

Prevention of Preterm Labor at Women with Multifetal Pregnancy

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Abstract – The paper analyzes the efficiency and safety of obstetric pessary among 78 pregnant women and 78 pregnant women with vaginal progesterone (Utrogestan) with cervical incompetence. It is found that obstetric pessary significantly improves the quality of life of patients at threatened miscarriage, preterm labor and sharply reduces pregnancy failures. Women with multifetal pregnancy and the cervical length of 25 mm or less have a risk of obstetric pessary surpassing the efficiency of vaginal progesterone by 53 % in labor prevention 34 weeks earlier the specified term and by 34 % – at term before 37 weeks. Serious perinatal complications were several times lower when the pessary was used in comparison with progesterone.

Keywords – labor, multifetal pregnancy, obstetric pessary, Utrogestan, cervical incompetence

I. INTRODUCTION

At present, the prevention of miscarriage and preterm labor is quite relevant. The 16th world congress on the issues of reproduction took place on March 18–21, 2015 in Berlin. Opening the session of the Advisory Board, professor Di Renzo presented basic provisions of 2015 FIGO resolution on overcoming early and superearly preterm labor (PL). He claimed that over the last 40 years the world is not facing the tendency towards the PL decrease, and the frequency of miscarriage increases, especially due to the growth of immature and multifetal pregnancy [1, 2].

At least every tenth child on earth (11.1 %) is born before the fixed term. This may be the reason of increasing perinatal mortality, incidence and disability, increased risk of motor and sensory disorders, difficulties in training and education of children. The decrease of PL frequency, especially early and superearly labor, improvement of perinatal indicators serve the priority tasks of the Global Millennium Development Goals specified by the WHO. For this reason, the session of the Advisory Board was quite relevant and timely.

The problem of multifetal pregnancy remains one of the most relevant in modern obstetrics due to high frequency of perinatal complications. The prevention of miscarriage in case of multifetal pregnancy is one of the most important directions within the complex of medical-preventive activities aimed to decrease the reproductive losses. The diagnostics of preterm labor in case of multifetal pregnancy is bound to certain difficulties since there is no specific symptomatology. The beginning of preterm labor can be specified via transvaginal ultrasonography thus measuring the cervical length or defining fetus fibronectin in cervical and vaginal secretion [1, 3, 4].

At present the main scientific direction is the search of factors promoting asymptomatic cervical dilatation and, hence, their main role in early labor alongside with measures blocking miscarriage mechanisms. One of such medicines with proved efficiency is vaginal progesterone, which is recently recommended as a means of PL prevention. There is a convincing evidence base confirming the efficiency of PL

prevention of two molecules: bioidentical (natural) micronized progesterone (vaginal introduction) and the 17 α -hydroxyprogesterone caproate (17-OPK) (intramuscular introduction). The main results of the study include the meta-analysis by Roberto Romero (Romero R. et al., 2012) [3, 4] presented at 2012 FIGO Congress, and the systematic review of the Cochrane Collaboration (Dodd J.M. et al., 2013), which combines the results of 36 clinical trials of micronized progesterone and 17-OPK with participation of 8,523 patients and health assessment of 12,515 newborns [5, 6].

The analysis showed that the use of vaginal progesterone:

- reduces risk of PL in terms up to 34 weeks by more than 40 %;
- reduces neonatal incidence by more than 40 %;
- reduces the number of newborns requiring resuscitation by more than twice;
- reduces the frequency of child birth with the body weight of less than 2500 g by 52 %.

British experts studied the value of progesterone in prevention of preterm labor at twins. They concluded that the use of progesterone at twins does not reduce the frequency of preterm labor and pre-natal death of a fetus prior to 34 weeks of gestation [1].

The factors contributing to preterm labor in II and III trimesters highlight high frequency of cervical incompetence observed among 15 % of pregnant women with threatened miscarriage.

One of the development trends of modern obstetric-gynecologic care is the introduction of efficient and low-traumatic methods. Such methods include Dr Arabin vaginal pessaries that are rather efficient in preventing preterm labor.

As of 2015 more than 50 % of women with twins in the USA gave birth prior to 37 weeks of gestation and 11 % – up to 32 weeks (for comparison: for women with one-fetal pregnancy these indicators made 6 and 1.5 %). Short cervix uteri in the II trimester is a dangerous risk factor of preterm labor [7–9].

One of heavy complications of pregnancy is the prolapse of fetal bladder. This disorder more often occurs since the II trimester of pregnancy (14 weeks) when fetal membranes go beyond the internal pharynx. The prolapse of fetal bladder is a consequence of uncorrected cervical insufficiency. For a long time, this pathology was quite traumatic and led to serious complications – cervix uteri suturation (cerclage). Broad use of surgical correction of cervical insufficiency in groups of pregnant women with threatened miscarriage is limited to gestation terms when surgical treatment is not quite efficient. An alternative to surgical treatment of cervical insufficiency is obstetric pessaries.

At present different types of obstetric pessaries are used to prevent cervical insufficiency. Dr Arabin Pessaries gained the highest popularity. Obstetric pessaries are intended to treat

cervical incompetence (short cervix uteri up to 25 mm and less) from 13 to 34 weeks of pregnancy. They are used to prevent preterm labor (multifetal pregnancy, pregnancy after hi-tech types of fertility treatment, recurrent miscarriage, pre-existing preterm labor) [8, 9]. Suture failure after surgical correction of cervical insufficiency is also applied as prevention.

Despite a certain progress in the prevention of preterm labor in case of multifetal pregnancy its frequency remains stable and ranges from 40–50 %. Therefore, it is critical to develop and implement modern methods aimed at prevention of preterm labor [9–11].

In view of unclear impacts of pessary and progesterone on the frequency of preterm labor we carried out the comparative analysis of the efficiency of these two methods of preterm labor prevention.

Purpose of the study: to compare the efficiency of Dr Arabin cervical pessary and vaginal progesterone for prevention of preterm labor among women with multifetal pregnancy and short cervix uteri.

II. METHODS AND MATERIALS

The study included 156 women with twins, with cervical length of less than 25 mm. Pregnant women were split into 2 groups: the 1st group comprised 78 pregnant women with obstetric pessary installed on 13–34 weeks of pregnancy, the 2nd group included 78 pregnant women receiving vaginal progesterone (400 mg once a day). The results of preterm labor before 34 and 37 weeks of pregnancy and adverse maternal and perinatal outcomes were assessed.

Pregnant women were observed in out-patient and polyclinic conditions, clinical trials of patients were conducted in compliance with the decree of the Ministry of Health of the Russian Federation No. 572n of 12.11.2012 “On the approval of healthcare procedures in obstetrics and gynecology and clinical recommendations (protocol) – multifetal pregnancy” // Letter of the Russian Ministry of Health 15-4/10/2-9480 of 17.12.2013 – M., 2017.

The following served the indications for obstetric pessary:

- cervical insufficiency (short cervix uteri up to 25 mm and less at gestational age from 14 to 34 weeks of pregnancy);
- prevention of suture failure after surgical correction of cervical insufficiency;
- threat of miscarriage combined with progressing changes of cervix uteri;
- prevention of preterm labor (multifetal pregnancy, pregnancy after hi-tech types of fertility treatment, recurrent miscarriage, pre-existing preterm labor);
- cicatricial deformity of cervix uteri.

Contraindications to obstetric pessary:

- severe extragenital pathology;
- recurrent bleeding from reproductive tract;
- prolapse of fetal bladder.

In case of vaginal inflammatory processes, the obstetric pessaries were installed after preliminary sanitation and bacteriological control.

The installation of a pessary is simple and does not require anesthesia. Besides, it is well tolerated by patients. After examination of a woman with void bladder the bended pessary is installed onto cervix uteri under pressure. The choice of external and internal diameters of the pessary was made according to the table “Procedures for selection of Dr Arabin obstetric pessaries” [2]. The table is compiled taking into account parity, term of pregnancy, condition of internal pharynx and cervical length.

III. RESULTS

The parity analysis showed that in the group of pregnant women with the risk of preterm labor the multiparous made 51.7 %. The primigravidae made 18 %, multigravida primigravidae – 30.3 %. The average age of pregnant women exposed to Dr Arabin obstetric silicone pessary in 2016–2018 was 25.4±3.4 years old.

At the introduction of Dr Arabin obstetric pessary the placental presentation 56.3 % of pregnant women had front uterine wall, 34.2 % – back wall, of 8.2 % – low insertion of placenta and 1.3 % – placental previa. The obstetric pessaries of 42.5 % of pregnant women in the 1st group were used due to functional and 57.5 % – due to anatomic cervical insufficiency. All pregnant women of the 2nd group were exposed to hormonal Utrogestan without tocolytics and spasmolytics in out-patient conditions.

The pessaries were taken out on the 37th week+1 day. Against the background of ARVI with high fever one patient suffered spontaneous miscarriage on 19–20th week of gestation in 2 weeks after the introduction of the pessary. 11.5 % of pregnant women had clinical situations, which required early pessary removal:

- emergency labor;
- premature rupture of membranes;
- labor development.

Premature rupture of membranes was diagnosed for 23.6 % of patients, labor anomalies – 12.6 %, emergency labor – 26.3 %, labor bleeding – 2.5 %.

Preterm labor before 34 weeks of pregnancy happened at 16.7 % of women in the group with pessaries and at 34.6 % – with progesterone – relative risk (RR) (RR=0.74; CI – 95 %: 0.48–1.17; p=0.24). However, for labor before 37 weeks this indicator was statistically significant – 39.7 against 59.5 % respectively (RR=0.81; CI – 95 %: 0.66–0.99; p=0.05). The associated indicator of adverse perinatal outcomes was much

lower – 19.2 against 28.2 % respectively (RR=0.70; CI – 95 %: 0.43–0.93; p=0.02).

Women applying pessary had profuse vaginal discharge (RR=2.91; CI – 95 %: 2.15–3.94; p=0.001).

Table 1 shows the indicators of perinatal outcomes.

TABLE I. PERINATAL OUTCOMES OF WOMEN WITH MULTIFETAL PREGNANCY AND SHORT CERVIX UTERI (25 MM AND LESS)

Outcome	Dr Arabin pessary	Vaginal progesterone	RR (CI – 95 %)	p
Labor < 34 weeks	16.7 %	34.6 %	0.47 (0.24-0.90)	0.03
Labor < 37 weeks	39.7 %	59.5 %	0.66 (0.46-0.94)	0.02
Weight < 2500 g	53 %	73 %	0.73 (0.22-0.82)	0.02
Respiratory distress syndrome	13 %	70 %	0.43 (0.15-0.75)	0.01
Newborn intensive care	15 %	40 %	0.37 (0.12-0.55)	0.001

The table shows that the frequency of preterm labor before 34 and 37 weeks was lower by 2 and 1.5 times respectively when using Dr Arabin obstetric pessary in comparison with vaginal progesterone.

IV. CONCLUSION

The use of Dr Arabin obstetric pessary significantly improves the quality of life of patients in case of threatened preterm labor and reduces pregnancy failures. The advantages of obstetric pessaries include the following: application of a method in outpatient-polyclinic conditions, no need for hospitalization, painlessness and simplicity of introduction, no need for anaesthetic support, reduction of the risk of infection and traumatism in labor, economic feasibility.

The obstetric pessary of women with multifetal pregnancy and cervical length of 25 mm and less exceeds the efficiency of vaginal progesterone by 48 % in labor prevention before 34 weeks and by 34 % – before 37 weeks. Serious perinatal complications were several times lower when using a pessary in comparison with progesterone.

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