

## ORIGINAL RESEARCH

**Augmentation of delayed labour using different doses of oxytocin**<sup>1</sup>Dr.LalitaYadav, <sup>2</sup>Dr. Jyoti Sengar, <sup>3</sup>Dr.Shruti Maheshwari

Assistant Professor, National Capital Region Institute of Medical Sciences, Nalpur, Uttar Pradesh, India

**Corresponding author**

Dr. LalitaYadav

Assistant Professor, National Capital Region Institute of Medical Sciences, Nalpur, Uttar Pradesh, India

Received: 15 December, 2022

Accepted: 10 January, 2023

**ABSTRACT**

**Background:** Prolonged labour is a substantial reason for maternal and perinatal morbidity and mortality. The present study evaluated augmentation of delayed labour using different doses of oxytocin.

**Materials & Methods:** 160 pregnant women with gestational age ranging from 37 weeks - 41 weeks were divided into 2 groups of 80 each. Group I were prescribed oxytocin high dose and group II oxytocin low dose in isotonic saline. Parameters such as mode of delivery indication for caesarean section, vaginal birth, NICU admission, NICU stay, mortality, metabolic acidosis, Apgar score less than 4, Apgar score less than 7 was recorded.

**Results:** Indication for caesarean section was fetal distress seen in 11 in group I and 14 in group II, progress failure in 29 in group I and 26 in group II. Vaginal birth was seen in 27 women in group I and 25 in group II and instrumental seen 13 in group I and 15 in group II. Need for manual placenta removal ( $P > 0.01$ ) was seen in 4 in group I and 8 in group II. Other parameter the difference was non-significant ( $P > 0.05$ ). APGAR score  $< 7$  was seen in 2 in group I and 4 in group II. NICU admission duration was seen in 5 in group I and 4 in group II, Average NICU stay duration was seen in 4.2 days in group I and 5.4 in group II, mortality was seen in 2 in group I and 1 in group II and metabolic acidosis was seen in 4 in group I and 3 in group II. The difference was non-significant ( $P > 0.05$ ).

**Conclusion:** Both high oxytocin or low oxytocin dose used in females with delayed labour exhibited similar results.

**Key words:** oxytocin, labour, Women

**Introduction**

Prolonged labour is a substantial reason for maternal and perinatal morbidity and mortality.<sup>1</sup>The causes of prolonged labour include abnormal fetal presentation, inadequate bony pelvis, poor uterine contractions, and maternal soft tissue abnormalities.<sup>2</sup> Prolonged or delayed labour has become one of the main indications for caesarean section. Caesarean section is a very common procedure nowadays, thus, exploring less invasive interventions is very crucial to limit the rates of caesarean delivery.<sup>3</sup> Labour augmentation has commonly been used when poor uterine contractions are responsible for the delayed labour. It stimulates the uterus to increase the duration, frequency, and intensity of contractions after spontaneous labour onset. Intravenous oxytocin infusion and amniotomy are traditional methods used for labour augmentation.<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 questionable.<sup>5</sup> There is a great controversy regarding the optimal dose of oxytocin for its administration in labour augmentation.<sup>6</sup> Although high dose oxytocin reduces the duration of labour, it can lead to uterine hypertonicity, uterine rupture, and fetal hypoxia. Although low dose oxytocin seems to be safer, it may be not efficient enough for labour

delay management.<sup>7</sup>The present study evaluated the labour & immediate neonatal outcome in augmentation of delayed labour using different doses of oxytocin.

### Materials & methods

This study consisted of 160 pregnant women with singleton pregnancy, vertex presentation, no previous scar on uterus, gestational age ranged 37 weeks - 41 weeks. All were informed regarding the study and their written consent was obtained.

Data such as name, age etc. was recorded. Patients were divided into 2 groups of 80 each. Group I were prescribed oxytocin (high dose) and group II oxytocin (low dose) in isotonic saline. Parameters such as Indication for caesarean section, vaginal birth, NICU admission, NICU stay, mortality, metabolic acidosis, Apgar score less than 4, Apgar score less than 7 was recorded. Results were recorded and subjected to statistical analysis. P value less than 0.05 was considered significant.

### Results

**Table I Assessment of maternal outcomes**

Parameters	Variables	Group I	Group II	P value
Indication for caesarean section	Fetal distress	11	14	0.81
	Progress failure	29	26	
Vaginal birth	Spontaneous	27	25	0.89
	Instrumental	13	15	
Need for manual placenta removal		4	8	0.01

Table I shows that indication for caesarean section was fetal distress seen in 11 in group I and 14 in group II, progress failure in 29 in group I and 26 in group II. Vaginal birth was spontaneous seen 27 in group I and 25 in group II and instrumental seen 13 in group I and 15 in group II. Need for manual placenta removal was seen in 4 in group I and 8 in group II. The difference was non- significant ( $P > 0.05$ ). except for need for manual placenta removal.

**Graph I Assessment of fetal outcomes**

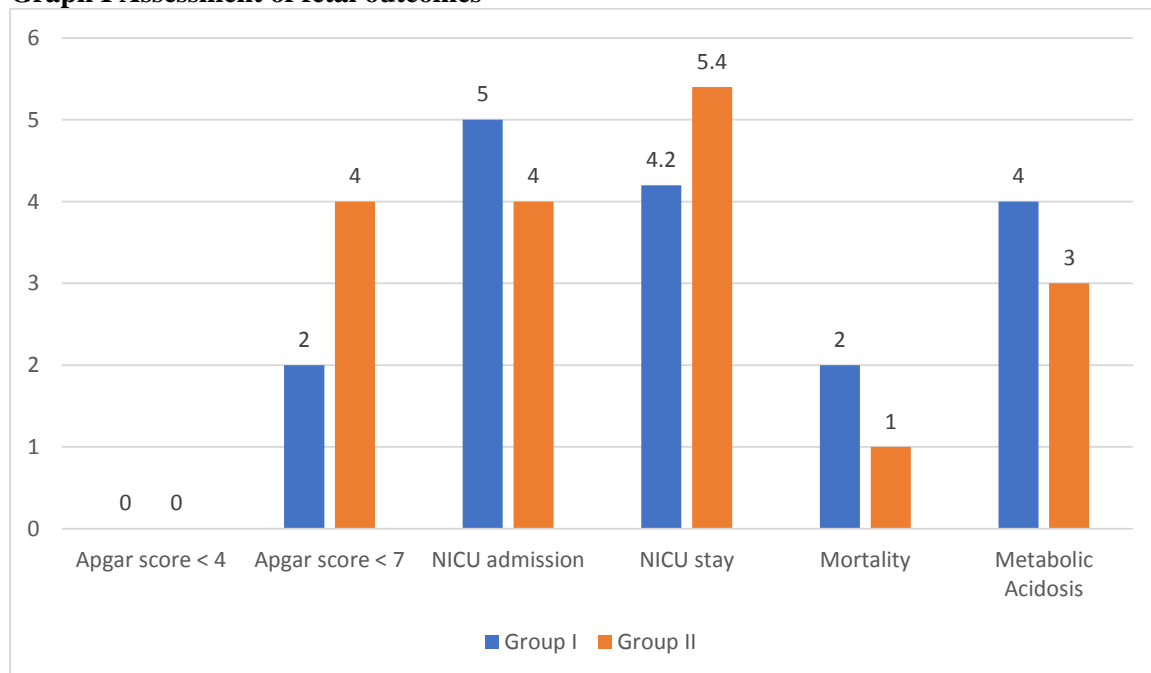


Table II, graph I shows that APGAR score < 7 was seen in 2 in group I and 4 in group II. NICU admission was seen in 5 in group I and 4 in group II, NICU stay was seen in 4.2 in group I and 5.4 in

group II, mortality was seen in 2 in group I and 1 in group II and metabolic acidosis was seen in 4 in group I and 3 in group II. The difference was statistically non-significant ( $P > 0.05$ ).

**Table II Assessment of fetal outcomes**

Parameters	Group I	Group II	P value
Apgar score < 4	0	0	0
Apgar score < 7	2	4	0.05
NICU admission	5	4	0.92
NICU stay	4.2	5.4	0.85
Mortality	2	1	0.72
Metabolic Acidosis	4	3	0.65

## Discussion

Delayed labour progress is common in nulliparous women, and is among the leading indications for emergency caesarean section. Synthetic oxytocin is one of the most frequently used medications in obstetric care and the common routine for augmentation of labour.<sup>8</sup> However, the effectiveness of oxytocin for treating abnormal progress has been questioned.<sup>9</sup> 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>10</sup> Delay in the labour comprises the major factor leading to emergency intervention by caesarean section and is commonly seen in the nulliparous females.<sup>11</sup> The present study evaluated augmentation of delayed labour using different doses of oxytocin. In our study caesarean rate was 50 percent the indication.

We found that indication for caesarean section was fetal distress seen in 11 in group I and 14 in group II, progress failure in 29 in group I and 26 in group II. Vaginal birth was spontaneous seen 27 in group I and 25 in group II and instrumental delivery seen 13 in group I and 15 in group II. Need for manual placenta removal was seen in 4 in group I and 8 in group II. Majokoet al<sup>12</sup> compared high and low starting dose of oxytocin infusion for effectiveness and safety in augmentation of labour in nulliparous women. 133 were randomized to the low and 125 to the high starting oxytocin dose groups. The groups were comparable for maternal and gestational age. There was no difference in mean cervical dilatation before augmentation of labour; six cm in both groups. The mean augmentation to delivery interval was shorter in the high dose group, 218 versus 326 minutes. There was no difference in the mode of delivery and fetal outcome in terms of birthweight, five minutes Apgar score, admission to neonatal unit and perinatal death.

We observed that APGAR score < 7 was seen in 2 in group I and 4 in group II. NICU admission was seen in 5 in group I and 4 in group II, NICU stay was seen in 4.2 in group I and 5.4 in group II, mortality was seen in 2 in group I and 1 in group II and metabolic acidosis was seen in 4 in group I and 3 in group II. Irrinkiet al<sup>13</sup> in their study 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 foetal 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). Litorpet al<sup>14</sup> consisted of 78 931 women, of whom 28 915 (37%) had labour augmented with oxytocin and 50 016 (63%) did not have labour augmented with oxytocin. Women with augmentation of labour had no increased risk of intrapartum stillbirth and first-day mortality (aRR 1.24, 95% CI 0.65-2.4), but decreased risks of suboptimal partograph use (aRR 0.71, 95% CI 0.68-0.74), suboptimal fetal heart rate monitoring (aRR 0.50, 95% CI 0.48-0.53), and emergency cesarean section (aRR 0.62, 95% CI 0.59-0.66), and increased risks of bag-and-mask ventilation (aRR 2.1, 95% CI 1.8-2.5), Apgar score <7 at 5 minutes (aRR 1.65, 95% CI 1.49-1.86), and neonatal death (aRR 1.93, 95% CI 1.46-2.56).

## Conclusion

Authors found that both high oxytocin or low oxytocin dose used in females with delayed labour exhibited similar results.

**References**

1. Kenyon S, Tokumasu H, Dowswell T, Pledge D, Kenyon S, Mori R, High dose Versus low dose oxytocin for augmentation of delayed labour. *Cochrane Database of Systematic Reviews* 2013;7:7201.
2. Ghidini A, Wohlleb D, Korker V, Pezzullo JC, & Poggi SH. *Open Journal of Obstetrics and Gynecology*, 2012; 2:106-11.
3. Shu-Qin Wei, Zhang-Chang Luu, Hui-Ping Q, Harirong XU, Fraser WD. High-dose vs low-dose oxytocin for labour augmentation: A systematic review. *AJOG* 2010;203:296-304.
4. Kenyon S, Tokumasu H, Dowswell T, Pledge D, Mori R. High- dose versus low- dose oxytocin for augmentation of delayed labour. *Cochrane Database of Systematic Reviews*. 2013(7).
5. Opiyo N, Young C, Requejo JH, et al. Reducing unnecessary caesarean sections: Scoping review of financial and regulatory interventions. *Reprod Health* 2020;17:133.
6. Davey M-A, 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.
7. UvnäsMoberg 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;5:0235806.
8. Jamal A, Kalantari R. High and low dose oxytocin in augmentation of labour. *Int J ObstetGynaecol* 2004;87:6-8.
9. Goetzl L, Shipp TD, Cohen A, et al. Oxytocin dose and the risk of uterine rupture in the trial of labour after caesarean. *ObstetGynecol* 2001;97:381-384.
10. Selin L, Wennerholm UB, Jonsson M, Dencker A, Wallin G, Wiberg-Itzel E, Almström E, Petzold M, Berg M. High-dose versus low-dose of oxytocin for labour augmentation: a randomised controlled trial. *Women and Birth*. 2019 Aug 1;32(4):356-63.
11. Aboshama RA, Abdelhakim AM, Shareef MA, AlAmodi AA, Sunoqrot M, Alborn NM, Gadelkarim M, Abbas AM, Bakry MS. High dose vs. low dose oxytocin for labour augmentation: a systematic review and meta-analysis of randomized controlled trials. *Journal of Perinatal Medicine*. 2021 Feb 1;49(2):178-90.
12. Majoko F. Effectiveness and safety of high dose oxytocin for augmentation of labour in nulliparous women. *Cent Afr J Med* 2001;47:247-50.
13. Irrinki et al. Comparison of high dose oxytocin with low dose oxytocin in augmentation of delayed labour. *International Journal of Health and Clinical Research* 2021; 4(21):309-312.
14. Litorp H, Sunny AK, Kc A. Augmentation of labour with oxytocin and its association with delivery outcomes: A large- scale cohort study in 12 public hospitals in Nepal. *ActaobstetriciaetgynecologicaScandinavica*. 2021 Apr;100(4):684-93.