

## COMPARISON OF DIFFERENT DOSES OF OXYTOCIN IN AUGMENTATION OF DELAYED LABOUR

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### Abstract

**Background:** To compare different doses of oxytocin in augmentation of delayed labour. **Materials and Methods:** Sixty- four pregnant women with gestational age between 37 weeks to 41 weeks were divided into two groups of 32 each. Group I patients received 32.2 mg oxytocin and group II received 16.6 mg with low oxytocin in isotonic saline. Parameters such as indication for cesarean section, vaginal birth, need for manual placenta removal and Apgar score was recorded. **Result:** Vaginal birth was spontaneous seen 10 in group I and 14 in group II and instrumental seen 22 in group I and 18 in group II. Indication for cesarean section was fetal distress seen in 13 in group I and 15 in group II and progress failure in 19 in group I and 17 in group II. Need for manual placenta removal was seen in 3 in group I and 5 in group II. The difference was significant ( $P < 0.05$ ). Metabolic acidosis was observed in 4 in group I and 3 in group II, NICU admission was seen in 5 in group I and 4 in group II, NICU stay was 5.2 days in group I and 6.5 days in group II, mortality was seen in 2 in group I and 1 in group II, Apgar score  $< 4$  was seen in 1 in group II and  $< 7$  was seen in 2 in each group. The difference was non-significant ( $P > 0.05$ ). **Conclusion:** Results in both groups were comparable. 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.

## INTRODUCTION

Augmentation of labour is the process of stimulating the frequency, duration, and intensity of uterine contractions after the onset of labour either by intravenous oxytocin infusion or artificial rupture of membranes, and it is used to treat prolonged labour and potentially avert caesarean section (CS). Delayed labour progress is common in nulliparous women, and is among the leading indications for emergency caesarean section (CS).<sup>[1]</sup>

Synthetic oxytocin is one of the most frequently used medications in obstetric care and the common routine for augmentation of labour.<sup>[2]</sup> Over time an increased use of oxytocin during labour has been noted. The physiological ways for atonic dystocia is labour augmentation using oxytocin.<sup>[3]</sup> Titration is the only method to achieve oxytocin concentration for an individual uterus.<sup>[4]</sup> 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>[5]</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>[6]</sup> Considering this, we planned present study to compare different doses of oxytocin in augmentation of delayed labour.

## MATERIALS AND METHODS

A sum total of sixty- four pregnant women with gestational age between 37 weeks to 41 weeks were enrolled in this study. They gave their written approval in written and permission from institutional ethical committee was also obtained. Demographic data of each patient was recorded. Patients were divided into two groups of 32 each. Group I patients received 32.2 mg oxytocin and group II received 16.6 mg with low oxytocin in isotonic saline. Parameters such as indication for cesarean section, vaginal birth, need for manual

placenta removal and Apgar score was recorded. Results were compiled and assessed using Mann Whitney U test with level of significance set below 0.05.

## RESULTS

Vaginal birth was spontaneous seen 10 in group I and 14 in group II and instrumental seen 22 in group I and 18 in group II. Indication for cesarean section was fetal distress seen in 13 in group I and 15 in group II and progress failure in 19 in group I and 17 in group II. Need for manual placenta removal was seen in 3 in group I and 5 in group II. The difference was significant ( $P < 0.05$ ) [Table 1].

Metabolic acidosis was observed in 4 in group I and 3 in group II, NICU admission was seen in 5 in group I and 4 in group II, NICU stay was 5.2 days in group I and 6.5 days in group II, mortality was seen in 2 in group I and 1 in group II, Apgar score  $< 4$

was seen in 1 in group II and  $< 7$  was seen in 2 in each group. The difference was non-significant ( $P > 0.05$ ) [Table 2, Figure 1].

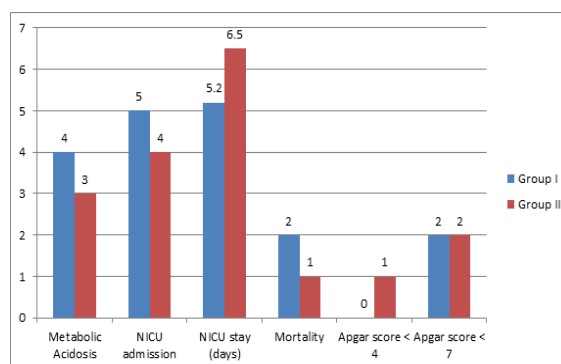


Figure 1: Comparison of fetal outcomes in both groups

Table 1: Assessment of maternal outcomes

Parameters	Variables	Group I	Group II	P value
Vaginal birth	Spontaneous	10	14	0.04
	Instrumental	22	18	
Indication for cesarean section	Fetal distress	13	15	0.82
	Progress failure	19	17	
Need for manual placenta removal		3	5	0.01

Table 2: Comparison of fetal outcomes in both groups

Parameters	Group I	Group II	P value
Metabolic Acidosis	4	3	0.91
NICU admission	5	4	0.84
NICU stay (days)	5.2	6.5	0.12
Mortality	2	1	0.05
Apgar score $< 4$	0	1	0.05
Apgar score $< 7$	2	2	1

## DISCUSSION

Augmentation of labour refers to uterine contraction stimulation in subjects where spontaneous labour onset fails to affect cervix dilatation and effacement. Delay in the labour comprises the major factor leading to emergency intervention by caesarean section and is commonly seen in the nulliparous females.<sup>[7]</sup> Although augmentation of labor may be effective to shorten the first and second stages of labor, little to no effect has been demonstrated on CS rates. During uterine contractions, the maternal spiral arteries are compressed and placental perfusion is strangulated.<sup>[8]</sup> As oxytocin increases the intensity of uterine contractions and decreases the resting time between contractions, it has been suggested that augmentation of labor with oxytocin increases the risk of fetal asphyxia.<sup>[9,10,11]</sup> We planned present study to compare different doses of oxytocin in augmentation of delayed labour.

There were 10 spontaneous vaginal birth in group I and 14 in group II and instrumental seen 22 in group I and 18 in group II. Indication for cesarean section was fetal distress seen in 13 in group I and 15 in group II and progress failure in 19 in group I and 17 in group II. Need for manual placenta removal was

seen in 3 in group I and 5 in group II. Litorp et al,<sup>[12]</sup> conducted a study which consisted of 78 931 women, of whom 28 915 (37%) had labor augmented with oxytocin and 50 016 (63%) did not have labor augmented with oxytocin. Women with augmentation of labor had no increased risk of intrapartum stillbirth and first-day mortality but decreased risks of suboptimal partograph use, suboptimal fetal heart rate monitoring and emergency caesarean section and increased risks of bag-and-mask ventilation, Apgar score  $< 7$  at 5 minutes and neonatal death.

Our results revealed that metabolic acidosis was observed in 4 in group I and 3 in group II, NICU admission was seen in 5 in group I and 4 in group II, NICU stay was 5.2 days in group I and 6.5 days in group II, mortality was seen in 2 in group I and 1 in group II, Apgar score  $< 4$  was seen in 1 in group II and  $< 7$  was seen in 2 in each group. Selin et al,<sup>[13]</sup> determined 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 (23.4 minutes); 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.

Irrinki et al,<sup>[14]</sup> included 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. A significantly lower dose was used in the low oxytocin group (5.72±5.56) than the high oxytocin group (7.96±8.31). 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.

## CONCLUSION

Results in both groups were comparable. 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.

## REFERENCES

- Jamal A, Kalantari R. High and low dose oxytocin in augmentation of labor. *Int J Gynaecol Obstet.* 2004;87(1):6-8. doi: 10.1016/j.ijgo.2004.06.004.
- Goetzl L, Shipp TD, Cohen A, Zelop CM, Repke JT, Lieberman E. Oxytocin dose and the risk of uterine rupture in trial of labor after cesarean. *Obstet Gynecol.* 2001;97(3):381-4. doi: 10.1016/s0029-7844(00)01171-6.
- Kenyon S, Tokumasu H, Dowswell T, Pledge D, Mori R. High-dose versus low-dose oxytocin for augmentation of delayed labour. *Cochrane Database Syst Rev.* 2013;(7):CD007201. doi: 10.1002/14651858.CD007201.pub3.
- Mori R, Tokumasu H, Pledge D, Kenyon S. High dose versus low dose oxytocin for augmentation of delayed labour. *Cochrane Database Syst Rev.* 2011;(10):CD007201. doi: 10.1002/14651858.CD007201.pub2.
- Opiyo N, Young C, Requejo JH, Erdman J, Bales S, Betrán AP. Reducing unnecessary caesarean sections: scoping review of financial and regulatory interventions. *Reprod Health.* 2020;17(1):133. doi: 10.1186/s12978-020-00983-y.
- Davey MA, King J. Caesarean section following induction of labour in uncomplicated first births- a population-based cross-sectional analysis of 42,950 births. *BMC Pregnancy Childbirth.* 2016;16:92. doi: 10.1186/s12884-016-0869-0.
- Uvnäs Moberg K, Ekström-Bergström A, Buckley S, Massarotti C, Pajalic Z, Luegmair K, et al. Maternal plasma levels of oxytocin during breastfeeding-A systematic review. *PLoS One.* 2020;15(8):e0235806. doi: 10.1371/journal.pone.0235806.
- Majoko F. Effectiveness and safety of high dose oxytocin for augmentation of labour in nulliparous women. *Cent Afr J Med.* 2001;47(11-12):247-50. doi: 10.4314/cajm.v47i11.8624.
- Wei SQ, Luo ZC, Qi HP, Xu H, Fraser WD. High-dose vs low-dose oxytocin for labor augmentation: a systematic review. *Am J Obstet Gynecol.* 2010;203(4):296-304. doi: 10.1016/j.ajog.2010.03.007.
- Kenyon S, Tokumasu H, Dowswell T, Pledge D, Mori R. High-dose versus low-dose oxytocin for augmentation of delayed labour. *Cochrane Database Syst Rev.* 2013;(7):CD007201. doi: 10.1002/14651858.CD007201.pub3.
- Aboshama RA, Abdelhakim AM, Shareef MA, AlAmodi AA, Sunoqrot M, Alborn NM, et al. High dose vs. low dose oxytocin for labor augmentation: a systematic review and meta-analysis of randomized controlled trials. *J Perinat Med.* 2020;49(2):178-190. doi: 10.1515/jpm-2020-0042.
- Litorp H, Sunny AK, Kc A. Augmentation of labor with oxytocin and its association with delivery outcomes: A large-scale cohort study in 12 public hospitals in Nepal. *Acta Obstet Gynecol Scand.* 2021;100(4):684-693. doi: 10.1111/aogs.13919.
- Selin L, Wennerholm UB, Jonsson M, Dencker A, Wallin G, Wiberg-Itzel E, et al. High-dose versus low-dose of oxytocin for labour augmentation: a randomised controlled trial. *Women Birth.* 2019;32(4):356-363. doi: 10.1016/j.wombi.2018.09.002.
- Irrinki. Comparison of high dose oxytocin with low dose oxytocin in augmentation of delayed labour. *Int J Health Clin Res.* 2021; 4(21):309-312.