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**METHODS OF TERMINATION OF PREGNANCY IN
OBSTETRICS AND GYNECOLOGICAL PRACTICE**

ABSTRACT

Varna, 2020

The dissertation contains... pages including... figures,... tables and... graphs. The bibliography covers... literary sources, of which... in Cyrillic and... in Latin. The publications related to the dissertation are 3.

The research on the dissertation work was performed in SBAGAL "Prof. Dr. D. Stamatov" - Varna and MHAT "St. Anna - Varna AD.

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**METHODS OF TERMINATION OF PREGNANCY IN OBSTETRICS
AND GYNECOLOGICAL PRACTICE**

DISSERTATION

For awarding a scientific and educational degree „doctor“

Scientific Specialty 03.01.45. “Obstetrics and Gynecology“

Scientific Supervisor

Assoc. Prof. Dr. Kremen Tsvetkov

Official reviewers:

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ABBREVIATIONS USED

ACOG - American College of Obstetricians and Gynecologists, USA

D&E - dilatation of the cervical canal and evacuation

FIGO - International Federation of Gynecology and Obstetrics

LBW – Low birth weight

MAII - medical abortion in the II trimester

NHS - National Health Service, United Kingdom

OR - relative risk

PG - prostaglandins

RCOG - Royal College of Obstetricians and Gynecologists, England

RF - risk factors

SC - cesarean section

SGA - Small-for-gestational-age, small for gestational age fetus

VA - vacuum aspiration

WHO - World Health Organization

g.a. - gestational age

g.w. - gestational week

KPBMP - Commission for termination of pregnancy for medical reasons

MA - medical abortion, "medical abortion"

MA I - medical abortion Trimester

NCPHA - National Center for Public Health and Analysis

SA - surgical abortion

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I. INTRODUCTION

Termination of pregnancy is the most common gynecological procedure. Worldwide, more than 56 million abortions are performed annually, 88.0% of which are in developing countries. In percentage terms, abortions in the second quarter accounted for 10.0% –15.0% of all abortions.

The birth / abortion ratio is characterized by demographic differences: for the Russian Federation it is 1/1, for the United States it is 2/1, for Europe it is 5/1, and for Bulgaria -5/1. Abortion must not be against the law and must be performed safely. In Bulgaria, Ordinance №2 of the Ministry of Health of 01.02.1990 defines the terms and conditions for abortion.

Surgical abortion is one of the most common causes of gynecological diseases, infertility and miscarriage. The term 'medical abortion' means the termination of a pregnancy with the help of medicines. The idea of medical abortion is old, but the development of methods for its implementation based on scientific evidence became possible in the late twentieth century. The Mifepristone molecule (RU-486) was developed in France in 1970-1980 by researchers involved in the study of glucocorticoid receptors. France was the first country to allow the use of Mifepristone and Misoprostol for early abortion in 1988. Since then, the method has gradually spread around the world.

Currently, there is a lasting trend in the world to expand the indications for medical abortion - including in the second trimester, as well as in adolescent pregnant women. Termination of pregnancy in the second trimester is most often used for medical reasons and less often for social. Termination of pregnancy in the second trimester represents only 10.0% - 15.0% of all abortions, but this manipulation is associated with 2/3 of their complications. At this stage, there is no unified and proven over time optimal, safe and effective method of abortion in the second trimester. Two procedures are most often used: surgical - dilatation of the cervical canals, evacuation of the fetus with the help of vacuum aspiration and abortion and medical - with Mifepristone and Misoprostol.

In Bulgaria, monographs on the action of prostaglandins were published in the 1980s. In 1983, J. Andreev et al. describe their use for abortion in the second trimester. Globally and nationally, based on randomized follow-up studies, there is an established protocol for safe termination of pregnancy in the first trimester - MA with Mifepristone and Misoprostol and vacuum aspiration. At present, there is no randomized, representative control study for Bulgaria in which to objectively compare the two modern methods for termination of pregnancy in the second trimester - dilatation of the cervical canal evacuation, compared with the combined use of Mifepristone and Misoprostol.

II. AIM AND TASKS OF THE DISSERTATION

II.1. AIM

The AIM of this dissertation is to perform a comparative analysis of the used surgical and medical methods of abortion in modern obstetric and gynecological practice, optimizing the criteria for application of procedures during the I and II trimesters of pregnancy.

II.2. TASKS

1. To make a comparative analysis of the structure of the studied groups of patients with indications for medical and surgical abortion during the I and II trimesters of pregnancy.
2. To perform a comparative analysis of modern medical and surgical methods of abortion during the first trimester of pregnancy: Mifepristone and Misoprostol against vacuum aspiration in terms of safety, efficacy, success, menstrual disorders, early and late complications.
3. To carry out a comparative analysis of modern medical and surgical methods for abortion in the second trimester of pregnancy: Mifepristone and Misoprostol against dilatation and evacuation in terms of safety, effectiveness, success, menstrual disorders, early and late complications.
4. To determine the risk factors for early and late complications in patients after medical and surgical abortion.
5. To derive the criteria for application of medical and surgical abortion during the I and II trimesters of pregnancy.
6. To clarify the economic feasibility of medical and surgical abortion during the second trimester of pregnancy - productivity and cost of labor, average hospital stay.

III. MATERIAL AND METHODS

III.1 CLINICAL MATERIAL

3.1.1. The subject of the research is the performance of medical and surgical abortion during the I and II trimester of pregnancy.

3.1.2. The subject of the study are pregnant women with indications for termination of pregnancy.

3.1.3. Place of study

The selection of cases in each group is hospital-based, using the registers of SBAGAL "Prof. Dr. D. Stamatov "Ltd. - Varna.

3.1.4. Study design

Patients are selected based on whether they have induced abortion in the first or second trimester, as well as on the type of abortion - MA or SA. Two pairs of groups were formed - for the I trimester (MA I, VA), for the II trimester (MA II, D&E). The Odds Ratio (OR) was used to measure the strength of the impact of the studied factor - the type of abortion. Exposure and result measurements are performed at different times.

The study is based on the epidemiological approach and is experimental-theoretical. Before collecting data on the subject of the study - patients with pregnancy in the I and II trimesters have an immediate impact. The study is retrospective and prospective. By type, the epidemiological study is observational, analytical - cohort type. The natural development of the studied phenomena - manifestation of early and late complications after exposure - termination of pregnancy by medical or surgical method, MA and SA (VA, D&E) was followed.

3.1.5. Unit and period of the study

Formation of the sample: For the period from 2013 to 2018 in SBAGAL "Prof. Dr. D. Stamatov "Ltd. - Varna and MHAT" St. Anna "- Varna are performed ≈ 2590 medical and surgical abortions in the I and II trimester (MA, SA). From literature data it was found that the assessment of the relative share in the general population for the parameter - completed abortion (selected as primary) is min. 87.0%. With a confidence probability $p = 0.05$ (95.00%), a confidence probability coefficient $z = 1.96$, a maximum permissible error rate $\Delta p = 3.0\%$ and a general population volume $N = 2590$ using a sample size formula to estimate the relative share of calculate a sample size of 420 abortions randomized in four cohorts, two for each trimester: 140 MA I / 140 VA; 70 MAII / 70 D&E. The groups were compared by patient age, gestational week in which the abortion was performed, parity, mode of delivery (normal delivery, SC), history of previous abortion and number of abortions, history of previous vaginal infection, and indications for termination of pregnancy (optional). The structure of the compared groups for the two trimesters is approximately the same. All manipulations related to abortion were performed in

accordance with the principles of the Declaration of Helsinki and patients gave informed consent after a detailed explanation.

III.2. METHODS

3.2.1. Research methods and abortion methods

All patients underwent a complete obstetric and gynecological examination, according to standard methods and with a volume of tests.

Medical abortion in the I trimester (MA I) -1 tablet. Mifepristone 200 mg orally, followed by 36 hours of taking 2 tablets of Misoprostol (Topogyne) of 400 mcg orally or sublingually every 2 hours.

Medical abortion in the II trimester - two therapeutic schemes depending

of which part of the day the abortion is to be completed:

First: 1 tablet. Misoprostol (Topogyne) of 400 mcg 20.00 h placed in the posterior vaginal fornix, followed by 1 tablet Misoprostol (Topogyne) of 400 mg subbuccal at 23.00 h and 01.00 h. (Tab.1)

Second: 1 tablet. Misoprostol (Topogyne) of 400 mcg 24.00 h placed in the posterior vaginal fornix, followed by 1 tablet Misoprostol (Topogyne) of 400 mg subbuccal at 02.00 h and 04.00 h.

Tab.1 Variants of distribution by hourly intervals in medical abortion in the second trimester

First option	20.00h	23.00h	01.00h
Topogyne 400mcg	1 tab in the posterior vaginal fornix	1 tab subbuccally	1 tab subbuccally
	00.00h	03.00h	06.00h
Topogyne 400mcg	1 tab in the posterior vaginal fornix	1 tab subbuccally	1 tab subbuccally

Vacuum aspiration (VA), I trimester - the woman is on the gynecological chair with emptied pelvic tanks - bladder and rectum. Short-term venous anesthesia is applied. A gynecological examination is performed to determine the position of the uterus and the size of the pregnancy. We catch the anterior lip of the cervix and pull the uterus along the conductive line of the pelvis. Use a hysterometer to determine the depth of the uterus. With Hegar dilators, dilate the cervix to N11 \approx N12 or to the number corresponding to gestational weeks, cleans the uterine cavity. Then the uterus is revised with a curette and the vagina is disinfected.

Dilation and evacuation (D&E), II trimester - after short-term venous anesthesia, the anterior lip of the cervix is captured. It is dilated to Hegar N13 ÷ N14. The fetal parts and the placenta are carefully expelled with forceps. The uterus is revised with a vacuum curette N12 and a curette. The procedure ends with disinfection of the vagina.

3.2.2. Statistical methods

Data processing: Data were processed and analyzed with IBM SPSS Statistics Versio 19.00 for Windows (Statistical Package for Social Sciences). To test the statistical hypotheses when working with SPSS, we work with an error of the first kind equal to 0.05 ($\alpha = 0.05$). The significance level (Sig. Level) was used for evaluation, which represents the corresponding probability of the calculated empirical characteristic. The significance level was compared with the error $\alpha = 0.05$. If the significance level is less than α (Sig. Level < 0.05), the null hypothesis (H_0) is rejected and the alternative (H_a) is accepted and vice versa - if (Sig. Level > 0.05), the null hypothesis (H_0) is accepted.

Methods for statistical analysis of the data: statistical methods were used for quantitative and qualitative assessment of the factor influence and statistical testing of hypotheses.

Verification of the theoretical distribution: To verify the theoretical distribution of the studied variable, the criterion of conformity is used - of Kolmogorov-Smirnov. The criterion was used to check whether the distribution of the studied variable was normal. The null hypothesis states that the distribution of the studied variable is normal. At a significance level of 2-Tailed $P < 0.05$, it is rejected and the alternative, i.e. it's not normal.

Proof of causation: To prove a causal relationship in the normal distribution of the studied variables, parametric tests are used, and in the absence of a normal distribution - non-parametric. When testing the statistical hypotheses, the null hypothesis (H_0) states that there is no statistically significant relationship between the studied variables. If the significance level Sig. Level < 0.05 , it is rejected and the alternative is accepted, i.e. The relationship between the studied variables is statistically significant. To prove a causal relationship, Chi-Square analysis was used as opposed to two relative parts. The empirical characteristic is presented as Chi-square Pearson. When the studied relationship is statistically significant with the correlation coefficient of Cramer's V, the degree of the relationship is measured: at a value of 0.1 ÷ 0.2 is weak, 0.3 ÷ 0.4 is moderate, 0.5 ÷ 0.6 is significant, 0.7 ÷ 0.9 is large; above 0.9 is extremely large.

Risk factor assessment: In case of a proven causal relationship, the Odds Ratio (OR) method was used to assess the studied factor as a risk factor. If: $OR > 1.00$ - the studied factor is a risk factor; $OR = 1.00$, the studied factor has no effect; $OR < 1.00$, the studied factor has a protective effect.

Mean scores: For the characteristic of the center of the empirical distribution of the studied variables the following generalizing characteristics are determined: mean arithmetic mean (Mean), median (Median), mode (Mode). In case of more significant deviations from the normal distribution and in the presence of remote observations, as an alternative to the ordinary mean and median, the so-called weighted sustainable assessments (M-

assessments). Remote observations were established by the methods of the numerical diagram. When the distribution is close to normal and remote observations are not strongly expressed, Huber's method (Huber's M-Estimator) is used to determine the weighted average value. In the case of significant deviations from the normal distribution and the presence of strong remote observations, the methods of Tukey's Weigh, Hampel's M-Estimator and Andrew's Wave were used to determine the weighted average.

IV. RESULTS AND DISCUSSION

4.1. Comparative analysis of the structure of the studied groups of patients with indications for medical and surgical abortion during the I and II trimesters of pregnancy

4.1.1. Age distribution

The calendar age of the patients is the first sign by which the four groups in pairs for the first and second trimesters are standardized. The average age in the two groups of the first trimester was 29 years, and for the second trimester - 28.5 years (Table 2). The four groups included women aged 18 to 45.

Table 2. Frequency distributions of patients by age with abortion in the I and II trimester

Age	Number	Minimum	Maximum	Average age	SD
MA I trimester.	140	18	44	29,05	5,868
VA	140	18	45	29,69	6,529
MA II trimester	70	18	42	28,61	5,616
D&E	70	18	44	28,53	5,768

MA I - medical abortion, Trimester, VA - vacuum aspiration

MA II - medical abortion, II trimester, D&E - dilation and evacuation

4.1.2. Distribution by gestational age

Gestational gestation is the second sign by which the four groups of pairs for the first and second trimesters are standardized.

The average g.w. in both groups of the Trimester is close to 8 g.w. for MA and 9 g.w. for VA, and for the II trimester - 19 g.w. for MA and D&E (Table 3).

Table 3

Frequency distributions of patients by g.v. in the groups with abortion I and II trimester

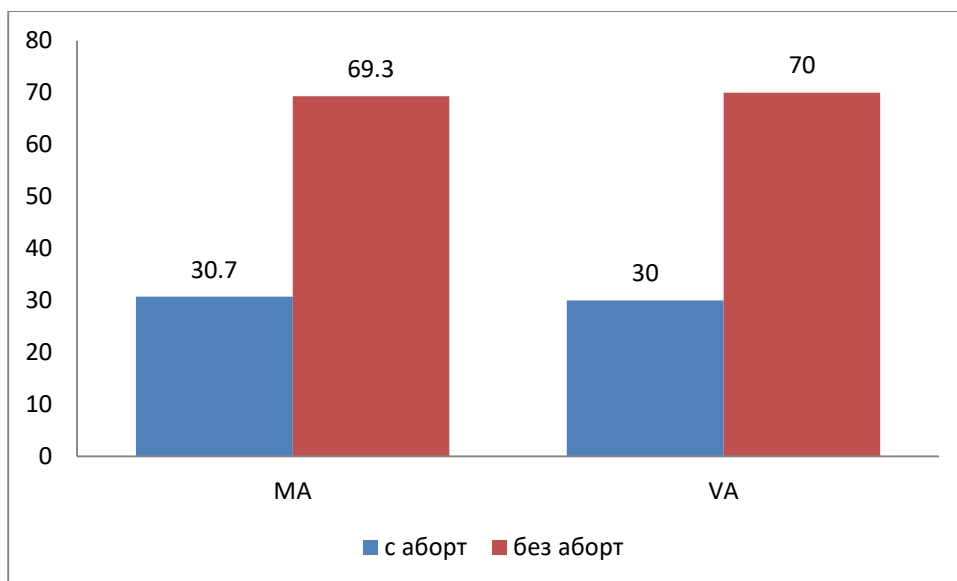
Gestational age	Number	Minimum	Maximum	Average g.w.	SD
Г.В. МА I	140	4	12	7,99	1,811
Г.В. VA	140	5	12	8,87	1,644
Г.В. МА II	70	13	22	18,99	2,216
Г.В. D&E	70	13	22	18,99	2,184

4.1.3. Distribution by parity and mode of birth

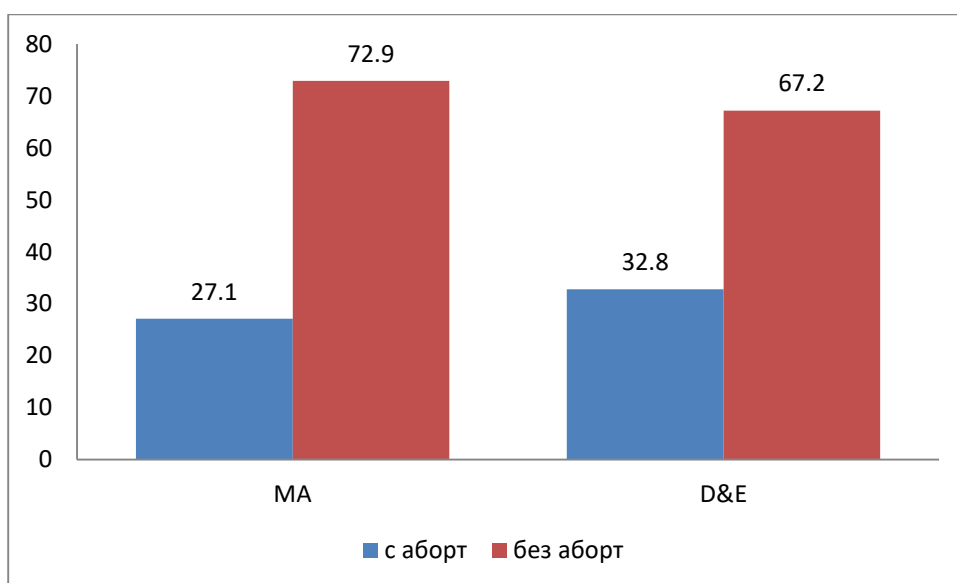
Parity and mode of delivery (vaginal delivery or SC) is the third feature by which the four groups for both trimesters are standardized. The relative proportions of patients by parity and mode of birth in the compared groups in pairs is approximately the same. In both trimesters (2/3) the unborn and those who gave birth vaginally predominate.

4.1.4 Distribution by anamnesis for previous abortion and number of abortions

The anamnesis for previous abortion and number of abortions is the fourth criterion by which the four groups for the two trimesters are standardized. The relative shares of patients with previous abortion and number of abortions in the compared groups in pairs is approximately the same (Graph 1, Graph 2).



Graph 1. Relative share of patients with abortion in the first trimester according to the anamnesis for previous abortion



Graph .2. Relative share of patients with abortion in the II trimester by history of previous abortion.

In both trimesters, patients with a history of no previous abortion (2/3) predominate, and when it is present, those with one previous abortion (1/2) have the largest relative share.

4.1.5. Distribution by history of previous vaginal infection

A history of previous vaginal infection is the fifth sign of standardization. In both trimesters, patients with a history of previous vaginal infection predominate. The relative proportions of patients with and without previous vaginal infection in the compared groups in pairs is

approximately the same. In both trimesters, patients with previous vaginal infection predominate (2/3).

4.2. Comparative analysis of modern medical and surgical methods for abortion in the first trimester of pregnancy: Mifepristone and Misoprostol against vacuum aspiration (VA)

4.2.1. Safety, effectiveness, success, menstrual disorders

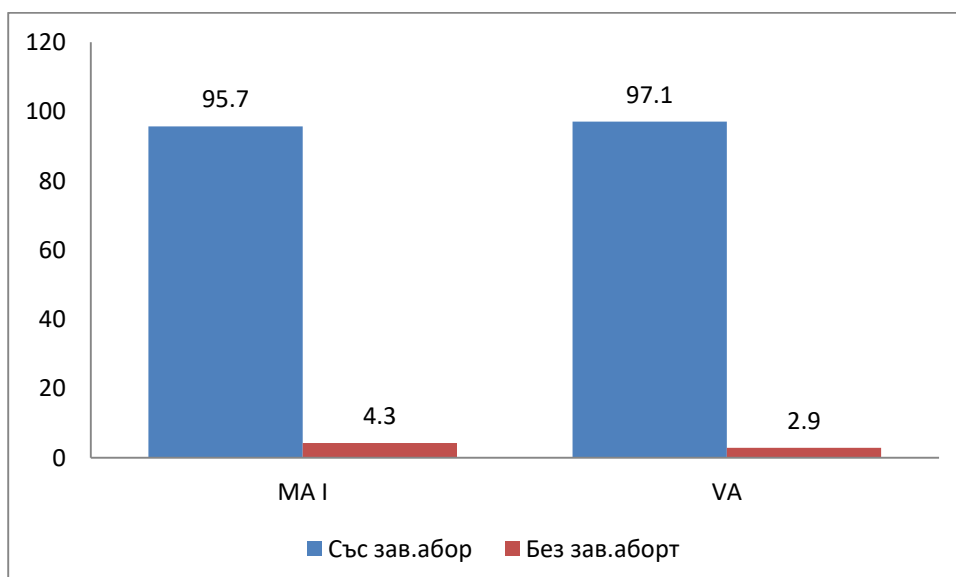
MA in I and II trimester is a safe procedure. No fatal cases were observed in the studied groups, as well as complications - damage to the cervical canal, damage to the uterus, ongoing pregnancy and allergic reaction.

On average for both trimesters, completed MA within 24 hours was observed in 93.4% of patients (185 of 198 completed abortions), and in 95.5% (189 of 198 completed abortions) within 48 hours. In 84.9% (168 out of 198 completed abortions) of the patients with completed MA and menstruation was restored within 31 days, and in 15.1% (30 out of 198 completed abortions) - for 62 days.

Efficacy - completed abortion (abortus completus)

Relative chance of completed abortion:

Chi-Square analysis revealed that there was no significant causal relationship between the abortion method (MA, VA) and the presence of a completed abortion (Sig.2-sided > 0.05), i. is. There is no difference between the two methods and they are equally effective. In the group with MA the relative share of cases with completed abortion is 95.7% (134 abortions), and in the group with VA - is 97.1% (136 abortions), i.e. the two sections are approximately identical (graph. 3). The relative risk (OR) for completed abortion is <1.0, therefore the type of method (MA, VA) is not a risk factor (Odds Ratio 0.657).



Graph 3. Relative share of patients with MA and VA with and without completed abortion

Expulsion time:

For MA - the weighted average is 7.1 hours, minimum - 4 hours and maximum 12 hours. For VA - weighted average is 15 minutes, minimum - 10 minutes and maximum 20 minutes.

4.2.2. Early complications of abortion in the first trimester

Prolonged hemorrhage (hemorrhagia persistens)

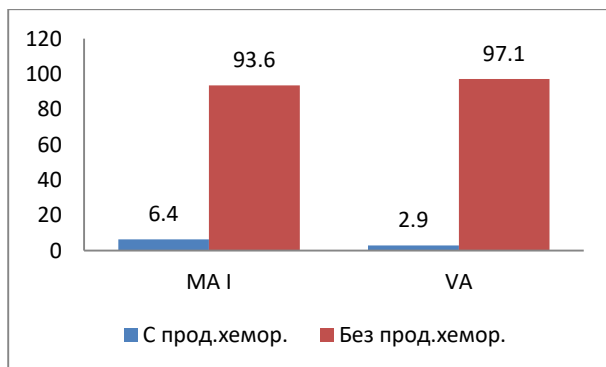
Relative risk of chronic haemorrhage:

Chi-Square analysis revealed that there was a causal relationship between the method of termination of pregnancy (MA, VA) and the occurrence of prolonged hemorrhage, but it was not statistically significant due to the small number of cases of hemorrhage (Sig.2-sided> 0.05). In the group with MA the relative share of cases with prolonged hemorrhage is 6.4% (9 abortions), and in the group with VA - 2.9% (4 abortions), ie. 2.2 times more (Graph 4). The relative risk (OR) for the occurrence of prolonged hemorrhage is 2.3 times higher in the group with MA, (Odds Ratio 2.336).

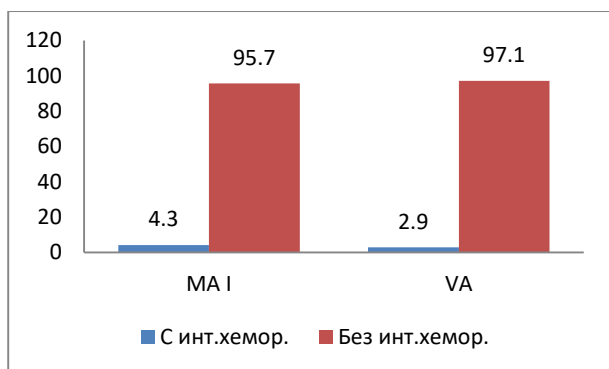
Intensive hemorrhage (hemorrhagia intensive)

Relative risk of intense haemorrhage:

Chi-Square analysis revealed that there was a causal relationship between the termination method (MA, VA) and the occurrence of intense haemorrhage, but it was not statistically significant due to the small number of cases of haemorrhage (Sig.2-sided> 0.05). In the group with MA the relative share of cases with intensive hemorrhage is 4.3% (6 abortions), and in the group with VA - 2.9% (4 abortions), ie. 1.5 times more (Graph.5). The relative risk (OR) for the occurrence of intense hemorrhage is 1.5 times higher in the group with MA, (Odds Ratio 1.522).



Graph 4. Relative share of patients with MA and VA, with and without prolonged hemorrhage



Graph 5. Relative share of patients with MA and VA, with and without intense hemorrhage

Incomplete abortion (abortus incompletus)

Relative risk of incomplete abortion:

Chi-Square analysis revealed that there was a causal relationship between the method of abortion (MA, VA) and the occurrence of incomplete abortion, but it was not statistically significant due to the small number of cases of incomplete abortion. (Sig.2-sided> 0.05). In the group with MA the relative share of cases with incomplete abortion is 2.1% (3 abortions), and in the group with VA - 0.7%, (1 abortion), i.e. 3.0 times more. The relative risk (OR) for the occurrence of incomplete abortion is 3.0 times higher in the control MA group), (Odds Ratio 3.044).

Hematometra

Relative risk for haematometer:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, VA) and the appearance of the hematometra, but it was not statistically significant due to the small number of cases with the hematometra (Sig.2-sided> 0.05). In the group with MA the relative share of cases with hematometra is 2.9% (4 abortions), and in the group with VA - 4.3% (6 abortions), i.e. 1.5 times less. The relative risk (OR) for the hematometra is <1.0, therefore the type of method (MA, VA) is not a risk factor (Odds Ratio 0.657).

Placental polyp

Relative risk for placental polyp:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, VA) and the occurrence of placental polyp, but it was not statistically significant due to the small number of cases of placental polyp (Sig.2-sided> 0.05). In the group with MA the relative share of cases with placental polyp 2.1% (3 abortions), and in the group with VA - 0.7% (1 abortion), i.e. 3.0 times more. The relative risk (OR) for the occurrence of a placental polyp was 3.0 times higher in the MA group (Odds Ratio 3.044).

Endometritis

Relative risk of endometritis:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, VA) and the occurrence of endometritis, but it was not statistically significant due to the small number of cases of endometritis (Sig. 2-sided > 0.05). In the group with MA the relative share of cases with endometritis is 0.7% (1 abortion), and in the group with VA - e1.4% (2 abortions), i.e. 2.0 times less. The relative risk (OR) for endometritis is <1.0, therefore the type of method (MA, VA) is not a risk factor (Odds Ratio 0.496).

Abdominal and pelvic pain (dolor abdominalis et pelvici)

Relative risk of abdominal and pelvic pain:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, VA) and the occurrence of abdominal and pelvic pain and it was statistically significant (Sig. 2-sided < 0.05). The correlation coefficient of Cramer measured that the relationship is moderate in strength (Cramer's V 0.4). In the group with MA the relative share of cases of abdominal and pelvic pain is 54.3% (76 abortions), and in the group with VA - e20.0%, (28 abortions), i.e. 3.0 times more. The relative risk (OR) for abdominal and pelvic pain was 4.8 times higher in the MA group (Odds Ratio 4.750).

Fever, hyperthermia

Relative risk of hyperthermia:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, VA) and the occurrence of hyperthermia and it was statistically significant (Sig. 2-sided < 0.05). The correlation coefficient of Cramer measured that the relationship was weak in strength (Cramer's V 0.2). In the group with MA the relative share of cases with hyperthermia is 11.4% (16 abortions), and in the group with VA - e2.9% (4 abortions), i.e. 3.9 times more. The relative risk (OR) for the occurrence of hyperthermia is 4.4 times higher in the MA group (Odds Ratio 4.387).

Nausea

Relative risk of nausea:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, VA) and nausea and it was statistically significant (Sig. 2-sided < 0.05). The correlation coefficient of Cramer measured that the relationship is weak in strength (Cramer's V 0.3). In the group with MA the relative share of cases of nausea is 30.7% (43 abortions), and in the group with VA - e7, 1%, (10 abortions), i.e. 4.3 times more. The relative risk (OR) for nausea is 5.8 times higher in the MA group (Odds Ratio 5.763).

Vomiting (vomitus)

Relative risk of vomiting:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, VA) and the occurrence of vomiting and it was statistically significant (Sig.2-sided <0.05). The correlation coefficient of Cramer measured that the relationship is weak in strength (Cramer 's V 0.2). In the group with MA the relative share of cases of vomiting is 12.1% (17 abortions), and in the group with VA - e1, 4%, (2 abortions), i.e. 8.6 times more. The relative risk (OR) for vomiting is 9.6 times higher in the control MA group, (Odds Ratio 9.537).

Diarrhea

Relative risk of diarrhea:

Chi-Square analysis revealed that there was a causal link between the abortion method (MA, VA) and the onset of diarrhea, it is statistically significant (Sig.2-sided <0.05). The correlation coefficient of Cramer measured that the relationship is weak in strength (Cramer 'sV 0.2). In the group with MA the relative share of cases of diarrhea is 10.7% (15 abortions), and in the group with VA - e0, 7%, (1 abortion), i.e. 15.3 times more. The relative risk (OR) for diarrhea is 16.7 times higher in the MA group (Odds Ratio16.680).

Vertigo

Relative risk for vertigo is:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, VA) and the occurrence of vertigo and it was statistically significant (Sig.2-sided <0.05). The correlation coefficient of Cramer measured that the relationship is weak in strength (Cramer 's V 0.2). In the group with MA the relative share of cases of vertigo is 11.4% (16 abortions), and in the group with VA - e2, 9%, (4 abortions), i.e. 3.9 times more. The relative risk (OR) for vertigo is 4.4 times higher in the MA group (Odds Ratio 4.387).

4.2.3. Late complications of abortion in the first trimester

Preterm birth

Relative risk of preterm birth:

Chi-Square analysis found that between abortion methods (MA, VA) and the onset of preterm birth due to follow-up, but it was not statistically significant due to the small number of prenatal cases. (Sig.2-sided> 0.05). In the group with MA the relative share of cases with premature birth is 2.9% (April 2), and in the group with VA - e4.3% (3 abortions), ie. 1.5 times less (graph. The relative risk (OR) for preterm birth is <1.0, hence the type of method (MA, VA) non-Iris factor (OddsRatio 0.657).

Placental complications (placental complications)

Placenta praevia, Placenta retinuit, Abruptio placentae

Relative risk for placental conditions:

Chi-Square analysis found that between abortion methods (MA, VA) and the occurrence of planned conditions due to a causal relationship, but it is not statistically significant due to the small number of cases with planned conditions. (Sig.2-sided > 0.05). In the group with MA the relative share of cases with planned conditions is 2.9% (April 2), and in the group with VA - e4.3% (3 abortions), ie. 1.5 times less. The relative risk (OR) for placental conditions is <1.0, therefore the type of method (MA, VA) is not a risk factor (Odds Ratio 0.657).

Low birth weight

Relative risk of low birth weight:

Chi-Square analysis found that there was a causal relationship between the abortion method (MA, VA) and the onset of low birth weight, but it was not statistically significant due to the small number of cases of low birth weight (Sig.2-sided > 0.05). In the group with MA the relative share of cases of low weight in subsequent births was 1.4% (1 abortion), and in the group with VA - e2.9% (2 abortions), ie. 2.0 times less. The relative risk (OR) for low birth weight <1.0, therefore the type of method (MA, VA) is not a risk factor (Odds Ratio 0.493).

SGA small-for-gestational-age (SGA small-for-gestational-age)

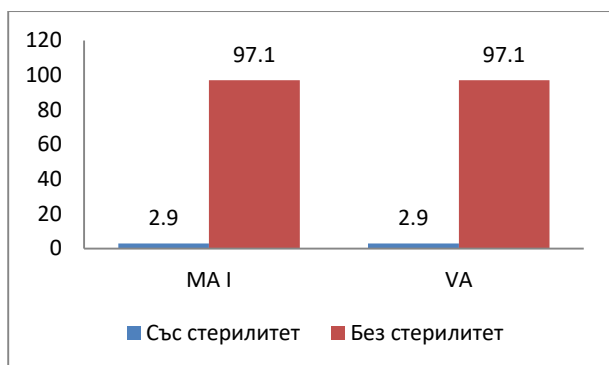
Relative risk for a small fetus for gestational age:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, VA) and the appearance of a small fetus of gestational age, but it was not statistically significant due to the small number of cases. with a small fetus for gestational age (Sig.2-sided > 0.05). In the group with MA the relative share of cases with a small gestational age fetus is 1.4% (1 abortion), and in the group with VA - e1.4% (1 abortion). The relative risk (OR) for a small gestational age fruit is = 1.0, therefore the type of method (MA, VA) is not a risk factor (Odds Ratio 1.000).

Sterility

Relative risk for sterility:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, VA) and the occurrence of infertility, but it was not statistically significant due to the small number of infertility cases. 2-sided > 0.05). In the group with MA the relative share of cases with infertility is 2.9% (2 abortions), and in the group with VA - e2.9% (2 abortions). The relative risk (OR) for sterility 1.0, therefore the type of method (MA, VA) is not a risk factor (Odds Ratio 1.000) (graph. 6).

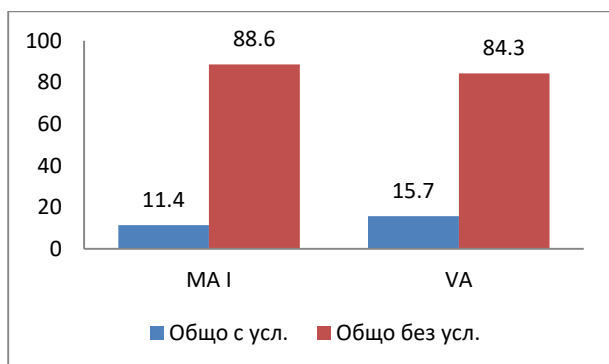


Graph 6. Relative share of patients with MA and VA, with and without infertility

Total late complications

Relative risk of late complications:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, VA) and the occurrence of late complications, but it was not statistically significant due to the small number of cases with late complications. (Sig.2-sided > 0.05). In the group with MA the relative share of cases with late complications is 11.4% (8 abortions), and in the group with VA - 15.7% (11 abortions), i.e. 1.4 times less (graph 7). The relative risk (OR) for late complications is <1.0, therefore the type of method (MA, VA) is not a risk factor (Odds Ratio 0.692).



Graph 7. Relative share of patients with MA and VA, with and without complications

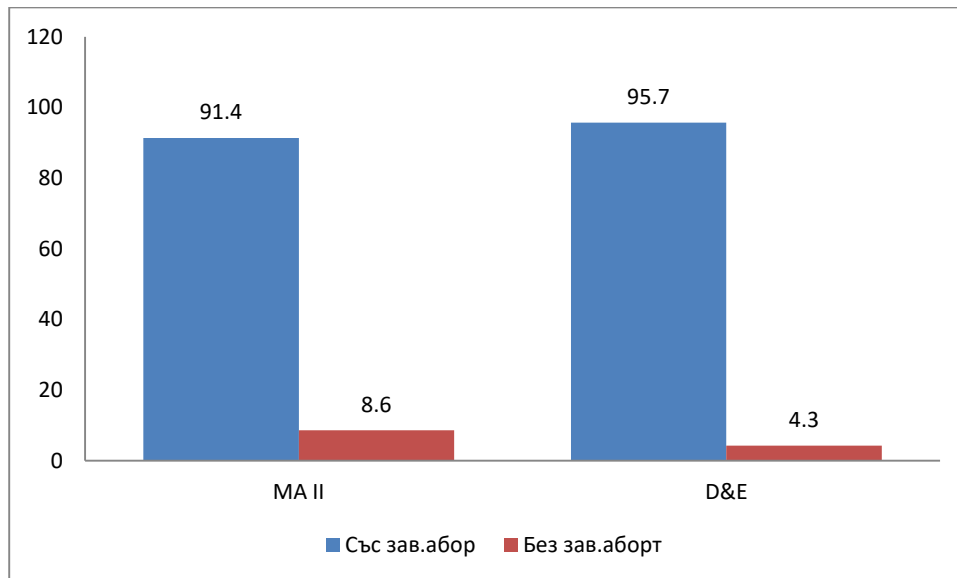
4.3. Comparative analysis of modern medical and surgical methods for abortion in the second trimester of pregnancy: Mifepristone and Misoprostol against dilatation and evacuation (D&E)

4.3.1. Safety, effectiveness, success, menstrual disorders

Efficacy - completed abortion (abortus completus)

Relative chance of completed abortion:

Chi-Square analysis revealed that there was no significant causal relationship between the abortion method (MA, D&E) and the presence of a completed abortion (Sig.2-sided > 0.05), i.e. there is no difference between the two methods and they are equally effective. In the group with MA the relative share of cases with completed abortion is 91.4% (64 abortions), and in the group with D&E - e 95.7% (67 abortions), ie. the two sections are approximately identical (graph.8). The relative risk (OR) for complete abortion is <1.0, therefore the type of method (MA, D&E) is not a risk factor (Odds Ratio 0.478).



Graph 8. Relative share of patients with MA and D&E with and without completed abortion

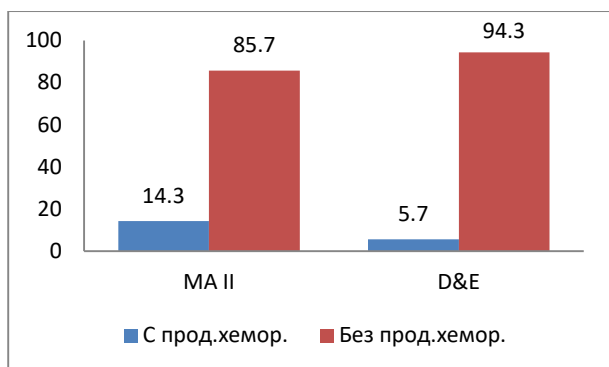
Expulsion time: For MA - the weighted average value is 8.1 hours, minimum - 6 hours and maximum 10 hours . For D&E - the weighted average is 15 minutes, minimum - 10 minutes and maximum 50 minutes.

4.3.2. Early complications of abortion in the second trimester

Prolonged hemorrhage (hemorrhagiapersistens)

Relative risk of chronic haemorrhage:

Chi-Square analysis revealed that there was a causal relationship between the method of termination of pregnancy (MA, D&E) and the occurrence of prolonged hemorrhage, but it was not statistically significant due to the small number of cases of hemorrhage (Sig.2-sided > 0.05). In the group with MA the relative share of cases with prolonged hemorrhage is 14.3% (10 abortions), and in the group with D&E - e5.7% (4 abortions), i.e. 2.5 times more (graph 9). The relative risk (OR) for the occurrence of prolonged hemorrhage is 2.8 times higher in the MA group (Odds Ratio 2.750).

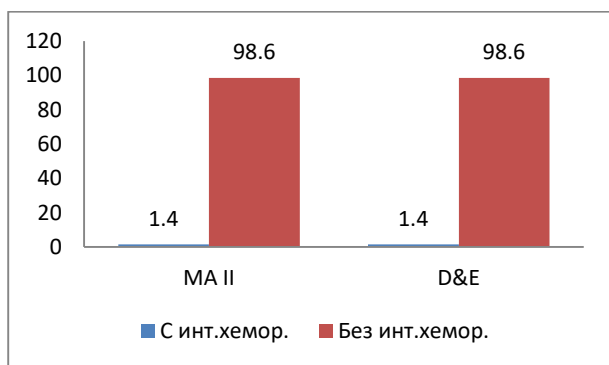


Graph 9. Relative share of patients with MA and D&E, with and without prolonged haemorrhage

Intensive hemorrhage (hemorrhagia intensive)

Relative risk of intense haemorrhage:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, D&E) and the occurrence of intense haemorrhage, but it was not statistically significant due to the small number of cases of haemorrhage (Sig.2-sided > 0.05). In the group with MA the relative share of cases with intensive hemorrhage is 1.4% (1 abortion), and in the group with D&E - 1.4%, (1 abortion), i.e. equal (graph 10). The relative risk (OR) for sterility is 1.0, therefore the type of method (MA, D&E) is not a risk factor (Odds Ratio 1.000).

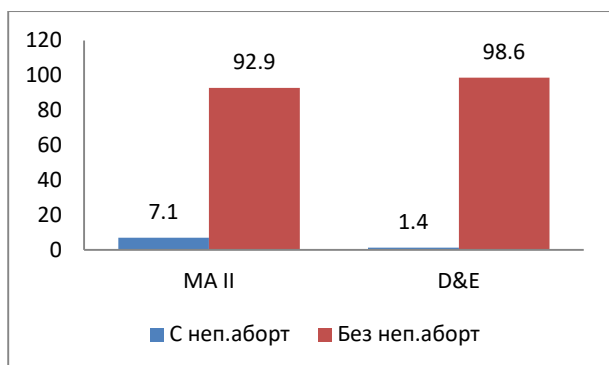


Graph 10. Relative share of patients with MA and D&E, with and without intense hemorrhage

Incomplete abortion (abortus incompletus)

Relative risk of incomplete abortion:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, D&E) and the occurrence of incomplete abortion, but it was not statistically significant due to the small number of cases of incomplete abortion. (Sig.2-sided > 0.05). In the group with MA the relative share of cases with incomplete abortion is 7.1% (5 abortions), and in the group with D&E - 1.4%, (1 abortion), i.e. 5.0 times more (Graph 11). The relative risk (OR) for the occurrence of incomplete abortion is 5.3 times higher in the control MA group, (Odds Ratio 5.308).

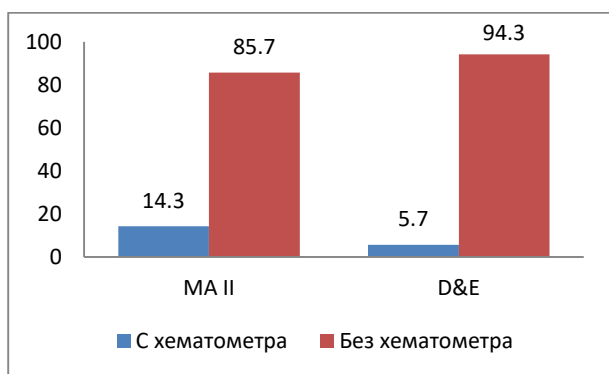


Graph 11. Relative share of patients with MA and D&E, with and without incomplete abortion

Hematometra

Relative risk for haematometra:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, D&E) and the appearance of the hematometra, but it was not statistically significant due to the small number of cases with the hematometra (Sig. 2-sided > 0.05). In the group with MA the relative share of cases with the hematometra is 14.3% (10 abortions), and in the group with D&E - 5.7% (1 abortion), i.e. 1.5 times less (Graph 12). The relative risk (OR) for the appearance of the hematometra is 2.8 times higher in the control MA group), (OddsRatio 2.750).



Graph 12. Relative share of patients with MA and D&E, with and without hematometra

Placental polyp

Relative risk for placental polyp:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, D&E) and the occurrence of placental polyp, but it was not statistically significant due to the small number of cases of placental polyp (Sig. 2-sided > 0.05). In the group with MA the relative share of cases with placental polyp 1.4% (1 abortion), and in the group with D&E - 1.4% (1 abortion), i.e. equal. The relative risk (OR) for placental polyp is 1.0, therefore the type of method (MA, D&E) is not a risk factor (Odds Ratio 1.000).

Endometritis

Relative risk of endometritis:

Chi-Square analysis revealed that there is a causal relationship between the method of termination of pregnancy (MA, D&E) and the occurrence of endometritis, but it is not statistically significant due to the small number of cases of endometritis (Sig. 2-sided > 0.05). In the group with MA the relative share of cases with endometritis is 4.3% (3 abortions), and in the group with D&E - 1.4% (1 abortion), i.e. 3.1 times more. The relative risk (OR) for the occurrence of endometritis is 3.1 times higher in the control MA group), (Odds Ratio 3.090).

Abdominal and pelvic pain (dolor abdominalis et pelvici)

Relative risk of abdominal and pelvic pain:

Chi-Square analysis revealed that there was a causal relationship between the method of termination of pregnancy (MA, D&E) and the occurrence of abdominal and pelvic pain and it was statistically significant (Sig. 2-sided \approx 0.05). The correlation coefficient of Cramer measured that the relationship was weak in strength (Cramer's V 0.2). In the group with MA the relative share of cases of abdominal and pelvic pain was 40.0% (28 abortions), and in the group with D&E - 20.0%, (14 abortions), i.e. 2.0 times more. The relative risk (OR) for abdominal and pelvic pain was 2.7 times higher in the MA group (Odds Ratio 2,667).

Fever, hyperthermia

Relative risk of hyperthermia:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, D&E) and the occurrence of hyperthermia and it was not statistically significant due to the small number of cases of hyperthermia (Sig. 2-sided > 0.05). In the group with MA the relative share of cases with hyperthermia is 10.0% (7 abortions), and in the group with D&E - 5.7% (4 abortions), i.e. 1.8 times more. The relative risk (OR) for the occurrence of hyperthermia is 1.8 times higher in the group with MA), (Odds Ratio 1.833).

Nausea

Relative risk of nausea:

Chi-Square analysis revealed that there was a causal relationship between the method of termination of pregnancy (MA, D&E) and the occurrence of nausea and it was statistically significant (Sig. 2-sided \approx 0.05). The correlation coefficient of Cramer measured that the relationship is weak in strength (Cramer's V 0.2). In the group with MA the relative share of cases of nausea is 12.9% (9 abortions), and in the group with D&E - 4, 3%, (3 abortions), i.e. 3.0 times more (graph 46). The relative risk (OR) for nausea is 3.3 times higher in the MA group (Odds Ratio 3.295).

Vomiting (vomitus)

Relative risk of vomiting:

Chi-Square analysis showed that there was a causal relationship between the abortion method (MA, D&E) and the occurrence of vomiting, but it was not statistically significant due to the

small number of cases of vomiting. 2-sided > 0.05). In the group with MA the relative share of cases of vomiting is 4.3% (3 abortions), and in the group with D&E - 1.4% (1 abortion), ie. 3.1 times more. The relative risk (OR) for vomiting is 3.1 times higher in the cMA group, (Odds Ratio) 3.0900.

Diarrhea

The relative risk of diarrhea is:

Chi-Square analysis revealed that there was a causal relationship between the method of abortion (MA, D&E) and the occurrence of diarrhea, but it was not statistically significant due to the small number of cases of diarrhea. 2-sided > 0.05). In the group with MA the relative share of cases with diarrhea is 4.3% (3 abortions), and in the group with D&E - 1.4% (1 abortion), ie. 3.0 times more. The relative risk (OR) for diarrhea is 3.1 times higher in the MA group (Odds Ratio 3.090).

Vertigo

Relative risk for vertigo is:

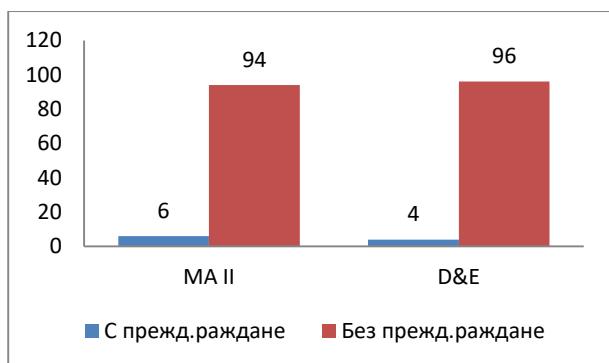
Chi-Square analysis revealed that there is a causal relationship between the method of termination of pregnancy (MA, D&E) and the occurrence of vertigo, but it is not statistically significant due to the small number of cases of vertigo. 2-sided < 0.05). In the group with MA the relative share of cases of vertigo is 10.0% (7 abortions), and in the group with D&E - 5.7% (4 abortions), .. 1.8 times more. The relative risk (OR) for vertigo is 1.8 times higher in the MA group (Odds Ratio 1.833).

4.3.3. Late complications of abortion in the second trimester

Preterm birth

Relative risk of preterm birth:

Chi-Square analysis revealed that there is a causal relationship between the method of abortion (MA, D&E) and the occurrence of preterm birth, but it is not statistically significant due to the small number of cases of premature birth Sig. 2-sided > 0.05). In the group with MA the relative share of cases with premature birth is 6.0% (3 abortions), and in the group with D&E - 4.0% (2 abortions), ie. 1.5 times more (Graph 13). The relative risk (OR) for premature birth is 1.5 times higher in the group with MA, (Odds Ratio 1.5320).



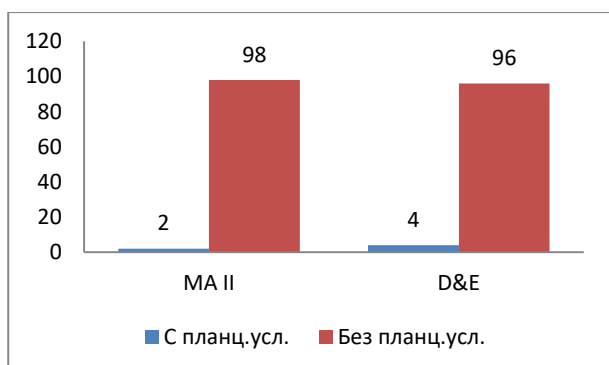
Graph 13. Relative share of patients with MA and D&E, with and without preterm birth

Placental complications

Placenta praevia, Placenta retinuit, Abruptio placentae

Relative risk for placental complications:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, D&E) and the occurrence of placental complications, but it was not statistically significant due to the small number of cases of placental complications (Sig.2-sided> 0.05). In the group with MA the relative share of cases with placental complications is 2.0% (1 abortion), and in the group with D&E - 4.0% (2 abortions), ie. 2.0 times less (graph 14). The relative risk (OR) for placental complications is <1.0, therefore the type of method (MA, D&E) is not a risk factor (Odds Ratio 0.490).



Graph 14. Relative share of patients with MA and D&E, with and without plank. complications

Low birth weight

Relative risk of low birth weight:

Chi-Square analysis revealed that there was a causal relationship between the abortion method (MA, D&E) and the onset of low birth weight, but it was not statistically significant due to the small number of cases of low birth weight (Sig.2-sided> 0.05). In the group with MA the relative share of cases of low birth weight is 4.0% (2 abortions), and in the group with D&E - 2.0% (1 abortion), ie. 2.0 times more. The relative risk (OR) for low birth weight is 2.0 times higher in the MA group (Odds Ratio 2.042).

Small-for-gestational-age (SGA small-for-gestational-age)

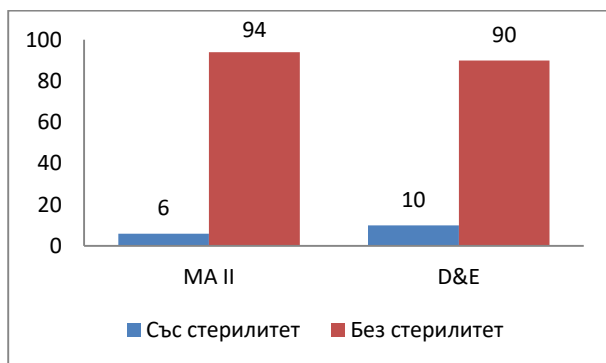
Relative risk for a small fetus for gestational age:

Chi-Square analysis showed that there was a causal relationship between the method of abortion (MA, D&E) and the appearance of a small fetus for gestational age, but it was not statistically significant due to the small number of cases with small fetal gestational age (Sig. 2-sided > 0.05). In the group with MA the relative share of cases with small fetus for gestational age is 2.0% (1 abortion), and in the group with D&E - e 2.0% (1 abortion) (graph 53). The relative risk (OR) for a small gestational fetus is = 1.0, therefore the type of method (MA, D&E) is not a risk factor (Odds Ratio 1.000).

Sterility

Relative risk for sterility:

Chi-Square analysis revealed that there is a causal relationship between the method of abortion (MA, D&E) and the occurrence of infertility, but it is not statistically significant due to the small number of cases of infertility. 2-sided > 0.05). In the group with MA the relative share of cases with infertility is 6.0%, (3 abortions), and in the group with D&E - e 10.0%, (5 abortions) (graph 15). The relative risk (OR) for sterility is <1.0, therefore the type of method (MA, D&E) is not a risk factor (Odds Ratio 0.490).

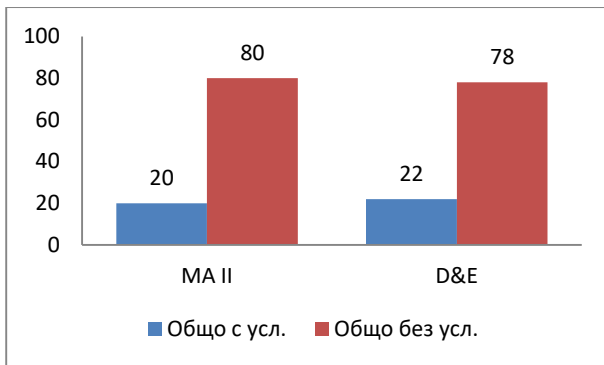


Graph 15. Relative share of patients with MA and D&E, with and without infertility

Total late complications

Relative risk of late complications:

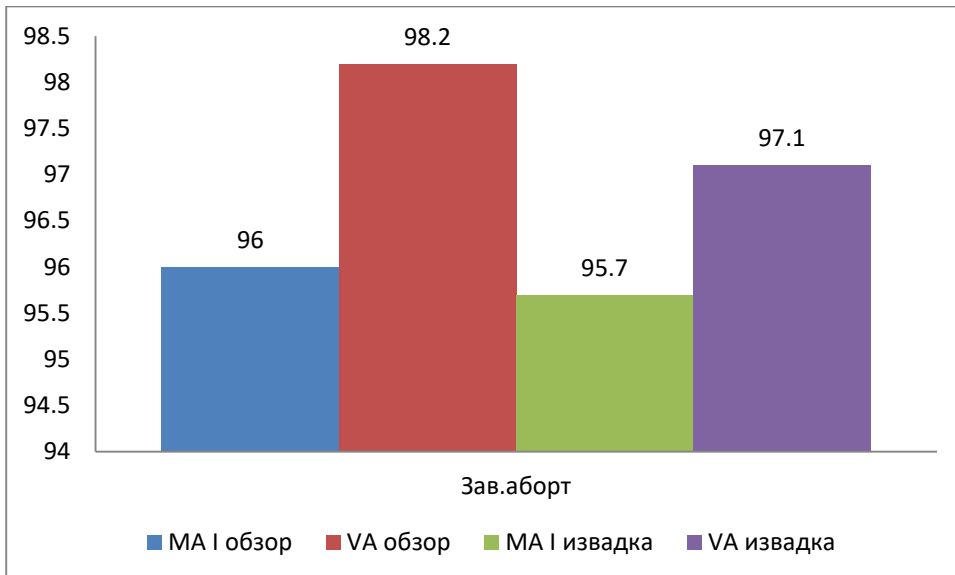
Chi-Square analysis revealed that there is a causal relationship between the method of induced abortion (MA, D&E) and the occurrence of late complications, but it is not statistically significant due to the small number of cases with late complications (Sig. 2-sided > 0.05). In the group with MA the relative share of cases with late complications is 20.0% (10 abortions), and in the group with D&E - e 22.0% (21 abortions), ie. identical (graph. 16). The relative risk (OR) for late complications is <1.0, therefore the type of method (MA, D&E) is not a risk factor (Odds Ratio 0.886).



Graph 16 Relative share of patients with MA and D&E, with and without sterility

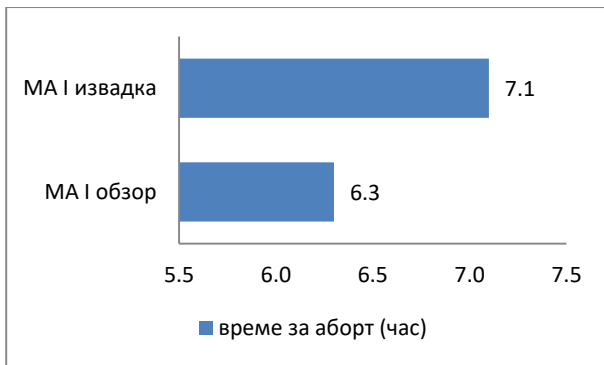
Discussion:

For the first trimester, the effectiveness of MA and VA applications is high (over 95.0%) and close to the average of the studies presented in the survey, which ranges from 90.0% to 99.7% (average 96.0 %) for MA, and from 93.7% to 100.0% (average 98.2) for VA (Graph 17).

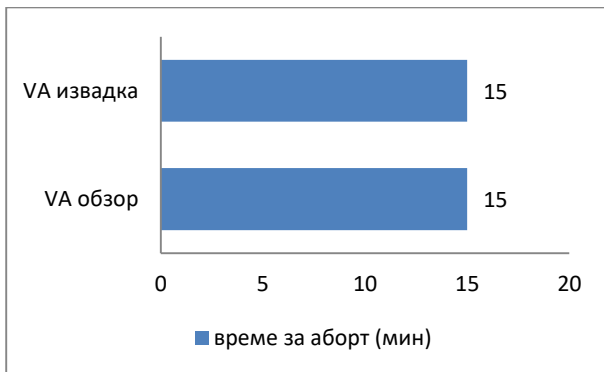


Graph 17. Relative share of patients with MA and VA and completed abortion

The mean time for expulsion and complete abortion with MA is close to the average of the survey studies and the same for abortion with VA (graph 18, Graph 19). In the survey studies, the time of expulsion with MA ranged from 3.5 hours to 12.2 hours, and the time to perform VA from 5 minutes to 50 minutes.

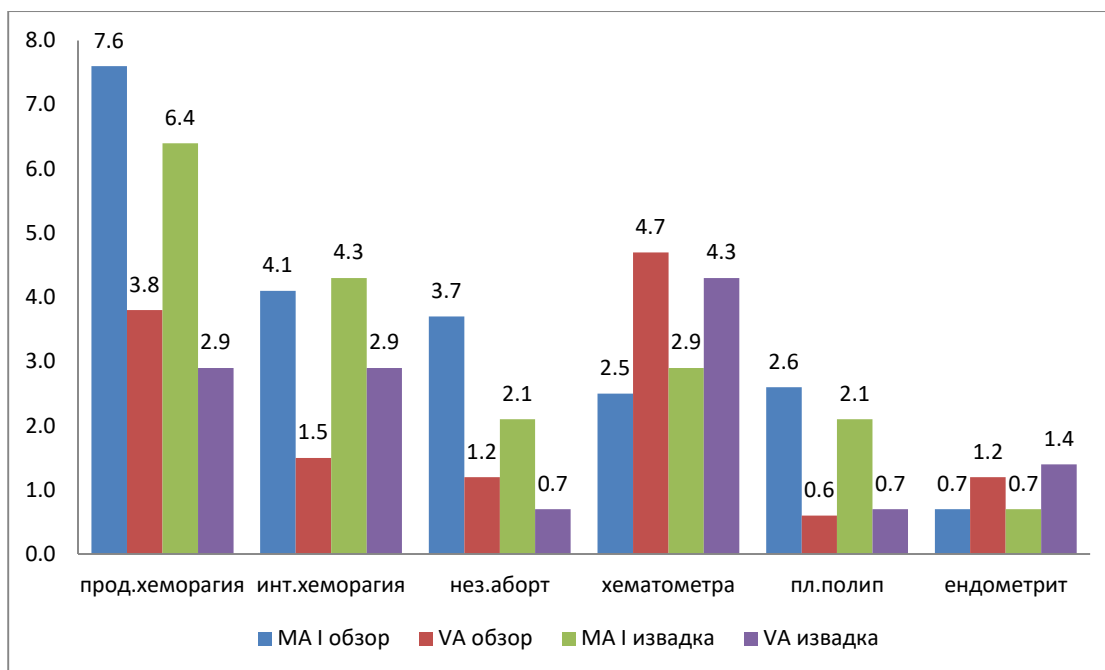


Graph 18. Average time for expulsion of patients with MA

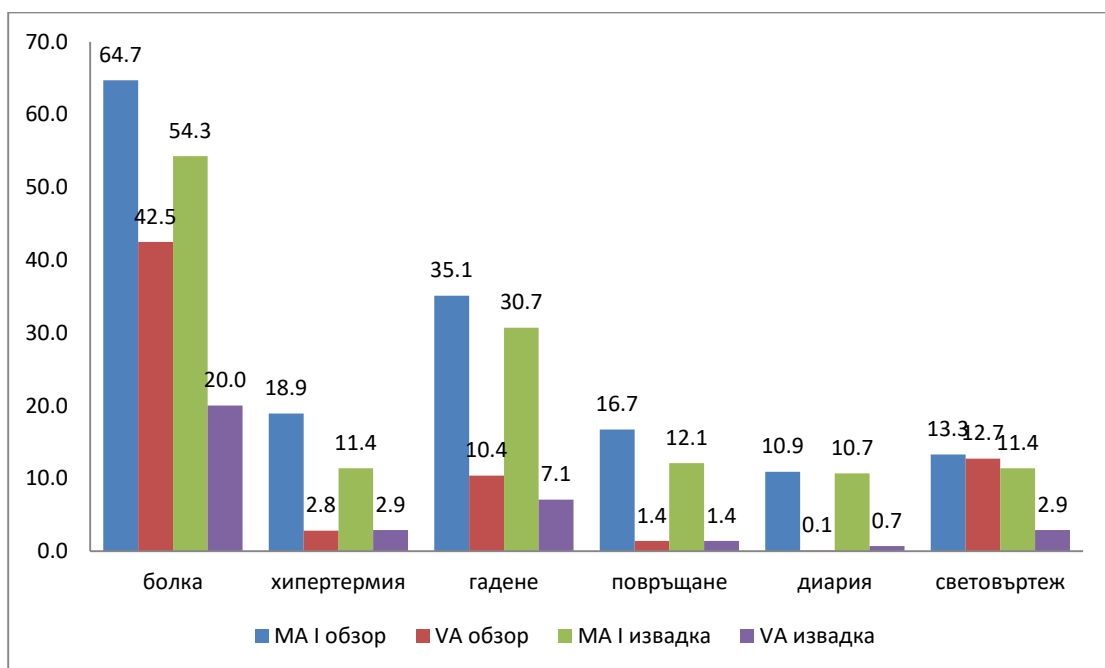


Graph 19. Average time for expulsion of patients with VA

The relative share of early complications by type is either close to the average of the studies in the survey or slightly smaller than it (Figure 20, Figure 21). The only exception is the indicator of abdominal and pelvic pain for VA, whose relative share is significantly lower than the average for the surveys - 42.5% for the survey, 20.0% for the sample. Studies from the VA Abortion Pain Survey cited relative proportions over a wide range of 1.0% to 37.0%, with a relative proportion of 20.0% for pain in the VA sample included in this range, although is significantly lower than the survey average. The relative share of intense hemorrhage is higher than the average for the abortion survey with VA - 1.5% for the survey, 2.9% for the sample. The survey studies cited relative proportions over a wide range, from 0.1% to 4.8%, with a relative proportion of 2.9% for intense hemorrhage in the VA sample included in this range. The relative share of incomplete abortion with VA in the sample is significantly lower than the average for the survey - VA - 1.2% for the survey, 0.7% for the sample but in the range of quoted shares from other studies - 0.3% to 2.3% for abortion with VA.



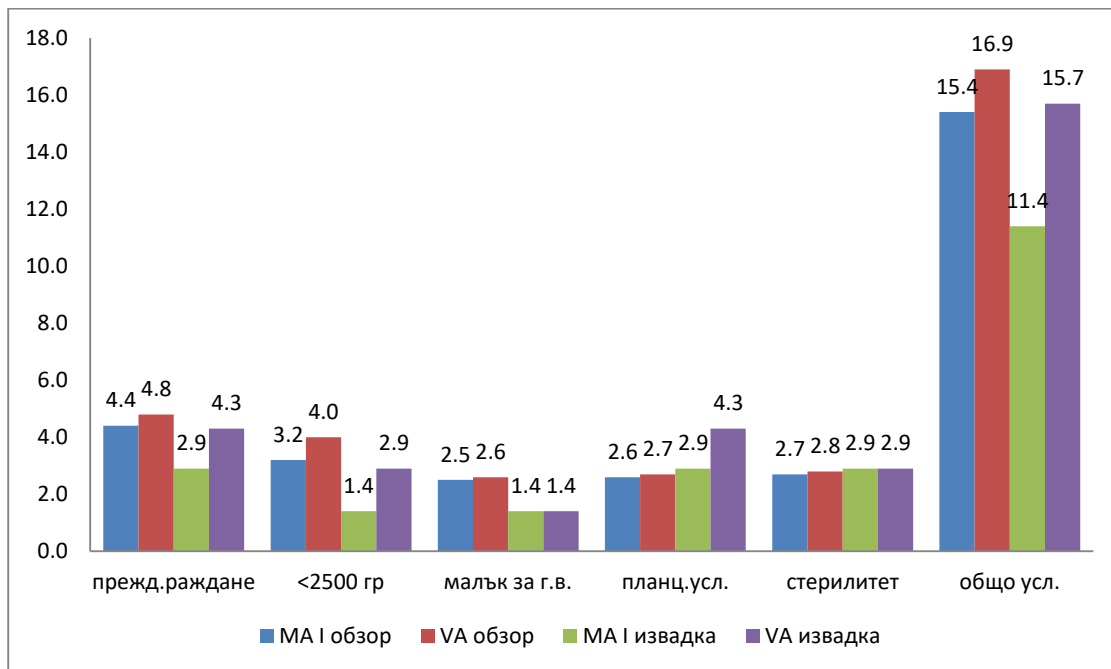
Graph 20. Relative share of patients with early complications and MA and VA



Graph 21. Relative share of patients with early complications and MA and VA

Of the early complications of MA in the first trimester, the largest is the relative share of abdominal and pelvic pain (54.3%) and GIS - nausea (30.7%), vomiting (12.1%), diarrhea (10.7%).). Of the early complications of VA, the largest is the relative proportion of abdominal and pelvic pain (20.0%), hematometra (4.3%), hemorrhage (2.9%) and endometritis (1.4%), with no GIS. Except hematometra and endometritis, the relative proportion of early complications in MA is only up to three times greater than in VA.

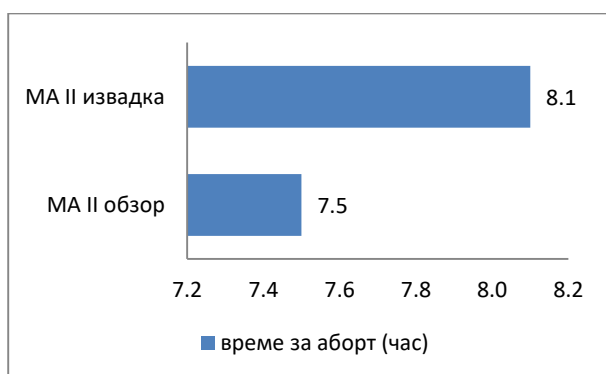
For late complications, the relative proportions of the sample are close to the averages cited in the review, with the incidence of complications being higher in application VA than in MA (graph 22).



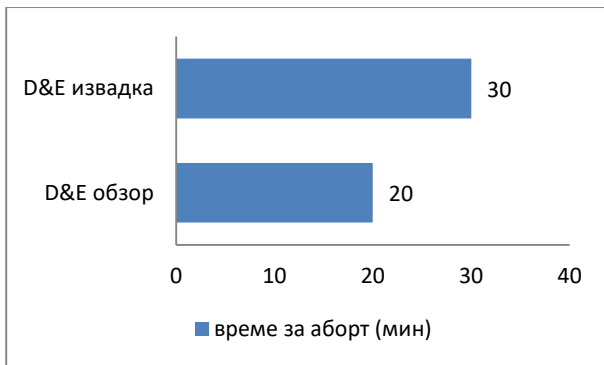
Graph 22. Relative share of patients with late complications and MA and VA

For the second trimester, the effectiveness of the applied MA and D&E is high ($\approx 95.0\%$) and close to the average of the studies presented in the survey, which ranges from 87.0% to 100.0% (average 93.5%).) for MA, and from 91.4% to 97.5% (average 95.8) for D&E.

The mean time for expulsion and completed abortion with MA and D&E is close to the average of the survey studies (Graph. 23, Graph 24). In the survey studies, the time of expulsion with MA ranged from 5.5 hours to 9.0 hours, and the time to perform D&E from 10 minutes to 50 minutes.

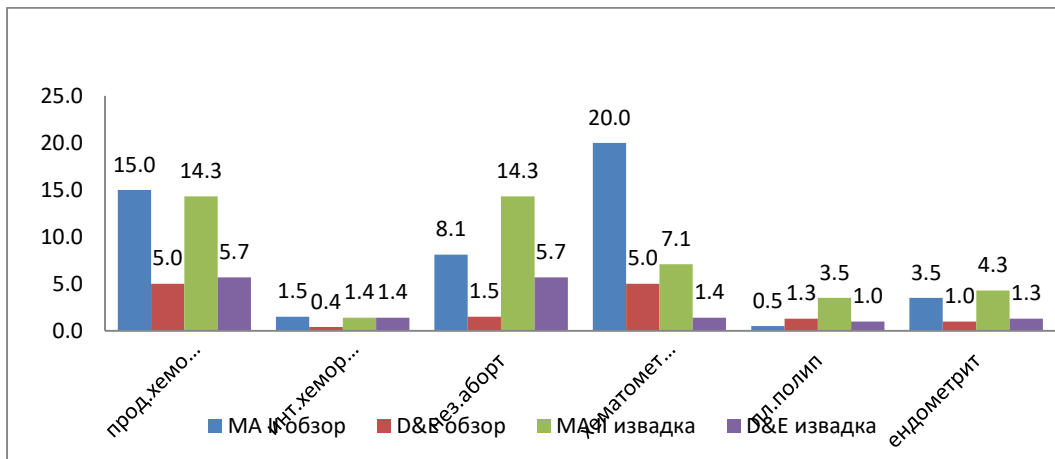


Graph 23. Mean time for expulsion of patients with D&E

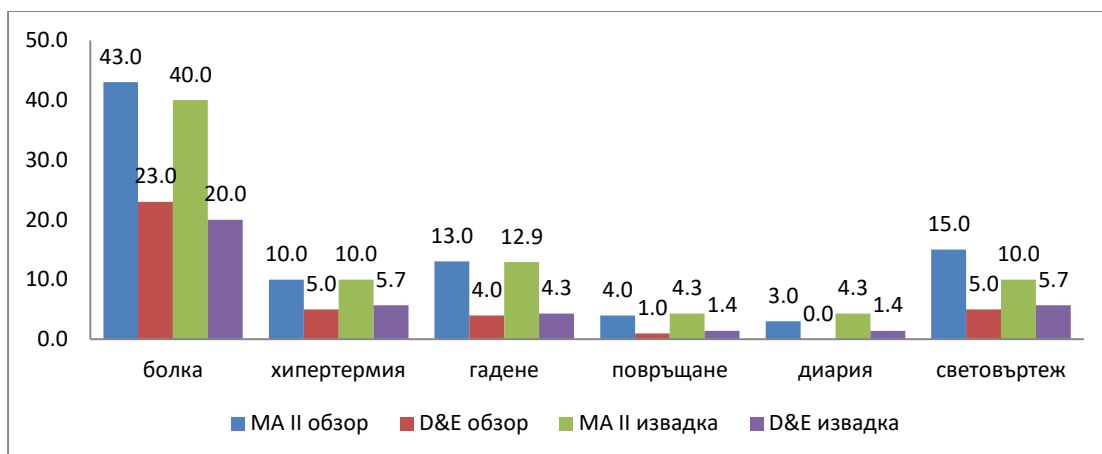


Graph 24. Mean time for expulsion of patients with MA

The relative share of early complications by type is close to the average of the studies from the survey (graph 25, graph 26). The only exception is the indicator of the hematometra for MA, whose relative share is significantly lower than the average for the surveys - 20.0% for the survey, 7.1% for the sample. In the survey studies, for the hematometra in abortion with MA, relative proportions were reported much lower than in the sample (1.4% from 2019, 114), as the relative proportion of 7.1% for the hematometra in the sample with MA was in the range up to 20.0%, although significantly lower than the survey average. The relative share of incomplete abortion is higher than the average for the survey in abortion with MA - 8.1% for the survey, 14.3% for the sample. The survey studies cited relative proportions ranging from 6.7% to 11.5%, with a relative share of 14.3% for incomplete abortion in the MA sample close to the maximum in the survey studies. The relative share of plantar polyp in MA in the sample is significantly higher than the average for the survey: 0.5% for the survey, 3.5% for the sample, because most authors include it in the group of infections (of 2 , 5% to 4.0%).

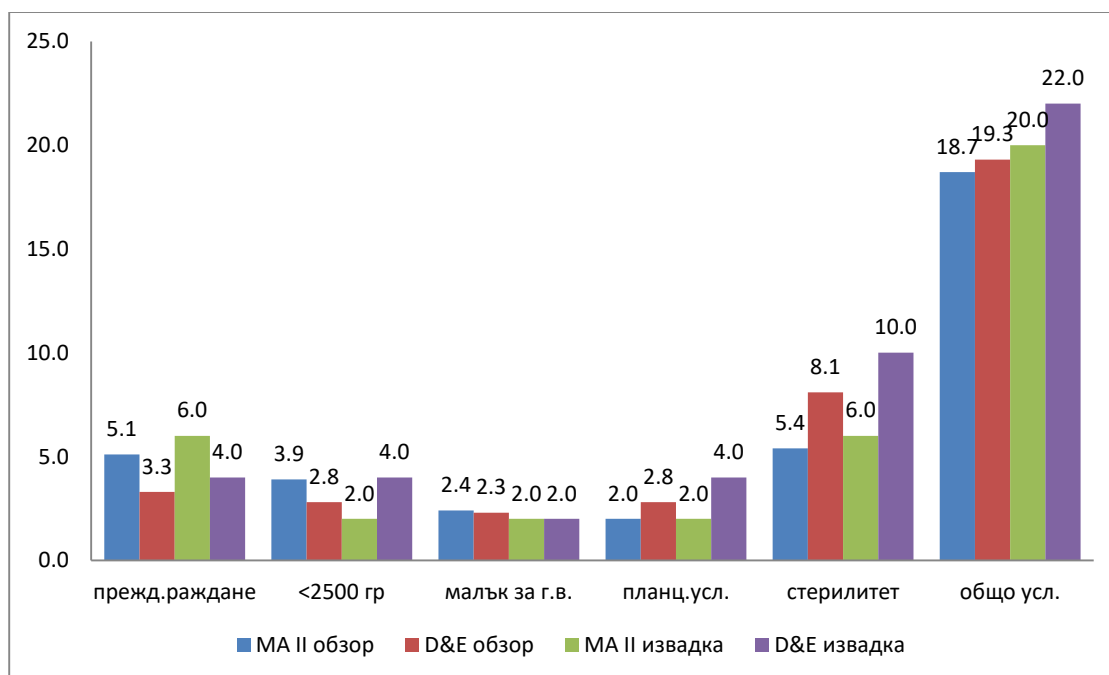


Graph 25. Relative share of patients with early conditions and MA and D&E



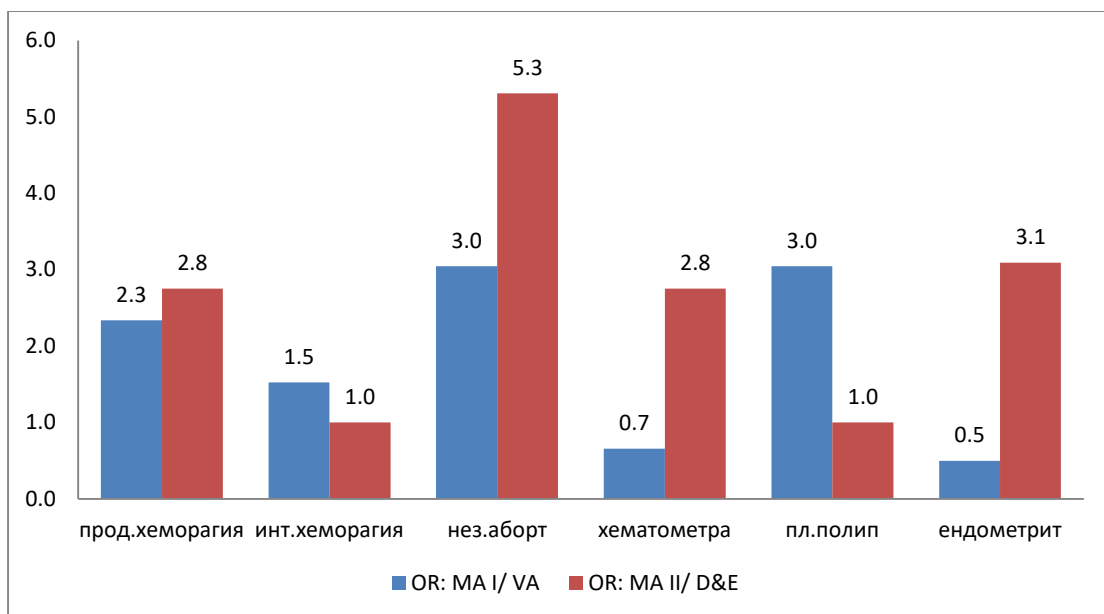
Graph 26. Relative share of patients with early conditions and MA and D&E

Of the early complications of MA in the second trimester, the largest is the relative share of abdominal and pelvic pain (40.0%), prolonged hemorrhage (14.3%) and incomplete abortion (14.3%), hematometra (7.1%)., followed by GIT - nausea (12.9%), vomiting (4.3%), diarrhea (4.3%) (graph 25, graph 26). D&E has the highest proportion of abdominal and pelvic pain (20.0%), prolonged hemorrhage (5.7%) and endometritis (1.3%), with GIT being less common. The relative share of early complications in MA is two to three times higher than in D&E (graph 27).

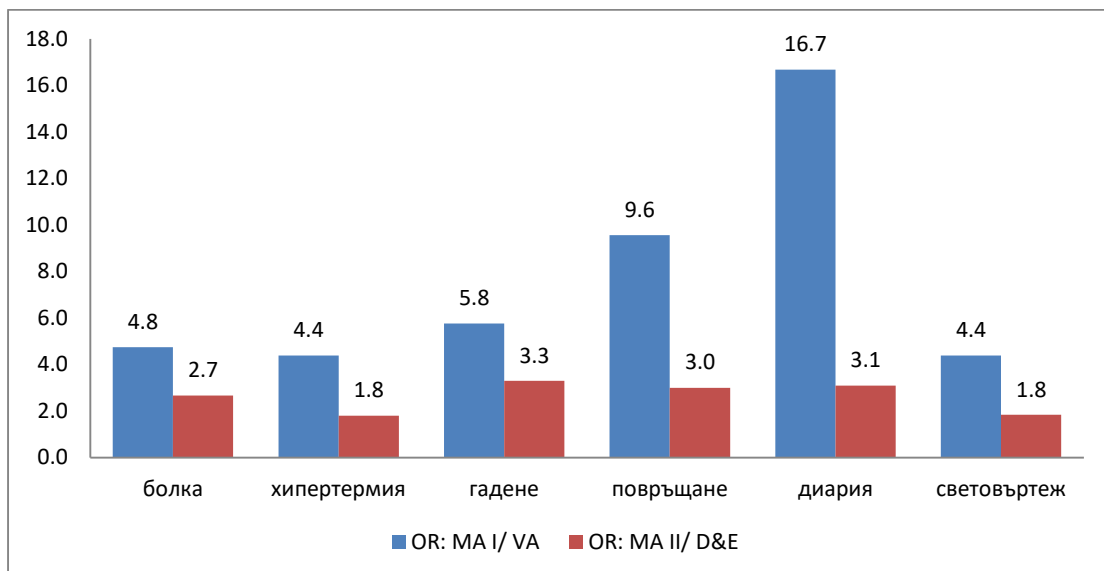


Graph 27. Relative share of patients with late complications and MA and D&E

Graph 28 and Graph 29 present the numerical estimates of the relative risk (OR) for the occurrence of early complications in MA, applied in the I and II trimesters.



Graph 28. Relative risk (OR) for early complications of MA in I and II trimester



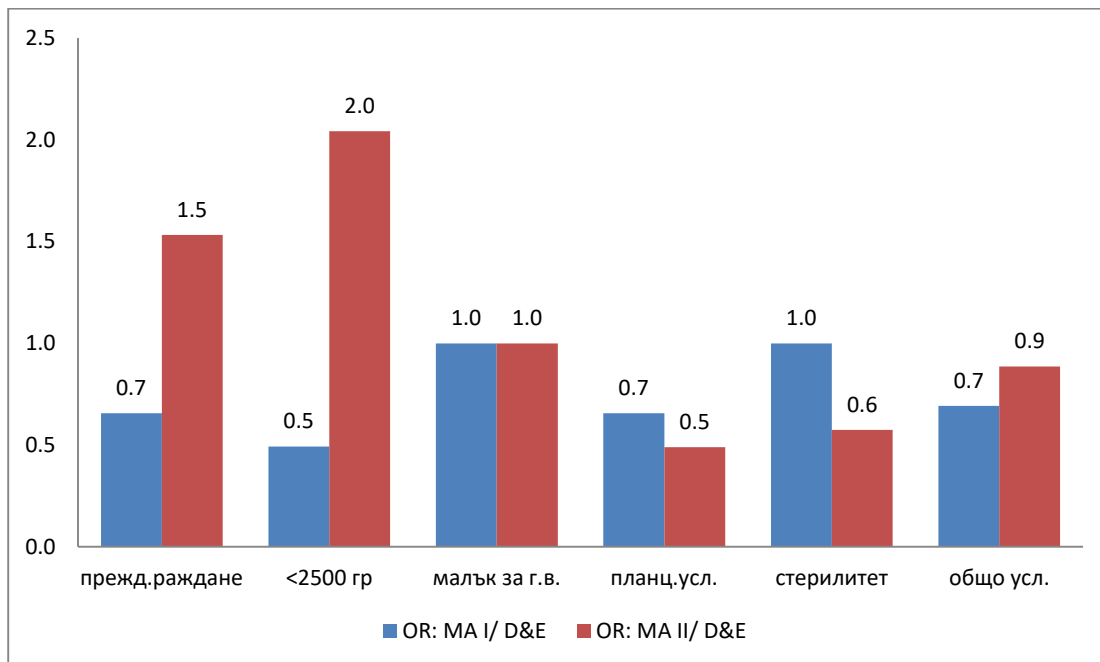
Graph 29. Relative risk (OR) for early complications of MA in I and II trimester

With the exception of the appearance of hematometra and endometritis in the first trimester, the application of MA in both the first and second trimester is a risk factor for the occurrence of early complications, $OR > 1$ (graph 28, graph.29). The first trimester is not associated with a risk of haematometra and endometritis ($OR < 1.0$), the risk of these complications is higher with VA.

With the exception of incomplete abortion and hematometra, the OR for the occurrence of other early complications is two to three times higher with MA in the trimester than with MA in the II trimester. The risk of incomplete abortion and hematometra is two to four times higher with MA in the second trimester, compared to the first trimester (graph 28).

The relative risk of late complications is higher with the use of MA in the second trimester ($OR > 1.0$) (graph 30). The most common are premature birth and low birth weight fetus

(<2500 g). The use of MA in the second trimester is associated with a reduction in the risk of infertility (OR <1), while the use of SA (D&E) is associated with a higher relative risk of infertility and late complications.



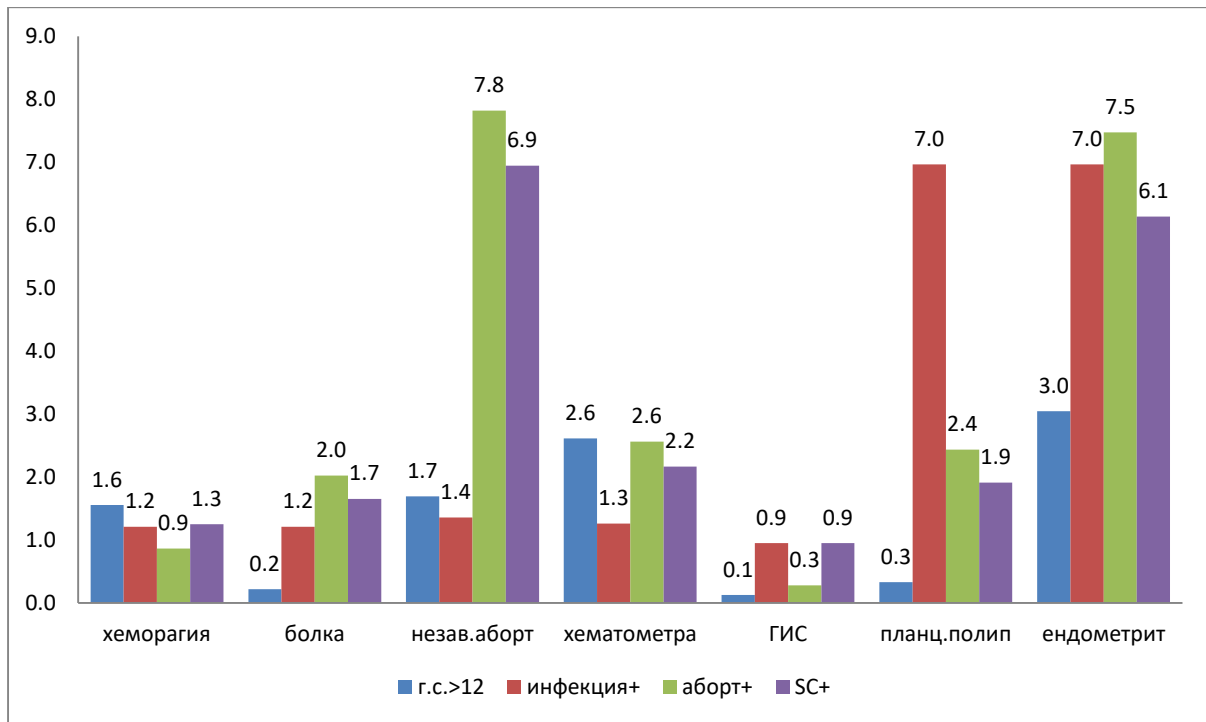
Graph 30. Relative risk (OR) for late complications in MA in the I and II trimester

MA and HA in the II and II trimester with high efficiency (over 95.0% completed abortion) and safety - no complications with lethal outcome, damage to the uterus or cervical canal. MA is more commonly associated with early complications and SA (D&E) with late complications. With the use of D&E, OR for sterility and late complications is higher than the application of MA in the II trimester.

4.4 Risk factors for early and late complications in patients after medical and surgical abortion during the I and II trimesters of pregnancy.

From its own results, it was found that MA is more often associated with the appearance of early complications, and SA - with late complications. Of the studies cited in the literature, the most common risk factors (RF) associated with early and late complications are: gestational age of pregnancy, history of previous vaginal infection, history of previous abortion, history of previous cesarean section. The relative risk (OR) for complications was measured by the action of each of the four risk factors, and the results are presented in a graph. 31 for the early complications related to MA and graph 32 - for the late complications related to HA. When $OR > 1.0$, the study factor is a risk factor. For didactic purposes, the risk factor is associated with low ($OR = 1.0$ to 2.0), medium ($OR = 2.0$ to 4.0) and high risk ($OR > 4.0$)

4.4.1. Risk factors for early complications in MA



Graph.31 Risk factors and relative risk (OR) for early complications in MA

Risk factors for hemorrhage

All four RF are associated with a low risk (OR \approx 1.3) for the occurrence of hemorrhage (prolonged or intense), ie with 1.3 times higher risk (Graph 31).

Risk factors for pain

Three (vaginal infection, abortion and SC) RF are associated with a low risk (OR \approx 1.6) for pain (abdominal or pelvic), ie 1.3 times higher risk (Graph 31).

Risk factors for incomplete abortion

All four RFs are associated with a risk of incomplete abortion, i.e. over 12 g.s. and low-risk vaginal infection (OR \approx 1.5), and previous abortion and SC - high-risk (OR \approx 7.4), ie over 7.0 times higher risk (graph 31).

Haematometra risk factors

All four RFs are associated with a low risk (OR \approx 2.0) for the occurrence of a hematometra, i.e with a 2.0 times higher risk (graph 31).

Risk factors for gastrointestinal disorders (GIS)

All four RF are not at risk for GIS, OR <1.0

Risk factors for placental polyp

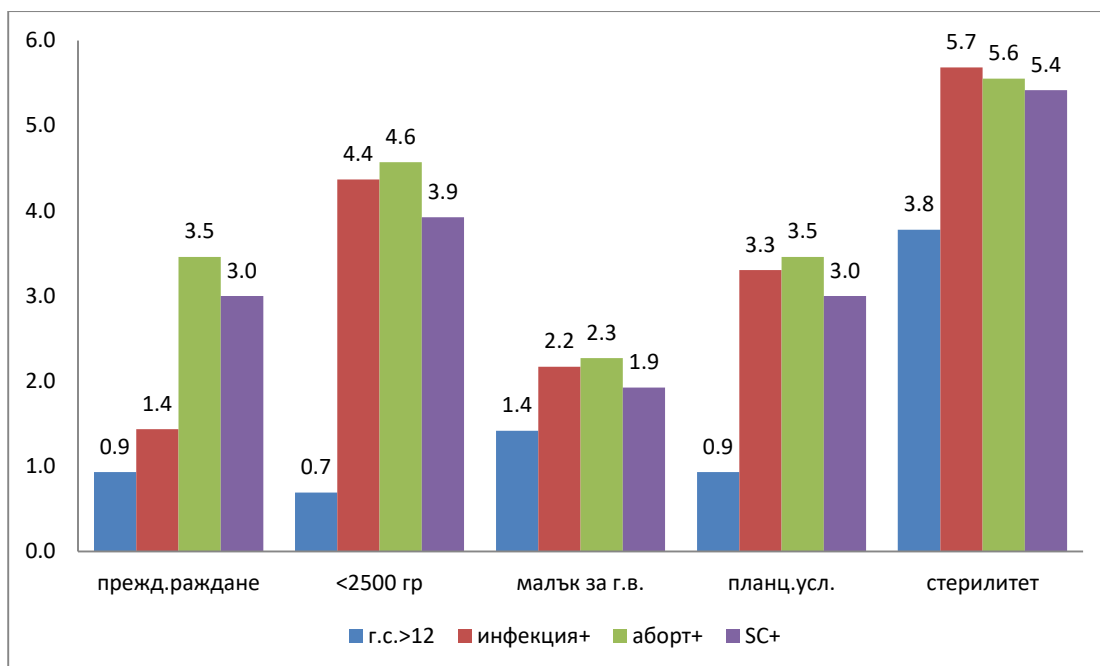
Previous abortion or SC was associated with a low risk of placental polyp (OR \approx 2.0), and high-risk vaginal infection - OR \approx 7.0, ie over 7.0 times higher risk (graph 31).

Risk factors for endometritis

Term of pregnancy over 12 g.w. is associated with a medium risk of developing endometritis, (OR \approx 3.0), while vaginal infection, abortion and SC are associated with a high risk - (OR \approx 7.0), ie over 7.0 times higher risk, (graph 31).

In MA, the risk of incomplete abortion and infection is highest. RF for the occurrence of these early complications are previous vaginal infection, abortion and cesarean section, and their presence alone is associated with more than 7.0 times higher risk.

4.4.2. Risk factors for late complications in SA



Graph 32. Risk factors and relative risk (OR) for late complications in SA

Risk factors for premature birth

Vaginal infection, previous abortion and cesarean section are associated with a medium risk of preterm birth (OR \approx 3.0) (graph 32).

Risk factors for low birth weight

Vaginal infection, previous abortion, and SC are associated with a high risk of low birth weight (OR \approx 4.3) (graph 32).

Risk factors for a small fetus for gestational age

Vaginal infection, previous abortion, and SC were associated with a low risk for a small fetus (OR \approx 2.0) (graph 32).

Risk factors for placental complications

Vaginal infection, previous abortion, and SC are associated with a moderate risk of placental complications (OR \approx 3.0) (graph 32).

Risk factors for sterility

The four studied RFs are associated with a high risk of sterility, (OR \approx 5.0) (graph 32). In SA, the risk of giving birth to a small fetus for gestational age is low, for preterm birth, low birth weight and placental complications is medium, and for infertility - high. Risk factors for the occurrence of these late complications are previous vaginal infection, abortion and cesarean section, and their presence alone is associated with more than 7.0 times higher risk of infertility.

4.5. Optimization of the criteria for application of medical and surgical abortion in the I and II trimester of pregnancy

Optimizing the choice of patients for medical and surgical abortion:

First stage:

During the first trimester, the use of VA is recommended.

Arguments:

MA is associated with two to three times the incidence of early complications. When administering VA during the first trimester, early complications are less common than with MA, and the procedure is highly effective (\approx 97.0% completed abortion), fast (\approx 15 min) and safe (no lethal outcome, cervical canal damage or uterus).

Prevention of early complications: Of the early complications of VA, the largest are the relative proportions of abdominal and pelvic pain (20.0%), hematometra (4.3%), haemorrhage (2.9%) and endometritis (1.4%). For pain prevention - additional analgesia in patients with previous abortion or SC. Patients at risk for hematometra, haemorrhage, and endometritis have a history of previous vaginal infection, abortion, or birth with SC. For prevention of hemorrhage and hematometra - adequate revision of the uterine cavity immediately after abortion and during the first follow-up examination (7 days).

For prevention of endometritis - targeted search for abnormal biocenosis of the lower genital tract and application of timely antibiotic prophylaxis to women at risk.

Alternative procedure:

Use of MA in an outpatient setting and in the presence of contraindications for VA.

Second stage:

During the second trimester, the use of MA is recommended.

Arguments:

SA (D&E) is associated with a higher incidence of late complications. The administration of MA in the second trimester is associated with a reduction in the risk of infertility (OR <1) and late complications, with the procedure being relatively slow (≈ 8.0 hours) but highly effective ($\approx 96.0\%$ completed abortion) and safe (no lethal outcome, damage to the cervical canal or uterus).

Prevention of early complications:

In MA in the second trimester the largest is the relative share of abdominal and pelvic pain (40.0%), prolonged hemorrhage (14.3%) incomplete abortion (14.3%) and hematometra (7.1%), followed by GIS - nausea (12.9%), vomiting (4.3%), diarrhea (4.3%), for the occurrence of pain, haemorrhage and haematometra - the risk is low (OR ≈ 2.0). For the occurrence of incomplete abortion - the risk is high (OR ≈ 7.0)

Prevention of early complications:

For prevention of pain, hemorrhage and hematometra- inpatient monitoring of patients within 6.0 hours to 10.0 hours, until the end of the abortion, and in the presence of incomplete abortion in the observed time (average 8 hours), the latter is completed surgically with D&E.

For prevention of incomplete abortion - high-risk patients (with two or more previous abortions, as well as birth with SC) it is recommended to apply an alternative procedure - SA (D&E).

Alternative procedure:

Use of SA (D&E) in the presence of contraindications for MA and in patients at high risk of incomplete abortion - with two or more previous abortions, as well as birth with SC.

Optimization of the moment of application of the drugs according to the therapeutic scheme for MA in the II trimester.

Arguments:

In order to monitor for early complications of abortion in daylight:

1 tablet of Topogyne of 400 mg at 20.00 is placed in the posterior vaginal arch and then 1 tablet of Topogyne of 400 mg is placed subbuccally at 23.00 and at 01.00.

4.6 .Measuring the economic feasibility of medical and surgical abortion during the I and II trimesters of pregnancy - productivity (%) and labor costs (%), average hospital stay (%).

Determining the average stay in the hospital

Table .

Index for average hospital stay

Average stay		Number of patients		Number of hospital bed days		Relative number of hospital bed days
<i>XA</i>	<i>MA</i>	<i>XA</i>	<i>MA</i>	<i>XA</i>	<i>MA</i>	
<i>2013-2018</i>	<i>2013-2018</i>	<i>2013-2018</i>	<i>2013-2018</i>	<i>2013-2018</i>	<i>2013-2018</i>	
Ro	Ri	Qo	Qi	RoQo	RiQi	RoQi
2.0	2.0	216.0	216.0	432.0	432.0	432.0

The maintenance of one patient is determined by the index for the average stay of patients in the hospital with a constant composition:

$$I = (\sum RiQi / \sum RoQo) \times 100.0\%$$

I (average hospital stay) = $(432.0 / 432.0) \times 100.0 = 100.0\%$ i.e. the average stay of patients in the hospital is the same during the period of application of MA and SA, which is expressed in absolute savings of 0.0 beds ($432.0 - 432.0$).

General conclusion: The application of MA is associated with lower labor costs (1.8 times), equal productivity and equal stay of patients in the hospital compared to SA.

V. CONCLUSION

Abortion is the most common gynecological procedure, with more than 56 million abortions per year worldwide, the largest percentage of which are in developing countries. In recent years, the efforts of physicians have focused mainly on improving the conditions and techniques for performing abortions in terms of efficiency, safety, reduced risk of complications and facilitating the technique and continuity of methods by the patient.

The use of prostaglandin and subsequently prostaglandin analogues as a method of termination of pregnancy, the so-called. medical abortion significantly increases the efficiency and reduces the complications of performing abortions.

Despite the undeniable advantages of medical abortion over surgical abortion, future research is needed to focus on improving analgesic methods and the optimal approach in cases of incomplete abortion using the medical method.

Through the prism of modern medicine, medical abortion is the method of choice for abortion in the first and second trimester in the medical standards of a growing number of countries around the world.

The main focus of our study is the comparative analysis of the known surgical and medical method of abortion in terms of effectiveness, safety, early and late complications, as well as the development of an algorithm for medical abortion in the first and second trimester of pregnancy.

In conclusion, we believe that medical abortion should be considered as the first method of choice for termination of pregnancy in the second trimester and its advantages over the surgical method are beneficial to the patient, namely the smaller number of early and late complications.

VI. CONCLUSIONS

1. Medical abortion in the I and II trimester is highly effective (91.4 ÷ 95.7% completed abortion) and safety, requiring time for expulsion of uterine contents - an average of 7 hours (I trimester) - 8 hours (II trimester) .
2. The relative share of early complications in medical abortion in the first trimester is two to three times higher than in vacuum aspiration.
3. The use of medical abortion in the second trimester is associated with a reduction in the risk of infertility.
4. The application of medical abortion is associated with lower labor costs (1.8 times) and equal stay of patients in the hospital compared to surgical abortion.
5. The efficiency of vacuum aspiration in the first trimester is high - 97.1% completed abortion, incomplete abortion 0.7%. It is a fast (≈ 15 min) and safe procedure.
6. The relative share of early complications in vacuum aspiration is two to three times less than in medical abortion in the first trimester. The risk of developing a haematometra and endometritis is higher with vacuum aspiration compared to medical abortion in the first trimester.
7. In dilatation and evacuation from early complications - the largest share of abdominal and pelvic pain (20.0%), prolonged hemorrhage (5.7%) and endometritis (1.3%), as symptoms of gastrointestinal system are low frequency.
8. The use of surgical abortion by dilatation and evacuation is associated with a higher relative risk of infertility and late complications. Risk factors for these late complications include previous vaginal infection, abortion, and a cesarean section.

VII. SCIENTIFIC CONTRIBUTIONS

Contributions of original character

1. For the first time in the country a study was conducted, which measured the relative risk of early and late complications in medical and surgical abortion in the I and II trimesters of pregnancy.
2. An optimized approach was proposed for the selection of patients for termination of pregnancy - vacuum aspiration for the first trimester, medical abortion - for the second trimester for patients without risk and dilatation and curettage for patients at risk (two or more abortions or cesarean section).
3. An algorithm for the application of Topogyne in medical abortion during the second trimester is being implemented.
4. The economic expediency of the methods for abortion during the I and II trimesters of pregnancy has been clarified.

Contributions of a confirmatory nature

1. Evidence is presented in support of the view that medical and surgical abortion are highly effective and safe modern methods of abortion during the I and II trimesters of pregnancy.
2. Evidence was obtained in support of the opinion that medical abortion is a multi-stage process that requires time for implementation - an average of 6 ÷ 7 hours (I Trimester) and 7 ÷ 8 hours (II trimester) for expulsion of uterine contents.
3. It is visualized that the relative risk for early complications of vacuum aspiration is two to three times less than that of medical abortion in the first trimester, and the use of medical abortion in the second trimester is associated with a reduced risk of infertility and late complications.
4. A detailed analysis of the risk factors associated with early and late complications during medical and surgical abortion in the I and II trimesters of pregnancy.

VIII. PUBLICATIONS RELATED TO THE DISSERTATION

