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On the history of management of the third stage of labor in Kazan (to the 155th anniversary of the birth of Professor V.S. Gruzdev)

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Abstract

The article aims to show the experience of the Kazan Obstetrics and Gynaecology Clinic named after V.S. Gruzdev for replacing the obstetric operation "manual removal of the placenta" with other techniques to prevent serious postpartum complications. Research methods — the historical study of primary literature sources. Manual removal of the placenta always associated with the risk of infection and developing puerperal sepsis. That is why obstetricians are constantly looking for a replacement for this operation. In 1895, even in the pre-Kazan period of work, professor Gruzdev successfully performed a method of inserting saline into the umbilical vessels to speed-up placental separation in the third stage of labor. While working in Kazan, on his proposal, doctor L.S. Sidorova (1936), and then Professor P.V. Manenkov (1942, 1948, 1955) and doctor M.V. Korotkova (1958) thoroughly studied and implemented the method of Budimilich in the work of the maternity ward of the clinic. This method involves replacing the saline solution with the crude alum solution. The second measure, preventing hemorrhage in the third stage of labor and avoiding manual removal of the placenta, was the successfully testing intravenous pituitrin (oxytocin) injection by Z.N. Yakubova, completed with the defense of her doctoral dissertation (1962). The high efficiency of these methods allowed us to recommend to them for widespread obstetric practice.

Keywords: the third stage of labor, placenta, obstetrical bleeding, manual removal of the placenta, oxytocin.

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Humans have evolved in such a way that the birth of a child is accompanied by both joy and anxiety. Joy is induced first by the end of many months of waiting for the completion of pregnancy, second by the feeling that accompanies the successful birth of a child, and third by the presence of a baby on the mother's breast rather than inside the womb. This joy is nonetheless accompanied by anxiety over the final outcome of physiological childbirth due to the risk of hazardous complications in the third stage of labor, namely bleeding and infection.

Bleeding may occur shortly after childbirth, in the third (placental) stage of labor, due to a disorder involving separation of the placenta or a delay in the discharge from the uterus of an already separated placenta. The infection manifests itself after some time, in the postpartum period, and is associated with the risk of introducing an infectious agent into the uterus when performing manual separation of the placenta, because a hand inserted into the uterus becomes contaminated while passing through the vagina. Today, with the hope of preventive treatment with modern antibacterial agents, obstetricians perform this surgery, supplementing hand sterilization with the use of sterile rubber gloves and antibiotic therapy in the postpartum period.

Professor V.S. Gruzdev, in his program lecture "Perspectives on the Past, Present, and Future of Obstetric and Gynecological Science," noted the scientific and practical importance of the discovery in 1847 by I. Semmelweis of ways to prevent "puerperal fever," as it"*... is the result of penetration of an organic infectious principle into the puerpera's body, extremely easily carried into the genital tract of women in labor and parturient women by the hands of examining or operating doctors, as well as by instruments*" [1].

With regard to the risk of infection during childbirth, V.S. Gruzdev wrote: "*First of all, the entire inner surface of the uterine body... is nothing more than a continuous wound,*" therefore "*...any postpartum woman in the first days after childbirth can be considered as wounded*" [2].

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He continued: "*The introduction of rational prophylaxis of puerperal diseases has tremendously reduced both morbidity and especially mortality from them in obstetric institutions. ... In the obstetric department of the Kazan Obstetrics and Gynecology Clinic, for 3644 puerperas who gave birth here during the period from 1900–1901 to 1914–1915 academic year, only one died of puerperal fever.*" During this period, 63 (1.7%) manual removals of the placenta were performed.

Obstetricians have always been, and are still in search of ways to separate and excrete the placenta without entering the uterus by hand. V.S. Gruzdev in his "Course …" [2] in the section "Retention of the placenta" reported that "*almost 100 years ago, DeLone suggested injecting vinegar into the umbilical vein when retention of the placenta. Having tried this method in several cases, just with the replacement of vinegar with a* ***sterile saline solution*** (emphasis added by L.K.) *I was convinced that in this way it is really possible to achieve separation of the placenta. Experiments with the injection of liquid under high pressure into the umbilical vein, performed on the excreted placentas, showed me further that the liquid under these conditions easily leaks out due to the rupture of the terminal branches of the umbilical vein on the uterine surface of the placenta. It is quite possible that* ***it is this leakage that plays the main role in the separation of the placenta*** *with this method* (emphasis added by L.K.)."

We know from the primary source [3] that the author made observations "on *pouring the placenta through the umbilical vein with water of different temperatures—either cold ... or warm*," and it was found that infusing the placenta led to acceleration of placental separation and discharge of the placenta. Moreover, the minimum required volume of injected fluid was 300 ml, and cold water was more effective than warm water. V.S. Gruzdev explained the mechanism of separation of the placenta via rupture of the terminal branches of the umbilical vein with the formation of a retroplacental hydrometra.

He undoubtedly kept the problem in mind at all times. We drew this conclusion from the dedication scribed by V.S. Gruzdev in his neat handwriting in a copy of "Course …" presented to assistant P.V. Manenkov with the inscription "*To Pavel Vasilyevich Manenkov from his loving teacher. 23/ıx-29.*" In the margins of page 138, next to the information about DeLone and his experiment on infusing the placenta, we find a note in pencil: "*The Mojon-Gabastu method.*" This aroused some interest.

In 1933, the *Kazan Obstetrics and Gynecology Clinic* celebrated its 100th anniversary. V.S. Gruzdev, having delegated the position of Department Head first to Professor I.F. Kozlov and then to Private Lecturer P.V. Manenkov, wholly concentrated on preparation for the anniversary, forming a collection of scientific works. As the saying goes: "Now's the time to gather stones."

The head of the clinic's maternity ward, Assistant M.A. Romanov, compiled a report on the department's work [4]. Summarizing the results of 18 years (1915–1932), he established that manual separation of the placenta had been performed in 116 (1.7%) parturient women. The normal course of the postpartum period was recorded in 67 (58.5%) puerperas. The remaining 49 (41.5%) puerperas had various forms of the disease. Moreover, 10 (13.8%) puerperas developed severe postpartum sepsis, which caused a lethal outcome in 3 (2.6%) cases.

The numbers were discouraging compared with those of 1900–1915. In these years, with the same frequency (1.7%) of manual separation of the placenta, postpartum morbidity was 14%, septic processes were registered in 3.5%, and mortality from sepsis occurred in 0.03%. This prompted a search for an escape route out of this situation.

Centuries-long practice has shown that, in most physiological deliveries, the placental period ends within 30 minutes. However, starting from the second half of the XIXth century, empirically, and in the first half of the XXth century, there was a tendency to wait for signs of separation of the placenta for 2 hours if blood loss did not exceed the physiological (permissible) norm. In those years, 500 ml was considered the norm. When positive signs of placental separation appeared within this time, the placenta was isolated by known and generally accepted methods (pushing, Abuladze, Genter, Crede-Lazarevich). We emphasize that the main defining aspect of the end of the placental period was not time but the appearance of signs of placental separation.

V.S. Gruzdev, having headed the Kazan Obstetrics and Gynecology Clinic in 1900, made it a rule that "… if *there are no special indications (bleeding), then the afterbirth should be born independently. ... Squeezing of the placenta according to Credé is performed only after it is separated by the forces of nature from the uterine walls, and in any case not earlier than 30 minutes after the birth of the child.*" This is confirmed by the description of the conservative instruction of the placental period in the publications of the students of V.S. Gruzdev, N.N. Chukalov (1922, 1926), and M.A. Romanov (1936).

To address this situation, a search was undertaken for ways to separate the placenta without entering the uterus by hand.

In 1934, V.E. Rogovin said that the obstetrician does not have"...*a way of forcing the placenta to separate smoothly and quickly, in addition to the manual one, which poses a great danger in terms of introducing infection and should be a means used as a last resort*," and proposed his own method of separation and isolation of the placenta [5]. In general terms, the method was reduced to pulling the umbilical cord with one hand and fractional displacement of the uterus up through the anterior abdominal wall with the other.

Kazan obstetricians tested the method of V.E. Rogovin. Students of Professor V.S. Gruzdev, assistant M.A. Romanov, and graduate student I.V. Danilov [6], based on careful execution in 230 cases of separation of the placenta by V.E. Rogovin's method, considered it possible to use this method if immediate termination of labor was deemed necessary. Concurrently, it was indicated that the method of separating the placenta and excreting the afterbirth according to V.E. Rogovin represents an improvement on the old method of separating and removing the placenta by pulling on the umbilical cord. However, the history of obstetrics has shown that pulling on the umbilical cord "*can cause not only the breakage of the latter and partial retention of the placenta, but even severe uterine bleeding and uterine inversion*."

Also in 1934, K.E. Efimov [7], characterizing the hazard and unpredictability of the outcome of manual separation of the placenta, wrote: "*Even the perfectly clean hand of an obstetrician, dressed in a rubber cover or an Okinchits sleeve, passing through the vagina, does not provide a full guarantee against the introduction of infection into the uterine cavity. Therefore, I do not make manual removal, but try to separate it (afterbirth) using external techniques*." The techniques of K.E. Efimov, at their core, were very similar to those of V.E. Rogovin.

The following publication by K.E. Efimov drew our attention. Although V.E. Rogovin does not mention DeLone, Majon, and Gabastou at all, K.E. Efimov, without going into particulars, believes that "*The Majon-Gabastou method makes sense to apply, if this is possible considering the puerpera's state, as the first manipulation; after attempts to squeeze out according to Crede, its benefit is doubtful, since the afterbirth is injured by vigorous squeezing and the integrity of the villi is disturbed.*"

In 1936, Professor K.K. Skrobansky [8] found it necessary to point out, in a textbook for students, that "*For a long time, they tried to facilitate the separation of the child's place from the walls of the uterus by filling the vessels of the placenta through the umbilical veins. ... Back in 1895, Gruzdev filled the placenta ... with cold or warm water and ... could note a significant reduction in the time of the placental period.*" Moreover, he described the technique for performing the method.

In 1935, R. Budimlich published his modification of the method of placental separation [9]. The method consisted of injecting 300 ml of 0.45% sterile solution of *aluminis crudi* into the placenta through the umbilical cord at a temperature of 39°C. If the placenta was not separated after 15 minutes, an additional 50–80 ml of this solution would be injected.

Professor V.S. Gruzdev regularly received this German magazine, and having read this article, became enthusiastic over the need to test Budimlich's method in the Kazan clinic. As a result, in 1936, a publication by L.S. Sidorova, the following appeared [10]: "*Due to the danger of the method of manual separation of the placenta, any proposal to separate the placenta without inserting a hand into the birth canal deserves a lot of attention from a practical doctor. The Crede method, which has been in use for over 70 years, is unsafe because is associated with complications ... and does not always achieve the goal. ... Recently, in international literature, Dr. Budimlich (Zbl. f. Gyn. No. 31, 1935) recommended a different method of separation, accessible practically to any doctor in any conditions and giving good results to the author.*"

Having used this proposal successfully for 19 urgent deliveries, when manual removal of the placenta was required, the author believed that due to the "...*compaction and enlargement of the placenta, there is a discrepancy between the placental surface and the placental bed, displacement of the placenta and excitation of uterine contractions, which accelerate separation of the placenta.*" As soon as signs of placental separation appeared after albumen infusion, the placenta was separated by conventional methods. In conclusion, the author argued that Budimlich's method "...*is simple in technique, not dangerous, accessible under any conditions and deserves the attention of district doctors.*"

Five years later, on May 23, 1941, the Head of the Department, Private Lecturer P.V. Manenkov (Fig. 1), reported at a meeting of the Society of Obstetricians and Gynecologists in Kazan the results of further testing of the Budimlich method and published them in the journal *Sovetskaya Meditsina* [11].

First, he stated that Budimlich's method, according to the author's description [9], was included "...*in the scheme of the placental period management and now we do not proceed to the manual separation of the placenta without first*



Fig. 1. Professor P.V. Manenkov (1938)

applying the Budimlich method." Over the past 5 years (since 1936), 14,114 babies were delivered at the clinic, and 142 (1%) parturient women had indications for manual separation of the placenta. This surgery was performed on 25 of them. The Budimlich method was previously performed on the remaining 117 women in labor. Eighty-nine (76%) of these parturient women, who "*…required and had to receive manual separation of the placenta*" managed to "*...avoid this dangerous intervention and, thus, reduce the number of manual separations of the placenta by more than half*." In 28 parturient women, Budimlich's method was not successful, and the afterbirth was removed by hand.

Thus, thanks to the Budimlich method, manual separation of the placenta was performed in only 53 of the 142 parturient women in which it was indicated, reducing the rate of the procedure from 1% to 0.4% of cases.

It should be added to the above that only 5 (5.6%) of puerperas with placental separation according to Budimlich (89 cases) had a febrile course of the postpartum period, and not a single lethal outcome was recorded. In puerperas with manual removal of the placenta (53 cases), 22 (41.5%) women had a febrile postpartum period, and 3 puerperas died. This led the author to conclude that "*Budimlich's method is simple, safe and effective, and it deserves to be introduced into wide practice not only in clinics and large maternity hospitals, but also in rural maternity facilities."*

In the second publication [12] P.V. Manenkov cited the results of observations over the past 5 years (since 1941). In 96 (1.4%) cases of 6,683 deliveries, there were indications for manual separation of the placenta (bleeding or prolonged, more than 2 hours, non-separation of the placenta). Twenty women in labor underwent this obstetric operation. In 76 women in labor, Budimlich's method was previously applied. In 46 (60.6%) of them, where manual separation of the placenta was required, Budimlich's method enabled avoidance of this operation, and in 30 of them, manual separation of the placenta and afterbirth removal were necessary.

Thus, in this series of cases, it was possible to reduce the frequency of manual removal of the placenta by half, namely to perform manual removal of the placenta not in 96 (1.4%) but only in 50 (0.7%) puerperas. The efficiency of Budimlich's method was noted in both urgent and premature births.

Moreover, with Budimlich's method, the course of the postpartum period was more favorable, as out of 46 puerperas, only 7 (15%) had a febrile postpartum period, and there were no lethal outcomes. By contrast, with manual removal of the placenta, 21 (42%) of 50 parturient women had a febrile period, and 1 parturient woman died.

As a result, summarizing 10 years of experience, Professor P.V. Manenkov justified dutifully, after a thoroughly conducted clinical study, that "*...in 70% of these cases, it was possible to avoid a serious operation - manual separation of the placenta. In other words, we managed to reduce the number of manual separations of the placenta by more than 3 times, thanks to the application of the Budimlich's method,*" In the V.S. Gruzdev clinic, this method has been used for many years.

In 1953, the editorial board of the journal *Akusherstvo i Ginekologiya,* in issue 4, published a contradictory article "To the clinic and management of the third, placental period of labor" by P.A. Beloshapko and V.M. Malyavinsky who graduated from the Institute of Obstetrics and Gynecology of the USSR Ministry of Health. Professor P.V. Manenkov responded to the editorial board's call for discussion and in the article [13] said that in the V.S. Gruzdev Kazan Obstetrics and Gynecology Clinic, the Budimlich method of placental separation "*...has been successfully used for 17 years. It enabled 70% of puerperas who had indications for manual removal of the placenta to avoid this serious operation*."

In May 1955, the "Conference of Innovators" was held in Kazan. Professor P.V. Manenkov in his report "Artificial separation of the placenta by Budimlich" [14] said that "*The study of this method for 18 years on the material of more than 300 cases has shown its simplicity, safety and efficiency. The use of the Budimlich method enabled to reduce the number of the placenta manual removal by more than 3 times.*"

In 1958, a scientific conference was held in honor of the 40th anniversary of the Great October Socialist Revolution. Doctor M.V. Korotkova (later, PhD in Medicine, Assistant of the Department of Obstetrics and Gynecology No. 1) presented a report [15] stating that the clinic already has the

experience of 400 cases, including her 65 operations according to the Budimlich method. In 62 cases, a positive result was obtained, and manual separation of the placenta was only performed in 3 cases, in the absence of signs of separation of the placenta and bleeding in the extreme. The postpartum period was normal in all cases.

All of the above enabled recommendation of the Budimlich method for widespread obstetric practice in order to **reduce the use of manual separation of the placenta and prevent septic postpartum diseases in women.**

Subsequently, from time to time, short notes appeared in the manuals with a delicately stated negative attitude toward Budimlich's method.

In 1954, Professor V.A. Pokrovsky, speaking about the non-separation of the placenta and separation of the afterbirth according to Budimlich, indicated that "*According to P.V. Manenkov, this method is simple, effective and safe*" [16]. However, this is where the conversation ends, as he further wrote: "*The method of injecting various solutions through the umbilical vein is not widely used in our obstetric institutions. The restrained attitude to this method is primarily due to the fact that when bleeding starts in the placental period, it is advisable to isolate the placenta as soon as possible; thereby reducing blood loss in a woman. Therefore, the use of these methods is not advisable*."

In 1964, A.P. Nikolaev [17], referring to the successful experience of Professor P.V. Manenkov, spoke out against the use of Budimlich's method in cases of severe bleeding, preferring, in his words, "the saving operation of manual separation of the afterbirth."

In 1968, K.N. Zhmakin and F.A. Syrovatko [18] commended the experience of Professor P.V. Manenkov. However, they emphasized that Budimlich's method "*...until now has not been widespread*" and added, without giving specific figures, "*Our personal experience also does not provide grounds for a broad recommendation of the Gabastou method.*"

It is worth recalling that, in December 1954, the 5th joint plenum of the Council of Obstetric and Gynecological Care of the USSR Ministry of Health and the RSFSR Ministry of Health decided to consider blood loss of not more than 250 ml physiologically permissible, from 250 to 400 borderline pathological, and 400 ml and above pathological. **This changed the approach to management of the placental period.**

Soon after, in 1957, L.S. Persianinov published the first volume of his *Obstetric Seminar*, where he recommended that practitioners conduct the placental period "*strictly expectantly, with constant follow-up of the woman in labor by a doctor or midwife ... Hasty and untimely attempts to remove the placenta ... often lead to a disorder of the normally proceeding placental period and are often accompanied by bleeding ... Interventions in order to remove the placenta when it is retained in the uterus, are indicated if bleeding occurs and blood loss exceeds 250 ml, or if the placenta is in the uterus for more than 2 hours*" [19].

Today, in the version of "Clinical Recommendations …" [20] introduced into the practice of obstetric hospitals, it is recommended to the doctor managing the labor to prevent bleeding in the placental period (*sic*!) "*by routine administration of 10 IU oxytocin intramuscularly or intravenously slowly (in the first minute after the birth of the fetus) and performing controlled traction on the umbilical cord in the presence of trained specialists.*"

While questioning the need for "traction" by the umbilical cord, we welcome the recommendation regarding the administration of oxytocin. However, we consider it necessary, in the interests of historical justice, to recall that Kazan obstetricians stood at the origins of this proposal.

Investigating the available materials, we found that in Kazan, an assistant named Zainab Nazipovna Yakubova conducted scientific work on the study of pituitrin. The motivation for the study of pituitrin was the following circumstance.

It is well known that pregnancy, childbirth, and the postpartum period can be complicated by various pathological situations that contribute to an increase in blood loss and even lead to a life-threatening condition. The mechanism of uterine hemostasis is known. It is implemented mainly by two processes: (1) contraction and retraction of the uterine muscles, which constricts the vessels in the region of the bleeding source, namely the placental site and (2) thrombogenesis in these vessels. In this case, a necessary condition should be the complete release of the uterus from the afterbirth.

In 1957, Z.N. Yakubova reported the results of clinical follow-up of 282 puerperas [21]. In the placental period, pituitrin (oxytocin) in the amount of 0.5 ml (2.5 U) in 20 ml of a 40% glucose solution was injected intravenously. All puerperas were predicted to have a blood loss above the maximum permissible level (hydramnios, multiple fetation, large fetuses, poor uterine contraction strength, placental previa, a large number of births in the history, etc.).

According to Z.N. Yakubova, the key success factor consists in (1) the choice of the moment for the injection of pituitrin and (2) the management of the placental period. We shall give the floor to the author.

First, "*We consider the very beginning of the third stage of labor to be the best moment for intravenous administration of pituitrin, when placental abruption has not started yet. Then the process of placental abruption takes place without the formation of a retroplacental hematoma, and subsequently, when the afterbirth is removed from the uterus, it is free of blood clots*." Otherwise, "*... blood clots from a retroplacental hematoma can be retained in the uterine cavity and cause repeated bleeding in the postpartum period*."

Second, "*We recommend a close monitoring of the separation of the placenta and isolation of it immediately as soon as these signs appear. … Placental abruption ... occurs within the first 2–3 minutes, and if the afterbirth is not isolated immediately, it may be pinched in the cervix, as after 4–5 minutes, the cervix starts to contract*." The author draws attention to the fact that "*In almost all cases, after the injection of pituitrin, its effect occurred instantly, and the uterus became stony-dense, and signs of separation of the placenta appeared quickly, within 2–3 minutes. Isolation of the afterbirth was performed by pushing the woman in labor with a slight hoisting her* [in 194 (70%) women in labor—our remark] *or by the methods of Abuladze, Lazarevich-Crede*."

Subject to the above conditions, blood loss of up to 200 ml was recorded in 95.8% of cases, whereas in 4.2%, it was up to 500 ml. It should be noted that, as judged by the list of indications for the administration of pituitrin, all women in labor were at risk for increased blood loss. The early postpartum period was uneventful in 97% of cases. There were no cases of delay in the afterbirth parts and late bleeding. Therefore Z.N. Yakubova declared confidently that "*Intravenous administration of 0.5 ml of pituitrin in 20 ml of 40% glucose solution is a simple and effective method of preventing atonic bleeding*."

Clinical follow-up continued for another 5 years. In the course of their implementation, an inventor's certificate was obtained for the prevention of atonic bleeding. In 1962, Z.N. Yakubova (Fig. 2) defended her doctoral thesis "Intravenous administration of pituitrin "P," "M," and oxytocin with glucose in the second and third stages of labor."

Later, information appeared about a new drug, methylergometrine, to enhance the contractile activity of the uterus. In 1986, on January 9, the Ministry of Health of the RSFSR issued order No. 55 "On the organization of the work of maternity hospitals (departments)." In accordance with the recommendations contained in it, "*For women at risk of bleeding, for prophylactic purposes, at the beginning of the third stage of labor,*



Fig. 2. Professor Z.N. Yakubova

1 ml of methylergometrine 0.02% solution with 20 ml of 40% glucose solution is slowly injected intravenously. If intravenous drip of oxytocin or prostaglandin is started during labor, then their administration should be continued for 25–30 minutes of the postpartum period."

In the V.S. Gruzdev Kazan Obstetrics and Gynecology Clinic, head of the maternity ward, high-level certificate physician V.A. Yankovich performed the follow-up and became convinced of the effectiveness of the introduction of methylergometrine at the time of crowning in combination with the introduction of drotaverine (No-Spa) to prevent entrapment of the placenta.

In subsequent years, the opinions of various authors on the management of the placental period were published regularly in the special literature. One of the latest publications was an article by E.M. Guseva [22]. In her opinion: "*At present, the question of* ***active or expectant*** *management of the third stage of labor remains controversial"* (emphasized by L.K.).

In the middle of the XIX century, G.I. Korablev [23] noted that "*...the afterbirth is removed by the forces of its nature not in all cases, which often under such circumstances that threaten the mother with danger, requires to resort to artificial removal thereof; and it was known in ancient times as well*," Concurrently, he indicated two directions of action in the placental period (expectant and active), treating them critically.

Regarding the first one, he said: "*...the obstetrician with carefree calmness and inexhaustible patience is waiting here for aid from nature (a day or more). The unfavorable consequences of indefatigable expecting actually proved the falsehood of the teaching and the unreliability of the method during childbirth accompanied by dangerous seizures.*"

Regarding the second, he believed that "*...immediate, upon delivery of the baby, separation and removal of the placenta from the reproductive parts*

... the method of assistance is full of reckless haste and harmful recklessness."

But what should a practitioner do in such cases?

G.I. Korablev answered this question with confidence: "*Therefore, in modern times, a **rational-active** method of support has emerged, which recommends to perform a surgery quickly in necessary cases, but not **recklessly*** (emphasis added by G.I. Korablev). … *It can be affirmatively stated that this method is the best*."

The dispute between supporters of active and expectant methods of management of the placental period continued throughout the latter half of the XIXth century. Abroad, K. Crede was a prominent representative of the former, and F. Alfeld was a representative of the latter; in Kazan, N.N. Phenomenov (obstetric clinic of the medical faculty of the Kazan Imperial University) was a representative of the former, and I.M. Lvov (maternity ward of the Kazan Provincial Zemstvo Hospital, Likhachevsky Maternity Hospital) supported the latter method, respectively.

In the early XXth century, Professor V.S. Gruzdev concluded this dispute by stating reasonably that, "*The most rational method of managing the placental period of labor is the middle one, which is not extreme of both over-active and overly expectant mode of action*," namely, "*...the placental period of labor is composed of two processes; the process of separating the placenta from the uterus and the process of removal it from the genital tract. The first of these processes should be left to the forces of nature, while we can accelerate artificially the removal of the separated placenta by squeezing the placenta according to the Crede method*" [2].

We believe that the experience of the clinic in finding ways to separate the placenta, eliminating the manual separation of the placenta, confirms fulfillment by the Kazan obstetricians, headed by Professor V.S. Gruzdev, of a recommendation from almost 200 years ago, of a **rational-active** (that is, an active-expectant) **approach to solving obstetric problems in the management of the third (placental) stage of labor**.

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REFERENCES

1. Gruzdev V.S. A look at the past, present and future of obstetric and gynecological science. *Russkiy vrach*. 1902; 2. (In Russ.)

2. Gruzdev V.S. *Kurs akusherstva i zhenskikh bolezney.* (Obstetrics and women's diseases course.) Berlin. 1922; 534 p. (In Russ.)

3. Gruzdev V.S. On the question of a single cord ligation. *Vrach*. 1895; (9–10): 175–177. (In Russ.)

4. Romanov M.A. Medical report of the maternity ward of the clinic of obstetrics and female diseases of the Kazan Medical University for 18 years (1915–1932). In: *Sborniki rabot KGMI za 1933 god.* (Collections of works of KSMI for 1933.) Kazan'. 1934; 111–112. (In Russ.)

5. Rogovin V.E. A new method of separating the placenta, based on the laws of mechanics, and prophylactic-active management of the afterbirth period. *Ginekologiya i akusherstvo*. 1934; (1): 29–39. (In Russ.)

6. Romanov M.A., Danilov I.V. Follow-up of the postpartum period according to the method of doctor Rogovin. *Kazan Medical Journal*. 1935; (5): 626–633. (In Russ.)

7. Efimov K.E. About the method of external allocation of the placenta after childbirth. *Zhurnal akusherstva i zhenskikh bolezney*. 1934; (4): 271–277. (In Russ.)

8. Skrobanskiy K.K. *Uchebnik akusherstva.* (Obstetrics textbook.) M.-L.: Medgiz. 1936; 255–260. (In Russ.)

9. Budimlic R. Improved method of artificial placenta detachment. *Zbl. f. Gin*. 1935; 31: 1827. (In Germ.)

10. Sidorova L.S. One of the safest ways to separate the placenta. *Kazan Medical Journal.* 1936; (11): 1339–1341. (In Russ.)

11. Manenkov P.V. The value of the Budimlich method as a replacement for manual separation of the placenta. *Sovetskaya meditsina*. 1942; (1–2): 18–20. (In Russ.)

12. Manenkov P.V. A simple, effective and safe way to artificially remove the placenta. In: *Trudy KGMI.* (Proceedings of KSMI.) Kazan'. 1948; 61–69. (In Russ.)

13. Manenkov P.V. *Comments on the article by P.A. Beloshapko and V.M. Malyavinsky "Towards the clinic and management of the third, successive, period of labor".* 1954; 1: 48–50. (In Russ.)

14. Manenkov P.V. Artificial separation of the placenta according to Budimlich. In: *Tezisy dokladov na konferentsii novatorov.* (Abstracts of the conference of innovators.) Kazan'. 1955; 15 p. (In Russ.)

15. Korotkova M.V. Artificial separation of the placenta according to the Budimlich method. In: *Tezisy dokladov nauchnoy konferentsii, posvyashchennoy 40-letiyu Velikoy Oktyabr'skoy sotsialisticheskoy revolyutsii.* (Abstracts of the scientific conference dedicated to the 40th anniversary of the Great October Socialist Revolution.) Kazan'. 1958; 175–176. (In Russ.)

16. Pokrovskiy V.A. *Patologiya posledovogo perioda. Ocherki akusherskoy patologii i operativnoe akusherstvo.* (Pathology of the successive period. Essays on obstetric pathology and operative obstetrics.) Ed. by K.N. Zhmakina, L.G. Stepanova. M.: Medgiz. 1954; 233–236. (In Russ.)

17. Nikolaev A.P. *Patologiya posledovogo i rannego poslerodovogo perioda*. (Pathology of the third stage of labor and early postpartum period.) A multivolume guide to obstetrics and gynecology. Vol. 3, book 2. M.: Meditsina. 1964. (In Russ.)

18. Zhmakin K.N., Syrovatko F.A. *Akusherskiy seminar.* (Obstetric workshop.) M.: Meditsina. 1968; 224–228. (In Russ.)

19. Persianinov L.S. *Akusherskiy seminar.* T. 1. (Obstetric workshop. Vol. 1.) Tashkent. 1973; 301–308. (In Russ.)

20. *Klinicheskie rekomendatsii (protokol lecheniya). Okazanie meditsinskoy pomoshchi pri odnoplodnykh rodakh v zatylochnom predlezhanii (bez oslozhneniy) i v poslerodovom periode*. (Clinical guidelines (treatment protocol). Providing medical care for singleton births in the occipital presentation (without complications) and in the postpartum period.) Letter of the Minis-

try of Health of the Russian Federation issued at May 6, 2014 No. 15-4/10/2-3185. https://ppt.ru/docs/pismo/minzdrav/n-15-4-10-2-3185-213658 (access date: 16.01.2021). (In Russ.)

21. Yakubova Z.N. On the issue of prevention of atonic bleeding. In: *Sbornik nauchnykh rabot KGMI*. (Collection of scientific works of KSMI.) Kazan'. 1957; 180–185. (In Russ.)

22. Guseva E.M. Comparative evaluation of methods of bleeding prevention in the afterbirth and early postnatal periods (literature review). *Vestnik novykh meditsinskikh tekhnologiy. Elektronnoe izdanie*. 2014; (1): 163. (In Russ.) DOI: 10.12737/7345.

23. Korablev G.I. *Kurs akusherskoy nauki i zhenskikh bolezney*. (Obstetric science and women's diseases course.) M.: 1841–1843; 560 p. (In Russ.)