

## Effects of forceps delivery and vacuum extraction on maternal and fetal outcomes

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### ABSTRACT:

**Background:** Every year, millions of women worldwide need assisted vaginal births. Obstetricians can use either an obstetric forceps or a vacuum extractor as their aided vaginal delivery tool. The present study compared effects of forceps delivery and vacuum extraction on maternal and fetal outcome. **Materials & Methods:** 70 women in the second stage of labor requiring assisted vaginal delivery were divided into 2 groups of 35 each. In group I, ventouse was used and in group II, forceps were used. Parameter such as mode of delivery, indication for delivery and neonatal outcomes were recorded. **Results:** The mode of delivery was specified instrument in 30 in group I and 35 in group II. Other (forceps) were in 5 in group I. Indication for delivery was fetal distress in 25 and 8, delay plus distress in 1 and 7, delayed second stage in 7 and 18 and to shorten second stage in 2 patients each in group I and II respectively. The difference was significant ( $P < 0.05$ ). Neonatal outcome was cephalhematoma in 3 in group I and 2 in group II, jaundice in 4 in group I and 1 in group II, facial palsy in 1 in group I and 3 in group II, and mortality was seen in 1 in group I patients. The difference was significant ( $P < 0.05$ ). **Conclusion:** Ventouse techniques were discovered to be more effective than using forceps.

**Key words:** Forceps, delivery, vacuum extractor

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### INTRODUCTION

Every year, millions of women worldwide need assisted vaginal births. Obstetricians can use either an obstetric forceps or a vacuum extractor as their aided vaginal delivery tool. The fundamental differences between the vacuum extractor and forceps methods of head extraction are outlined by Myerscough.<sup>1</sup> The metal-cup vacuum extractor is a metal cup with a diameter that ranges from 40 to 60 mm, fashioned like a mushroom. The cup is connected to a detachable handle that provides traction via a centrally attached chain. A vacuum port positioned on the edge of the metal cup is used to connect an electrical or mechanical suction device to it.<sup>2,3</sup>

Higher success rates and simpler cup positioning in the occipito-posterior (OP) position are two benefits of metal-cup vacuum extraction over soft-cup extraction, particularly when an OP cup is utilized.<sup>4</sup> Sadly, the stiffness of metal cups can make application painful and challenging, and using them raises the possibility of embryonic scalp injury. In the US, metal-cup vacuum extractors are not commonly utilized.<sup>5</sup> The majority of these studies examining the effects of forceps delivery versus vacuum extractor on mothers and fetuses concur that vacuum extractors are

superior to forceps for mothers because they cause less soft tissue damage, require less regional or general anesthesia, and result in less blood loss.<sup>6</sup> The present study compared effects of forceps delivery and vacuum extraction on maternal and fetal outcome.

### MATERIALS & METHODS

The present study consisted of 70 women in the second stage of labor requiring assisted vaginal delivery. All patients gave their written consent for the participation in the study.

Data such as name, age, etc. was recorded. Patients were divided into 2 groups of 35 each. In group I, ventouse was used and in group II, forceps were used. Parameters including the timing of the instrument's application, the delivery time, the kind of tool used, the number of pulls or detachments in the event of a ventouse, the amount of analgesia or anesthesia administered, the extent of the episiotomy, the perineal tears, the vaginal lacerations, the cervical tears, Apgar score, maternal blood loss, and other data were noted. Data thus obtained were subjected to statistical analysis. P value  $< 0.05$  was considered significant.

### RESULTS

**Table I Assessment of parameters**

Parameters	Variables	Group I	Group II	P value
Mode of delivery	Specified instrument	30	35	0.72
	Other (forceps)	5	0	

Indication for delivery	Fetal distress	25	8	0.05
	Delay plus distress	1	7	
	Delayed second stage	7	18	
	To shorten second stage	2	2	

Table I shows that mode of delivery was specified instrument in 30 in group I and 35 in group II. Other (forceps) were in 5 in group I. Indication for delivery was fetal distress in 25 and 8, delay plus distress in 1 and 7, delayed second stage in 7 and 18 and to shorten second stage in 2 patients each in group I and II respectively. The difference was significant ( $P < 0.05$ ).

**Table II Analysis of neonatal outcome**

Neonatal outcome	Group I	Group II	P value
Cephalhematoma	3	2	0.05
Jaundice	4	1	
Facial palsy	1	3	
Mortality	1	0	

Table II shows that neonatal outcome was cephalhematoma in 3 in group I and 2 in group II, jaundice in 4 in group I and 1 in group I, facial palsy in 1 in group I and 3 in group II, and mortality was seen in 1 in group I patients. The difference was significant ( $P < 0.05$ ).

**DISCUSSION**

Forceps delivery and vacuum extraction are obstetric procedures used to assist in childbirth when there are concerns about the progress of labor or the well-being of the mother or baby.<sup>7</sup> While both techniques can aid in safely delivering the baby, they also carry certain risks and potential complications. Forceps delivery may be indicated when there is prolonged second-stage labor (pushing stage).<sup>8,9</sup> Maternal exhaustion or inability to push effectively. Fetal distress where expedited delivery is necessary. Maternal health conditions where minimizing pushing effort is crucial (e.g., heart disease). Vacuum extraction may be used when there is prolonged second-stage labor. Maternal fatigue or inability to push effectively. Fetal distress where a quicker delivery is needed.<sup>10,11</sup> The present study compared effects of forceps delivery and vacuum extraction on maternal and fetal outcome.

We found that mode of delivery was specified instrument in 30 in group I and 35 in group II. Other (forceps) were in 5 in group I. Indication for delivery was fetal distress in 25 and 8, delay plus distress in 1 and 7, delayed second stage in 7 and 18 and to shorten second stage in 2 patients each in group I and II respectively. Research by Berkus et al<sup>12</sup> has demonstrated that overdiagnosing cephalhematomas based solely on clinical characteristics without ultrasound confirmation is possible. Previous research shows a varied occurrence of cephalhematomas and concludes that when more ventouse extraction techniques are mastered, the incidence of these lesions decreases. 82% of forceps and 77.3% of vacuum cases showed the occipitoanterior position as reported by Shihadeh et al.<sup>13</sup> It was observed that 17.38% of vacuum and 17.33% of forceps had occipitoanterior locations.

We observed that neonatal outcome was cephalhematoma in 3 in group I and 2 in group II, jaundice in 4 in group I and 1 in group I, facial palsy in 1 in group I and 3 in group II, and mortality was seen in 1 in group I patients. One hundred suitable

women in the second stage of labor who needed assisted vaginal delivery were randomly assigned to have vacuum extraction or forceps delivery in a study by Shekhar et al.<sup>14</sup> A total of 100% of the women assigned to forceps delivery actually used the instrument (a delivery rate of 100% in forceps vs. 90% in VE); however, the group assigned to vacuum extraction experienced significantly less maternal trauma (40% in forceps vs. 10% in VE,  $p < 0.001$ ), analgesic medication use ( $p < 0.001$ ), and blood loss (234 ml in VE vs. 337 ml in forceps group,  $p < 0.05$ ). On the other hand, vacuum extraction seems to raise the risk of cephalhematoma and neonatal jaundice. In both groups, more severe newborn morbidity was infrequent.

**CONCLUSION**

Authors found that ventouse techniques were discovered to be more effective than using forceps.

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