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RESEARCH ARTICLE

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The Most Significant Risk Factors for Intranatal Fetal Damage When Using the Kiwi Vacuum Extractor

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ARTICLE HISTORY

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The question on expediency of application of vacuum extraction of a fetus does not cause doubts, at the same time, in connection with a perfect design of the machine for vacuum extraction with the expansion of indications for its production (beginning of fetal hypoxia, myopia high degree, for shortening second period), there was the need to clarify the factors of risk of damage to the fetus in the production of the auxiliary vaginal operational technology.

Research Purpose

Determine the state of the newborn after vacuum extraction and identification of the most significant risk factors of their defeat.

History of the birth under which used vacuum extraction retrospectively analyzed. Three groups were formed by outcomes for newborns: the first group - 9 (20,4%) newborns had cephalohaematoma, the second-15 (34,1%) neonates with pain syndrome, and the third - 20 (45,5%) without damage to the fetus. The fetal distress was major indication for the production of vacuum extraction.

Conclusions

The most significant were: stimulation of the birth forces and fetal hypoxia of the fetus. Less significant risk factor, according to the results of our research was the level of location of the head in the small pelvis.

Key words: Vacuum Extraction, The Factors of Risk of Damage to the Fetus, Cephalohaematoma, Pain Syndrome, Hypoxia of the Fetus.

Introduction

Critical fetal conditions or disorders of contractile activity of the uterus that occur at the most critical moment of delivery (the second period) require emergency delivery using auxiliary vaginal surgical technologies of the highest efficiency for both the fetus and the mother. One of these technologies is vacuum fetal extraction using the "KIWI" device.

The zone of the greatest obstacle of the birth canal is the plane of the narrow part of the pelvis, when the fetal head reaches it and the need for rapid delivery, 2 technologies are used: the imposition of obstetric forceps and Introduction.

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The zone of the greatest obstacle of the birth canal is the plane of the narrow part of the pelvis, when the fetal head reaches it and the need for rapid delivery, 2 technologies are used: the imposition of obstetric forceps and cuum extraction of the fetus. The operation of applying obstetric forceps requires a high level of technical training and a lot of practical experience, which limits the possibilities of this technology. Previously used vacuum fetal extraction had limited indications due to the relatively large percentage of complications in unskilled use and the design of the device's Cup. Performing a caesarean section with a low-standing fetal head dramatically increases the risk of its traumatic lesion. At the same time V. E. Radzinsky (2011) considers that when placing the fetal head in the pelvic cavity, a caesarean section with careful extraction of the head is preferable. According to many authors, vacuum extraction is less traumatic for the mother, but more traumatic for the fetus than obstetric forceps [1-3].

Modern kiwi system for vacuum extraction of the fetus is not traumatic and does not require complex technical training of the doctor, so it is available for medical institutions of any level, and the range of indications for its use has expanded somewhat. For example, vacuum extraction can be used when intrauterine fetal hypoxia has begun, myopia of a high degree and shortening of the labor period.

The goal is to determine the results of vacuum fetal extraction and identify the most significant risk factors for intranatal lesions.

Material and Methods

A retrospective analysis of 44 outcome of vaginal operative delivery by vacuum extraction of the fetus by means of the device according KIWI MAME GOC of Irkutsk in 2010.

According to the outcomes for newborns, 3 groups were formed: the first group – 9 (20.4%) newborns had cephaloematomas, the second-15 (34.1%) newborns with pain syndrome, and the third-20 (45.5%) without fetal damage. The following risk factors

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were analyzed to determine the cause and effect of fetal vacuum extraction and its traumatic lesion risk factors for intranatal fetal damage are the duration of the birth process, the stimulation of contractions, the level and location of the head at the time of vacuum extraction, indications for vacuum extraction, and the average number of traction in each group analyzed.

The frequency of vacuum fetal extractions from all operative deliveries was 4.2%, which is more than the average in Russia-3.5% and less than the same indicator in the United States-5%. The age of women who underwent vacuum fetal extraction in 86% ranged from 18 to 36 years. One woman in labor was more than 36 years old and two were less than 17 years old. Most of them were first-born - 41 (91%).

Indications for the production of vacuum fetal extraction were distributed as follows: in the first place was fetal distress in 27 (63.7%), which was registered in the second period of labor. In second place, secondary weakness of the birth force in 9 (20.4%), in third place - a combination of weakness of the birth force and fetal distress in 7 (16%). In one observation (2.2%), the indication for vacuum fetal extraction was a high degree of myopia.

Thus, the structure of indications for vacuum fetal extraction had a peculiar character, when the first place was beginning intrauterine fetal hypoxia, and not the main, as before, indication for vacuum extraction-a secondary weakness of the birth force, which was noted only in every fifth woman with vacuum fetal extraction. The structure of indications for vacuum fetal extraction indicates the presence of risk factors in 43 analyzed cases. Thus, the structure of indications for vacuum fetal extraction had a peculiar character, when the first place was beginning intrauterine fetal hypoxia, and not the main, as before, indication for vacuum extraction-a secondary weakness of the birth force, which was noted only in every fifth woman with vacuum fetal extraction. The structure of indications for vacuum fetal extraction indicates the presence of risk factors in 43 analyzed cases.

The average duration of labor in the first group was 10 hours 13 minutes± 48 minutes, in the second group 11 hours. 26 min.± 32 min. and in the third group 7 hours 45 min.± 25 min. Thus, there is no significant difference in the average duration of labor in groups where children were diagnosed with cephalosematomas and pain syndrome after birth. (P≥0.01) The average duration of labor in the third group is significantly less (P≤ 0.05) than in the first and second groups of children.

Stimulation of generic forces due to their secondary weakness in the first group was carried out in 7 (77.8%) cases, in the second group in 10 (66.7%) and in the third only in 5 (25%) cases, which is 3 times less than in the first group and 2.7 times less than in the second group.

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The average number of traction in the first group was 3.0 ± 0.6 , in the second group 2.7 ± 0.5 and in the third 2.8 ± 0.4, and did not differ significantly (P≥ 0.05).

The fetal heads at the time of vacuum extraction were located in the narrow part of 7 (77.8%) of the first group, and in two (22.2%) in the wide part of the pelvis In the second group, 8 (53.3%) in the narrow part of the pelvis, 5 (30%) in the wide part, and two (13.3%) at the exit of the pelvis. In the third group, two (10%) fruits had a head in the wide part of the pelvis, 7 (35%) in the narrow part, and 11 (55%) fruits in the plane of the exit from the pelvis Thus, the largest number of cases with a favorable location of the head (the plane of exit from the pelvis) was noted in the third group, and the smallest in the second.

The level of location of the fetal head in the pelvic cavity confirms the relatively favorable conditions for non-traumatic extraction. So the location of the fetal head in the wide part of the pelvis occurred only in 9 (20.4%), in the narrow part in 22 (50.4%) and in the exit plane in 13 (29.5%).

It is obvious that the number of traction depends on the level of the fetal head in the pelvis. For one traction, the fetal head was removed in 11 (25%) cases, for 2 traction in 14 (31.8%) women, for 3 traction in 17 (38.6%) and for 4 traction in 2 (4.5%). Thus, the dependence of the level of location of the fetal head and the number of traction produced is traced So, for 2 traction, 25 (56.8%) newborns were extracted, the head of which was located in the narrow part and in the exit from the pelvis, for 3-4 traction-19 (43.1%) newborns, the pre-lying part of 9 (47.4%) of them was in the wide part of the pelvis.

The weight of fruits extracted by vacuum extraction was distributed as follows: 13 (29.5%) newborns from 3500 to 4260 g, 26 (47.7%) from 3000 to 3499 g. and 5 - from 2500 to 2999 gr. Thus, the fetuses belonging to the risk group for intranatal lesions were 40.9% (18). These are small and relatively large fruits..The weight of fruits extracted by vacuum extraction was distributed as follows: 13 (29.5%) newborns from 3500 to 4260 g, 26 (47.7%) from 3000 to 3499 g. and 5 - from 2500 to 2999 gr. Thus, the fetuses belonging to the risk group for intranatal lesions were 40.9% (18). These are small and relatively large fruits.

When analyzing birth histories, it was found that an unfavorable risk factor for fetal trauma was also the features of inserting the head in the form of a posterior view of the occipital presentation, which was noted in 9 (20.4%) observations, that is, in every fifth fetus that was extracted by vacuum extraction.

The posterior type of occipital presentation at the time of production of the vacuum extraction of the fetus in the first group occurred in 2 (22.2%) fetuses, in the second group in 3 (20%) cases, and in the third group in 4 (20%) observations. Therefore, the posterior type of occipital presentation is not a risk factor for traumatic fetal damage.

The condition of newborns was traditionally assessed on the Apgar scale. With a score of 8 points or higher at birth, there were 36 (81.8%) newborns, with a score of 5-7 points-3, 5-8 points-1, 4 points-1 and 6 points-in 3 observations. Thus, 8 children were born in a state of hypoxia. All children born in a state of hypoxia, had cephalhaematoma removed.

Traumatic fetal damage was detected in 24 newborns and was manifested by the presence of cephalohematomas in 9 (20.4%) and pain syndrome in 15 (34.1%), that is, in 54.5% of cases of vacuum extraction. When analyzing the course of labor in women whose children had cephaloematomas at birth, it was noted that the fetal head was located in the narrow part of the pelvis in all cases before vacuum extraction, and the birth was complicated by premature outpouring of amniotic fluid.

The main part of children were discharged during the first week: 8 children on day 3, 17 children on day 4, 5 – 6, 6 – 7, and 3 children on day 7. During the following week, 3 newborns were discharged. Late discharge is explained by the severity of jaundice in newborns and impaired cerebral circulation. No children were treated in the intensive care unit or intensive care unit

Conclusions

Vacuum fetal extraction is an effective and relatively safe method of emergency delivery if there are indications and conditions for it.

It is possible to use vacuum extraction of the fetus during its hypoxia and when the fetal head is located in a wide part of the pelvis. At the same time, hypoxia of the fetus in the decompensation stage is an undoubted risk of its traumatic damage during the production of vacuum extraction of the fetus even with THE kiwi device»

The main risk factors for traumatic fetal damage during vacuum extraction with the KIWI device are: stimulation of labor forces, severe fetal hypoxia and premature outpouring of amniotic fluid

To a lesser extent, the injury of the fetus is affected by the level of the location of its head in the pelvic cavity at the time of vacuum extraction.

References:

[1] Radzinsky V E Obstetric aggression (2011); Moscow.

[2] Saveleva G M, Kurzer MA, Shalina RI, Akush, gin (2000); 5: 3-8.

[3] Chernukha EA of A.... and gin (2001); 5: 4-9.