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Surgical removal of asymptomatic polyps detected on the day of egg collection increases fertility outcome

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Abstract

Aim: In this study, we aimed to determine the impact of surgical removal of polyps that were detected incidentally on the day of egg collection on the fertility outcome.

Material and Methods: Forty-five patients who were suspected of having polyps in the ultrasonographic examination performed during egg collection were included in the study. The patients were informed about the endometrial polyp and hysteroscopy was recommended. While 30 of 45 patients accepted hysteroscopy, 15 patients did not. Patients who did not undergo hysteroscopy continued their routine treatment and embryo transfer was performed. Polyps of different localizations and sizes were detected in 28 of 30 patients who underwent hysteroscopy and were surgically removed. No polyps were found in two patients. Frozen embryo transfer was performed to the patients after polypectomy. A single embryo was given to the patients in both groups. The primary outcome measures of the study were detection of serum beta-hCG levels, clinical pregnancy rate (CPR), live birth rate (LBR), and miscarriage rate.

Results: The mean size of the polyps was 15 mm (range 2 mm to 25 mm). Beta hCG values measured after 12 days in the polypectomy group were positive in 14 of 28 patients (50%). Beta hCG positivity was detected in 6 of 15 patients in the control group (40%). Beta hCG positivity was significantly higher in the polypectomy group than in the control group ($p<0.02$). Clinical pregnancy was detected in 13 of 14 patients in the polypectomy group (46.4%). In the control group, clinical pregnancy was detected in 5 patients (33.3%). A significant increase was found in the polypectomy group in terms of CPR rates ($p<0.01$). While 11 patients in the polypectomy group had a live birth (39.2%), 5 patients in the control group had a live birth (33.3%). There was no difference between the groups in terms of live birth and miscarriage rates ($p<0.76$ and $p<0.40$ respectively).

Discussion: Surgical removal of asymptomatic polyps detected on the day of egg collection leads to a significant increase in clinical pregnancy rates.

Keywords

Polypectomy, Egg Retrieval Day, Clinical Pregnancy, Live Birth, Miscarriage

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Introduction

Endometrial polyps are considered to be the most common acquired uterine cavity anomalies. They are single or multiple stalked or sessile endometrial neoplasms consisting of glands, stroma and blood vessel triad [1]. Although they are generally benign lesions, 0-10% malignant transformation may occur in the polyp or in the surrounding endometrial tissue [2]. Although it occurs mostly in the reproductive age, it can also be seen in the postmenopausal period. However, it is not clear whether the menopausal polyps are denova formation or polyps from the reproductive age. It may be asymptomatic or may lead to postcoital spotting, abnormal uterine bleeding, or infertility [3]. The incidence of polyps increases in the elderly, with the use of tamoxifen, in the presence of hypertension, PCOS, and obesity [4]. Although 2D or 3D transvaginal ultrasound, saline contrast sonohysterography and hysterosalpingography are the most used methods in the diagnosis of polyps, hysteroscopy is considered the most sensitive method because it offers both diagnosis and simultaneous treatment [5]. Although the incidence of polyps in asymptomatic infertile patients undergoing diagnostic hysteroscopy before IVF/ICSI varies between 6-32% [6], its incidence varies between 1-40% according to the patient group studied and the diagnostic tests performed [7].

Subfertility-producing effect of endometrial polyps may occur due to the mechanical or non-mechanical effect of the lesion, or may occur due to the combined effect of both. The fact that more than half of the patients who underwent hysteroscopic polypectomy became pregnant indicates the importance of surgical removal of polyps [8]. It has been reported that both hysteroscopic polypectomy before IUI [9] and surgical removal of polyps located at uterotubal junction before IVF/ICSI lead to a significant increase in pregnancy rates [10]. Opinions on the removal of asymptomatic polyps detected during egg collection are not clear [11]. This study was designed to determine the effects of surgical removal of polyps that were detected incidentally on the day of egg collection on the fertility outcome.

Material and Methods

Forty-five IVF/ICSI patients who were suspected of having polyps in the ultrasonographic examination performed during egg collection were included in the study. The patients were informed about the endometrial polyp and hysteroscopy was recommended. While 30 of 45 patients accepted hysteroscopy, 15 patients did not. Patients who did not undergo hysteroscopy continued their routine treatment and embryo transfer was performed. Polyps of different localizations and sizes were detected in 28 of 30 patients who underwent hysteroscopy and were surgically removed. No polyps were found in two patients. Frozen embryo transfer was performed to the patients after polypectomy. A single embryo was given to the patients in both groups. The primary outcome measures of the study were detection of serum beta-hCG levels, clinical pregnancy rate (CPR), live birth rate (LBR), and miscarriage rate. Clinical pregnancy rate is defined as evidence of a gestational sac, confirmed by ultrasound examination at the 4th week of the transfer. Live birth rate is defined as the delivery of a live fetus after 24 completed weeks of gestational age. Serum beta-hCG levels were measured in all patients on the 12th day of embryo transfer. The loss of the fetus before 20 weeks of gestation was defined as miscarriage. All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and approval for the study was obtained from the Institutional Review Board.

Statistical analysis

SPSS 21.0 (IBM Corporation, Armonk, NY, USA) was used for the statistical analysis of the data. Quantitative data were expressed as mean ± standard deviation (SD). The normality distribution of data was analyzed with Shapiro–Wilk test and found to be normal. Continuous variables were analyzed using the Mann-Whitney U test. A p-value <.05 was considered significant.

Results

There was no difference between the group that underwent polypectomy and the group that did not, in terms of age, BMI, infertility periods, rFSH dose used, endometrial thickness, and basal hormone levels. MII oocyte and 2PN embryo counts were also similar. The mean size of the polyps was recorded as 15 mm (range 2 mm to 25 mm). Beta hCG positivity and clinical pregnancy rates were significantly higher in the polypectomy group than in the non-polypectomy group. Beta hCG values measured after 12 days in the polypectomy group were positive in 14 of 28 patients (50%). Beta hCG positivity was detected in 6 of 15 patients in the control group (40%). Beta hCG positivity was significantly higher in the polypectomy group than in the control group ($p<0.02$). Clinical pregnancy was detected in 13 of 14 patients in the polypectomy group (46.4%). In the control group, clinical pregnancy was detected in 5 patients (33.3%). A significant increase was found in the polypectomy group in terms of CPR rates ($p<0.01$). While 11 patients in the polypectomy group had a live birth (39.2%), 5 patients in the control group had a live birth (33.3%).

There was no difference between the groups in terms of live birth rates ($p<.0.76$). Abortion was detected in 3 patients (21.4%) in the polypectomy group and 1 patient in the control group (16.6%). There was no difference between the groups in terms of abortion rates ($p<0.40$).

Discussion

Endometrial polyps may interact mechanically with both sperm and embryo transport, leading to subfertility. The size, number, and location of the polyp determine the severity of the mechanical interaction between the embryo, sperm and the polyp [12]. It can be accepted that sessile polyps with a small implantation base are more innocent lesions than pedunculated and/or sessile polyps with a large implantation base in terms of the possibility of mechanical interaction [5,10,13]. In addition to their mechanical effects, polyps may also cause subfertility by disrupting endometrial receptivity. Potential mechanisms whereby endometrial polyps could adversely affect reproductive outcomes include the release of receptivity molecules and genes that adversely affect sperm transport or embryo attachment.

Based on clinicians' practice or when the results of polypectomy studies are reviewed separately, the performance of polypectomy in subfertile patients who are asymptomatic

for polyps comes to the fore. On the other hand, most of the available data do not have sufficient scientific basis to recommend routine polypectomy in subfertile patients with asymptomatic polyp [5]. Although the risk of subfertility due to a polyp that covers the tubal ostium or internal os seems to be more evident, polyps can cause subfertility regardless of their number, location and size and therefore need to be treated [8,10]. Despite the abundance of data supporting polypectomy, many of the studies showing that polypectomy improves fertility outcomes in infertile patients consist of low-quality and observational studies [14]. In our study, polyps were not classified according to their location. When the polyps in the entire location were evaluated together, we found clinical pregnancy in 46.4% of the patients who underwent polypectomy. In those who did not undergo polypectomy, the clinical pregnancy rate was 33.3%. Polypectomy resulted in approximately 13% of extra pregnancies. As a result, surgical removal of asymptomatic polyps detected on the day of egg retrieval, regardless of location, leads to a significant increase in clinical pregnancy rates. However, polypectomy did not lead to a significant increase in live birth rates. We found the abortion rates of both groups to be similar. It has been reported that polypectomy performed before intrauterine insemination increases clinical pregnancy rates [9]. Similarly, it has been suggested that polyps detected during routine examinations in IVF/ICSI patients should be considered for whether or not they should be operated according to their localization. It has been reported that removal of polyps located at the uterotubal junction significantly increases pregnancy rates compared to other locations. Yanaihara et al [10] reported 57% clinical pregnancy after IVF/ICSI procedures performed after removal of uterotubal polyps. While this rate was 28.5% in the posterior wall, it was reported as 14.8% in the anterior wall. Moon et al. reported that removing polyps detected on the day of egg retrieval while the patient is asleep is a patient-friendly option and increases pregnancy rates close to late polypectomy [11].

Conclusions

Despite the small number of participants, the results of our study showed that the removal of asymptomatic polyps detected on the day of egg collection led to a significant increase in clinical pregnancy rates. Interrupting treatment for a while to remove polyps detected on the day of egg collection may lead to a significant increase in the fertility outcome.

Scientific Responsibility Statement

The authors declare that they are responsible for the article's scientific content including study design, data collection, analysis and interpretation, writing, some of the main line, or all of the preparation and scientific review of the contents and approval of the final version of the article.

Animal and human rights statement

All procedures performed in this study were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. No animal or human studies were carried out by the authors for this article.

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Conflict of interest

None of the authors received any type of financial support that could be considered potential conflict of interest regarding the manuscript or its submission.

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