were included in intention-to-treat analysis (high-dose n = 647; low-dose n = 648). Caesarean section rates did not differ between groups (12.4% and 12.3%). Women with high-dose oxytocin had: shorter labours (23.4min); more uterine tachysystole (43.2% versus 33.5%); similar rates of instrumental vaginal births, with more due to fetal distress (43.8% versus 22.7%) and fewer due to failure to progress (39.6% versus 58.8%). There were no differences in neonatal outcomes.

We observed that NICU admission was seen in 4 in group I and 3 in group II, NICU stay was seen in 4.90 in group I and 5.16 in group II, mortality was seen in 1 in group I, metabolic acidosis in 3 in group I and 2 in group II, Apgar score less than 7 was seen in 1 in each group. Aboshama et al<sup>13</sup> in their study eight RCTs with 3,154 patients were included. High dose

oxytocin did not reduce cesarean delivery rate compared to low dose oxytocin (OR=0.76, 95% CI [0.52, 1.10], p=0.15). After solving the reported heterogeneity, high dose oxytocin did not increase the rate of spontaneous vaginal deliveries vs. low dose oxytocin (OR=1.06, 95% CI [0.84, 1.32], p=0.64). Low dose oxytocin was linked to a significant decline in uterine hyperstimulation and tachysystole (p>0.001). A reduction in labor duration was found in high dose oxytocin group over low oxytocin regimen.

## CONCLUSION

Authors found that there was no difference in the rates of the caesarean section for the high oxytocin or low oxytocin dose used in females with delayed labour.

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