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# Effect of Hysteroscopic Polypectomy on Conception in Women with Infertility

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## Abstract

**Background:** Infertility is estimated to impact one in every seven heterosexual couples. The malefactors causing infertility (30 percent), tubal damage (20 percent), unexplained infertility (25 percent), ovulatory disorders (25 percent), tubal damage (20 percent), and uterine or peritoneal disorders (10 percent) are the leading causes of infertility. In the past twenty years, hysteroscopy has gained recognition as the gold-standard technique for evaluating the uterine cavity.

**Aim and objectives:** To assess the impact of hysteroscopic polypectomy on conception in unexplained infertile women.

**Subjects and methods:** A prospective cohort interventional research was performed at El-HUSSEIN University Hospital from January 2022 to August 2022, involving a total of 50 women who had been diagnosed with unexplained infertility in the Obstetrics and Gynecology department.

**Result:** Regarding primary outcome measures among the studied cases, 32.0% were clinical pregnancies, and 26% were ongoing pregnancies. Laboratory results and HSG in our study showed that the mean Serum estradiol (E2) was  $56.2 \pm 10.45$ , the mean Mid-luteal progesterone was  $40.1 \pm 3.21$ , 16% was Obstruction and 12% was Adhesion.

**Conclusion:** Patients whose infertility is caused by endometrial polyps and menstrual abnormalities and who do not have any other medical reasons for their infertility can significantly benefit from trans-cervical polypectomy. Additionally, there is a minimal recurrence rate, and the procedure is safe.

**Keywords:** hysteroscopic polypectomy; unexplained infertility; menorrhagia; endometrial polyps

## 1. Introduction

Infertility is estimated to impact one in every seven heterosexual couples. Male factors causing infertility (30%), unexplained infertility (25%), tubal damage (20%), tubal damage (20%), ovulatory disorders (25%), and uterine or peritoneal disorders (10%) are the leading causes of infertility.<sup>1</sup>

Evaluation of cervical, uterine, and tubal, in addition to ovulatory factors, comprise the basic investigations for female infertility. Hysterosalpingography (HSG) was historically employed to assess the uterine cavity. Nonetheless, many researchers believe that hysteroscopy is preferable to HSG for direct visualization of the uterine cavity.<sup>2</sup>

Hysteroscopy, considered the gold standard method for uterine cavity examination during

the last two decades, has gained increased acceptance and is now a vital tool in the treatment of female infertility.<sup>3</sup>

Hysteroscopy is a rapid, safe & well-tolerated treatment that permits a direct view of the cervical canal and the uterine chamber to examine the form and vascular pattern of any abnormality.<sup>4</sup>

Overgrowths of endometrial stroma and organs within the uterine cavity are known as endometrial polyps. Anomalies of the uterus (AUB) may result from polyps, but due to their often asymptomatic nature, they may go undetected.<sup>5</sup>

The objective of this trial was to assess the impact of hysteroscopic polypectomy on conception in females with unexplained infertility.

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## 2. Patients and methods

This prospective cohort interventional trial was conducted on fifty women diagnosed with unexplained infertility at the Obstetrics and Gynecology Department of El-HUSSIEN University Hospital from January 2022 to August 2022.

**Sample size:** This trial was based on research conducted by Stamatellos et al.,<sup>6</sup> The sample size was calculated utilizing Epi Info by the following assumptions: - 95 percent confidence level on both sides, with an eighty percent power. Also, the standard deviation is 5%. As a result of the Epi-Info output, the highest sample size that could be obtained was 47. In order to reduce the possibility of participants dropping out, the sample size was expanded to fifty.

**Inclusion Criteria:** Age below 35, a minimum of 12 months of infertility, three to eight months of menstrual disorders (including menorrhagia, intermenstrual bleeding, or menorrhagia), and three to eighteen months of follow-up with attempts to conceive after hysteroscopic polypectomy and endometrial polyp/polyps were identified as the sole potential factors contributing to infertility after a standard infertility evaluation.

**Exclusion Criteria:** Age above 35 years and other causes of infertility.

All patients were subjected to demographic information collection, general examination, and unexplained infertility diagnosis (by exclusion of known factors for infertility).

**Procedure:** Diagnostic hysteroscopies were performed with a standard four-millimeter hysteroscope (Shdy Kant Sten) with a 25-degree fore-oblique lens and a 5.5-millimeter diagnostic sheath or a 2.7-millimeter telescope (Acmi, Circon, USA) with a 30-degree lens and 3.5-millimeter sheath. We utilized a 24-French continuous flow resectoscope with a passive handle for all operational hysteroscopies. Diagnostic hysteroscopies required proper saline uterine canal dilation. Sorbitol and mannitol were utilized in surgical hysteroscopies. Utilizing a Hamou endomat (Karl Storz, Germany) or a pressure cuff (75–120 mmHg) around the bag of irrigant caused uterine distension. The "no touch" or vaginoscopic approach technique was utilized to insert the hysteroscope into the endometrial cavity after visualizing the external cervical or without gynecological valves or a speculum or tenaculum. This was done during diagnostic hysteroscopy. Systematically, the cavity was inspected for any anomalous findings. The tubal ostia and the uterine walls or fundus were where any intracavitary lesion, also known as a polyp, was found to be related. It was determined that the endometrium was normal if there were no thickness variations and good visualization of the entire cavity. Additionally, there were no structural abnormalities or hypervascularization,

and the endometrium appeared all the same thickness. Following this, the telescope was gradually removed from the uterus, and the cervical canal was examined. Before introducing the resectoscope, the cervix was dilated to a Hegar 9.5, the maximum size that could be achieved. The procedure began with proper orientation, identification of the tubal ostia, and localization of the lesion. A 75–125 W blended cutting and coagulating current respected endometrial polyps. Monitored fluid balance and stopped operation when shortfall was  $>1.5$  l. By hysteroscopic mechanical scissors, nulliparous women were dilated to 5.5 Hegar before polypectomy with normal saline. Women with clinical pregnancy (fetal heartbeat on transvaginal ultrasound) and  $\beta$ -hCG positivity in serum were the significant outcome measures during follow-up.

**Ethical consideration:** The protocol was considered official after being accepted by the faculty's ethical committee. Before participating in the research, the study cases provided informed consent.

**Statistical analysis:** SPSS 26.0 and Excel 2016 were utilized to tabulate and analyze the data. Data was analyzed using descriptive statistics involving mean  $\pm$  SD, minimum and maximum range, median, first and third interquartile range, and number and percentage for categorical data. Quantitative variables were inferentially analyzed using independent t-tests for parametric data and Mann-Whitney U for non-parametric data. Quality data was inferentially analyzed using the Chi-square test for the independent group. Wilcoxon Rank test was used to compare non-parametric variables between related samples. The significance criterion was set at  $P < 0.05$  else it was non-significant.

## 3. Results

*Table 1. Demographic characteristics among the examined individuals*

	N	%
PARITY	1.3 $\pm$ 0.7	
BODY MASS INDEX	27.3 $\pm$ 2.7	
AGE	26.3 $\pm$ 2.2	

**Table 1** showed demographic characteristics among the examined individuals. The mean age was 26.3 $\pm$  2.2. The mean BMI was 27.3 $\pm$  2.7. The mean Parity was 1.3 $\pm$  0.7.

*Table 2. Medical histories among the studied cases*

	N	%
INTERMENSTRUAL BLEEDING	5	10.0%
MENOMETRORRHAGIA	4	8.0%
MENORRHAGIA	3	6.0%

**Table 2** showed medical histories among the studied cases. There were 10.0% Intermenstrual

bleeding, 8.0 % with Menometrorrhagia. There were 6.0% with Menorrhagia.

*Table 3. Duration and type of infertility among the studied cases*

DURATION OF INFERTILITY (YEARS)	Mean± SD	1.4± 0.22
TYPE OF INFERTILITY		
PRIMARY		32 (64%)
SECONDARY		18 (36%)

**Table 3** showed duration and type of infertility among the investigated cases. The mean Duration of infertility 1.4± 0.22, there were 64% Primary, 36% Secondary.

*Table 4. Laboratory results and HSG among the studied cases*

SERUM ESTRADIOL (E2)	Mean± SD	56.2 ± 10.45
MID-LUTEAL PROGESTERONE, (NG /ML)	Mean± SD	40.1±3.21
HSG		
NORMAL		36 (72%)
OBSTRUCTION		8 (16%)
ADHESION		6 (12%)

**Table 4** showed laboratory results and HSG among the studied cases. The mean Serum estradiol (E2) was 56.2 ± 10.45, The mean Mid-luteal progesterone was 40.1±3.21, 16% were Obstruction, 12% were Adhesion.

*Table 5. primary outcome measure among the studied cases*

	N	%
CLINICAL PREGNANCY	16	32%
ONGOING PREGNANCIES	13	26%

**Table 5** showed primary outcome measure among the studied cases. There were 32.0% Clinical pregnancy, 26% Ongoing pregnancies.

*Table 6. outcome measure of pregnancy.*

	N	%
CASES OF PREGNANCY	70	77%
CASES OF ABORTED PATIENTS	20	22%
ABORTED CASES OF SECOND 3MONTHS OF PREGNANCY	3	3%

**Table 6** showed number cases of pregnancy was represented 77%, number of aborted cases was represented 22%, number of cases of aborted during second 3months was 3%.

#### 4. Discussion

As regards demographic characteristics among the examined individuals. The mean age was 26.3± 2.2. The mean BMI was 27.3± 2.7. The mean Parity was 1.3± 0.7.

Our findings were corroborated by research by Zakaria et al.,<sup>7</sup> which reported that the participants' BMI was 27.6±3.9 kg/m<sup>2</sup>, their average age was 22–42 years, and their average

Duration of infertility was 4.6±3.3 years.

This research revealed concerning medical histories among the studied cases. There were 10.0% Intermenstrual bleeding, 8.0 % Menometrorrhagia, and 6.0% Menorrhagia. Our findings were confirmed by an investigation of Lieng et al.,<sup>8</sup> as in 31 (12.1%) of the women examined, endometrial lesions were identified. When contrasted with women without polyps, women with polyps experienced significantly heavier menstrual discharge.

The current study showed the Duration and type of infertility among the studied cases. The mean Duration of infertility was 1.4± 0.22; there were 64% Primary and 36% Secondary.

Our consequences were supported by the research of Elbareg et al.,<sup>9</sup> who reported that 65% of their studied cases had primary infertility and 35% had secondary. The Duration of infertility was more than three years in all patients.

Laboratory results and HSG among the studied cases: The mean Serum estradiol (E2) was 56.2 ± 10.45, the mean Mid-luteal progesterone was 40.1±3.21, 16% were Obstruction, and 12% were Adhesion.

In the study of Belal et al.,<sup>10</sup> Pelvic adhesions constituted the laparoscopic results (38/168=22.6%), while endometriosis of the pelvis followed (34/168=20.2 %). In addition, 26 individuals (15.47%) presented with multiple laparoscopic abnormalities.

Our findings revealed that, as regards the primary outcome measure among the studied cases, 32.0% were Clinical pregnancies, and 26% were Ongoing pregnancies.

Our findings were verified by research by Karakuş et al.,<sup>11</sup> They evaluate pregnancy rates after hysteroscopic polypectomy in infertile individuals with endometrial polyps and compare subgroups with varying polyp locations, sizes, and numbers. All individuals with endometrial polyps on hysteroscopic examination were included. Non-polyp intrauterine pathology and ET cases were excluded. Cases were assessed for polyp location, size, and number. Rates of β-hCG positive and clinical pregnancy were contrasted. With multiple polyps, the clinical pregnancy rates following polypectomy were 41.7%; with isthmus zone polyps, 30.8%; with anterior wall polyps, 28.6%; with corneal zone polyps, 27.3%; with posterior uterine wall polyps, 22.2%; and fundal polyps, 11.8% (p = 0.532). There is no variation in the reproductive results after hysteroscopic excision of polyps placed in different intrauterine places. It would indicate that the removal of polyps through hysteroscopic surgery, regardless of their size or quantity, does not have any impact on the likelihood of conceiving a child. There does not appear to be any variation in the reproductive results after hysteroscopic excision of polyps



placed in different intrauterine locations. It would indicate that the removal of polyps through hysteroscopic surgery, regardless of their size or quantity, does not have any impact on the likelihood of conceiving a child.

Similarly, Stamatellos et al.,<sup>12</sup> revealed that 91.6% of women had regular menstrual cycles after polypectomy. Spontaneous pregnancy and term delivery increased to 61.4% and 54.2% in the study population after the surgery. No significant distinction in fertility rates was seen among patients with polyps  $\leq 1$  cm,  $>1$  cm, or many polyps. The first-trimester spontaneous abortion rate was 6%, and there was no variation among cases with minor or large/multiple polyps. Infertility type did not alter fertility rates after hysteroscopic polypectomy. Hysteroscopic polypectomy had a 2.4% complication rate and a 4.9% recurrence rate.

Mikolajczyk et al.<sup>13</sup> found that hysteroscopic polypectomy and hysteroscopic myomectomy improved fertility in infertile women with standard cavities. Hysteroscopic resection of a giant myoma has a higher potential benefit to fertility than danger because the procedure may ablate a substantial surface area of the endometrial cavity. The significant impact of hysteroscopy in subfertility was demonstrated by the reproductive outcomes observed in our series, which involved an 80% probability of spontaneous pregnancy and a 70% rate of birth at term.

In a meta-analysis conducted by Mouhayar et al.,<sup>14</sup> the combined results of the three trials showed that the rate of continued pregnancy was 35.6% in the group that had the polyps removed, in contrast to 25.2% in the control group.

#### 4. Conclusion

Transcervical polypectomy is a procedure that has been shown to increase significantly the fertility rate of people who have endometrial polyps and menstrual irregularities and who have no other cause to explain their infertility. The procedure is also safe, with a minimal recurrence rate.

#### Disclosure

The authors have no financial interest to declare in relation to the content of this article.

#### Authorship

All authors have a substantial contribution to the article

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#### Conflicts of interest

There are no conflicts of interest.

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