

The Feasibility of Predicting a Clinically Narrow Pelvis in Modern Practical Obstetrics

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Abstract:

One of the principles of modern medicine is the prediction of pathological processes in the human body and their prevention. Changes in the frequency and types of anatomically narrow pelvis, as well as anthropometric indicators of pregnant women and the frequency of large fetuses remain one of the causes of obstetric complications associated with a clinically narrow pelvis. Therefore, the issues of predicting a clinically narrow pelvis before the implementation of obstetric complications, which are the most common cause of litigation, have not lost their significance

The aim of the study was to clarify the need to predict a clinically narrow pelvis, through the retrospective determination of some prognostic indices of this obstetric pathology that can affect the frequency of CUT and its obstetric complications.

Retrospectively, during 2020, 65 birth histories of the Irkutsk city perinatal center were investigated, which ended surgically due to a clinically narrow pelvis.

After each case of completion of labor with a clinical diagnosis: "Clinically narrow pelvis of pronounced degree", Matveev and Ershova indices were determined based on anthropometric data of the woman and fetus, ultrasound pelviometry was performed to determine the direct dimensions of the pelvic cavity and the existing indicator of the biparietal size of the fetal head as a result of the third screening, followed by calculation of the pelviocranial index (PKI).

As a result of the conducted research, we came to the conclusion. That the most significant risk factors for a clinically narrow pelvis are a large fetus and incorrect insertion of the fetal head into the pelvic cavity, as well as an anatomically narrow pelvis, Normative values of prognostic indices and the absence of clinical manifestations of this pathology led to inadequate tactics with the prompt completion of labor.

In the presence of risk factors for a clinically narrow pelvis, it is advisable to calculate prognostic indices and, if possible, ultrasound pelviometry with the determination of the pelveocranial index to choose the method of delivery.

Key words: prognosis; clinically narrow pelvis; risk

Introduction:

With a clinically narrow pelvis (CT), there is a large percentage of complications both on the part of the mother (ruptures of the soft tissues of the birth canal, postpartum bleeding, infectious and toxic complications

of childbirth, vesicovaginal fistulas) and on the part of the fetus (hypoxia, asphyxia, trauma) [1,2,3,4,5,6].

In modern obstetrics, so-called atypical forms of narrowing of the pelvis have appeared, when the external dimensions remain normal, and the capacity of the pelvis is reduced due to the flattening of the sacrum [5].

The purpose of the study: to show the feasibility of predicting a clinically narrow pelvis as a method of preventing possible obstetric complications.

Material and methods: A retrospective study of 65 birth histories with a diagnosis of Clinically narrow pelvis (CUT), ended with operative delivery. After each delivery with the diagnosis: "Clinically narrow pelvis", on the basis of anthropometric indicators of maternity hospitals and fetal weight, the indices of Matveev Yu.G. (1973) and Ershova A.S. (1977) were calculated according to the formulas: $\text{Matveev Yu.G.} = (\text{height} - \text{Approx.} + (\text{growth} - \text{VDM}) + (\text{Pelvic index} - 0.5 \text{ Okr. Abdomen}) + (\text{Ind.pelvis} - \text{VDM}))$, where VDM is the height of the uterine fundus, and the pelvic index was equal to the sum of the indicators of the external dimensions of the pelvis: $\text{distantia spinarum} - (\text{D.S.})$, $\text{distantia cristarum} - (\text{D.C.})$, $\text{distantia trochanterica} - (\text{D.T.})$ and $\text{conjugate externa} - (\text{C.Ext.})$. According to the author, with an index exceeding 305, there was no discrepancy between the size of the pelvis and the fetal head.

Ershov A.S. = percentage of the estimated weight of the fetus from the weight of the pregnant woman, which normally should not exceed 5.4%.

Ultrasound transabdominal pelviometry was performed with a Toshiba Aplio-500 device and a linear sensor with a frequency of 12 MHz, with the determination of the main direct dimensions of the pelvic cavity and the calculation of the pelvocranial index (PKI) according to the methodology developed by V.A. Kramarsky (1994), taking into account the biparietal size (BPR) of the fetal head obtained as a result of the third screening, or ultrasound examination before childbirth. The PKI was calculated according to the BPR formula: $(\text{PRP} + \text{PRV})/2$, where BPR is the biparietal size of the fetal head in mm., PRP is the direct size of the pelvic cavity, PRV is the direct size of the pelvic outlets, and the ratio of $\text{PRP} + \text{PRV}/2$ was the conditional direct size of the narrowest part of the pelvis.

The study was conducted on the basis of the city perinatal center of Irkutsk during 2020.

The inclusion criteria were: full-term pregnancy, lack of increased nutrition, infertility in the anamnesis, the presence of uterine tumors and traumatic injuries of the bone pelvis. The criteria for non-inclusion were: the presence of pathology, the absence of which was assumed when determining the inclusion criteria.

Results and discussion:

Clinical manifestations of functional inferiority of the pelvis occurred in 56 analyzed cases, which amounted to 86.2%. Of the risk factors for clinically narrow pelvis, the largest fetus was most often noted in 24 (36.9%) cases. At the same time, the average fetal weight among women with a diagnosis of "Clinically narrow pelvis" was 3406 ± 186.2 grams with a fluctuation from 3200 to 4400 grams. Anatomically narrow pelvis was detected in 6 (9.2%) cases. The combination of an anatomically narrow pelvis and a large fetus was noted only in one observation (1.5%).

In the active phase of the birth process, in 13 (20%) cases, incorrect insertion of the fetal head into the pelvic cavity was recorded. Anomalies of labor activity were noted in 16 (24.6%). In the group of women with a clinically narrow pelvis, weakness of labor forces was detected in 6 (9.2%) cases, and discoordination of uterine contractile activity of varying severity in 10 (15.4%). Childbirth with oxytocin in the case of weakness of labor forces within 2-3 hours led to the severity of clinical manifestations of CT and the appearance of recorded fetal distress according to its cardiotocogram (CTG). At the same time, the average duration of labor was $8\text{h}48 \text{ min.} \pm 1\text{h}24 \text{ min.}$ with a fluctuation from 4 hours to 18 hours and 20 minutes. The state of functional inferiority of the pelvis was found in 34 (52.3%) women in the active phase of labor, when the opening of the cervical pharynx was from 5 to 8 cm, averaging 5.8 ± 0.8 cm, and in 31 (47.7%) in the stage of slowing down the active phase of the labor process (from 8 to 10 cm.), when the opening of the pharynx of the cervix was almost complete or complete.

Intrauterine fetal hypoxia was noted in 7 cases (according to CTG data), and the assessment of newborns on the Apgar scale in these observations ranged from 5 to 6 points in the first minute after birth. In the remaining 59 cases, the Apgar score at birth ranged from 7 to 9 points.

The average duration of the cesarean section operation was 36.2 ± 0.4 min. with a fluctuation from 25 to 60 minutes. The average blood loss is 386.1 ± 48 ml. with a range from 300 to 700 ml.

When analyzing the presented material, attention is drawn to the satisfactory condition of newborns in most observations. The verification of the diagnosis in almost half of the women studied occurred with an almost complete opening of the cervical pharynx, only in 24 (36.9%) newborns. 24 (36.9%) women had large fetal sizes, and an anatomically narrow pelvis was noted only in 6 (9.2%) cases. At the same time, the combination of a large fetus and an anatomically narrow pelvis, as high-risk factors, occurred only in one observation (1.5%). One of the possible manifestations of functional inferiority of the pelvis may be incorrect insertion of the fetal head, which occurred only in 13 (20%) of observations. And the combination of incorrect insertion and a large fetus occurred only in one observation (1.5%). Violation of contractile activity of the uterus as a possible manifestation of a clinically narrow pelvis was noted in every fourth woman (24.6%). At the same time, early labor activity against the background of incomplete opening of the cervical pharynx with the correct insertion of the fetal head, its relatively small size and the absence of anatomical narrowing of the pelvis in the active phase of labor was observed in 5 (7.7%) of women in labor, which could be regarded as a discoordination of labor forces, and not a manifestation of a clinically narrow pelvis.

To confirm this assumption, prognostic indicators of functional inferiority were analyzed. It was noted that the Matveev index with an index of less than 300 in the main group took place in 30 observations, amounting to 46.2%, and in 35 exceeded the index of 305, which corresponded to a favorable forecast.

The Yerzhova index in the examined group of women was on average $5.4 \pm 0.8\%$, which exceeded the indicators indicating the possibility of a favorable course of labor. At the same time, the index ranged from 3.96 to 6.2% and in 30 (46.2%) cases was higher than the acceptable standards of a favorable forecast. An unfavorable combination of indicators of the prognostic indices of Matveev and Ershova was noted only in 24 observations, which amounted to 36.9%. With control pelviometry and determination of PKI, its unfavorable indicators were noted only in 20 (30.75%) observations. In 16 (24.6%) cases, PKI indicated the likelihood of a CUT that needed to be diagnosed at the early stages of labor. And in almost 44.65% of cases, the index indicator was favorable.

Thus, in almost half of the cases, there was an evidence-based variant of functional inferiority of the pelvis, which was confirmed by prognostic indices and the prognostic value of the PKI. The objectivity of the assumption made with timely verification of the diagnosis is also indicated by such factors as the satisfactory condition of children at birth in most maternity hospitals, the absence of traumatic lesions of the mother and fetus and a low percentage of a combination of unfavorable risk factors for a clinically narrow pelvis. Operative delivery, in none of the observations were complicated by pathological blood loss, or toxic-infectious complications.

Attention is drawn to the absence of clinical manifestations of functional inferiority of the pelvis in 9 (13.8%) women out of 65, the presence of a large fetus in 24 (36.9%) pregnant women, anatomically narrow pelvis in 6 (9.2%) cases, atypical insertion of the fetal head in 13 (20%) women. And a combination of unfavorable risk factors, such as a large fetus and an anatomically narrow pelvis, occurred only in 1 (1.5%) observation, as well as the presence of a large fetus and incorrect insertion of the fetal head into the small pelvis in one case (1.5%).

Of the risk factors, the most significant was a large fetus, the frequency of which did not exceed even 40%. In second place was atypical insertion

of the fetal head, the frequency of which was 20%, and only in third place was an anatomically narrow pelvis (9.2%).

When analyzing the indicators of prognostic indices, the significance of each of them turned out to be equivalent if we take the Matveev index not exceeding 300 as the norm of an unfavorable prognosis, and the Ershova index more than 5.2%. Then in 46.2%, the indicators of these indices indicated a high degree of risk of CUT during delivery through the natural birth canal

Thus, based on the data obtained, the following conclusions can be drawn:

1. Risk factors for a clinically narrow pelvis include: a large fetus, atypical insertion of the fetal head into the pelvic cavity that does not correspond to the anatomical shape of the pelvis, and anatomical forms of a narrowed pelvis.
2. The analysis showed that in almost half of the cases there was an unjustified diagnosis of a clinically narrow pelvis.
3. In the presence of risk factors for CT (anatomically narrow pelvis, large fetus) at the end of pregnancy, it is necessary to predict a clinically narrow pelvis at the end of pregnancy (after 38 weeks) to choose the optimal method of delivery.

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