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Induction of labour by amniotomy combined IV with syntocinon and IV syntocinon alone

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ABSTRACT

Introduction: Induction of labour is artificial initiation of uterine contractions after the period of viability, with the intention of accomplishing delivery prior to onset of spontaneous labor. Oxytocin is the commonest induction agent used worldwide. It has been used alone, in combination with amniotomy or following cervical ripening with other pharmacological or non-pharmacological methods. **Aim**: The present study is to compare the results of induction of labour by amniotomy combined intravenous with syntocinon and intravenous syntocinon alone. **Materials and methods:** This Study carried out over a period of six months. Patients with a definite indication for induction were chosen from ante-natal ward and studied in two groups. In group – I, 60 patients who were induced by artificial rupture of membranes combined with intravenous oxytocin included and in group – II, 30 patients who were induced by oxytocin alone included. **Results:** Induction delivery interval was shorter in the group - I with a mean of 4 hours and 10 minutes (range being 2 hours 50 minutes to 10 hours 30 minutes) compared to group - II whose mean duration was 21 hours 36 minutes (range being 5 hours 30 minutes to 33 hours). Among the 60 patients in group – I, 44 had spontaneous vaginal delivery, 10 had out-let forceps delivery and 6 subjects underwent caesarean section. By contrast, of the 30 patients in group - II 19 delivered spontaneously, 3 patients has out-let forceps delivery and 8 subjects underwent caesarean section. Mean latent period and IDI are shorter in group - I as compared to group - II.In both groups Post dated pregnancy was the commonest indication of induction followed by gestational hypertension, essential hypertension and intrauterine growth retardation. Failure of induction and fetal distress is much lower in Group- I. **Conclusion:** The present concluded that that the induction method with amniotomy and syntocinon combined is more efficacious and safer than one with syntocinon alone.

Key words: Uterine contractions Amniotomy**,** Syntocinon

Introduction

For many years obstetricians had been in search of an ideal method of induction of labour. Nearly 460 years ago Ambroise Pari induced premature labour in the treatment of ante-partum hemorrhage. Induced labour is one in which pregnancy is terminated artificially after the 28th week by method that aims to secure delivery "via naturals ". Though it is desirable to avoid maternal and fetal morbidity and mortality, the ideal may not always be achieved because of the original indication for induction itself, and the prematurity of the foetus. The incidence of labour induction has increased over the last decade [1]. The incidence of induction varies from 15 - 30%.Indications for induction of labour may be clinical or social (mother's or clinician's convenience). Clinical indications include post-term pregnancy, hypertensive disorders of pregnancy, prelabour (premature) rupture of membranes, chorioamnionitis, diabetes, isoimmunisation, intra-uterine fetal death, intra-uterine growth restriction, gross fetal anomalies and other maternal conditions [2]. .Contraindications to induction include cephalopelvic disproportion, placenta praevia or vasa praevia, abnormal fetal lie, cord presentation/prolapse, previous classical caesarian section scar, prior myomectomy with breach of uterine endometrium, pelvic structure anomalies, invasive carcinoma of the cervix and active genital herpes simplex infection. The magnitude of risk of induction

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of labour is influenced by factors such as gestational age, presence/absence of fetal lung maturity, severity of the clinical condition, and cervical status. Cervical status is one of the most important factors for predicting the likelihood of successfully inducing labor [3]. In observational studies, other characteristics associated with successful induction include multiparity, tall stature (over 5 feet 5 inches), increasing gestational age, nonobese maternal weight or body mass index, and infant birth weight less than 3.5 kg [4, 5].Synthetic oxytocin administration is a proven method of induction of labour [6]. Oxytocin administration produces periodic uterine contractions, with increasing responsiveness with advancing gestational age. However, it is less successful for labour induction when used in women with uneffaced and undilated cervices [6]. In order to improve cervical score and induce myometrial contractility, cervical ripening is done [7]. Ripening of the cervix can be achieved by either mechanical (physical) interventions (such as disruption of fetal membranes or insertion of dilators or balloon catheter; or by pharmacological methods (application of cervical ripening agents). The choice of method used for induction should take into account the cost of drug, storage, accessibility, administration and supervision during induction. There is continual research for better agents and methods to induce labour [8, 9].Oxytocin is the commonest induction agent used worldwide. It has been used alone, in combination with amniotomy or following cervical ripening, with other pharmacological or non-pharmacological methods. In developed countries, oxytocin alone is more commonly used in the presence of ruptured membranes, whether spontaneous or artificial.Oxytocin augmentation of uterine contractions with or without amniotomy is widely used in the modern obstetric practice to treat a slow labor, although the timing of oxytocin initiation and amniotomy may vary widely [10].Amniotomy refers to artificial rupture of the fetal membranes. It is an effective method of labour induction, but can only be performed in women with partially dilated and effaced cervices. A Cochrane review of randomized trials found the combination of amniotomy and intravenous oxytocin to be more effective than amniotomy alone [11]. The object of the present study is to compare the results of induction of labour by amniotomy combined intravenous with syntocinon and intravenous syntocinon alone.

Materials and methods

This Study carried out in the Govt. Maternity Hospital Sulthan Bazar, Hyderabad over a period of six months from March 2012 to march 2013. Patients with a definite indication for induction were chosen from ante-natal ward and studied in two groups. In group – I, 60 patients who were induced by artificial rupture of membranes combined with intravenous oxytocin included and In group – II, 30 patients who were induced by oxytocin alone included.Most of the indications of induction being postdated pregnancies Gestational hypertension, essential hypertension and IUGR. For the purpose of study latent period or induction labour interval was taken as the time interval between the induction of labour and commencement of regular painful contractions. Induction delivery interval was taken as the time interval from the commencement of induction to the birth of the baby. Patient was first carefully examined and the necessity for induction was explained to the mother in simple words without arousing anxiety or fear. The next morning a soap and water enema was given and the Patient's temperature, pulse rate, Blood pressure were recorded.Abdominal palpation for Presentation and position was made. Foetal heart sounds were carefully recorded. It was doubly made sure that there was no contraindication for induction. Preliminary sedation was given with 50 mg of phenergon and prophylactic antibiotic was given. Avaginal examination was made to note the level of the presenting part and the type of cervix as per Bishops scoring system, and patients with Bishops scoring of 5 and above only were taken for study. Fore-water was ruptured, with Kocher's forceps and guided long needle under aseptic precaution.

In the group - I patients had amniotomy combined with intravenous syntocinon 1 ml of syntocinon (Sandoz containing 5 IU was diluted in 500 ml of 5% dextrose for primies and

2.5 IU to 3 IU for multies), intravenous infusion 16 - 24 drops per minute (10 - 15 mu per minute) started. Then patient was monitored for uterine action and fetal heart sounds.

Then the labour was closely watched and delivery observed, follow up was for 1 week Post partum.

In group - II only syntocinon drip was given and closely watched as above in group - I. A partogram was plotted and compared with standard fried man's curve.

Results

Among the 60 patients who were induced labour as an indicated planned procedure at term, 44 women delivered spontaneously and 10 were delivered by out-let forceps and 6 were delivered by caesarean section with no fetal loss. (Table 2)

All these who delivered vaginally did so within 10 hours 30 minutes from the time of induction and the

induction delivery interval ranged from 2 hours 50 minutes to 10 hours 30 minutes with a mean of 4 hours 10 minutes. (Table 1)Birth weight of the babies born of induction ranged from 2 kgs to 3.9 kgs, with a mean of 2.9 kgs there was no perinatal loss. Barring dry labour no other significant complications were noticed. There were no other complications, especially cordprolase, intrauterine infection, incoordinate uterine action, uterine spasm, uterine rupture, etc. The blood loss was within normal limits in all subjects, and there were no placental problems and post-natal complications.

Comparative analysis of the two methods of induction

The two method of induction were practiced in a consecutive group of 60 patients, artificial rupture of membranes combined with intravenous oxytocin drip, and another consecutive group of 30 patients intravenous oxytocin drip alone, with evenly matched age, parity, gestational age and Bishops score. It was realized that the induction delivery interval was shorter in the group - I with a mean of 4 hours and 10 minutes (range being 2 hours 50 minutes to 10 hours 30 minutes) compared to group - II whose mean duration was 21 hours 36 minutes (range being 5 hours 30 minutes to 33 hours). (Table 1)

Table 1: Data about latent period and I.D.I in both groups

Feature	Group - I		Group – II	
	Latent period	I.D.I	Latent Period	I.D.I
Range	0.10-3.00	2.50-10.30	20-5.30	33.00
Average	0.53	4.10	4.21	21.36

The duration of labour could be reduced in-group - I'. The end results were quite satisfactory in both groups, all delivering within 33 hours. Since there is much difference in induction delivery interval (33.00-10.30 = 22.30) 22 hours 30 minutes, continuous oxytocin infusion is inconvenient and requires more careful attention of the patient for longer period. It is observed that artificial rupture of membranes and oxytocin drip is good enough as the method of planned induction of labour. Among the 60 patients in group – I, 44 had spontaneous vaginal delivery, 10 had out-let forceps delivery and 6 subjects underwent caesarean section. By contrast, of the 30 patients in group - II 19 delivered spontaneously, 3 patients has out-let forceps delivery and 8 subjects underwent caesarean section. (Table 2)

Table 2: Mode of delivery in both groups

Mode of delivery	Group I		Group II	
	Number	%	Number	%
Spontaneous Vaginal Delivery	44	73	19	**63**
Out - Let forceps delivery	10	17	03	**10**
Lower Segment Caesarian Section	**06**	**10**	**08**	**27**

This table shows lowest incidence of caesarean section in group –I (10%) as compare to Group – II (27%).

Table 3: Data of mean latent and I.D.I in both groups

			Group – II			Group - II
Parity	No.	Mean Latent Period	Mean I.D.I	No.	Mean Latent Period	**Mean I.D.I**
Primies	39	.49	4.38	20	4.14	**21.26**
Multies	19	.27	3.16	10	3.34	**21.17**
Grand Multies	**2**	**.23**	**1.62**	**Nil**	**.....**	**.....**

Mean latent period and IDI are shorter in group - I as compared to group - II. There is no difference in IDI and latent period among primies and multies in group - II. But in group -I multies responded in shorter intervals compare to primies. (Table 3)

Table 4: Indications for induction in both groups

	Group – I		Group – II	
Indications	No. of patients	percentage	No. of patients	**percentage**
Post – Dated	29	48.3	14	**46**
Gestational hypertension	21	35	10	**33.3**
Essential Hypertension	8	13.3	6	**20**
IUGR	**2**	**3.33**	-	

In group I indication for induction were post dated in 29 patients, gestational hypertension in 21 patients, essential hypertension in 8 patients and IUGR in 2 patients observed where as in group II post dated pregnancy in 14 cases, gestational hypertension in 10 cases and essential hypertension in 6 cases observed. (Table 4)
In both groups Post dated pregnancy was the commonest indication followed by gestational hypertension, essential hypertension and intrauterine growth retardation.

Table 5: Indication for LSCS in both groups

Indication for LSCS	Group – I		Group – II	
	No. of patients	percentage	No. of patients	**percentage**
Failed induction	0	-	2	**6.6**
Dry labour	1	1.66	0	-
Intrapartum eclampsia	1	1.66	0	-
Deep Transverse arrest (Multi)	1	1.66	0	-
Deflexed head1	1	1.66	0	-
Fetal distress	**2**	**3.32**	**5**	**16.6**

In group I indication for LSCS were dry labour in 1 patient, intrapartum eclampsia in 1 patient, Deep Transverse arrest (Multi) in 1 patient, deflexed head in 1 patient and fetal distress in 1 patient observed where as in group II failed induction in 2 patients and fetal distress in 5 patients observed. (Table 5).Failure of induction and fetal distress is much lower in Group- I. This is the main reason for low LSCS rate.

Discussion

As patients in both the groups were assigned alternately they were evenly matched for age, parity and gestation. The type of uterine contractions induced was almost similar in both groups. All patients in both groups had definite indication for induction of labour, post dated pregnancy being the commonest in both groups, followed by gestational hypertension essential hypertension and intra-uterine-growth retardation (Table - IV). Out of 60 patients induced with combined method 73% responded in the first attempt. In Group - II there were 30 patients out of which 63% responded in the first attempt and the forceps rate was 17% in Group - I. Chow SL .et al[12] showed instrumental vaginal delivery range between 10% and 15%. Increase forceps rate in the present series as compared to control group which is 10% could be due to the more number of toxemias of pregnancy cases which is the 2nd most frequent indication for induction in the group - I. There was no difference in induction delivery interval as regards with Bishops score. The mean latent period much shorter in group – I, i.e.53 minutes as compared to group – II, i.e. 4 hour 21 minutes. Mean induction delivery interval is also much shorter in group - I, 4 hours 10 minutes than in group - II 21 hours 36 minutes.(Table I) Lower segment caesarean section rate in present series in group I,10% and in group - II, 27%. This shows that caesarean section rate was almost more than double in syntocinon group and the higher incidence of caesarean section in syntocinon group being due to the higher incidence of fetal distress (Table - Iv) and also due to longer induction delivery - interval.One of the complications commonly encountered with the administration of syntocinon is inco-ordinate uterine action. In the present series there was no incidence of inco-ordinate uterine action whereas in literature studies developed 26% inco-ordinate uterine action , in his similar study caesarean section rate was 8.3%.[13]There was no incidence of post-partum-haemorrhage in present series. Studies quoted as 8.9%. There was no incidence of manual removal of placenta in the present series. Wrigly 1959

gave a figure of 3.3%. There was no maternal death either in present series or past studies. [14,15].There was no incidence of hyperbilirubinemia in present series, the recent reports of neonatal hyperbilirubinemia found a highly significant increase in the incidence. Chalmer's et al [16].Considering the complications like cord prolapse intrauterine infection resulting from amniotomy there was no incidence in the present series. Dilbaz B et.al[17] gave a figure of cord-prolapse 1.2%. Dry labour resulting from amniotomy in one patient was the only type of problem encountered in this series of 60 patients, which was delivered abdominally.The birth weight and apgar score of the babies did not show any significant difference in the two groups. There was no maternal and fetal morbidity or mortality in the present study.

Conclusion

The study was conducted to evaluate efficacy and safety of combined method of amniotomy and syntocinon (I.v) over syntocinon infusion alone for induction of labour.

Total of 60 patients in combined method and 30 in syntocinon alone were studied. Latent period and induction delivery interval was significantly shorter in patients induced with combined method, as compared to syntocinon alone. No. of syntocinon drips after doing amniotomy and can be minimised to one, whereas in syntocinon gr. needed 2, 4 drips.

Hence the conclusion after the present study is that the induction method with amniotomy and syntocinon combined is more efficacious and safer than one with syntocinon alone.

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