

# Comparison Of Instrumental Deliveries Between Urban And Rural Hospitals: A Retrospective Study

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## Abstract

**OBJECTIVE-** To analyze the data of deliveries from 2008-2012 in two tertiary care large hospitals ( $\geq 300$  bedded) of a district located in urban and rural area and analyze the instrumental delivery trends and its complications.

**METHOD-** Delivery records of all births during 5 years period from Jan 2008 to Dec 2012 were analyzed and data was classified into types of deliveries. The rise and fall in trends in proportion of instrumental deliveries over the 5 years was analyzed and their increase and decrease was compared with total deliveries and also comparison between urban and rural area was done using Chi square test and Wilcoxon signed rank test.

**RESULTS-** Over the years, annual number of total deliveries for both hospitals increased from 1223(2008) to 1962 (2012). But instrumental delivery rate initially increased from 2.4% (2008) to 4.4% (2009) and then gradually decreased to 3.1% (2012). Comparison between rural and urban areas showed sharp difference in Instrumental delivery rates i.e. 0.3% to 1.6% (rural) vs. 2.9% to 5.6% (urban). The fall in the instrumental delivery rate and the difference in instrumental delivery rate between rural and urban hospitals, were statistically significant ( $p= 0.017$  and  $0.043$  respectively).

**CONCLUSION-** This study revealed statistically significant decrease in rates of instrumental deliveries as compared to total deliveries and statistically significant difference between rural and urban areas within the same district.

## INTRODUCTION

Obstetrical-care providers frequently face dilemmas in the management of the second stage of labour. The decision as to whether or not a particular birth requires assistance and the choice and timing of any intervention must involve consideration of the risks of the potential techniques and the skills of the operator, as well as the urgency of the need to expedite the birth process. Instrumental delivery refers to forceps or vacuum-assisted delivery. Caesarean section is the surgical alternative to instrumental vaginal birth but also carries significant morbidity and implications for future births [1]. Experts often provide conflicting evidence for and against the use of these procedures.

## INDICATIONS FOR INSTRUMENTAL VAGINAL BIRTH [2]

Fetal

## PREREQUISITES [2]

## MATERIAL AND METHODS

Retrospective analysis of all the delivery records of births

during 5 years period from Jan 2008 to Dec 2012 was done and data was analyzed. The rise and fall in trends in proportion of instrumental deliveries over the 5 years was analyzed and their increase and decrease was compared with total deliveries and also comparison between urban and rural area was done using Chi square test and Wilcoxon signed rank test using IBM SPSS Statistics software.

## RESULTS

Over the years, annual number of deliveries gradually increased 60.4% from 1223 (2008) to 1962 (2012) as shown in Table 1. However instrumental delivery rate initially increased from 2.4% (2008) to 4.4% (2009) and then gradually decreased to 3.1% (2012). Table 1 shows number of total deliveries, CS and instrumental deliveries and their proportion. This decrease in incidence of instrumental deliveries when compared with rising trend of total deliveries was found to be statistically significant ( $p=0.017$ ) using Chi square test.

There were less number of Instrumental deliveries in rural hospital than urban hospital i.e. 0.3%-1.6% (rural) vs. 2.9%-5.6% (urban) as seen in Table 2 and 3. When it was

statistically analyzed using IBM SPSS software Wilcoxon signed rank test, it was found to be significant ( $p=0.043$ ).

Table 4 shows rates of complication associated with instrumental deliveries as seen in this study. Complication rate was 15.9% with 19 patients having more than one complication.

Graphs 1, 2 and 3 illustrate the contents of table 1, 2 and 3 respectively. Graph 2 shows slight fall followed by rise in instrumental deliveries rate in rural hospital. Graph 3 does not show any appreciable rise in instrumental deliveries rate in urban hospital. Graph 4 shows comparison between proportions of instrumental deliveries in rural hospital, urban hospital and combined total.

### DISCUSSION

In the United States, 4.5 per cent of vaginal births were accomplished via an operative vaginal approach [3]. The overall rate of operative vaginal delivery had been diminishing, but the proportion of operative vaginal deliveries conducted by vacuum assisted births had been increasing and was more than four times the rate of forceps assisted births. Forceps deliveries accounted for 0.8 % of vaginal births and vacuum deliveries accounted for 3.7 %. In recent years, the success rate for operative vaginal deliveries had been quite high [4]. However rates of instrumental use in developing countries were low. In Latin America, data from hospital deliveries in 18 countries showed that rates did not exceed 6% and were below 2% for half of them [5]. Data from Argentina showed rates of 1% in a region accounting for half of the country births [6].

In this study, overall instrumental delivery rate from 2008-2012 was 3.2% (233/7243). However, it was 1.0% (22/2196) in rural area and 4.2% (211/5047) in urban area. Forceps accounted for overall 28.3% (66/233) of total instrumental delivery and 80.0% (16/20) in rural and 23.7% (50/211) in urban area.

The decline in the use of instrumental deliveries is multifactorial although many of the factors are inter-related. Litigation has grown over recent years in all areas, but it is often related to care on the labour ward and departures from practice guidelines. [7, 8] Issues of litigation and practice guidelines relate to widespread concerns over the training of obstetricians. Obstetric forceps are potentially dangerous in the hands of untrained or inexperienced obstetricians. Most residency training programmes do not lay enough emphasis in training of instrumental deliveries. Training in the use of

forceps has been further reduced with awareness that the sequential use of instruments (failed vacuum extraction followed by forceps) was inappropriate and associated with increased morbidity [1].

Usually lesser number of instrumental deliveries is associated with rise in CS. But in our study, table 3&4 and graphs 2,3 &4 showed that in rural hospital there was rise in both instrumental delivery rates and CS rates whereas a fall in proportions of both were seen in urban hospital. Perhaps it reflected the convergence of difficult and neglected cases to tertiary care hospital in rural area due to lack of adequate obstetric services around it. Whereas, the improvement of obstetric services in urban area led to more women demanding spontaneous vaginal deliveries.

Women who had instrumental vaginal deliveries typically had a shorter hospital stay and fewer readmissions than women who had caesarean sections. [9] Worldwide this has cost implications to healthcare providers and social benefits to women. A Cochrane meta-analysis found that women who experienced vaginal delivery were less anxious about their babies and more satisfied with the birth than women who had a caesarean section. Women who had a vaginal delivery were also more likely to breast feed, have more positive reactions to their infants immediately after birth, and interact with them more at home. These outcomes concerned all types of vaginal deliveries compared with caesarean sections. [10]

The implication for future mode of delivery is one of the central issues regarding chosen mode of delivery. Repeat caesarean section was one of the principal factors implicated in increasing rates of caesarean section. [11] By minimising primary caesarean sections this should have a noticeable effect on the overall caesarean section rate. Furthermore, the risk of intra-partum complications in subsequent pregnancies was reduced if a woman did not have a previous caesarean section. [12] In postpartum period, instrumental deliveries have been associated with increased perineal and vaginal trauma, a greater requirement for analgesia, cervical laceration, postpartum infection etc.

In our study, incidence of cervical laceration, 2<sup>nd</sup> and 3<sup>rd</sup> degree perineal tears, and urinary incontinence was 13.7%, 6.9%, 1.3% respectively.

Evidence evaluating neonatal morbidity after instrumental vaginal delivery is inconsistent. Neonatal trauma and fetal acidosis were more common after failed instrumental

vaginal delivery than after immediate caesarean section. [1]

In our study, incidence of neonatal morbidity was 6.9%. It included cephalhematoma (5.2%), nerve palsy (0.4%) and intracranial haemorrhage (1.3%). No incidence of neonatal mortality or fracture parietal bone due to instrumental delivery was reported.

Most women aim for spontaneous vaginal delivery, although a growing minority request elective caesarean section in the absence of an obstetric indication. A prospective cohort study found that women were more likely to prefer a future vaginal delivery after a successful forceps delivery than after a caesarean section.[11]These women were more likely to achieve a vaginal delivery in subsequent pregnancies (over three quarters of women after instrumental delivery compared with almost a third after caesarean section) [12].Practice guidelines and protocols along with education and training may help to ensure safe instrumental deliveries with minimal maternal and neonatal morbidity.[13]

## **? CONCLUSION**

This study revealed statistically significant decrease in rates of instrumental deliveries as compared to total deliveries and statistically significant difference between rural and urban areas within the same district.

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