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Effectiveness of Hysteroscopic Surgeries for Intrauterine Lesions on Pregnancy Rate in Patients with Primary Infertility

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ORIGINAL ARTICLE

Effectiveness of Hysteroscopic Surgeries for Intrauterine Lesions on Pregnancy Rate in Patients with Primary Infertility

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Abstract

Background: ***Hysteroscopy is a technique used by gynecologists to examine the endometrial cavity and perform surgical procedures on the uterus from outside the body (transcervical).***

Aim of the work: ***This study will utilize a prospective design to ascertain whether or not medical treatment via operational hysteroscopy is beneficial in boosting conception rate and decreasing patient complaints in women diagnosed with intrauterine abnormalities and primary infertility.***

Patients and methods: ***This study, which involved fifty patients, is prospective. Of childbearing age who visited the Al-Hussein University Hospital with complaints of primary infertility were analyzed in this study after giving informed consent. They went to Al-Hussein University Hospital for submucous myoma hysteroscopic excision, polypectomy, or intrauterine septum resection between November 2021 and October 2023.***

Results: ***The treatment of any uterine abnormalities, no matter how minor, increases the chance of pregnancy among infertile women without additional causes of infertility.***

Conclusion: ***Removal of uterine cavity abnormalities in subfertile women using hysteroscopy may be recommended to improve their reproductive outcome and increase their chances of becoming pregnant.***

Keywords: Operative Hysteroscopy; Infertility; Uterine cavity abnormalities

1. Introduction

The conventional approach for repairing uterine abnormalities involved trans-abdominal surgery, which carried with it the risks of pelvic adhesions and consequent infertility, extended hospital stays, and a longer window of time before pregnancy could be attempted. Hysteroscopic surgery, which allows for a vaginal approach, is less invasive and requires less time spent in the hospital after that.[1]

In recent years, surgical hysteroscopy has replaced traditional methods of treating submucosal fibroids, polyps, uterine septa, and intrauterine adhesions.[2]

Only 2%–3% of instances of infertility are caused by uterine factors, which are also the main cause of infertility and pregnancy loss since they interfere with normal implantation and placentation and reduce the success rate of IVF.[3]

Retrospective investigations with case series have shown that hysteroscopic excision of submucosal myomas within infertile women resulted in successful reproduction. Between ten and thirty percent of premenopausal women are informed that they have polyps.[4]

Although endometrial polyps are sometimes asymptomatic, abnormal uterine bleeding is a common sign when they do arise, as is infertility.[5]

Numerous trials involving women with polyps and infertility that have not been explained have demonstrated that hysteroscopic polypectomy dramatically increases the chances of pregnancy.[6] There are several names for the arcuate uterus: septate, bicornuate, and typical variation.[7]

The purpose of the current study is to ascertain if therapeutic intervention using operational hysteroscopy can improve the rate of conception and reduce patient complaints in women who have been diagnosed with intrauterine anomalies and primary infertility. The study will employ a prospective design.

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2. Patients and methods

This is a prospective study carried out on fifty patients of childbearing age who visited Al-Hussein University Hospital with complaints of primary infertility. After giving informed consent, they were analyzed in this study. They went to Al-Hussein University Hospital for submucous myoma hysteroscopic excision, polypectomy, or intrauterine septum resection between November 2021 and October 2023.

2.1.Population of study & disease condition:

Primary infertile women receive hysteroscopic excision of submucous fibroids, polyps, and septa for the treatment of infertility.

Inclusion criteria: Female patients who are undergoing surgical hysteroscopy and have primary infertility within the childbearing age range.

2.2.Exclusion criteria: Patients with severe cervical stenosis, pelvic inflammatory disease, cervical malignancy, pregnancy, excessive monthly bleeding, or a recent uterine perforation should not have a hysteroscopic procedure. Individuals who have undergone cervical surgery and are experiencing infertility, as well as those who are unable to conceive due to male-related factors.

2.3.Methodology in details

Primary infertility was the motivation for the hysteroscopic operation. Patients were chosen after carefully considering their indications, medical histories, and physical examinations (including full-body, abdominal, and pelvic checks). Laboratory tests, including a hormonal assay and a semen analysis, have been performed on the husbands. All the cases were diagnosed by ultrasound, hysterosalpingogram, and saline infusion sonohysterogramy.

The ultrasound used for diagnosis was a Philips Clear Vue 650 machine, and the hysteroscopy used for surgical intervention was a Karl Storz image 1 HD camera system at Al Hussein University Hospital.

Prior to the surgery, preoperative measures were taken, including the administration of prophylactic antibiotics, the use of misoprostol to soften the cervix six hours before the procedure, and the administration of light sedation through anesthesia. The hysteroscopy was performed during the follicular phase of the patient's menstrual cycle. Information regarding future fertility was obtained through examining medical records, patient interviews, and hospital personnel observations. The impact of intrauterine lesions (such as submucous fibroids, polyps, and septum) and primary complaints on fertility and pregnancy outcomes after undergoing hysteroscopy have been established.

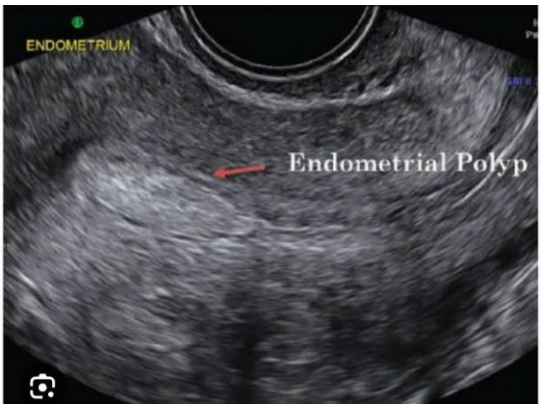

Figure 1. Ultrasound picture of endometrial polyp.

Figure 2. Hysteroscopic picture of endometrial polypectomy.

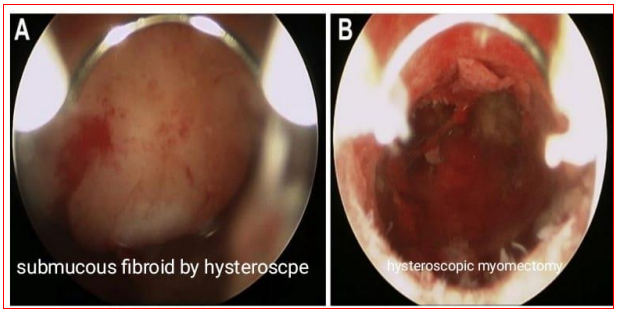

Figure 3. Hysteroscopic picture of myomectomy

2.4.Statistical Test:

The data was compared using the Chi-square (2) test, and the findings were tabulated as frequencies (number of cases) and percentages. A p-value less than 0.05 was considered statistically

significant, and the Yates adjustment algorithm was used when the expected frequency was less than 5. All analyses were performed in SPSS version 22 for Windows, IBM's Statistical Package for Social Science. IBM's headquarters are located in Armonk.

2.5.Possible Risk:

The likelihood of complications arising from hysteroscopy procedures. Key outcomes (the most significant to be assessed): Fertility and pregnancy outcomes within 24 months following hysteroscopic repair. Secondary outcome measurements, sometimes known as extra measures of effectiveness, include the relief of linked problems. Possible negative outcomes.

3. Results

Table 1. Socio-demographic profile of the participants (n=50).

SOCIODEMOGRAPHIC PROFILE	*GROUPS*	*NO. (%)*
AGE	*≤ 25*	*15(30%)*
	25 – 30 yrs	*17(34%)*
	≥ 30	*18(36%)*
DURATION OF INFERTILITY	*3 yrs or less*	*20(40%)*
	> 3 – 6 yrs	*18(36%)*
	> 6 yrs	*12(24%)*
MENARCHE AGE	*< 13 yrs*	*31(62%)*
	≥13 yrs	*19(38%)*
BMI(KG/M2)	*<25*	*12(24%)*
	≥25	*38(76%)*
JOB	*Housewife*	*32(64%)*
	Work	*18(36%)*

Participants' ages ranged from 22 to 42, with a mean of 28.94.3 years; the average length of infertility was 4.63.3 years; and their mean body mass index was 27.63.9 kg/m2.

Table 2. Procedures before operative hysteroscopy.

PROCEDURE BEFORE HYSTEROSCOPY	NO. OF CASES	NO. OF PATIENTS WITH DETECTED PATHOLOGY	ACCURACY
U/S	50	25	50%
HSG	20	13	65%
SIS	15	10	66%

All patients had undergone pelvic ultrasonography with pathology detection rate 50% of cases. HSG had been done for 20 patients with pathology detection rate 65% of cases. 15 patients had undergone saline infusion sonography which detected intrauterine pathology in 10 of them (66%).

Table 3. Distribution of the patients according to chief complaint

CHIEF COMPLAINT	NUMBER	%
PURE INFERTILITY	15	30%
INFERTILITY +AUB	17	34%
INFERTILITY +DYSMENORRHEA	8	16%
INFERTILITY+ AUB +DYSMENORRHEA	9	18%
INFERTILITY +HYPOMENORRHEA	1	2%

All patients included in the study complained of primary infertility. Of them, 15 (30%) complained of infertility only, 17 (34%) complained of Infertility and AUB. Patients complained of infertility and dysmenorrhea was 8 (16%) while, 9 patients (18%) complained of infertility, AUB and dysmenorrhea but only one patient (2%) suffered from infertility and hypomenorrhea.

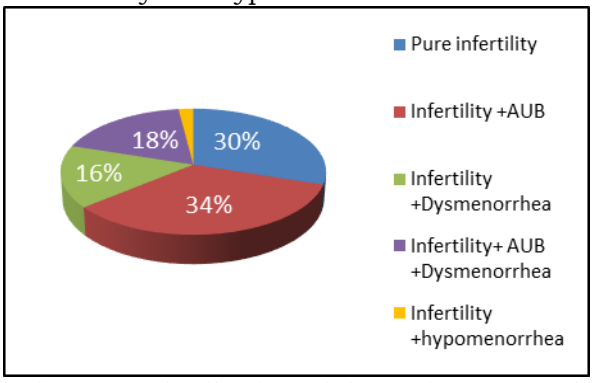

Figure 4. Distribution of the patients according to chief complaint.

Table 4. Distribution of the patients according to type of pathology.

TYPE OF PATHOLOGY	NUMBER OF PATIENTS (%)
SEPTUM	11 (22%)
FIBROID	10 (20%)
POLYP	21 (42%)
POLYPS + FIBROID	8 (16%)
TOTAL	50 (100%)
PATIENTS WITH ASSOCIATED LESIONS	12 (24%)

The most frequent pathology detected was polyp in 21 patients (42%), followed by incomplete intrauterine septum in 11 patients (22%) and fibroids in 10 patients (20%). Patients with polyps associated with fibroids were 8 (16%) while 12 patients (24%) had associated lesions (e.g. subserous and/or intramural fibroids, ovarian cysts etc.).

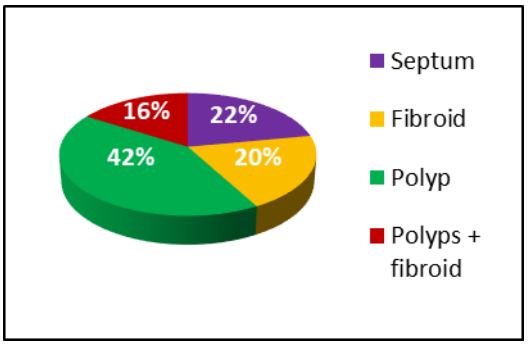

Figure 5. Distribution of the patients according to type of pathology.

Table 5. Distribution of chief complaints according to type of intrauterine pathology.

PATHOLOGY CHIEF COMPLAINTS	SEPTUM	MYOMA	POLYPS	MYOMA + POLYPS	TOTAL
PURE INFERTILITY	6	2	7	0	15
INFERTILITY & AUB	0	5	8	4	17
INFERTILITY & DYSMENORRHOEA	4	0	4	0	8
INFERTILITY & AUB & DYSMENORRHOEA	0	3	2	4	9
INFERTILITY & HYPOMENORRHEA	1	0	0	0	1
TOTAL	11	10	21	8	50

Six patients of them suffered only from infertility, 4 suffered from both infertility and dysmenorrhea, while only one had infertility and hypomenorrhea. Myoma in half of patients caused AUB and infertility. Eight patients with polyps had infertility and AUB, 7 with only infertility, while two had infertility, AUB and dysmenorrhea. In the group with polyps and myoma 50% of patients had both infertility and AUB and 50% had infertility, AUB and dysmenorrhea.

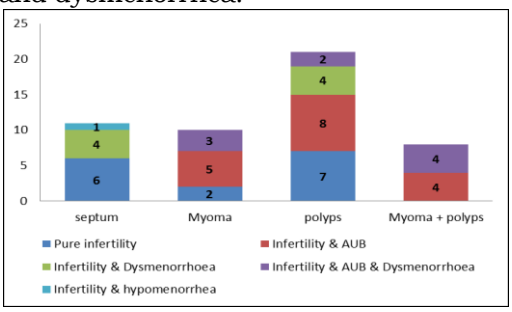

Figure 6. Distribution of chief complaints according to type of intrauterine pathology.

Table 6. Reproductive outcome following surgical hysteroscopy in all situations.

OUTCOME	PREGNANCY		SPONTANEOUS ABORTION	PRETERM <36 WEEKS		TERM		LIVE BIRTHS	TOTAL
	single	twins		Vaginal delivery	Cesarean delivery	Vaginal delivery	Cesarean delivery		
	26	3		3	2	7	10		
TOTAL	29 (58%)		7/29 (24%)	5/29 (17%)		17/29 (59%)		22/29 (76%)	29

A total of 29 out of 50 women, or 58% of the sample, successfully obtained pregnancy. Out of the total, 26 women (52%) experienced singleton pregnancies, while 3 women (6%) had twin pregnancies. Out of the 29 patients who successfully became pregnant, 7 patients (24%) experienced a spontaneous termination of the pregnancy, 17 patients (59%) carried the pregnancy to full term, and 5 patients (17%) gave birth prematurely.

Table 7. Pregnancy rate according to each pathology type.

TYPE OF PATHOLOGY	CONCEPTION GROUP (%)	NO CONCEPTION GROUP (%)	TOTAL NUMBER OF PATIENTS IN THE GROUP
SEPTUM	4 (36%)	7	11
MYOMA	4(40 %)	6	10
POLYP	16 (76%)	5	21
POLYPS AND MYOMA	5 (62.5%)	3	8
TOTAL	29 (58%)	21	50

Best results were achieved in women for whom polypectomy was done (76% of participants), followed by polypectomy and myomectomy (pregnancy rate 62.5%) then myomectomy (pregnancy rate 40%) and finally, metroplasty for incomplete septum (pregnancy rate 36%).s

4. Discussion

All women of childbearing age experienced primary infertility that lasted at least a year (and typically between one and five years). There was a range of 3-24 months of observation, with an average of 15.518.1 months. 8.59 3.4 months (3-16 months) was the average time for couples to conceive. A submucous myoma, polyp, or intrauterine septum was removed with hysteroscopic surgery.

Surgery to remove the uterine septum, polyps, or fibroids, as indicated in this study, should be performed on patients with primary infertility before any infertility treatment or advised reproductive therapy is attempted.

Our findings suggest that women experiencing their first about with infertility might benefit from hysteroscopic septoplasty, polypectomy, and myomectomy for readily treatable uterine irregularities before undergoing infertility treatment, and IVF/ET in particular. The number of live babies, the percentage of full-term births, the percentage of preterm deliveries, and the average gestational age at birth all indicate that the procedure is beneficial.

Our data showed that the most common reasons for hysteroscopy were infertility and abnormal uterine bleeding (AUB), with 15 patients (30%) experiencing primary infertility. This is consistent with previous research that has also linked hysteroscopy to AUB and infertility.

All participants in the current study had the following reproductive outcomes: Pregnancy was achieved by 29 out of 50 women (58%). Twenty-six (52%) of the ladies carried only one baby, while 3 (6%) carried twins. Seven (24% of pregnant patients) had an abortion, seventeen (59% of pregnant patients) carried to term, and five (17%) had premature births. Pregnancy rates were 85% throughout the first follow-up year, with a mean interval of 8.5 months from surgery to conception. This little lag in conception has been noted by other researchers as well Goldenberg et al.,[8]

Six out of eleven patients (54.50%) in this study who went through hysteroscopic metroplasty for uterine septum proceeded to get pregnant, with one patient (0.9%) encountering a fetus removal and five others (45.50%) conceiving an offspring at term, even though 8 out of 11 patients (72.7%) saw a massive improvement in their AUB-related side effects (dysmenorrhea, hypomenorrhea, or both).

In a review done in El-Menya College by Shawki et al.,[9] to decide the regenerative results after hysteroscopic metroplasty on 26 patients with various levels of uterine septa and unexplained essential barrenness. Of those 26 patients associated with the review, 23 patients (88.46%) became pregnant; of them, 3/23 (13.04%) had routine fetus removal, two patients (4.34%) finished preterm work, 14/23 (60.86%) had reached term conveyance. Those results look like the results of the current review of pregnancy rate, which was more noteworthy than our review (54.5%).

Likewise, Hollett-Caines et al.,[10] detailed a much higher pregnancy rate after metroplasty than the current review (80%) (n=21/26), yet live births were 15/26 (57%), which was close to that of the current review.

Selvaraj et al.,[11] detailed after hysteroscopic septum resection, which was performed on 19 essential barren patients post-operatively, that the pregnancy rate was less than that of the current review, "32%" (n=6), the live rate of birth was close to that of the current review, "67%" (n=4), and 33% (n=2) had unsuccessful labor, which was more than this review.

The conceptive result of hysteroscopic metroplasty in ladies with septate uterus and beginning barrenness of obscure reason was examined. 25 (41%) of the 61 ladies who had hysteroscopic metroplasty proceeded to imagine inside eight to fourteen (mean 11.2 months).

This study's discoveries are predictable compared to those of a past one, which were as follows: There were 18 live births (29.5% of the complete gathering) among the ones who were overviewed (13 full-term, five preterm), and seven unconstrained fetus removals (11.5%) among the ones who were reviewed.

A past report with a more prominent example size of 202 patients found a lower pregnancy rate in the gathering with essential barrenness (made out of 119 patients) because of a mix of variables, including a higher pace of fetus removal (12.4 percent) and a lower pace of term conveyance (74.4% of all pregnancies). Nonetheless, the live birth and early termination rates are similar to those in the ebb and flow research.[12]

The current study's findings are consistent with those of previous studies (Shokeir et al., Tonguc et al., Saygili-Yilmaz et al., Nouri et al.) that have reported positive reproductive outcomes in infertile patients following hysteroscopic septoplasty. Eight out of ten patients with fibroids in the current study had AUB as their primary significant complaint prior to myomectomy. While this was reduced by more than 76 percent following surgery, the reproductive outcome was only 50 percent.[13,14,1516]

Our review followed 18 ladies who were at first incapable of imagining after being determined to have essential fruitlessness and hysteroscopic myomectomy for submucous uterine fibroids. Intra-operatively, 10 of these ladies had a solitary fibroid (8 of type 0 and 2 of type 1), while the remaining 8 had fibroids and polyps. Nine of the eighteen ladies (half) became pregnant, and five infants (55.5%) were full-term. Moreover, four patients had early terminations (45%).

In our series, all ladies of term pregnancies are conveyed by cesarean segment. The postoperative presence of extra fruitlessness factors antagonistically impacts the postoperative conceptive results.

Varasteh et al.[17] announced similar outcomes to the current concentrate concerning pregnancy rate (52.8%), and 36% had live births.

4. Conclusion

Removal of uterine cavity abnormalities in subfertile women using hysteroscopy may be recommended to improve their reproductive outcome and increase their chances of becoming pregnant.

Disclosure

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

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All authors have a substantial contribution to the article

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There are no conflicts of interest.

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