



# The operative vaginal delivery: experience of five years

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## Abstract

**Objective:** To evaluate the perinatal outcomes of forceps and vacuum extraction cases in our clinic.

**Methods:** The study was planned as a retrospective study. The delivery cases were examined by accessing archival information between January 2006 and December 2010. The postpartum follow-up of the cases that had maternal and fetal complications were evaluated by taking into consideration the patient files.

**Results:** There were 6,043 deliveries in our clinic between January 2006 and December 2010. The number of total operative vaginal delivery was 65. The total operative vaginal delivery rate within 5 years was 1%. The complication rate was 20.8% for vacuum extraction, and 21.9% for forceps extraction.

**Conclusion:** Proper use of obstetric forceps and vacuum enables safe and timely practice of vaginal delivery in cases where abnormal course of birth exists and emergency delivery is needed. Since the risk of fetal injury in operative vaginal delivery is based on the instrument which is used. Clinical status and experience of the operator is the primary step of selection of the instrument, it is very important that the obstetricians who got obstetrics training should learn to use both instruments and indications.

**Key words:** Vacuum, forceps, fetal complication, maternal complication.

## Operatif vajinal doğum: Beş yıllık deneyim

**Amaç:** Kliniğimizde forseps ve vakum uygulaması ile doğum yapan olguların perinatal sonuçlarının değerlendirilmesi.

**Yöntem:** Çalışma retrospektif bir araştırma olarak planlandı. Ocak 2006 - Aralık 2010 tarihleri arasında doğum yapan hastalar, arşiv bilgilerine ulaşılarak incelendi. Maternal komplikasyon ve fetal komplikasyon gelişen hastaların doğum sonrası takipleri, hasta dosyaları göz önüne alınarak değerlendirildi.

**Bulgular:** Ocak 2006 - Aralık 2010 tarihleri arasında kliniğimizde 6043 doğum gerçekleştirildi. Operatif vajinal doğum uygulanan olguların toplam sayısı 65 idi. Beş yıllık toplam operatif doğum oranı %1 olarak hesaplandı. Vakum uygulamalarındaki komplikasyon oranı %20,8, forseps ile doğumdaki komplikasyon oranı ise %21,9 olarak saptandı.

**Sonuç:** Obstetrik forseps ve vakumun doğru kullanımı, anormal doğum seyri olan ve acil doğum gereken durumlarda güvenli ve zamanlı vajinal doğumun gerçekleşmesini sağlar. Operatif vajinal doğumda fetal yaralanma riski, genel olarak kullanılan enstrümana özeldir. Klinik durum ve operatörün tecrübesi, enstrümanın seçilmesinde birincil aşama olduğu için, obstetri eğitimini alan hekimlerin her iki enstrümanın da kullanımını ve endikasyonlarını çok iyi bilmeleri en büyük önemi taşımaktadır.

**Anahtar sözcükler:** Vakum, forseps, fetal komplikasyon, maternal komplikasyon.

## Introduction

Forceps and vacuum used in obstetrics are the instruments which turn obstetric care into a practice unique to obstetricians. Proper use of these instruments enables safe and timely practice of vaginal delivery in cases where abnormal course of birth exists and emergency delivery is needed.<sup>[1]</sup> Cesarean rates reached to

approximately 32.9% of all deliveries in the United States. However, while operative deliveries (forceps, vacuum) were 17.7% in 1980, it decreased to 4% in 2000.<sup>[1-3]</sup> The steps should be known before performing operative delivery practices. Evaluating the position and level of fetal head is the first step in operative delivery. The second step is to meet prerequisites required for forceps or vacuum applications. These

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prerequisites are the engagement of fetal vertex, full open cervix, knowing fetal position definitely, evaluating maternal pelvis, providing sufficient analgesia to mother, emptying out the bladder, experienced operator, the ability to stop the practice when required, to get informed consent form, and to keep required personnel and equipment available. After required prerequisites are met, the indications for operative delivery are: extension of second phase of delivery, impairment of fetal well-being condition urgently or potentially, unreliable fetal heart beat trace and shortening second phase of delivery for the welfare of mother (fatigue of mother, maternal cardiopulmonary or cerebrovascular disease).<sup>[4]</sup>

In our study, perinatal outcomes of the cases who delivered by forceps and vacuum practices in our clinic between 2006 and 2010 were evaluated in the light of the literature.

## Methods

The study was planned as a retrospective research. Patients who delivered in between January 2006 and December 2010 in Gynecology and Obstetrics Clinics of Cerrahpaşa Medical Faculty, Istanbul University were examined by accessing archival information. Delivery data of patients (age, gravida, parity, gestational week, birth weight, 1st and 5th minute Apgar scores, operative delivery indication, gender of baby) who delivered by forceps and vacuum practices were recorded. Postpartum follow-up of patients who had forceps and vacuum operations were analyzed. Postpartum follow-up of patients who had maternal complications (perineal trauma, urinary incontinence and fecal incontinence) and fetal complications (cephalhematoma, subgaleal hemorrhage, intracranial hemorrhage and facial paralysis) were evaluated by considering patient files. Percentage, average, standard deviation, and minimum and maximum values were used in the descriptive analysis.

## Results

There were 6,043 deliveries in our clinic between January 2006 and December 2010. The number of total operative vaginal delivery was 65. Operative delivery was applied to 8 cases (8/988, 0.81%) in 2006, to 13 cases (13/1241, 1%) in 2007, to 14 cases (14/1339, 1%) in 2008, to 15 cases (15/1365, 1%) in 2009, to 15 cases (15/1210, 1.2%) in 2010. Our total

operative delivery rate for five years was calculated as 1% (65/6,043). Operative delivery indications were extension of second phase of delivery (20/65, 30.7%), fetal distress (40/65, 61.5%) and maternal cardiac disease (7.8%, 5/65), respectively. Vacuum was applied to 24 cases (36.9%) and forceps was applied to 41 cases (63.1%). Mean age of cases who had operative vaginal delivery was 26.4 (min.: 19 – max.: 37), while mean gravida was 1.73 (min.: 1- max.: 7) and mean parity was 0.38 (min.: 0 - max.: 3).

Mean delivery week of cases was calculated as 38.7±0.5. Mean birth weight of cases was found as 3,643 (min.: 2,670 - max.: 4,610) gram. While mean 1st minute APGAR score of cases was 4.7±0.3, mean 5th APGAR score was 6.1±0.4. When evaluated according to gender distribution, it was found that 53.1% of cases who had operative delivery were male while 46.9% of them were female.

When cases who underwent vacuum practice were evaluated, it was seen that 14 cases (58.3%) were diagnosed with operative delivery indication due to the extension of second phase of delivery and 10 cases (41.7%) were diagnosed with operative delivery indication due to fetal distress. Mean 1st and 5th minute Apgar scores of cases who underwent vacuum practice was 4.5±0.2 and 5.9±0.4, respectively.

When cases who underwent forceps practice were evaluated, it was seen that 10 cases (24.3%) were diagnosed with operative delivery indication due to the extension of second phase of delivery, 24 cases (58.5%) were diagnosed with operative delivery indication due to fetal distress and 7 cases (17%) were diagnosed with operative delivery indication due to maternal cardiac disease. Mean 1st and 5th minute Apgar scores of cases who underwent forceps practice was 4.8±0.3 and 6.2±0.4, respectively. Mean birth weight of vacuum cases was 3,759 (min.: 3,170 - max.: 3,950) gram and it was found as 3,680 (min.: 2,670 - max.: 4,610) gram for forceps cases.

When complication rates in cases who underwent vacuum practice were evaluated, it was seen that 4 cases (16.6%) had cephalhematoma and one case (4.1%) had intracranial hemorrhage. Complication rate in total vacuum practices was calculated as 20.8%. When complication rates in cases who underwent forceps practice were evaluated, it was seen that 7 cases (17%) had severe perineal trauma (3rd or 4th degree laceration), 1 case (2.4%) had fecal incontinence and 1 case (2.4%)

had cephal hematoma. Complication rate in total forceps practices was calculated as 21.9%.

## Discussion

According to the data announced by Turkish Statistical Institute in 2009, 1,241,617 deliveries occurred in Turkey. Especially medicolegal problems increasing recently, patient desires and the situation that physician is put after complications occurring during delivery seem as the causes of the increase in cesarean rate. Operative delivery is simply the vaginal delivery made by using vacuum or forceps. When Turkish data are reviewed, it is not possible to give a healthy operative delivery rate. The rate of the USA after 2000 seems about 5%.<sup>[5,6]</sup> In our study, our operative delivery rate is found as 1% when our 5 years of experience is considered. As it is seen, our rate is quite below the data of the USA. We associated this result with medicolegal problems increasing recently that obstetrics undergo. We see that our rates of operative delivery between 2006 and 2010 are 0.81%, 1%, 1%, 1%, and 1.2%, respectively.

Choosing proper instrument for operative delivery depends on the clinical indications and experience of clinician. According to the literature, forceps practice is associated with increased maternal morbidity (severe perineal trauma) and vacuum practice is associated with increased fetal morbidity (scalp injury, cephalhematoma).<sup>[7-9]</sup> In our clinic, forceps was used on 63.1% of cases. The main reason for the preference difference between two instruments is that the experience of our clinic on forceps is higher. In the study of Johanson et al., it was observed that instrument type used has no significance in terms of complication risk.<sup>[10]</sup>

No significant difference was observed statistically in our study when complication rates of vacuum and forceps were compared (vacuum complication rate is 20.8% and forceps complication rate is 21.9%). While neonatal complications (cephalhematoma, intracranial hemorrhage) distinguished in cases who underwent vacuum practices, maternal complications (perineal trauma, fecal incontinence) distinguished in cases who underwent forceps practices. Indications of vacuum and forceps practices should be evaluated in the same way, because both instruments have prerequisites. While the most frequent indication was extension of second phase of delivery in 58.3% of vacuum cases in

our study, it was fetal distress in 58.5% of forceps cases. All cases diagnosed with operative delivery indication due to maternal cardiac diseases were undergone forceps. The reason for choosing forceps in this indication is that forceps practice is a faster procedure than vacuum practice. When our operative delivery indications are considered cumulatively, fetal distress (61.5%) is placed on the top.

In a study comparing vacuum and forceps during a 9-month follow-up, no difference was observed in weight, visual and hearing tests and hospitalization. No permanent damage was observed on long-term cognitive functions during follow-ups in the next period.<sup>[11]</sup> In our study, statistically no significant difference was observed between vacuum and forceps practices in terms of 1st and 5th minute Apgar scores of babies. Using vacuum and forceps practices consecutively increases the risks of negative perinatal outcomes more than the total relative risks of each instrument.<sup>[12]</sup> American College of Obstetrics and Gynecology (ACOG) also does not recommend using more than one instrument during vaginal delivery.<sup>[13]</sup> In line with the literature, second instrument was never tried in any cases in our clinic when first instrument failed.

Practices aiming to decrease cesarean rate recently will help operative deliveries to come into prominence again. Proper use of obstetric forceps and vacuum enables safe and timely practice of vaginal delivery in cases where abnormal course of birth exists and emergency delivery is needed. The number of operative delivery practices performed by obstetric assistants who work at gynecology and obstetrics clinics during their educations decreased to minimum levels due to recent medicolegal problems. Fetal injury risk during operative vaginal delivery is generally peculiar to instrument used. Since clinical condition and experience of operator is the primary step for choosing instrument, it is very essential that obstetricians who got obstetrics training should learn to use both instruments and indications.

## Conclusion

Vaginal delivery by vacuum or forceps after proper education and careful patient selection are the two procedures which are still very essential in the obstetric practices.

**Conflicts of Interest:** No conflicts declared.

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