

ENDOMETRIAL POLYPS AND SUBMUCOUS MYOMAS
AS A CAUSE OF INFERTILITY. ANALYSIS
OF POST-HYSTEROSCOPIC RESECTION RESULTS

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Abstract

The aim of our study was to investigate the efficacy and reproductive outcome after bipolar hysteroscopic resection of intrauterine polyps and submucous myomas in patients with infertility.

A randomized clinical trial was conducted in a total of 181 patients with a history of intrauterine pathology and concomitant infertility problems of which 134 patients were diagnosed with an endometrial polyp and 47 – with a submucous intrauterine fibroid structure. Modern endoscopic methods were used to determine the perioperative and operative behaviour, such as diagnostic hysteroscopy with a 6-mm hysteroscope, as well as a hysteroscopic resection with a 9-mm hysteroscope.

Successful pregnancy rate in the postoperative period was 62.4% as compared to the complete absence of successful pregnancies in the preoperative period. In the group of women with previously diagnosed submucous myomas, 74.4% of women conceived in the postoperative period as a result of the hysteroscopic procedure. As far as patients with a previously diagnosed endometrial polyp were concerned, successful pregnancies were accomplished in 60.4% women.

Based on the results of the present study, it can be concluded that the elimination of existing intrauterine pathology, especially the one which leads to changes in the contour of the uterine cavity, significantly increases the chances of pregnancy in patients with previous infertility.

Key words: intrauterine pathology, submucous myomas, endometrial polyp, infertility, hysteroscopy

Introduction. Intrauterine pathology (endometrial polyps and submucous myomas) is often manifested with subfertility problems and early pregnancy loss. However, still data is missing to prove any direct correlation between the presence of an organic uterine substrate and failure of conception [1]. However, the removal of endometrial polypoid structures leads to an increase in the incidence of successful spontaneous pregnancies, as well as of pregnancies achieved by insemination or in-vitro fertilization (IVF), thus reducing the relative rate of early pregnancy loss.

The mechanisms by which a present intrauterine pathology might lead to conception failure could not yet be fully understood. The most commonly cited ones are the possible mechanical obstruction and the negative effect on sperm migration [1]. Endometrial polyps and submucous myomas also lead to increased levels of metalloproteinases, cytokines and gamma-interferon on a molecular basis, as well as of inhibitory factors such as glycodecline, which inhibit the ovocyte binding and lead to natural killer (NK) cell activation [2].

The aim of the study was to investigate the efficacy and reproductive outcome after bipolar hysteroscopic resection of intrauterine polyps and submucous myomas in patients with infertility.

Material and methods. A randomized clinical trial was conducted within the period of 2013–2018 in a total of 181 patients with a history of intrauterine pathology and concomitant infertility problems, aged between 20–50 years, of which 134 patients were diagnosed with an endometrial polyp and 47 – with a submucous fibroid structure. A vaginal ultrasound examination was used in the preliminary establishment of the diagnosis. Modern endoscopic methods were used to determine the perioperative and operative behaviour, such as diagnostic hysteroscopy with a 6-mm hysteroscope, as well as a hysteroscopic resection with a 9-mm hysteroscope. Subsequently, we studied the frequency rate of patients with persistent infertility, as well as that of women with a successfully achieved pregnancy after hysteroscopic resection procedure. The level of significance we used was $\alpha = 0.05$. The corresponding null hypothesis was rejected when the p -value (p) was less than α . The SPSS for Windows version 13.0 was used to process the survey data [3].

Results. Table 1 shows the results of our study. The rate of persistent infertility in patients with a previous intrauterine pathology significantly decreased in the postoperative period as compared to the preoperative period, $p < 0.0001$ [confidence interval (CI) 2.0036–3.5716].

The same statistical difference was observed also in the subgroup of patients with submucous myomas and endometrial polyps, $p < 0.0001$ (see Table 1).

Successful pregnancy rate significantly improved in the postoperative period as compared to the preoperative period, $p < 0.0001$ [CI 0.0000–0.03318].

The difference was statistically significant all the same for the subgroups of patients with submucous myomas and endometrial polyps, respectively, $p < 0.0001$ (see Table 1).

T a b l e 1

Number of patients with reproductive problems

	Total (181)	Submucous myomas (47)	Endometrial polyp (134)	<i>p</i>
Preoperative infertility rate	100% (181/181)	100% (47/47)	100% (134/134)	
Postoperative infertility rate	37.6% (68/181)	25.6% (12/47)	39.5% (53/134)	<0.0001
Preoperative successful pregnancy rate	—	—	—	
Postoperative successful pregnancy rate	62.4% (113/181)	74.4% (35/47)	60.4% (81/134)	<0.0001

In Fig. 1 we compared the percentage of successfully achieved postoperative pregnancies (62.4%), which proved to be significantly higher than that of the persistent postoperative infertility (37.6%), $p < 0.0001$ [CI 14.5535–34.3176%]. We analysed also the results for the subgroups of patients with myomas and endometrial polyps (see Fig. 1).

Discussion. Endometrial polyps are often considered in literature to be a factor for infertility [1]. They could prevent the achievement of a success-

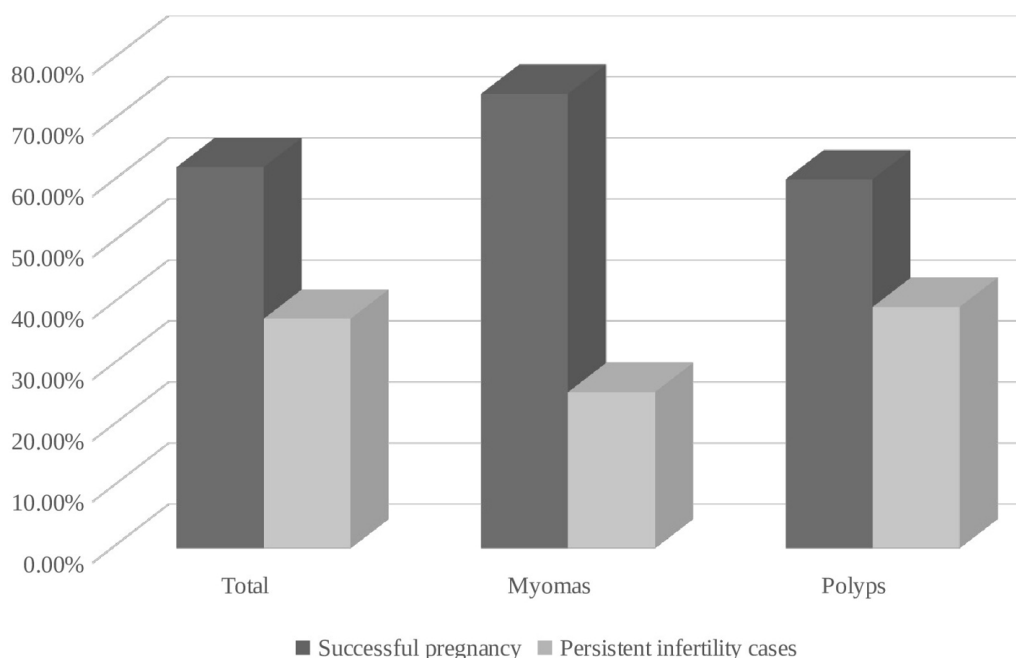


Fig. 1. Postoperative successful pregnancy rate

ful pregnancy by creating mechanical obstacles for sperm and/or the fertilized egg transportation, as well as for further embryonic implantation. They might also establish favourable conditions for the occurrence and persistency of an intrauterine infection, and last but not least, they might negatively influence endometrial receptivity on a molecular-biological basis. Diagnostic methods include uterine ultrasound exam, hysterosalpingography, sonohysterography, and/or hysteroscopy [1]. At present, there is no reliable data in literature on the exact clinical behaviour upon the establishment of their diagnosis, and there are different opinions concerning a possible conservative approach or a surgical removal.

In most cases, patients are asymptomatic before diagnosis [4,5]. However, irregular uterine bleeding and infertility complaints are not uncommon features [6]. The association of an endometrial polyp with meno-/metrorrhagia reaches up to 20–30% [6], and the frequency of discovered intrauterine pathology on hysteroscopic examination of the uterine cavity before the initiation of an IVF procedure reaches 11–45% [7–10]. Within a total of the 181 studied patients in this survey, all had sought some gynecological help due to difficulties in achieving a successful pregnancy.

The association of endometrial polyps or submucous myomas with infertility is still considered controversial, as it appears that some patients have had successful pregnancies despite the presence of a similar uterine pathology. However, modern literature sources increasingly emphasize on the most probable role of the presence of an anatomical substrate such as an endometrial polyp, a submucous myoma, intrauterine synechiae, and/or congenital uterine abnormalities as a cause of infertility [1]. Thus, endometrial polyps proved to be the most common abnormality (16.7%) in patients with repeated unsuccessful IVF attempts [9]. It is believed that the latter, in addition to mechanical obstacles, might also provide a negative impact on endometrial receptivity, thus making embryonic implantation impossible [11]. For example, glycodefine is a specific glycoprotein with a suppressive effect on the attachment of the spermatozoid to the ovocyte. Its levels in endometrial tissues are considered low in the periovulatory period (6 days before and 5 days after ovulation), which usually facilitates the fertilization process. Subsequently, glycodefine levels rise 6 days post ovulation, which in turn suppresses NK cell-activity, thus enabling implantation of the product of conception [2]. The presence of a submucous myoma or an endometrial polyp could disrupt normal levels of this glycoprotein in the periovulatory period, thereby inhibiting proper nidation processes [2]. In addition, it has been suggested that the presence of an endometrial polypoid structure may interfere with the gene expression of HOXA10 and HOXA11, which also might contribute to an inadequate endometrial receptivity [2].

It is believed that the transvaginal ultrasound diagnostics in the 2-dimensional (2D) mode has a low efficiency in comparison with the sonohysterographic and/or the hysteroscopic exam.

The diagnosis of intrauterine anomalies and submucous myomas can be made sonographically during the early proliferative phase of the menstrual cycle. However, in broad-based endometrial polyps, a differential diagnosis with submucous myomas often needs to be made. It appears also difficult to distinguish a true polyp from a polypoid growth of the endometrium, especially after early ovulation has occurred, which leads to the development of a densely growing endometrial lining [1]. In 90% of cases, diagnostic hysteroscopy confirms the previously made ultrasound finding [8].

Sonohysterography has a high sensitivity (88%) and specificity (94%), which is why it is considered an alternative to hysteroscopy [8]. Hysteroscopy, however, still remains the gold standard in the diagnosis of endometrial polyps. Last but not least, a diagnostic hysteroscopy could be easily turned into an operative one with the surgical removal of macroscopically visualized pathologically altered endometrial areas such as polypoid structures or small submucous myomas [1].

At present, there is still no well-established pattern of behaviour in the diagnosis of intrauterine pathology in young asymptomatic patients who envisage future pregnancies. According to some literature sources, the described polypoid structures may undergo involution in 27% of patients [7,8]. Their removal, however, is still being recommended in a number of publications, considering the beneficial effect they might have both on successful spontaneous pregnancy achievement, as well as on the use of insemination and assisted reproductive methods [12–14]. Thus VARASTEY et al. [15] reported a successful pregnancy rate of 78.3% after a polypectomy versus 42.1% if conservative management was chosen. SPIEWANKIEWICZ et al. [16] in turn found a 76% (19/25 women) successful pregnancy rate within 12 months of endometrial polypectomy. A great interest attracted still another research from 2015 by BOSTEELS et al. [17], where the percentage of successful pregnancies after the surgical removal of previously diagnosed endometrial polyps reached 63% versus 28% in untreated patients. The same trend was observed among the population of patients having undergone insemination, in whom the frequency of successful pregnancies was higher after a polypectomy as compared to those with a chosen conservative management – 38.3% versus 18.3%, respectively [13]. According to the results in our study, the infertility rate after hysteroscopic treatment was significantly reduced. The opposite was observed concerning the conception rate which was significantly increased in the postoperative period.

Moreover, the specific location of the polypoid structure within the uterine cavity could also affect the frequency of successfully achieved pregnancies after a hysteroscopic resection. Thus, according to a study of 230 patients with infertility complaints, the postoperative conception rate was 57.4% after a hysteroscopic removal of a polyp at the ostium of the fallopian tubes, versus 14.8% after a hysteroscopic polypectomy at the level of the anterior uterine wall – 14.8% [18].

Conclusion. Based on the results of the present study, it can be concluded that the elimination of existing intrauterine pathology, especially the one which leads to changes in the contour of the uterine cavity, significantly increases the chances of pregnancy in patients with previous infertility.

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