

A Comparative Study of Fetomaternal Outcome in Women with Spontaneous Vs Induced Labour

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Abstract: *Background:* Labour can start spontaneously or be induced for various maternal or fetal conditions. The benefit of labour induction must be weighed against the potential maternal or fetal risks associated with the procedure. *Objective:* To compare the mode of delivery and fetomaternal outcome between spontaneous versus induced labour. *Material and Methods:* It was a hospital based prospective comparative clinical study. Total 80 patients were recruited who met inclusive criteria. Forty patients were included in each spontaneous and induced labour group. This study compared mode of delivery, maternal complications and neonatal outcomes between both the groups. *Conclusion:* There was an increase in caesarean section rate from 27.5% in induced patients to 17.5% in spontaneous labour patients.

Keywords: Spontaneous labour, induced labour, maternal outcome, fetal outcome.

1. Introduction

Labour is a clinical diagnosis characterized by regular, painful uterine contractions that increases in frequency, intensity and duration and associated with progressive cervical effacement and dilatation. Labour can start spontaneously or be medically induced for various maternal or fetal reasons. Induction of labour is the stimulation of the uterus to initiate the labour process whether by administering oxytocin, prostaglandin or rupturing the membrane^[1].

Data from the National Centre for Health Statistics for the last decade indicate that the rate of labour induction has increased gradually from 9% to 20%. This increase has been noted both at community Hospitals and at the university tertiary care hospitals. Explanation for this rise in the induction rate are multifactorial. Better planning of birth by the physician, patient and her family is the most common reason.

American College of Obstetricians and Gynaecologists practice bulletin "induction of labour" states, "generally induction of labour has merit as a therapeutic option when the benefits of expeditious delivery outweigh the risks of continuing pregnancy". The benefit of labour induction must be weighed against the potential maternal or fetal risks associated with the procedure like fetal distress, instrumental delivery, caesarean delivery and neonatal intensive care unit admission^(2,3)

As the induction have both advantages and disadvantages there is a need to study the maternal and fetal outcomes of both spontaneous and induction and to compare them.

2. Material and Methods

It was a hospital based comparative clinical study. Total 80 pregnant women were recruited who met inclusive criteria admitted in labour room of department of Obstetrics and gynaecology, SRMSIMS Bareilly, over a period of one and half year from November 2019 to April 2021 were recruited. Forty patients were recruited in each Spontaneous and Induced labour group. Women of age 20 - 40 years at term gestation with singleton pregnancy having vertex presentation with reassuring fetal conditions were included. Informed consent was obtained before recruitment. Women with post caesarean pregnancy, cephalopelvic disproportion, known case of uncontrolled diabetes mellitus/ hypertension/ asthma, advanced labour were excluded. A detailed clinical assessment of patient including history, general physical exam and pelvic examination was done. Two groups were recruited. 1) Spontaneous labour group - those patients who went into spontaneous labour. 2) Induced labour group - those patients in whom induction of labour was done due to various indications.

Microsoft Excel was used in creating the database and producing graphs, while the data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 23.0 for Windows.

3. Results and Observations

The present study was conducted with the aim to study mode of delivery and fetomaternal outcome in women with spontaneous and induced labour. Total 80 patients were included in the study.

Table 1: Demographic characteristic of studied women of both the groups

Demographic Variables		Spontaneous (n=40)	Induced (n=40)	p value
Age Group	20 - 25 Years	20 (50.0%)	21 (52.5%)	0.846
	26 – 30 Years	17 (42.5%)	14 (35.0%)	
	31 – 35 Years	3 (7.5%)	5 (12.5%)	
	36 - 40 Years	0 (0.0%)	0 (0.0%)	
BMI (kg/m ²)	Underweight	0 (0.0%)	0 (0.0%)	0.278

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	<18.5 kg/m ²			
	Normal 18.5 - 24.9 kg/m ²	27 (67.5%)	20 (50.0%)	
	Overweight >25 - 29.9 kg/m ²	13 (32.5%)	18 (45.0%)	
	Obese >30 kg/m ²	0 (0.0%)	2 (5.0%)	
Antenatal Status	Booked	21 (52.5%)	30 (75.0%)	0.062
	Un - booked	19 (47.5%)	10 (25.0%)	

Table no 1 shows the demographic characteristics with majority of the patients in the age group 20 - 25 years (51.2%) with 63% patients booked antenatally.

Table 2: Distribution of the studied women on the basis of mode of delivery in both groups

Mode of delivery	Spontaneous (n=40)	Induced (n=40)	p value
Full term Vaginal delivery (FTVD)	33 (82.5%)	29 (72.5%)	0.764
Lower Segment Caesarean Section (LSCS)	7 (17.5%)	11 (27.5%)	
Ventouse	0 (0%)	0 (0%)	
Forceps	0 (0%)	0 (0%)	
Total	40 (100.0%)	40 (100.0%)	

Table no 2 shows the full term vaginal delivery was more common in spontaneous group (82.5%) while in induced group 27.5% pregnant women needed lower segment caesarean. None of the women required instrumental delivery.

Table 3: Neonatal outcome of both groups

Neonatal outcome	Spontaneous (n=40)	Induced (n=40)	p value
Baby weight (gms)	2782.75±551.73	2848.32±381.14	0.544
APGAR at 1 min	8.00±0.64	8.08±0.89	0.666
APGAR at 5 min	9.05±0.50	9.10±0.81	0.741
NICU Admission	2 (5.0%)	3 (7.5%)	0.644
Hyperbilirubinemia	2 (5.0%)	3 (7.5%)	0.644
Neonatal Sepsis	0 (0.0%)	1 (2.5%)	0.314
Meconium Aspiration syndrome	0 (0.0%)	1 (2.5%)	0.314

NICU admission (7.5%) and hyperbilirubinemia (7.5. %) were more common in induced group as compared to spontaneous group (5.0%). In induced group one baby had neonatal sepsis and one had meconium aspiration syndrome.

Table 4: Maternal complication in both groups

Maternal complication	Spontaneous (n=40)	Induced (n=40)	p value
Post - Partum Hemorrhage	1 (2.5%)	3 (7.5%)	0.303
Wound infection & Sepsis	1 (2.5%)	0 (0.0%)	0.314
Perineal tear	0 (0.0%)	1 (2.5%)	0.314
Total	2 (5.0%)	4 (10%)	

Table no 4 shows the maternal complications in both spontaneous and induced groups. In induced group post - partum hemorrhage (n=3) was more common followed by perineal tear (n=1) but in spontaneous group there was only one case of post - partum hemorrhage.

4. Discussion

Labour is induced when the risk of continuing the pregnancy outweighs that of delivering a fetus and the goal is to achieve a successful vaginal delivery. Fetomaternal safety is the ultimate aim in all deliveries and every obstetrician aims to anticipate the risk and provide timely intervention for better neonatal outcome and maternal health.

The present study compared mode of delivery in women with spontaneous and induced labour and their perinatal outcome. Majority of the cases were in the age group 20 - 25 years followed by 26 - 30 years. In present study the mean age of the studied patients was 24.05±3.84 years in spontaneous and 24.58±3.19 years in induced group. Our institute being a tertiary care centre covering rural population this observation indicates towards the increasing awareness of hospital delivery in young generation. Majority of the women, 57.5% women in spontaneous group and 67.5% women in induced group were primigravidas.

It is evident that women in spontaneous labour had higher chance of full term normal vaginal delivery (82.5%) than women in induced group (72.5%).

These results are similar to studies done by Orji *et al*, which showed a greater proportion of 72.1% delivering vaginally in spontaneous labour compared to 64.7% in induced group as well as fewer C - sections in spontaneous group ⁽⁴⁾.

Women who had induction of labour were found to be associated with higher incidence of caesarean section (27.5%). Our finding of modest increase in caesarean delivery among women with induced labour is concurrent with the results of Heffner *et al* ⁽⁵⁾. He did observe that the caesarean delivery rate was 24.7%. Al - Shaikh GK *et al*. ⁽⁶⁾ they maintained that parity, hypertension, diabetes, older maternal age, and higher birth weight influence the rate of CS, but not the induction of labor. Others Cammu H. *et al*, ⁽³⁾ they have studied outcome after elective induction in nulliparous women only.

Third stage complication like postpartum haemorrhage was more in induced group (7.5%) than in spontaneous group (2.5%) whereas the study done by James *et al* showed no significant difference in both groups. ⁽⁷⁾

5. Result

Labour is induced when delivery will be of benefit to the health of the fetus or mother or both. The induction is justified when the benefits to either mother or fetus outweigh those of continuing the pregnancy. A general

concept is the recognition that the induction is associated with increased fetomaternal complications as compared to spontaneous labour.

High rates of successful vaginal deliveries were seen in spontaneous labouring women as compared to those in induced labour. In spite of being a safe procedure, induction of labour poses increased risk of C - section and increased third stage complications.

Hence, patients should always be counselled when there is an option between the two deliveries. status and fetal heart rate patterns during labor. Am J Obstet Gynecol.2008; 199

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