

Maternal and Perinatal Complications of Patients Subjected to Instrumented Delivery with Forceps at the Military Hospital of Guadalajara

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1. Abstract

1.1. Introduction: Speaking of physiological birth, this sometimes tends to become complicated during the delivery phase, and this is where the doctor may decide to use a tool that allows the safe extraction of the fetus, such as the use of forceps.

1.2. Objective: to demonstrate the importance of the use of forceps, as long as the appropriate technique is applied and it is performed in cases where it is truly warranted; as well as perform an analysis on maternal and perinatal complications after its use at the Guadalajara Military Hospital.

1.3. Material and Methods: a sample of 20 patients undergoing instrumental delivery at the HMREM was obtained in the period 2017-2020, and short-term complications of both the mother and the newborn were analyzed through their records.

1.4. Results: 2% of deliveries were performed with forceps. The most serious maternal complications were obstetric hemorrhage, while the most common perinatal complications were cephalohematomas and respiratory distress, which improved under appropriate treatment.

1.5. Discussion: use of forceps is not associated with greater fetal morbidity. Its use usually takes approximately 5 minutes, a vital time to improve the conditions of the newborn.

1.6. Conclusions: the technique used was correct in most cases and the benefit to the patients was significant. Therefore, we recommend allowing adequate training in the use of these instruments

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in the future.

2. Background

Childbirth is one of the most important events for both the mother and the doctor. It can be done vaginally (physiological birth) or abdominally (cesarean section); However, there are times in which vaginal delivery tends to have difficulties in the expulsion phase, requiring the support of other instruments or techniques such as the option of forceps, in order to achieve the proper birth of the baby [10, 12, 22].

This work will focus on the importance of proper use of forceps. These are defined as detachable instruments for obstetric use in the form of forceps, designed to take, without traumatizing, the head of the fetus inside the maternal pelvis during the expulsive period of labor, facilitating its extraction [24].

The use of forceps is a technique that has been used since ancient times, initially with the aim of extracting the dead fetus (embryotomy), after long hours of unsuccessful labor (1); Later, the techniques were adapted in order to be able to extract the fetus alive, in case the birth became complicated (3). However, with the passage of time, new surgical technologies, comfort for both the mother and the doctor, the speed of the procedure, better pain management and the high rate of cesarean sections have made the use of forceps considered an option. ambiguous technique, to such a degree that it is no longer given importance in teaching future generations of gynecological-obstetrician doctors [18, 19, 23]. For this reason, one of our objectives is to demonstrate that the use of forceps is not

considered an old technique, since it can be very useful in some situation where a birth is prolonged, and taking into account the care and techniques Adequately, postnatal complications can be minimal, and even beneficial results can be obtained [5-7].

In this document, the most important data about forceps will be discussed, as well as their use at the Regional Military Hospital of Medical Specialties of Guadalajara (HMRE) in patients undergoing instrumented delivery, with the purpose of knowing the type of technique used, the situation that led to the decision to use this type of instrument in the patients and the maternal and fetal complications that they could suffer in the short term.

3. Material and Methods

A) Materials

1. Record book of all pregnant patients admitted to the Regional Military Hospital of Medical Specialties of Guadalajara
2. Clinical records of the patients who underwent instrumented delivery with forceps at the Regional Military Hospital of Medical Specialties of Guadalajara
3. General supplies and consumables
 - 3.1. Various stationery and computer system.

B) Methods

1. In the Tocosurgery room of the Regional Military Hospital of Medical Specialties of Guadalajara, all pregnant and postpartum women are registered in different notebooks, specifying the type of delivery. From these notebooks, all patients who underwent instrumented delivery by forceps from January 1, 2017 to February 29, 2020 were included using a convenience sampling method.
2. The records in the clinical file of the patients who underwent instrumented delivery with forceps were reviewed and the data and variables necessary for the study were taken.
3. The postpartum sheets were reviewed and from there the data on the newborn was obtained.
4. The clinical records of the newborn were searched based on the mother's surname and registration number, thereby obtaining more complete and detailed information about the baby, such as well-child check-ups, postnatal complications and psychomotor development.
5. Once the records of both the mother and the newborn had been analyzed, a database was created in order to graph and percentile the results, thus identifying the most frequent complications presented in the binomial.

4. Selection and Exit Criteria

4.1. Inclusion Criteria

1. Pregnant women who underwent instrumented delivery with forceps, at the Regional Military Hospital of Medical Specialties of Guadalajara from January 1, 2017 to March 31, 2020.

2. Newborns by vaginal delivery instrumented with forceps born between January 1, 2017 to March 31, 2020.

4.2. Non-Inclusion Criteria

1. Pregnant women who underwent normal vaginal delivery
2. Newborns through normal vaginal delivery.
3. Pregnant women who underwent an emergency cesarean section during labor.
4. Pregnant women who underwent instrumented delivery with forceps, however their file was incomplete.

4.3. Elimination Criteria

1. Pregnant women who underwent elective cesarean section.

5. Variables

5.1. Independent Variables

1. Mother's date of birth
2. Gestational age
3. Mother's BMI
4. Parity (Pregnancy, Births, Cesarean section, Abortions)
5. Adequate prenatal control
6. Comorbidities of the mother during pregnancy
7. Indication for use of forceps
8. Type of forceps used
9. Hodge plane in which the baby was presented

5.2. Dependent Variables

1. Maternal
 - 1.1. Maternal complications (tears)
 - 1.2. Bleeding
2. Fetal
 - 2.1. APGAR at 5 min
 - 2.2. Advanced neonatal resuscitation
 - 2.3. Capurro
 - 2.4. Weight
 - 2.5. Size
 - 2.6. Sex
 - 2.7. Postnatal complications (respiratory distress syndrome, facial dermabrasions, cephalohematoma).

6. Ethical Aspects

The project adhered to the provisions of the regulations of the federal health law regarding health research, without exposing the identification of the patients involved, for purely academic purposes.

Carrying out this study in our hospital is feasible because we have all the means to carry it out, in addition to allowing us to know if in our population the results are similar or there are differences

conditioned by environmental factors to those already published in other research centers. international level. Our main objective is to demonstrate that the use of this instrument can be beneficial, serving as a useful tool when a birth is prolonged and that the majority of maternal or perinatal complications are not necessarily secondary to these.

7. Results

In the descriptive analysis of this study, the following results were obtained: of all pregnant women registered in the tocosurgery area of the Regional Military Hospital of Medical Specialties of Guadaluajara from 2017 to 2020, 67% were delivered by cesarean section (n=735), 31% were normal vaginal births (n=338) and 2% were instrumented births with forceps (n=20).

Focusing only on mothers undergoing instrumental delivery, 25% (n=5) were between 15 and 17 years old, 65% (n=13) were between 18 and 29 years old, and only 10% (n=2) He was more than 30 years old. The percentage of primigravidas was 55% (n=11) and that of multipregnancies was 45% (n=9). 100% of the patients (n=20) received adequate prenatal care. Regarding their BMI, 60% (n=12) were overweight, while 25% (n=5) were in the normal range and only 15% (n=3) were type 1 obese. At the time of delivery, the mothers' weeks of gestation varied between the following categories: 95% (n=19) were full term, while 5% (n=1) were still preterm, with an average of 38 weeks of gestation +/- 2.

Among the complications during pregnancy, the most frequent were: urinary tract infections, cervicovaginitis, threatened abortion and hypertension in more than 50% of the patients, which improved with proper treatment (Figure 1). Regarding the indications for the use of forceps, those that stood out the most were: Fetal bradycardia, maternal fatigue, loss of fetal well-being, prolonged labor and in the least of cases, late decelerations, lack of descent and prolapse of the umbilical cord (Figure 2).

The type of forceps used was the Simpsons type in each of the cases 100% (n=20). The time of labor, from the time of delivery until the birth of the baby (second period) was 30-60min in 75% (n=15) of the cases, 61-90min in 15% (n= 3) of the cases and only 10% (n=2) lasted 91-120min, with an average of 50min +/-20. Once the procedure was finished, the quantification of bleeding was as follows: 90% (n=18) bled less than or equal to 500cc, while 10% (n=2) bled more than 500cc.

Regarding maternal complications, the most notable were perineal tears, presented in 80% of the patients (n=16) with the most common being 3rd degree, without presenting a 4th degree tear in any of the patients. ; followed by minimal lacerations of the vaginal wall, presented in 25% of the patients (n=5) and in the least cases, uterine prolapse in 5% (n=1) and obstetric hemorrhage presented in 10% of the patients. (n=2) (Figure 3).

Basic resuscitation maneuvers were applied to 100% (n=20) of the babies, without the need to perform advanced resuscitation

maneuvers. 35% (n=8) had an APGAR of 8 at 5 minutes, while in 65% (n=13) of the cases their APGAR was 9 at 5 minutes. The weight of the babies was presented as follows: 90% (n=18) had an adequate weight for gestational age, while 10% (n=2) had a large weight for gestational age and with respect to height, 5% (n=1) had low height for gestational age, while 95% (n=19) had adequate height. In the measurement of the Capurro (gestational age) of the newborns, 5% (n=1) had a capurro less than 37 weeks, 75% (n=15) had a capurro of 37-39 weeks of gestation, while the 20% (n=4) presented equal to or greater than 40 weeks of gestation.

Among the main neonatal complications, the most frequent were the following: cephalohematoma in 55% (n=11) of patients, respiratory distress syndrome or requirement for a positive pressure cycle in 10% (n=2) of patients. newborns, as well as a case of neonatal sepsis 5% (n=1), which evolved without major complications in the medium term, the rest of the newborns did not present any complications (Figure 4).

The records of the mothers and newborns were reviewed, as well as their follow-up in the outpatient clinic. All of them evolved satisfactorily, even the one who presented with uterine prolapse was started on treatment and was discharged three days later without presenting signs of fecal or urinary incontinence, discomfort or any other alteration later. The patient who presented obstetric hemorrhage was transfused with an erythrocyte package and was discharged three days later due to clinical improvement and adequate hemodynamic evolution [21].

Likewise, the children continued to be monitored in our hospital, as well as their well-child check-up appointments, where adequate psychomotor and neurological development was reported in each of them, denying long-term complications after the use of forceps.



Figure 1: Maternal complications during pregnancy

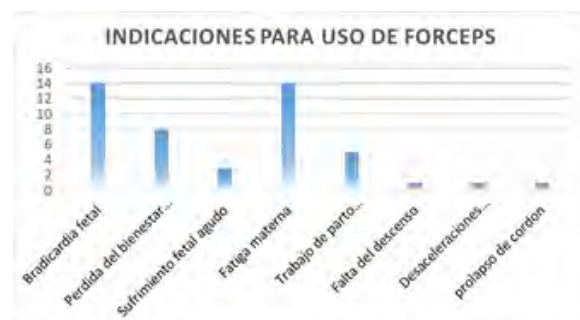


Figure 2: Indications for the use of forceps



Figure 3: Postpartum maternal complications

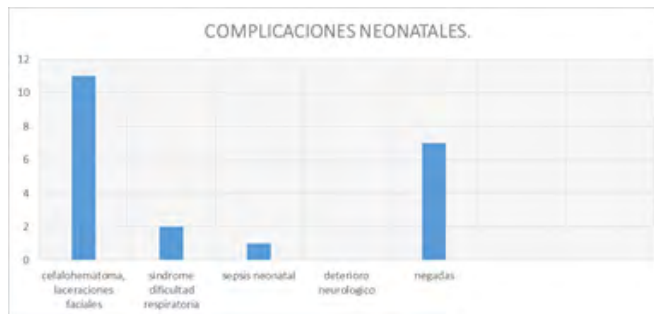


Figure 4: Main neonatal complications

8. Discussion

This study aimed to compare maternal and perinatal complications secondary to instrumented delivery with forceps at the Regional Military Hospital of Medical Specialties of Guadalajara, with those already established at the national level. Among the results, it was found that the percentage of forceps use in our hospital was 2%, which agrees with the literature, since currently the usefulness of this instrument has been reduced to 1.5-5% [2, 4]. Among the main indications for its use are: maternal fatigue, fetal distress, fetal bradycardia and prolonged labor, as well as the presentation and season in which the baby is, the same reasons why the use of forceps in our hospital [8, 20].

The most serious complications were obstetric hemorrhage in the case of the mothers, who after the transfusion of a red blood cell package improved significantly, and were discharged without subsequent complications. While in the case of newborns, the most frequent complications were cephalohematomas and facial dermabrasions, as well as respiratory difficulty, which in the first 3 days disappeared almost completely with the support of positive ventilation cycles, with an evident improvement in the newborn without the need for advanced treatments and without having presented neurological deterioration or any severe complications in the short or medium term, with adequate psychomotor development according to the healthy child control notes, obtained from their records. According to the literature, most of the complications related to the use of forceps are related to obstetric trauma, causing obstetric hemorrhage, perineal tears, respiratory difficulty in the newborn and in rare and very rare cases, asphyxiation, severe neurological deterioration in the newborn. and facial, skull or clavicle fractures of the newborn [16, 13]. It is true that complications are inherent in

medical procedures. However, we can confirm that in our hospital we did not reach such levels of complications, since although there were some, they were nevertheless minimal and resolved.

Currently, complications from forceps are rare, although it is important to emphasize that part of this is due to proper technique, in addition to using them at the right time [14, 17]. When the fetal presentation is from the third or fourth Hodge plane, the use of forceps does not seem to be associated with greater fetal morbidity, in addition to the fact that its use usually takes approximately 5 minutes, a time that can be of utmost importance to improve the conditions of the newborn, since it allows us to act quickly and precisely; compared to the time that can be spent waiting and preparing for an emergency cesarean section, which often exceeds these 5 minutes. Therefore, they are safe for both the mother and the fetus and can be used safely if there is an indication, as an alternative to cesarean section, an operation carrying a much higher morbidity and mortality [11, 19].

9. Conclusions

The results obtained in our study demonstrate that the technique used was correct in most cases and that the benefit to the patients was significant. Therefore, we recommend allowing adequate training in the use of these instruments in the future, and even more so if the rotation of gynecology and obstetrics residents were carried out in our hospital [9].

Maternal-fetal morbidity is four to six times higher with cesarean section than with forceps and although the abdominal route has become a safe procedure, in emergency and medium-height situations where the progression of labor becomes complicated, the cesarean section does not have to do anything. before the forceps and will have to do less at lower heights (low or expulsion forceps), since there is a risk of injuring the neonate at the time of making the incision and complicating the binomial picture [15].

It is a valuable instrument that should be well known by those who practice obstetrics, which should not be feared, but respected. In conclusion: "Forceps when indicated and known how to apply. Caesarean section when necessary and known how to perform" [24].

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