

# Prospective Evaluation of Changes in Bishop's Score in Induction of Labour with PGE 2 Gel.

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**Summary :** A prospective evaluation in 101 subjects of changes in Bishop's score in induction of labor with PGE2 gel is being presented. The initial Bishop's score at the first insertion was having a significant influence over the success of induction. There was a progressive, smooth & consistent change in Bishop's score in whom induction was successful at first insertion. In those subjects in whom re-insertion was required, the behaviour of Bishop's score was inconsistent and erratic. Subjects with lower Bishop's score at first induction had a lower IDI. Parity had a more distinct influence in reducing the IDI when the initial Bishop's score was low.

## Introduction

Bishop's score for assessment of clinical status pre-induction has been of great help to the obstetricians. Cervix in labor is now accepted as a separate and distinct entity in the physiology of labor. It is no more thought to be a passive conduit between the uterus and the vagina. Its responses are no more thought to be passive and secondary to the uterine activity. Though cervix acts in symphony with the uterus for successful outcome of labor it doesn't lose its unique identity and physiology. It is therefore very relevant to specifically study changes in the cervix following labour inducing agents. Bishop's score is accepted as a time-honored and sensitive system for objectively studying these changes since a long time (Calder et al - 1973). Many workers have studied the changes in Bishop's score following induction with PGE2 gel as a part of a larger design of their study (Daftary et al 1994, Nawani M et al, 1995) These have usually been broad based observations. The present prospective study specifically zeroes down on the Bishop's score itself. This has helped us in studying the changes in this scoring system in different situations like - on single insertion, on reinsertion, influence of parity etc. Results so obtained have been thoroughly analyzed & discussed in the light of current Indian literature on the subject.

## Subject and Methods :

This is prospective analysis carried out in unit III/IV in the Department of Obstetrics & Gynecology S.S.G. Hospital & Medical College Baroda over a period of one and a half years. All subjects included in the study fulfilled the following criteria.

1. Weeks of gestation > 28 weeks
2. Singleton pregnancy
3. Cephalic presentation
4. Reactive NST in cases where the baby was alive.

The list of indications for induction both maternal or fetal as well as the contraindications which were observed for this study have been tabulated in table 1.

**Table - 1**  
**Indications - Contraindications**  
**Indications of Induction**

<b>Maternal</b>	<b>Fetal</b>
1. Pregnancy induced hypertension	1. Post-datism
2. Chronic hypertension	2. IUGR
3. Eclampsia	3. Chronic placental insufficiency
4. Intra uterine fetal death	4. Oligohydramnios
5. Congenital malaria of fetus	5. Unexplained IUGR in present preg.
6. Chronic renal disease	6. Rh Isoimmunization
7. Diabetes mellitus	7. Unstable Lie at term after correcting it in longitudinal lie.
8. Cumulative factors such as maternal age.	

**Contra indications :**

1. Previous uterine scar
2. Cephalo-pelvic disproportion
3. Grand multipara
4. Fetal distress
5. Premature rupture of membranes
6. Abruptio placentae
7. H/O Asthma, epilepsy
8. Pelvic tumor
9. Placenta previa
10. Pregnancy following a repair of vesico-vaginal fistulas.

Before introduction of intra-cervical PGE2 gel cervical examination was done and Bishop's score was a principle objective; only subjects with scores 4 or less were included for induction & labour.

Once the Bishop's scoring was done, intra-cervical PGE2 gel was introduced by the standard applicator taking care that the nozzle did not go beyond the internal os. Once introduced, Bishop's score was recorded at every 4 hourly interval. If the subject did not go into active labour or the Bishop's score remained less than 5 after 12 hrs. of PGE2 gel insertion, reinsertion was done. If the Bishop's score remained less than 5 after 12 hrs. of reinsertion, it was recorded as failure of cervical ripening.

Once the labor was successfully induced, management was done by the standard methods. These not being under the purview of the study are not mentioned here in greater details.

**Results :**

During this study period of one and a half years totally 112 subjects were induced for labour in our dept. of these 105 were induced with intra-cervical PGE2 gel. Of these, one subject took discharge against medical advice after first insertion. The protocol and design of the study could not be strictly maintained in five other subjects. All these six subjects were dropped from the study. Thus, in all 101 subjects were studied.

**Table - 11**

Initial Bishop's Score & Success Rate			
Bishop's Score	No.	Success	
		No.	%
1~2	35	25	71.42
3~4	66	64	96.96
(P<0.01)			

As shown in table 11, initial Bishop's score at the time of insertion had a significant influence over the success of induction. Success rate was 71.4% when the score was low (1 or 2). It soared to 96.9% when the score was 3 or 4. In 89 subjects labor was induced at first insertion. The remaining 12 required reinsertion. They are tabulated separately.

**Table - III**

Score	Change in Bishop's Score			
	at insertion	After-4 hrs.	After 8 hrs.	After 12 hrs.
Mean	2.8	4.9	7.6	9.7
Range	1-4	1-11	1-11	1-11

A gradual but progressive change in Bishop's score occurred when success was met. The rise in the score was about 2 to 2.5 with every four hours that passed. There was no sudden rise initially or towards the end.

**Table - IV**

Score	Change in Bishop's Score after reinsertion			
	At reinsertion	After 4 hrs.	After 8 hrs.	After 12 hrs.
Mean	2.9	4.6	4.9	5.1
Range	1-4	1-8	1-11	1-11

Amongst the subjects requiring reinsertion the pattern of rise in Bishop's score was entirely different. In the first four hours there was a relatively brisk, rise of 1.7 (mean). Though this was less than the mean of 2.2 in the group of successful induction, amongst this group it was the fastest. Then after rise in Bishop's score gradually declined to 0.3 and 0.2 between 4 to 8 and 8 to 12 hours, respectively.

**Table - V****Bishop's Score and Insertion Delivery Interval in subjects who delivered vaginally**

	Score	No. (N-77)	IDI (Hrs.)
	1-2	20	19.8
	3-4	57	12.1
Parity			
Primi	1-2	14	21.7
	3-4	28	12.8
Multi	1-2	6	14.4
	3-4	29	9.8

There were 77 subjects amongst the 101 who delivered vaginally. As shown in Table V, the insertion - delivery interval (I.D.I) was 19.8 hrs. When Bishop's score was 1 or 2. This was significantly less - 12.1 when the Bishop's score was 3 or 4. This difference was statistically significant with P value being 0.01.

Multis had a significantly more chance of vaginal delivery at equal Bishop's score than primis. This difference was also statistically significant (P.<0.01)

**Discussion**

Labor induction is required in a wide variety of conditions in modern obstetric practice. In this study there were in all sixteen indications for inducing labour. Many workers have found PGE2 induction to be satisfactory (Gupta et al 1995, Nawani et al 1995, Kore S et al 1996, Mukerjee K et al (1996). Till recently oxytocin was used for the purpose. However, Dubey P et al (1994) in a comparative study found that the induction delivery interval was significantly more with oxytocin compared to PGI-2 gel. The behavior of the cervix is now accepted to be a cardinal factor in deciding the success of an induction. Bishop's cervical scoring system is an objective way of evaluating cervical status and response in induc-

tion of labour. The initial Bishop's score at the time of insertion of PGE2 gel was found to be one of the most important factors in deciding the success. This was also shown by workers like Kamla Jayram et al in 1994. The change in Bishop's score from unfavourable to favourable is gradual, consistent & smooth when labor could be successfully induced. This was distinctly shown in the present study. Cases where reinsertion was required were those where labor could not be successfully induced at the first insertion. In these, the behaviour of cervix even on reinsertion was erratic. The Bishop's score rose quickly within the first four hours & than much more slowly in the time to follow upto twelve hours. The mean score so attained in these cases was only 5.1 after twelve hours. This figure was 9.7 (mean) where first insertion produced desirable results.

Expectedly than, the induction delivery interval was greatly influenced by the initial Bishop's score at the time of insertion. There was a significant difference of 7.9 hrs. (mean) when the initial Bishop's score was 3-4 vis-à-vis when the score was 1 or 2. Similar results have been shown by other workers like Sasikala et al in 1994. The influence of parity was one more important factor in deciding the success rate. At equal Bishop's score of 1 or 2 the I.D.I. was 7.3 hours more in primis compared to multi's. However when the score was 3 or 4 the difference in I.D.I. was only about three hours. Thus parity has its influence more pronounced at lower Bishop's scores.

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