THE IMPORTANCE OF OPERATIVE HYSTEROSCOPY IN TREATING PATHOLOGIES OF THE UTERINE CAVITY IN INFERTILE PATIENTS

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Abstract: According to the definition of the World Health Organization (WHO), infertility is the inability of a sexually active, non-contracepting couple to achieve pregnancy in one year. One of the causes of sterility is inborn and acquired uterine anomalies. The best visualization of the inside of the uterus is achieved hysterscopically. Hysteroscopy is a minimally invasive surgical procedure and has the greatest significance in the diagnosis and treatment of congenital anomalies of the uterus. It is possible to eliminate and correct most of the congenital anomalies of the uterus, and it also enables the removal of other pathological changes in the cavity of the uterus. The incidence of congenital uterine anomalies in general population is 0.1- 3.5%. Infertile patients have a higher incidence of these anomalies which range from 3-6%, and 5-10% in habitual abortions. The study included 200 infertile patients up to 40 years of age, with performed surgical hysteroscopy due to diagnosed changes in the uterine cavity. The patients were operated at the Department of infertility of the Obstetrics and Gynecology Clinic "Narodni Front" in Belgrade, in 2013. and 2014. The following pathological changes of the uterine cavity, were hysteroscopically removed: submucosal fibroids type 0 and type I. The aim of this paper was to evaluate the success of operative hysteroscopy in the treatment of pathological changes of the uterine cavity in infertile patients, based on the number of relapses in the first six months upon surgery. Relapses occurred in 0.5% of patients during a six-month postoperative course. Complications during hysteroscopic operations were intraoperative and postoperative. There were 1.5% of overall complications in the participants.

Keywords: infertility, hysteroscopy, submucosal fibroids.

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The paper presents the most significant results of the subspecialist paper "The importance of operative hysterscopy in treating pathologies of the uterine cavity in infertile patients", authored by Dr Aleksandar P. Dević under the mentorship of Prof. Mladenko Vasiljević.

INTRODUCTION

Hysteroscopy is a minimally invasive surgical procedure which is of the greatest importance in the diagnosis and treatment of congenital uterine anomalies [1,2]. Hysteroscopic examination is usually performed in the first phase of the menstrual cycle [3]. Hysteroscopy can also be done regardless of the phase of the menstrual cycle if the patient has been previously prepared with oral contraceptives [4]. Hysteroscopy can be diagnostic and operative [5,6]. After hysteroscopic surgeries the fertility rate is significantly improved, as well as the overall percentage of pregnancies and live births, whereas the rate of miscarriages significantly decreases in these patients [7,8]. In our country, the total frequency of infertility is around 15%. The most frequent uterine causes of infertility are congenital anomalies of the uterus and uterine fibroids [9]. The significance of fibroids as the cause of infertility is even greater now due to an increasing number of women who decide to give birth later in life, at the time when uterine fibroids are more frequent [10,11]. The accepted parameters for fibroids being the cause of infertility are the following: subserosal fibroids that are ≥5 cm in diameter, intramural fibroids that are 2-3 cm in diameter and submucosal fibroids that are 1-2 cm in diameter [12]. It has been proven that the

percentage of pregnancies and implantations is significantly lower in patients with intramural and submucosal fibroids even when there is no cavum deformity [13]. The percentage of pregnancies upon myomectomy is up to 60% [14,15].

THE AIM

The aim of the paper was to assess the success of operative hysteroscopy in treating pathological changes of the uterine cavity caused by fibroids in infertile patients taking into consideration the number of relapses in the first six months upon surgery and the number of intraoperative and postoperative complications.

THE MATERIAL AND METHOD

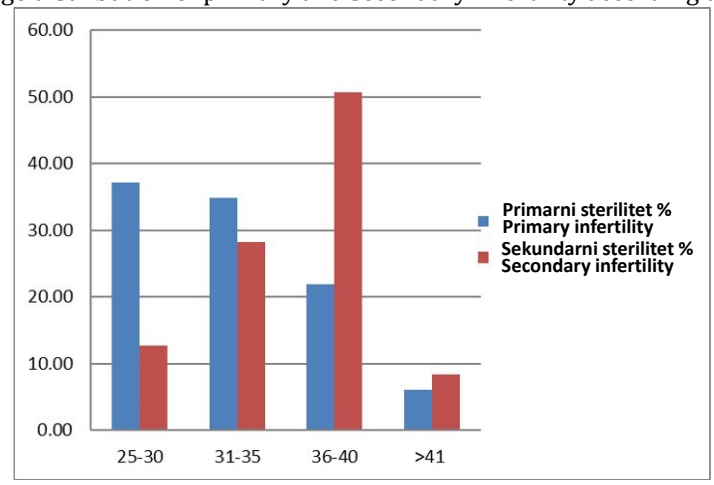
The research included 200 infertile patients of up to 40 years of age who had been previously diagnosed with fibroids in the uterine cavity and thus had an operative hysteroscopy done for removing the fibroids. The patients were randomly selected and they were all operated on during 2013. and 2014. at the Obstetrics and gynecology hospital "Narodni front". A rigid hysteroscope with an outer sheath 9 mm in diameter and a resectoscope containing a bipolar electrode for resecting pathological changes in the uterine cavity was used for performing hysteroscopy [16,17]. Saline solution (0,9% NaCl) was used for the distension of the uterine cavity [18]. The following pathological changes of the uterine cavity were removed: submucosal fibroids type 0 and type I [19]. The success of hysteroscopic surgeries was assessed according to the number of relapses in the first six months upon surgery [20]. In all the patients the following parameters were analyzed: age, occupation, education, the type of infertility, the duration of infertility, the presence of previous miscarriages or labors, ultrasound findings, hysterosalpingography findings, and diagnosed fibroids in the uterine cavity. The decision to perform a hysteroscopic surgery was made according to ultrasound or hysterosalpingography findings [21]. Submucosal fibroids were classified using the European Society for Hysteroscopy's classification as type 0 (pedunculated, i.e. completely located in the uterine cavity), type I (≤50% of the fibroid is located in the myometrium whereas its ≥ 50% is located in the uterine cavity) and type II (≥50% of the fibroid is located in the myometrium and its ≤50% is located in the uterine cavity) [19,22,23]. Hysteroscopic surgeries were performed in the first phase of the menstrual cycle between day 6 and day 12, under general endotracheal anesthesia and after adequate preoperative preparation of the patient [21,16]. The collected data were analyzed using the methods of descriptive statistics (the mean and standard deviation) and analytical statistics (Chi-square test, Mann-Whitney U test and Student's t-test). A database was created on an ASUS X% 1 RL computer using the software package SPSS 10.0 for analyzing the data. The results obtained were presented using figures and tables and they were compared with the results obtained by other authors. According to the collected data certain conclusions were made.

RESULTS

In this part the most significant results are presented through tables and figures. Figure 1 shows the distribution of primary and secondary infertility according to the patient's age.

Figure 1 presents the percentage distribution of primary and secondary infertility according to the patient's age.

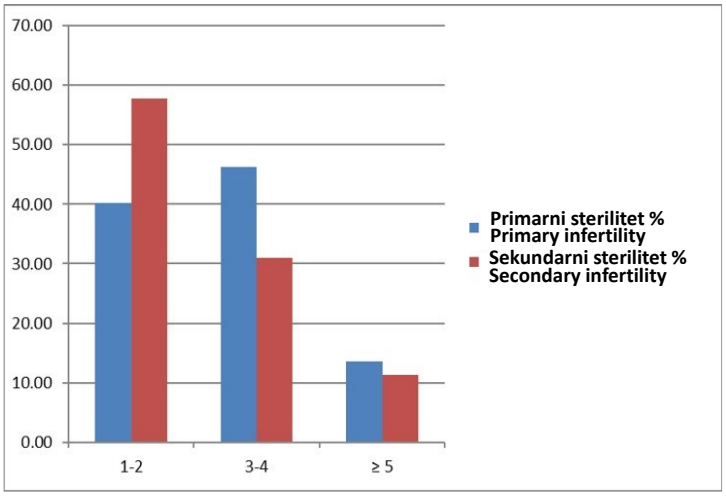
Figure 1. Percentage distribution of primary and secondary infertility according to the patient's age.



There is a large statistically significant difference in the distribution of groups formed according to age between the patients with primary infertility and those with secondary infertility (U=2493.5; p<0.001). Moreover, a statistically highly significant correlation was found between the age groups and the type of infertility (r=0.408; p<0,001), which indicates a significantly more frequent correlation between primary infertility and older patients.

Figure 2 presents the distribution of primary and secondary infertility according to the d uration of infertility in both groups of patients.

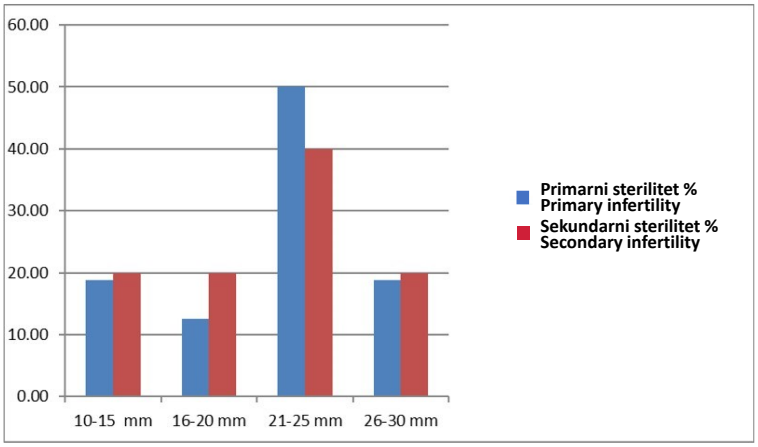
Figure 2. Percentage distribution of primary and secondary infertility according to the duration of infertility in the observed patients.



The duration of infertility in patients with primary infertility is statistically significantly longer when compared to the patients with secondary infertility, (U=3907.5; p<0.05). Besides, a statistically significant correlation was found between the duration of infertility and the type of infertility (r=0.151; p<0,05), which indicates a significantly more frequent correlation between primary infertility and the duration of infertility.

Figure 3 presents the distribution of the size of submucosal fibroids in patients with primary and secondary infertility.

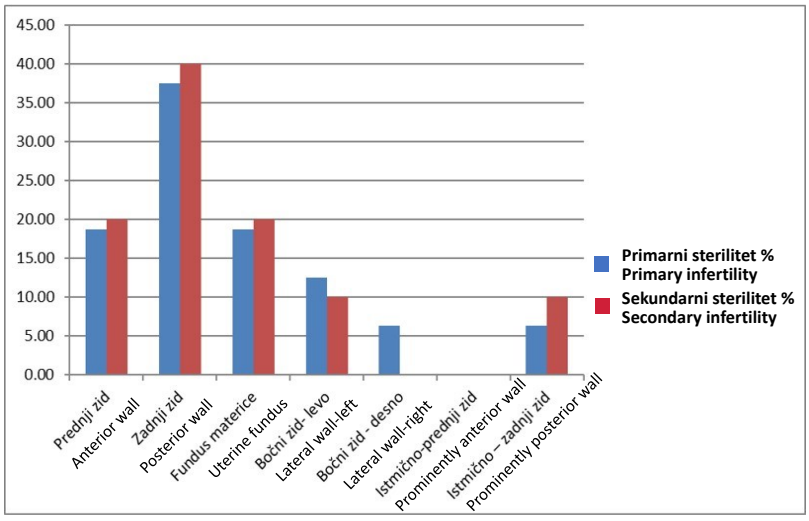
Figure 3. Percentage distribution of the size of submucosal fibroids in patients with primary and secondary infertility.



There is no statistically significant difference in the size of submucosal fibroids between the patients with primary infertility and those with secondary infertility (U=76.000; p>0.05).

Figure 4 presents the distribution of submucosal fibroids according to the location in the uterus in patients with primary and secondary infertility.

Figure 4. Percentage distribution of the location of submucosal fibroids in patients with primary and secondary infertility.



There is no statistically significant difference between the patients with primary infertility and those with secondary infertility concerning certain locations of submucosal fibroids (U=76.500; p>0.05).

Table 1 shows the most frequent complications that occurred during hysteroscopic surgeries.

Table 1. Intraoperative complications of hysteroscopic surgeries

Intraoperative complications	Number and percentage of patients	
	N	%

Bleeding during surgery	1	0.5
Uterine perforation	1	0.5
In total	2	1

Table 2 presents the most frequent postoperative complications of hysteroscopic surgeries.

Table 2. Postoperative complications of hysteroscopic surgeries.

	N	**%**
Creating adhesions after surgery	1	0.5
In total	1	0.5

Table 3 presents the frequncy of relapses in the first six months upon a hysteroscopic surgery of fibroids.

Table 3. The frequency of relapses six months after a hysteroscopic myomectomy

	Number and percentage of patients	
	N	%
Miomektomia	1	0.5

Six months upon a hysteroscopic surgical myomectomy there was a relapse in one patient, p>0.05.

DISCUSSION

Observing the type of infertility in relation with the age of the examined patients, we found that primary infertility was approximately equally represented in patients of 25-30 years of age and those of 31-35 years of age, whereas secondary infertility was most often represented in patients of 36-40 years of age. In most of our patients, primary infertility lasted for 3-4 years, while secondary infertility lasted for 1-2 years. Transvaginal ultrasound is accurate in diagnosing uterine fibroids [23,24]. No abnormalities were found in 10.6% of the patients. There is no statistically significant difference when it comes to individual locations of submucosal fibroids between the patients with primary and secondary infertility and there is no significant difference concerning the size of submucosal fibroids between these two groups of patients [25].

Submucosal fibroids were present in 12.12% of our patients with primary infertility and in 14.08% of the patients with secondary infertility. The size of fibroids was between 21 and 25 mm both in the patients with primary infertility and those with secondary infertility. Other authors also stated that the average size of submucosal fibroids in patients who had undergone hysteroscopic myomectomy was 2.1 cm [25,26]. Most of the authors agree that type 0 and type I submucosal fibroids up to 6 cm in size and type II submucosal fibroids up to 4 cm in size can be removed hysteroscopically [20,25,26]. Trying to answer the question whether the size and location of submucosal fibroids affected the reproductive outcome, women with and without submucosal fibroids were compared and no significant difference was found in the birth rate which was 30.5% in women with fibroids and 33.7% in women without fibroids [15]. The largest meta-analysis to date by Sunkare et al. involved 11 different studies and it found that there was a 21% lower birth rate in the patients with submucosal fibroids with no distortion of the cavity compared to the patients with no fibroids [19,21].

In both groups of the patients submucosal fibroids were most commonly located on the dorsal wall of the uterine corpus, followed by the anterior wall of the uterus and the fundus of the uterus. Fibroids located in the uterine horns are more difficult to reach and remove and are thus connected with a greater risk of complications during surgery [16]. In all our participants resections of submucosal fibroids were performed in a single step. Other authors stated that they had done a complete resection of submucosal fibroids in 92.9% of cases and an incomplete resection in 7.1% of cases [27].

Complications during hysteroscopy can be intraoperative and postoperative. There were complications in three patients. When it comes to intraoperative complications, perforation of the uterus during dilation of the cervix occurred in one patient, and another patient developed

uterine bleeding during fibroid resection. Postoperative complications included adhesion formation after fibroid resection in one patient. In 0.5% of the patients there was a relapse in the first six months upon surgery, a relapse of submucosal fibroid occurred in one patient.

Other authors stated that the percentage of intraoperative complications was around 5.4% and that the risk of uterine perforation was particularly pronounced during resection of type II submucosal fibroids [16]. Uterine rupture during pregnancy and childbirth after a hysteroscopic myomectomy was found in 1% of cases [13]. The pregnancy rate after a hysteroscopic myomectomy was 29.7% [14]. The pregnancy rate was 40% if the fibroid was the only cause of infertility and in 33.3% in it was completely located in the uterine cavity [14].

CONCLUSION

Hysteroscopy is a safe and efficient endoscopic procedure for diagnosis and surgical removal of submucosal fibroids as one of the factors causing pathological conditions of the uterine cavity. Submucosal fibroids which deform the uterine cavity reduce a woman's fertility. Submucosal fibroids type 0 and type I 21-25 mm in size located on the dorsal wall of the uterine corpus were most often resected using the hysteroscopic procedure. The percentage of intraoperative complications was 1%. One patient experienced perforation of the uterus and one patient had uterine bleeding. The percentage of postoperative complications was 0.5%. One patient experienced adhesion formation in the uterus after fibroid resection. The percentage of relapses six months upon surgery was 0.5% as one patient had a relapse of a submucosal fibroid. Through adequate planning and performance it is possible to minimize the risk of complications during hysteroscopic surgeries. Advantages of the hysteroscopic approach include a shorter procedure, a better observation of the cavity, a greater precision, less pain, lower morbidity, the absence of cuts, faster recovery and getting back to work sooner.

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