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Trends of instrumental deliveries at a tertiary care teaching hospital in Puducherry

KEYWORDS: Instrumental delivery, trends, indications of instrumental delivery, India

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ABSTRACT *Background: The decreasing trend of instrumental deliveries is a major concern in health care system all over the world. Assessing the trends of instrumental deliveries and its major indications would be useful in adopting suitable measures to reduce the caesarean section rate and the problems associated with it.*

Methodology: This retrospective study was conducted at Pondicherry Institute of Medical Sciences, Puducherry. Data were collected on instrumental deliveries and their indications from the medical records of women delivered over a period of 5 years. (2010-2014).

Results: Among a total of 5445 deliveries occurred during study period, 7.7% were instrumental vaginal deliveries. The year-wise rate of instrumental deliveries ranges from 6.1% to 9.8%. During the study period (except during year 2011), a declining trend for instrumental deliveries was observed. Non-reassuring fetal heart (45.3%), maternal exhaustion (23.9%), prolonged second stage of labour (10.7%), maternal indication to cut short second stage of labour (13.1%) and unrotated fetal head (7.1%) were the major indicators for instrumentation. The proportion of instrumental deliveries due to non reassuring fetal heart showed a continuous increase during study period.

Conclusion: The instrumental deliveries are showing decreasing trends. There is need to address the issue by improving the instrumental delivery skills.

INTRODUCTION

Instrumental vaginal delivery refers to application of a device to assist mother in effecting vaginal delivery. The device can be either forceps or vacuum. Rates of instrumental vaginal delivery range from 5% to 20% of all births in developed countries.[1] Indications for instrumental vaginal delivery may be fetal or maternal. Various fetal conditions for which instrumental vaginal delivery may require include fetal heart rate abnormality and mal-position of the fetal head such as occipito-posterior position. Maternal indications include maternal exhaustion and medical conditions such as cardiac disease in which expulsive effort must be reduced. Recent Royal College of Obstetricians and Gynaecologists (RCOG) green top guidelines include the following as indication for instrumental vaginal delivery; fetal distress, prolonged second stage of labour, maternal exhaustion, mal-positioning of fetal head and to shorten the second stage of labour in certain maternal medical disorder.

Assisted vaginal delivery offers safe and quick delivery in difficult situation of fetal or maternal compromise at full dilatation of cervix. The only other option available is caesarean section, which at full dilatation is technically challenging and is also associated with higher maternal morbidity and its consequences on future pregnancy. Despite this fact, it is seen that for the past few decades, overall rate of operative vaginal delivery is on decline.[2]

There has been an increasing awareness and litigation regarding potential fetal and maternal complications associated with instrumental delivery. These factors have led to reduction in instrumental delivery rates. This present study was conducted to find the instrumental delivery rates and their indications among women delivered at tertiary care hospital. This will help in adopting suitable measures to reduce the caesarean sections in second stage of labour and the problems associated with it.

METHODOLOGY

This record based study was conducted at Pondicherry Institute of Medical Sciences (PIMS), a tertiary care hospital in Puducherry. All the women delivered by instrumental vaginal delivery at PIMS over a period of five years (2010 - 2014) were included in the study.

The study protocol was approved by the Institute Ethics Committee of PIMS and Department of Medical Records was requested for permission to review the records of women undergone instrumental vaginal delivery during the study period. A semi-structured questionnaire was used to collect the data. Data regarding various characteristics including prior registration, maternal age, prenatal care, number of previous deliveries and various indications for application of instrument were recorded.

Data was entered in Microsoft excel 2010 and SPSS version 17 was used to analyse the data. Means for continuous variables and proportion of instrumental deliveries and their indications were calculated.

RESULTS

During the study period, a total of 5445 deliveries were conducted and among them 421 (7.7%) were instrumental vaginal deliveries.

Table 1 is showing the characteristics of the women who had instrumental vaginal delivery. Among a total of 421 women had instrumental vaginal delivery, majority (67.2%) were registered. Their mean age was 25 years. Almost half of them were in age group of 21-25 years and 11.5% were 0f age >30 years. More than three-fourth (77%) of them

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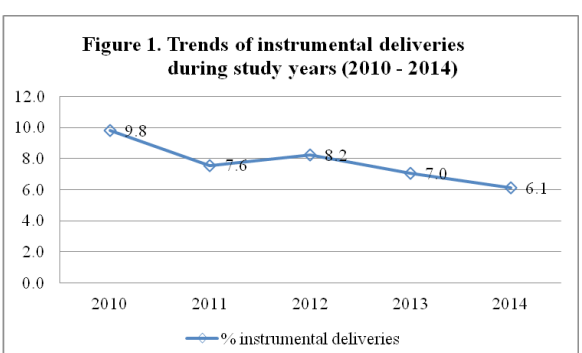
were primipara and labour was spontaneous in 68% of women.

Table 1 Characteristics of women delivered by instrumental delivery (n=421)

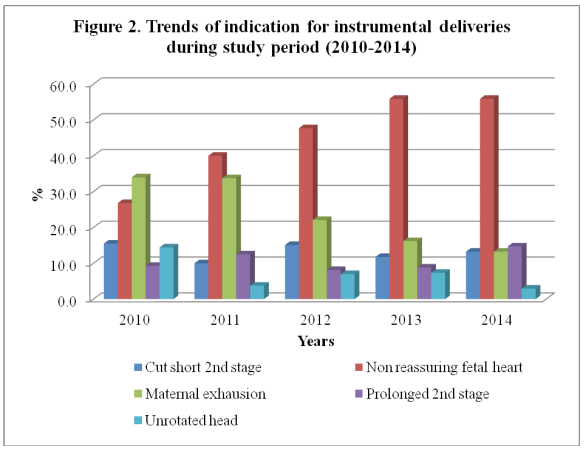
Characteristics		Number	Percentage
ANC registration			
	Registered	283	67.2
	Non-registered	138	32.8
Parity			
	Primipara	326	77.4
	Multipara	95	22.6
Age groups (Years)			
	<20	38	9
	21-25	210	49.9
	26-30	125	29.7
	31-35	44	10.5
	>35	4	1
Type of labour			
	Induced	136	32.3
	Spontaneous	285	67.7

The overall instrumental delivery rate was 7.7%. Figure1 is showing the year-wise instrumental delivery rates for 5 years (2010-2014). The instrumental delivery rates ranges from 6.1% to 9.8%. During the year 2010, instrumental delivery rate was 9.8% and it dropped to 7.6% during year 2011. Apart for year 2012, when a slight increase in the instrumental deliveries (8.2%) as compare to previous year was observed, the instrumental delivery rates shows a consistent decreasing trends over the study period. In year 2014 the instrumental delivery rate was 6.1%.



Among various indications for instrumental delivery, non reassuring fetal heart (45.3%), maternal exhaustion (23.9%), prolonged second stage of labour (10.7%), maternal indication to cut short second stage of labour (13.1%) and unrotated fetal head (7.1%) were the major indicators.

The trends for common indications for the instrumental deliveries are shown in Figure 2. The proportion of instrumental deliveries due to non reassuring fetal heart showed a continuous increase from 26.8% during year 2010 to 55.9% during 2014. Further, the proportion of instrumental deliveries due to maternal exhausion is showing a decreasing trend whereas instrumental delivery due to prolonged second stage and unrotated head is almost same.



DISCUSSION

The goal of operative vaginal delivery is to assist the spontaneous vaginal birth providing minimum maternal and neonatal morbidity. It is used to shorten the second stage of labour and hence may be indicated for maternal exhaustion or fetal conditions including non reassuring fetal heart to prevent hypoxic brain damage or fetal death.[3] Another common indication for assisted vaginal delivery is inadequate progress of labour.

The rate of the instrumental delivery in present study was 7.7%, which was comparable to that found in previously published studies.[4,5] Some studies from Europe showed that the proportion of instrumental delivery is approximately 10%, while in North America and Australia accounts for 7-16% of deliveries.[6]

During the study period (2010-2014), there was a declining trend in the proportion of instrumental deliveries. This decline in the instrumental deliveries may be due of fear of failure and litigation in case of fetal and maternal complication.

Fetal distress is the most common indication in modern obstetrics for instrumental delivery. In the present study also, the most frequent indication for instrumental deliveries was fetal distress (45.3%). Similar results were found in the study conducted by Lopmudra B et al. where the fetal distress was the most common indication for instrumental deliveries (46.3%).[7] In present study, the second most common indication for instrumental delivery was maternal exhaustion (23.9%). Prolonged 2nd stage of labour (i.e., where delivery is delayed for more than two hours in primigravida and more than one hour in multigravida after full dilatation of the cervix) was the indication for instrumentation among 10.7% of women. In a study in Texas University the most common indication was fetal distress followed by poor maternal efforts, same as our present study.[8] In an Indian study by Singh A et al; cutting short of 2nd stage of labour (i.e., where prolonged bearing down is detrimental for the mother in cases of hypertension, heart disease etc.) was the chief indication followed by prolonged 2nd stage.[9]

The art of instrumental delivery is a reasonable option available to the obstetrician to reduce the rising caesarean section rates.[10] Also, the training programs in teaching hospitals should include the curriculum to impart knowledge and skills about indications and technique of use of the instruments to assist vaginal deliveries.

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CONCLUSION

The trends of instrumental deliveries are showing a decreasing trend at present. As the complications associated with instrumental deliveries are lower as compared to cesarean sections, all attempts should be made to conduct assisted vaginal deliveries.

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