



A comparative study of Misoprostol with continuous Oxytocin infusion in Induction of Labor

Dr. Sandhya Khurana

Assistant Professor, HNB, Base Teaching Hospital, Srikot, Srinagar VCSGIMS&R. Srikot, Srinagar Pauri Garhwal, Uttarakhand, India

Abstract

Objectives: To compare the efficacy & safety of continuous Oxytocin infusion & sublingual Misoprostol.

Design: A prospective randomised study.

Setting: Labor room of the department of Obs. & Gynaecology in V.C.S.G.G.I.M.S. & R. Srinagar in Pauri - Garhwal Uttarakhand.

Method: A randomised study was conducted on 100 labor patients including both primigravida & multigravida with singleton pregnancy of 38 weeks or more; cephalic presentation & no reason for elective caesarean section. Two groups A & B were formed with 50 patients in each group. In group A labor was induced with continuous oxytocin infusion. 5 units of oxytocin was given in 500 ml. of dextrose at the rate of 10 drops/minute. The infusion rate was doubled every 20 minutes till the patient had uterine contraction lasting more than 30 seconds & with uterine contraction coming every 3 minutes or infusion rate reaching 40 drops/ min. In group B 50 micrograms of misoprostol was given sublingually; next dose was given after 6 hours. If no uterine contractions after 12 hours; a third dose was given. In either case if duration of uterine contraction exceeded 45 seconds or fetal heart irregularities occurred the next dose of misoprostol was temporarily stopped. In case of oxytocin infusion i.e., group A patients the oxytocin infusion was temporarily discontinued to avoid hyper stimulation of uterus.

Result: Statistically, induction of labor was better with misoprostol as compared to oxytocin. The onset of labor was quicker; patient compliance better, induction delivery interval was shorter & 3rd stage blood loss was less in patients with misoprostol induction as compared to the ones induced with oxytocin. Caesarean delivery rate was also less in misoprostol group. There was no difference in perinatal outcome.

Keywords: Statistically, perinatal, blood, oxytocin

Introduction

Induction of labor is initiation of uterine contractions after the period of viability in order to deliver the baby especially when the risk either to the mother or to baby is more if the pregnancy is continued. Statistically around 25% of all pregnant patients require induction of labor e.g. in

1. Postdated pregnancy
2. Pregnancy with hypertension
3. Intrauterine growth retardation
4. Gestational diabetes mellitus
5. H/O previous term stillbirth &
6. Patient living far away from hospital & transportation at odd hours is difficult as in hilly areas of Uttarakhand etc.

Role of oxytocin infusion in establishing the onset of labor or its augmentation is well known. Since early 90s a pharmacological analogue of PGE1 has been tried for induction of labor. The drug is cheap; can be stored at room temperature; rapidly absorbed after sublingual & vaginal administration & has very few side effects. Being an analogue & not the actual PGE1 it is slowly metabolised & hence has higher potency & longer duration of action.

Procedure

The study was conducted on 100 cases both primigravida & multigravida. Informed consent of the patient was taken. Following precautions were taken

1. All cases were more than 38 weeks of pregnancy
2. Multiple pregnancy was excluded
3. Malpresentation was ruled out
4. No cephalopelvic disproportion
5. No previous cesarean section
6. No case of prematurity & PROM
7. Maternal diseases like cardiac, renal & severe anaemia were excluded.

And also fetal complications like Intrauterine fetal death, congenital malformations, hydramnios were excluded. Before starting induction of labor detailed history like age, parity, antenatal care & pregnancy complications, if any, were recorded. General physical & systemic examination was done. Per abdomen examination was done to assess the *et al.* lie, presentation, position & FHR were noted. Per vaginal examination was done to assess the cervical score & to rule out cephalopelvic disproportion.

Routine lab investigations Hb, BG & Rh, platelet count, & random blood sugar levels were done. Complete urine examination & serological screening for VDRL, HIV, HCV, & Hbs Ag was done. Routinely low enema was given in all cases.

Study Design

All cases were randomly allotted to 2 groups (A & B) of 50 patients each. Group A cases were started with 5 units of oxytocin in 500ml. of dextrose at the rate of 10 drops/min. intravenous infusion. The rate of oxytocin drip was doubled every 20 minutes until establishment of uterine contractions i.e., one contraction lasting more than 30 seconds every 3 minutes or infusion rate of 40 drops/minute reached. In group B misoprostol induction was initiated with 50 micrograms of misoprostol administered sublingually & if no pain ensued another 50 micrograms of misoprostol administered sublingually after 6 hours. A total of 3 doses of misoprostol given maximally till uterine contractions were established i.e., one contraction every 3 minutes lasting more than 30 seconds. Progress of labor was monitored in both groups by assessing maternal & fetal status clinically: Pulse rate, hydration, temperature, uterine contractions (frequency, intensity & duration) recorded. B.P. was recorded 4 hourly or earlier if necessary; FHR recorded every 30 minutes or earlier as the labor progressed & every abnormality noted carefully. Low amniotomy was done at 5 cm stage of cervical dilatation & colour of liquor recorded. Per vaginum examination was done 2-4 hourly. Cervical dilatation, station & rotation of fetal head or any meconium staining of liquor taken into consideration. In case of uterine hyperstimulation or fetal heart irregularity oxytocin infusion or next dose of misoprostol withheld temporarily & restarted only after uterus gets relaxed in between contractions & FHR becomes normal. Caesarean section was done if fetal heart remained abnormal & immediate vaginal delivery was not possible.

Comparison between two study groups

Relationship of cervical score and mode of delivery in group A & group B

Table 1

Variable	Group A	Group B
Age (years)	21-32	19-33
Parity (no.)	Primi- 16 Multi- 34	Primi- 22 Multi- 28
Gestational age	38-41 wks	39-41 wks
Bishop Score	<4 27 (pts) >4 23 (pts)	<4 28 (pts) >4 22 (pts)
Induction Contraction time	1.5-2 hrs (median)	0.5-1hr (median)
Induction delivery time in cases that progressed to vaginal delivery	11.5 hrs (median)	7.5 hrs (median)
LSCS (for failed Induction)	6	2
Average APGAR Score of baby at one minute	9	8
PPH	5	2

Table 2

Bishop Score	Group A		Group B	
	VD	LSCS	VD	LSCS
<4	24	4	26	2
>4	20	2	22	0

Result

In either study group patients with cervical score >4 showed better results. Of the two drugs i.e., misoprostol & oxytocin; with misoprostol the onset of labor was earlier, duration of labor shorter, caesarean delivery lesser & no difference in fetal outcome & decreased 3rd stage haemorrhage & PPH.

Discussion

In Obstetric practice sometimes situations arise when continuation of pregnancy may jeopardise the Intrauterine life of fetus or the mother or both & for a favorable outcome uterine contractions are initiated once the baby has attained viability in order to deliver the baby before the patient herself goes into spontaneous labor & the process is called induction of labor. Around 25% of all pregnancies require induction of labor for various reasons like hypertension complicating pregnancy, pregnancy with diabetes mellitus, previous IUFD at term, IUGR etc. Earlier oxytocin infusion was the standard procedure. Recently for the past 20 years a pharmacological analogue of PGE1 -- misoprostol has been tried for induction of labor. The action is similar to PGE2 i.e., initiation & augmentation of uterine contractions. The drug is cheap, easily stored at room temperature, rapidly absorbed after sublingual or vaginal administration, higher potency than oxytocin & longer duration of action. In order to analyse the safety & efficacy of misoprostol vis-a-vis oxytocin a comparative study was done. Two batches of patients were selected 1st batch given continuous oxytocin infusion & 2nd batch given S/L misoprostol. It was observed that with misoprostol the onset of labor was quicker, duration of labor shortened & caesarean rate was less as compared to oxytocin. Fetal outcome & postpartum was similar in both groups. Induction of labor was better in patients with cervical score >4. Hence misoprostol administration was found to give comparatively better result than oxytocin in all aspects of labor with a good cervical score adding to better outcome.

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