

# Comparision of Buscopan and Epidosin on Cervical Dialatation in Labour

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**Abstract- Purpose:** Prolong labour contributes to increased perinatal and maternal morbidity. Inhibitory impulses in the form of spasm often impair the dilatation of cervix and prolong the duration of labour. This study was undertaken to compare the effect of intramuscular Valathemate bromide [Epidosin] and Hyoscine N Butylbromide [Buscopan] rectal suppository on duration of labour and rate of cervical dilatation. **Methods:**Two hundred women with full term preganancy in active labour were divided randomly into two groups. Group A received Buscopan 10mg suppository rectally and group B received intramuscular Epidosin. **Results:**Among primigravidae the mean duration of active phase of labour was 179.43 minutes and 163.84 minutes in group A and B respectively. Among multigravidae the mean duration of active phase of labour was 156.7 minutes and 130.68 minutes minutes in group A and B respectively. Transient side effects like tachycardia were seen with Epidosin which was significant clinically as well as statistically ( $p < 0.0001$ ). **Conclusion:** Both Buscopan and Epidosin are comparable in reducing the duration of active phase of labour and rate of cervical dilatation. Buscopan because of its convenience of administration (as rectal suppository) can be an alternative in rural setups where trained medical personnel may not be available most of the times.

**Keywords-** Hyoscine N Butylbromide (Buscopan); Epidosin Cervical dilatation; Active phase; Delivery.

## I. INTRODUCTION

Prolonged labour contributes to increased perinatal and maternal morbidity. There is an increased incidence of maternal distress, postpartum haemorrhage and sepsis.[1] The foetus is exposed to a higher risk of infection and asphyxia. Inhibitory impulses in the form of spasm often impair the dilatation of cervix and prolong the duration of labour. There is also an increased incidence of medical intervention. Active management of labour, as conceptualised by Prof. O' Driscoll [1], has been widely accepted and shown to be beneficial [2]. Amniotomy, with the judicious use of oxytocin, has been shown to be beneficial in augmenting labour. Various other methods have also been used to augment labour and have been evaluated in studies.[3] This study was undertaken to compare the effect of intramuscular Valathemate bromide and Hyoscine N Butylbromide rectal suppository on duration of labour and rate of cervical dilatation.

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## II. METHODS

The college ethical committee approval was obtained before the commencement of the study. Informed consent from the patients was obtained for enrollement into the study. Two hundred women with full term preganancy in active labour were divided randomly using random number table into two groups. Group A received Buscopan 10mg suppository rectally when the patient was having regular uterine contractions and cervix 3cms dilated. The drug dosage was repeated every hour up to a maximum of three doses and the cervical dilatation was assessed. Group B received injection Epidosin intramuscularly at ½ hourly intervals for 3 doses (max, 5 doses) when patients were having regular uterine contractions and cervix was 3-4 cms dilated. Each group was further divided into two groups consisting of 50 primigravid patients and 50 multigravid patients. All multi and primigravidae aged 16-35 years inactive phase of labour with regular established uterine contractions with vertex presentation and adequate pelvis were included. Preterm and PROM were also included. Abnormal presentations like breech, associated obstetric complications like severe preclampsia, placenta praveia, and abruptio placenta , multiple pregnancies, medical disorders like heart disease and previous caesarean section were excluded. Any side effects such as tachycardia, dryness of mouth, flushing, headache, hypotension, nausea, vomiting, and pain at injection site were noted and treated accordingly. After the delivery of the placenta, cervix and the vagina were inspected to exclude any trauma to the cervix. The primary end point of study was end of second stage of labour and a healthy baby. Total duration of active phase of labor, rate of cervical dilatation, Mode of delivery, Induction delivery interval, any complication in the 3rd stage and neonatal condition at birth was recorded in every patient. Progress of Labor was plotted graphically in Partogram Artificial rupture of membranes was done at the onset of active stage of labour that is at 3- 4 centimeteres of cervical dilatation and bishop score of more than six. Oxytocin was started when there were no regular uterine contractions. . Continous fetal heart monitoring was done throughout the active stage of labour.

### Statistical analysis

In the present study, the data collected was analyzed by computing percentages, proportions, mean and standard deviation. The statistical inference was derived by computing the Z'test for difference between two mean values and the difference between two proportions. The

way analysis of variance, Mann-Whiney or Wil Coxon test wherever applicable. A  $P$  value  $<0.05$  was taken as significant.

### III. RESULTS

Maternal characteristics were comparable in the two groups [Table1]. Among primigravidae the mean duration of active phase of labour was 179.43 minutes and 163.84 minutes in group A and B respectively. The rate of cervical dilatation was 2.53 cms/hr, and 2.86 cms/hr in group A and B respectively which was statistically significant. ( $p=0.05$ ). Among multigravidae the mean duration of active phase of labour was 156.7 minutes and 130.68 minutes in group A and B respectively. Among primigravidae the mean rate of cervical dilatation in group A and group B was 2.53 cm/hr and 2.86 cm/hr respectively. Among multigravidae the mean rate of cervical dilatation in group A and group B was 2.98 cm/hr and 3.26 cm/hr respectively. The difference between both the groups among primigravidae ( $p<0.02$ ) and among multigravidae ( $p<0.001$ ) was statistically significant. Among primigravidae 4% of group A and 2% of group B underwent LSCS, the indication being fetal distress. 6% in group A and 10% of group B had instrumental delivery, the indication being fetal distress as diagnosed by continuous fetal heart monitoring and maternal exhaustion. Among multigravidae 2% of patients in both group A and group B underwent LSCS, the indication being fetal distress in one patient and failure to progress in the other. 6% of group B had instrumental delivery, the indication being fetal distress. No significant differences in the duration of 2<sup>nd</sup> and 3<sup>rd</sup> stages were noted following administration of both the drugs. There was no increase in the incidence of 3<sup>rd</sup> stage complications like PPH, retained placenta and cervical tears. Transient side effects like tachycardia were seen with Epidosin which was significant clinically as well as statistically ( $p<0.0001$ ). The average rise in pulse rate was 30 bpm and the tachycardia persisted for 20-25 minutes. There were no significant neonatal complications like low apgar score, respiratory depression or increased incidence of NICU admissions in both the groups.

### IV. DISCUSSION

In modern obstetrics as per professor O.Driscoll (1973) labour should be managed actively. For active management of labour along with good uterine contractions, simultaneous cervical dilatation and softening are required. But inspite of good uterine contractions, the cervical dilatation may be hampered due to inhibitory impulse in the form of spasm.[1] Cervical ripening, expressed as a remodeling of the cervical connective tissue, has been proven to be necessary for an uncomplicated vaginal delivery. Recent biochemical evidence also suggests that the cervix could obstruct labor by a sustained spasm due to insufficient connective tissue remodeling. While various immunohistochemical studies concentrate upon collagen type remodeling and stabilization, it is a known fact that upto 10-15% of the nonpregnant cervix is constituted by smooth muscle fibres[3] Studies have also shown that besides a decrease in fibrous

connective tissue in the cervix at term, there is an increase in the proportions of smooth muscle fibres, which also become dissociated and hypertrophic, and are aligned in a particular direction[3]. These studies, relating to the presence of smooth muscle fibers in the cervix logically support the role of antispasmodics and smooth muscle relaxants in helping the cervix to dilate. Valathemate bromide and hyoscine butylbromide are two such smooth muscle relaxants with different mechanisms of actions. Various methods have been used to reduce the duration of labour like early amniotomy, [4] intravaginal administration of relaxin [5], cervilaxin conjunction with oxytocin, [6] drotavarine hydrochloride injection [7] and valathemate bromide[8] Studies showed the various uses and modes of action of hyoscine butyl bromide in obstetrics and gynecology, and it was found that most prompt action occurred with intravenous and suppository routes, optimal time of administration was at 2.5-3 cm cervical dilatation and no significant side effects were observed with up to 30 mg dose[2] Hyoscine butylbromide or Scopalamine hydrochloride is 6,7-Epoxy-8-butyl-3-(S)-tropoyloxy tropamine bromide and is a quaternary derivative of atropine which acts as an anticholinesterase. It acts on the muscarinic receptors of the smooth muscles and competes for the receptor sites with acetylcholine. Being a quaternary ammonium derivative, it does not readily cross the blood brain barrier, so central effects, if any, are rare. Also, there are no known fetal effects of this compound. Valethamate bromide is one of the drugs of the group of cervical antispasmodics, Efosin. It belongs to a group of esters with quaternary N atom with a formula  $CH_3-CH_2-CH_3-C_6H_5-COO-CH_2-CH_3N(C_2H_5)_2$  Br i.e., 1-phenyl - 2 methyl - valerianic acid - diethyl 1 amino - ethyl ester - bromomethylate [3, 20, 32], is a potent rapidly acting anticholinergic and musculotropic agent. It is a synthetic analogue of atropine, which has been found to relieve spasm by its parasympatholytic action and results in cervical dilatation.[8] Our study demonstrates that effective shortening of the duration of labour was achieved without any significant detrimental effects to the mother and the new born. The results were comparable to other studies.[Table 2,3]. Both the drugs were equally effective in achieving the end result. Hence both the drugs can be used in modern obstetrics to relieve spasm and hasten the rate of cervical dilatation and thereby promoting safe delivery.

### V. CONCLUSION

Both Buscopan and Epidosin are comparable in reducing the duration of active phase of labour and rate of cervical dilatation. Buscopan because of its convenience of administration (as rectal suppository) can be an alternative in rural setups where trained medical personnel may not be available most of the times.

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**Table 1:** Comparison between both the groups

Variable	Group A		Group B		p value*	
	Primi	Multi	Primi	Multi	Primi	Multi
Age(years)	23.16	26.58	22.38	27.74	>0.05	>0.05
Gestational age(weeks)	38.64	38.48	38.5	39.6	>0.05	>0.05
Initial cervical dilatation(cms)	3.32	3.46	3.60	3.42	>0.05	>0.05
Artificial rupture of membranes (%)	80	98	70	94	>0.05	>0.05
Oxytocin augmentation (%)	44	46	40	44	>0.05	>0.05
Epidural analgesia (%)	8	2	6	0	>0.05	>0.05

\*p value &gt;0.05 not significant

**Table 2** Rate of cervical dilatation in various studies

Study	Primigravida	Multigravida
Bhan et al[9] with epidosis	1.05 cm/hr	2.71 cm/hr
Ghaisas et al[10] with epidosis	1.32cm/hr	-
Tewari et al [11]with epidosis	1.89cm/hr	2.52cm/hr
Tewari et al[11] with buscopan	2.74cm/hr	2.76cm/hr
Present study with epidosis	2.86cm/hr	3.46cm/hr
Present study with buscopan	2.53cm/hr	2.98cm/hr

Table 3 Duration of Active phase of labour in various studies

Study	Primigravida	Multigravida
Bhan et al[9]	4.99hrs	1.75 hrs
Ghiasas et al[10] with epidosin	4hr33min	-
Tewari et al[11] with epidosin	2hrs	2hr31min
Tewari et al[11] with buscopan	2hr11 min	1hr41min
Sirohiwal et al[12] with buscopan	2hr3min	-
Present study with epidosin	2hr43min	2hr10 min
Present study with buscopan	2hr59 min	2 hr11 min