

MEAN DURATION OF LABOR AFTER DROTAVERINE HYDROCHLORIDE INJECTION IN THE PRIMIGRAVID WOMEN PRESENTING IN THE ACTIVE PHASE OF LABOR

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ORIGINAL ARTICLE

Background: The process of hastening labor involves stimulating the uterus to enhance the frequency, duration, and intensity of contractions once active phase of labor has begun. Drotaverine is an effective drug for treating spasms of the smooth muscles. However, its efficacy in shortening the duration of labor in primigravidas is not well-established in the local settings. **Objective:** Determining the mean duration of labor after Drotaverine hydrochloride injection in primigravid women presenting in the active phase of labor at a tertiary care hospital. **Methodology:** This caseseries study was undertaken from Feb 2023 till Dec 2023, at department of Obs and Gyne Swat Medical College Saidu Shareef Swat. The study included 150 patients who were already in the active phase of labor with cervical dilation of 3 to 5 cm with 2 to 3 uterine contractions lasting for at least 30 seconds every 10 minutes. All patients received a 40 mg injection of Drotaverine hydrochloride intramuscularly at 3 to 5 cm dilation. Then, patients were monitored until delivery, and the duration of labor from the time of injection until delivery was noted. **Results:** The mean age of the patients was 23.67 + 3.23 years. The mean length of first, second, and third stage of labor was 4.34±0.094 hours, 22.07±4.25 minutes, and 10.42±3.35 minutes, respectively. The total duration of labor was 4.94±0.33 hours.

Conclusion: Drotaverine hydrochloride effectively reduced the average length of labor in the primigravidas presented in the active phase of labor. Therefore, it can be administered to alleviate spasms and accelerate cervical dilatation, thereby facilitating safe and prompt delivery, and reducing the incidence of feto-maternal complications.

INTRODUCTION

Labor is a natural physiological process of childbirth which consists of uterine contractions, cervical ripening and dilation, and the expulsion of the fetus through the vagina¹. Globally, health-care providers practice active management of labor, especially in primigravid women who face a higher risk of prolonged labor, with the aim of minimizing duration of labor and its related maternal and fetal adverse outcomes such as fetal distress, perinatal asphyxia, shoulder dystocia, prolonged hospital stay, postpartum hemorrhage, and infection²⁻⁴. In primigravid women, the first stage of labor usually lasts approximately 12-16 hours⁵. Cervical spasm, leading to the cervical dystocia, is a major cause of prolonged

labor⁶. To mitigate prolonged labor, use of antispasmodic agents is advisable to expedite the first stage of the labor, along with amniotomy and prompt administration of oxytocin⁷⁻¹⁰. Spasmolytic agents such as Drotaverine hydrochloride, Hyoscine butylbromide, Dicyclomine, and Valethamate bromide assist in relieving cervical spasm and promoting cervical dilatation^{2,11-13}. Drotaverine hydrochloride is a newer musclopastic spasmolytic drug and a type IV phosphodiesterase inhibitor, that is claimed to shorten labor duration by reducing cervical spasm¹⁴. In a study by Gupta et al., the mean duration of labor after Drotaverine hydrochloride injection was found to be 4.48 ± 2.26 h, with no fetal and mat-

ernal complications¹¹. However, a Cochrane review identified low-quality evidence indicating that spasmolytic agents shorten the 1st stage of labor and increase the rate of cervical dilatation. It also found low-quality evidence showing that these drugs might reduce the total duration of labor, but there was inadequate evidence regarding the safety of these drugs⁷. Additionally, data is lacking regarding the impact of Drotaverine hydrochloride in reducing the duration of labor in Pakistan. So, this study intended to analyze the mean duration of labor after administering Drotaverine hydrochloride to primigravid women presenting in the active phase of labor at a tertiary care hospital.

MATERIAL AND METHODS:

Study design: Descriptive case-series study.

Settings: This study was undertaken at department of Obs and Gyne Swat Medical College Saidu Shareef Swat

Duration: It was accomplished in 10 months (from Feb 2023 till Dec 2023,)

Sample size: A sample size of 150 was estimated with a 95% confidence level, a 1% margin of error, and a mean duration of labor of 4.48 + 2.26 hours following Drotaverine hydrochloride injection in primigravida women presenting in the active phase of labor¹¹.

Sampling technique: Purposive technique was used for sampling. **Sample selection criteria:** **Inclusion criteria:** Patients aged 18-36 years with a gestational age of ≥ 36 weeks, having a single fet-us with cephalic presentation confirmed by ultra-sound, and already in the active phase of

Table 1: Baseline features of patients(n=150)

Features	Mean \pm SD
Age of patients (years)	23.67 + 3.23
Gestational age (weeks)	38.26 + 1.26
Cervical dilatation (cm)	4.32 \pm 1.15

Table 1: n = number of patients; SD = standard deviation; cm = centimeter

The mean duration of labor after receiving Drotaverine hydrochloride injection is shown in table 2. The mean duration of 1st, 2nd, and 3rd stages of labor was 4.34 \pm 0.094 hours, 22.07 \pm 4.25 minutes, and 10.42 \pm 3.35 minutes, respectively. The mean total duration of labor was 4.94 + 0.33 hours.

Table 2: Duration of labor after receiving Drotaverine hydrochloride injection

labor with cervical dilation of 3 to 5 cm with 2 to 3 uterine contractions lasting for at least 30 seconds every 10 minutes. **Exclusion criteria:** Patients with a borderline pelvis, cephalopelvic disproportion, and pregnancy complications such as gestational hypertension and gestational diabetes mellitus. **Data collection procedure:** After obtaining authorization from the official committee and permission from the patients, 150 patients were included in the study. Sociodemographic information was noted on a pre-designed questionnaire. All patients received a 40 mg injection of Drotaverine hydrochloride intramuscularly at 3 to 5 cm dilation by a single nurse. Then, patients were monitored until delivery, and the duration of labor from the time of injection until delivery was noted. **Statistical analysis:** All the collected information was analyzed through SPSS version 25. Age, gestational age, cervical dilatation, and duration of labour was calculated and presented as mean and standard deviation.

RESULTS:

The current study included 150 patients, with baseline features exhibited in table 1. The mean age of the patients was 23.67 + 3.23 years. The mean gestational age at the time of presentation was 38.26 + 1.26 weeks. The mean cervical dilation at the time of presentation was 4.32 \pm 1.15 cm. The minimum dilation was 3.22 cm and the maximum dilation was 4.96 cm.

Variables	Mean ± SD
Duration of 1st stage of labor (hours)	4.34 + 0.094
Duration of 2nd stage of labor (minutes)	22.07 + 4.25
Duration of 3rd stage of labor (minutes)	10.42 + 3.35
Total duration of labor (hours)	4.94 + 0.33

Table 2: SD = standard deviation

DISCUSSION:

Prolonged labor is multifactorial and is associated with adverse fetomaternal outcomes. It is more common in primigravid women, increasing the likelihood of cesarean delivery and other complications. However, normal vaginal delivery has always been preferred for its socioeconomic benefits. Therefore, various pharmacological and physiological methods are available to lessen the duration of labor and facilitate normal vaginal delivery. These include amniotomy, the use of oxytocin and different spasmolytic drugs. Drotaverine hydrochloride is a relatively new spasmolytic drug used to reduce muscle spasms. However, its efficacy in lessening the duration of 1st stage of labor is not well established in local settings, which necessitated conducting the current study. This study was intended to analyze the mean duration of labor after Drotaverine hydrochloride injection in primigravid women presenting in the active phase of labor. The current study documented that the mean duration of the 1st stage of labor was 4.34 ± 0.094 hours, and the mean total duration of labor was 4.94 ± 0.33 hours. Multiple studies have reported the impact of Drotaverine hydrochloride injection on the duration of labor^{12, 13, 15, 16}. Loke et al. reported that administration of Drotaverine hydrochloride, in the active phase of labor, effectively reduced the length of labor by promoting the cervical dilatation¹⁷. Similarly, a study performed in Lahore, Pakistan, also revealed that Drotaverine hydrochloride shortened the duration of the first stage of labor. The duration of the 1st stage of labor was 206.80 ± 24.45 minutes following the administration of Drotaverine hydrochloride injection¹⁶.

Another study validated the findings of this study, showing that the first stage of labor was shortened by 15% and the second stage by 19% after administering Drotaverine hydrochloride¹⁵. One more study reported that the mean length of the active phase of labor was 4.21 ± 1.98 hours after Drotaverine hydrochloride injection², comparable to the findings of the current study. Aslam also documented that the length of the active phase of labor was 2.08 ± 0.82 hours, compared to 3.10 ± 0.86 hours in the control group¹⁸. An Indian study also supported the outcomes of the current study. It reported that the length of 1st stage of labor, in patients receiving Drotaverine hydrochloride, was 3.34 ± 1.09 hours¹⁹. Shahid et al. revealed that the average length of active phase of labor was 203.77 ± 8.21 minutes in patients receiving Drotaverine hydrochloride²⁰. These results are in agreement with those of the current study. Nevertheless, the present study also had some limitations. Firstly, the small sample size narrowed down the generalizability of the results. Secondly, no control group was included in the study, limiting the causal link between the treatment and the outcome. A larger case-control study should be performed to ascertain the findings of the current study.

CONCLUSION:

In conclusion, Drotaverine hydrochloride effectively reduced the mean length of labor in the primigravidas presented in the active phase of labor. Therefore, it can be administered to alleviate spasms and accelerate cervical dilatation, thereby facilitating safe and prompt delivery, and

reducing the incidence of feto-maternal complications.

Author's contribution

ZAK: Idea conception, Data collection, main write up

SKK: Data collection, write up

MU: Literature collection, discussion

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