

Research Article

A Novel Technique of Mechanical Hysteroscopic Polypectomy during Office Vaginoscopy without using Energy Sources in Infertility Patients: An Observational Cohort Study

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Abstract

Aim: The aim of this study was to analyse the safety, efficacy & feasibility of a novel technique of mechanical hysteroscopic polypectomy for endometrial polyps during office vaginoscopy without the use of energy sources, in infertility patients planned for IVF or FET cycles.

Material and Methods: We conducted a retrospective observational analysis of 100 women of infertility planned for IVF or FET at a tertiary care hospital who underwent mechanical hysteroscopic polypectomy for endometrial polyps during office vaginoscopy without the use of energy sources & cervical dilatation. They were divided into two groups, primary infertility group (I) with 62 patients & secondary infertility group (II), with 38 patients. Polypectomies were performed mechanically with the tip of the scope by breaking the pedicle of pedunculated polyps & by shearing force in sessile polyps. The primary outcome was the completion of polypectomy, duration of surgery, pain score, post-operative complications & secondary outcome measure was endometrial growth response in subsequent IVF or FET cycles post polypectomy.

Results: 100 women of infertility planned for IVF or FET cycles underwent mechanical hysteroscopic polypectomy for endometrial polyps during office vaginoscopy without the use of energy sources. Complete polypectomies were achieved in all the cases with mean surgical time of 6 min 30 s ± 2 min 30 sec in group I & 5 min 30 sec ± 2 min 30 sec in group II. There were minimal intraoperative or postoperative complications. Cancellation of polypectomy was 8.06% in group I & 7.89% in group II. Mean VRS pain scores were 3.23 ± 1.30 & 3.12 ± 1.10 in the two groups respectively. Endometrial growth response post polypectomy (triple layer ≥7mm) in subsequent IVF or FET cycles were similar in both the groups, 93.54% in Group I & 92.10% in Group II.

Conclusion: Outpatient mechanical hysteroscopic polypectomy during office vaginoscopy without the use of energy sources, anaesthesia & cervical dilatation is a safe, efficacious, cost effective & feasible surgical option in an experienced hand.

INTRODUCTION

Hysteroscopy is considered the gold standard procedure for uterine cavity evaluation. Technological advances have allowed simultaneous diagnosis, see & treat in the office outpatient set up, without the need for cervical dilatation and anaesthesia [1,2]. Outpatient hysteroscopic polypectomy is cost effective and preferred by women, in comparison with that performed in the

operation theatre [3]. Office vaginoscopies have become less painful and better tolerated by patients, which increases the acceptability of this procedure and allows the performance of therapeutic hysteroscopic procedures at an outpatient setting, reserving the conventional hysteroscopies, in an operating room, for the treatment of more complex uterine pathologies [4,5].

Approximately 15% to 20% of married couples experience

infertility or subfertility. The success of in vitro fertilization (IVF), treatment depends on embryo quality, uterine receptivity and uterine integrity. Benign endometrial pathologies, such as endometrial adhesions, polyps, hyperplasia, sub mucus myoma and uterine mullerian abnormalities have an adverse effect on endometrial receptivity and correction of these anomalies have been associated with improved pregnancy rates. Therefore, complete infertility workup should include an evaluation of the uterine cavity. The vaginoscopic, or “no touch,” technique is performed without a speculum or tenaculum and without anaesthesia. Bettocchi introduced the ‘no-touch’ trans-vaginal approach, where no instruments expose or grasp the cervix. Due to improved endoscopic equipments and evolving techniques, hysteroscopy can be performed reliably and safely as an office procedure without anaesthesia with minimal complications [1,6-8].

The endometrial polyp is a focal hyperplasia of the basal layer of the endometrium, which originates as a localized tumor and is covered by glandular epithelium. In histology, it is recognized by glands of varied aspect, fibrous stroma and vessels with thickened walls. The pathogenesis of the endometrial polyp is similar to that of endometrial hyperplasia. Polyps may be single or multiple, of various sizes, sessile or pedunculated, and their vascularized base may externalize through the uterine cervix. They account for approximately one fourth of the cases of abnormal uterine bleeding (AUB), in women before and after menopause [9-11]. The facilitated access to the uterine cavity by means of transvaginal ultrasonography and hysteroscopy has increased the frequency of diagnosis of endometrial polyps [12].

Endometrium from uterine cavity with polyps have significantly lower HOXA10 and HOXA11 expression compared to controls, suggestive of impaired endometrial receptivity in uteri with polyps. Endometrial polyps can produce glycodeilin, a glycoprotein that has been shown to inhibit natural killer cell activity, rendering the endometrium less receptive to implantation. Polyps can cause infertility due to mechanical interference with sperm and embryo transport, impairment of embryo implantation or altered endometrial receptivity [13,14].

We, therefore, conducted a retrospective observational cohort study of 100 women planned for IVF or FET cycles for infertility at a tertiary care hospital who underwent hysteroscopic polypectomy mechanically for endometrial polyps during office vaginohysteroscopy without the use of energy sources & cervical dilatation. Aim of the study was to analyse the safety, efficacy, feasibility & complications of the above surgery.

MATERIAL & METHODS

This retrospective observational cohort study was performed on 100 infertility patients of endometrial polyps from Dec 2016 to Dec 2019, who underwent mechanical hysteroscopic polypectomy for endometrial polyps during office vaginohysteroscopy without the use of energy sources & cervical dilatation in a tertiary care centre. Polyps were diagnosed on transvaginal sonography & confirmed on office vaginohysteroscopy before polypectomy. They were divided into two groups, primary infertility group (I), with 62 patients & secondary infertility group (II), with 38 patients. Written informed consents were taken from each patient after

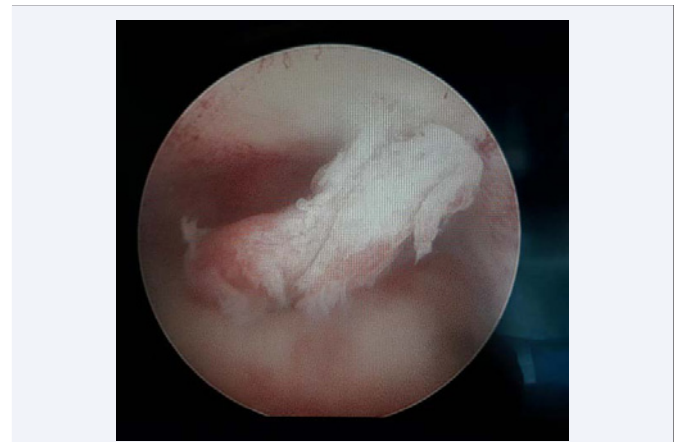


Figure 1 Pedunculated Polyp with Polypectomy.

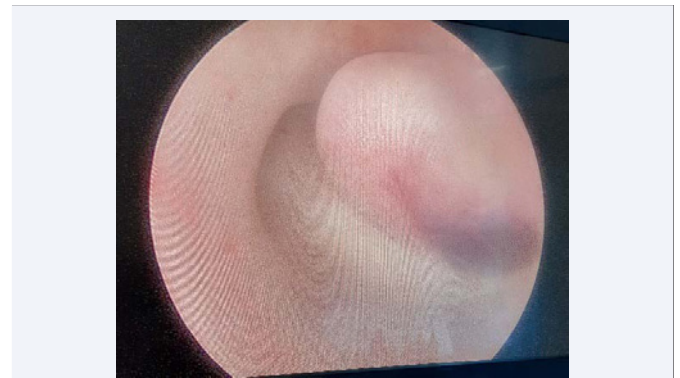


Figure 2 Sessile Polyp with Polypectomy.



Figure 3 Sessile Polyp with Polypectomy.

trans vaginal sonographic diagnosis & only confirmed cases of polyps of size ≤ 2 cm on hysteroscopy were selected as part of the study. As a protocol 200 mcg of tab misoprostol was given orally to all the patients 12 hrs prior to the procedure. Post procedure single dose of Diclofenac rectal suppository was given to all the patients with 03 days course of Tab Ofloxacin 400 mg 12 hourly & Tab Ornidazole 600 mg 12 hrly. Office vaginohysteroscopies were performed between D6 – D10 of the menstrual cycle for all the patients with 2.9 mm/ 30 degree hysteroscope (Karl Storz), using normal saline as the distension media. Hysteroscopy was performed by no touch technique. Vaginal speculum or cervix

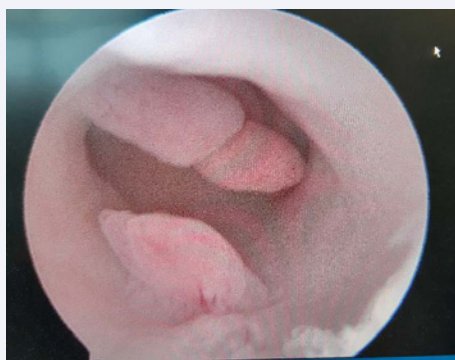


Figure 4 Multiple Polyps & Post Polypectomy normal uterine cavity.

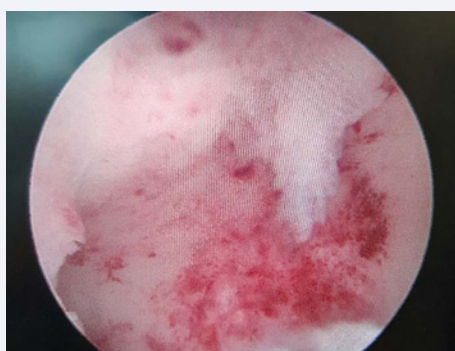


Figure 5 Multiple Polyps & Post Polypectomy normal uterine cavity.

holding forceps, cervical dilatation or local anaesthesia was not used in any of the case during polypectomies.

Polypectomies were performed mechanically with the tip of the scope by breaking the pedicle of pedunculated polyps & by shearing force in sessile polyps. Specimen was taken out with manual vacuum aspirator in each case. The procedure was considered complete only when the entire uterine cavity and both tubal ostia were visualized without any remnant of polyp. The primary outcome was the completion of polypectomy, duration of surgery, pain score, cancellation rates, duration of post operative analgesia & post operative complications. Quantification of pain was made by means of the discrete quantitative Pain Verbal Rating Scale (VRS) & the pain was stratified into mild (VRS between 0 and 4), moderate (VRS between 5 and 7) and severe (VRS between 8 and 10). Post polypectomy all the patients resumed their IVF or FET cycles from D2 of next menstrual cycle and endometrial growth response was measured with minimum cut off of ≥ 7.0 mm triple layer on TVS as secondary outcome measure.

- Inclusion criteria Infertility patients with endometrial polyp planned for IVF or FET cycles & willing for office hysteroscopic polypectomies after informed consent
- Polyps diagnosed on TVS & confirmed during office hysteroscopy
- Polyps ≤ 2 cm in size

Exclusion criteria

- Hypertension, Heart Disease, Hb < 9.0 gm/dl
- Post Hysteroscopic Surgery
- Cancelled cases of office hysteroscopy due to non negotiable cervix

Statistical analysis

The statistical analysis was performed with SPSS software. A 2 - tailed $p < 0.05$ was defined as statistically significant.

RESULTS

The profiles of the patients were similar as regards age in both primary and secondary infertility groups. Majority of the patients with primary infertility (62 patients) as well as secondary infertility (38 patients) was in the age group of 21 - 30 years (Table 1) (Chart No.1).

The duration of surgery in Group I was 06 min 30 sec \pm 02 min 30 sec whereas in Group II 05 min 30 sec \pm 02 min 30 sec. There were 03 cases of minimal bleeding episodes in Group I which was managed by Foley's tamponade & removed after 04 hours. There were nil incidences of cervical trauma, uterine perforation & vasovagal syncope. Cancellation rates of office hysteroscopic polypectomy were 8.06% in primary infertility group (I) & 7.89% in secondary infertility group (II), due to intense pain (VRS > 7.0). Post polypectomy endometrial growth response in IVF or FET cycles with minimum cut off of ≥ 7.0 mm triple layer was similar in the two groups, 93.54% in Group I & 92.10 % in Group II (Table 2 and 3).

The mean level of pain in the primary infertility group (I), referred immediately after the end of the procedure by means of the VRS, was 3.23 ± 1.30 points, whereas in secondary infertility group it was 3.12 ± 1.10 points. When the pain was stratified into mild (VRS between 0 and 4), moderate (VRS between 5 and 7) and severe (VRS between 8 and 10), it was noted that 83.87% (52) of patients reported the pain as mild in primary infertility group (I) & 86.84% (33), as mild in secondary infertility group (II). Polypectomy was abandoned in 8.06% (05), cases in group I & 7.89% (03) cases in group II due to intense pain. These cases were done later in operating room under anaesthesia (Table 4).

DISCUSSION

The results of this study demonstrate that for women with infertility and endometrial polyps, outpatient hysteroscopic polypectomy mechanically during vaginohysteroscopy without anaesthesia, energy sources & cervical dilatation appears to be a safe, feasible, acceptable and effective treatment option.

Table 1: Age wise distribution in the two groups.

Age (Yrs)	Primary Infertility (n = 62)	Percentage	Secondary Infertility (n = 38)	Percentage
21 - 25	11	17.74	06	15.78
25 - 30	27	43.54	18	47.36
31 - 35	17	27.42	11	28.94
>35	07	11.29	03	07.94

Table 2: Primary Outcome Measures.

	Primary Infertility Group I (n = 62)	Secondary Infertility Group II (n = 38)
Duration of Surgery	06 min 30 sec ± 02 min 30 sec	05 min 30 sec ± 02 min 30 sec
Bleeding episode	03 (4.83%)	Nil
Syncope/ vasovagal reactions	Nil	Nil
Detention in Ward ≤ 06 hours	06 (9.67%)	03 (7.89%)
Hospitalization	01 (1.61%)	Nil
Cancellation of polypectomy	05 (8.06%)	03 (7.89%)
Cervical Trauma	Nil	Nil
Uterine Perforation	Nil	Nil

Table 3: Secondary Outcome Measure.

	Primary Infertility Group I (n=62)	Secondary Infertility Group II (n = 38)
Post Polypectomy Endometrial growth response in IVF or FET cycles (Triple layer ≥7.0 mm)	58 (93.54%)	35 (92.10%)

Table 4: Pain Score (VRS).

Pain Score	Primary infertility Group I (n = 62)	Secondary Infertility Group II (n = 38)
Mild (0 - 4)	52 (83.87%)	33 (86.84%)
Moderate (5 - 7)	05 (8.06%)	02 (5.26%)
Intense (8 -10)	05 (8.06%)	03 (7.89%)
Mean Pain Score	3.23 ± 1.30	3.12 ± 1.10

Removal of endometrial polyps have shown to improve the reproductive outcome in IVF cycle and does not require waiting for two or more menstrual cycles after hysteroscopic polypectomy. Patients can undergo ovarian stimulation or FET cycle after their next menses without affecting IVF-ET outcomes [13-15].

Cooper NA et al in their RCT on outpatient versus inpatient uterine polyp treatment for abnormal uterine bleeding concluded that outpatient polypectomy was non-inferior to inpatient polypectomy. Failure to remove a uterine polyp was, however, more likely with outpatient polypectomy and acceptability of the procedure was slightly lower. 73% of women in the outpatient group and 80% in the inpatient group reported successful treatment at six months [16].

Angela Mendes BergamoI et al., in an observational cross-sectional study on hysteroscopic endometrial polypectomy comparing outpatient versus conventional treatment of 60 patients with hysteroscopic diagnosis of endometrial polyps concluded that hysteroscopic polypectomy performed in an

outpatient setting under no anesthesia is a well-tolerated procedure. As compared to conventional treatment, it displays the same efficacy, but the procedure time is shorter and the complication rate is lower. The mean time of procedure was 7 minutes in the Outpatient Group and 35.16 minutes in the Conventional Group. In the Outpatient Group, menopausal patients ($p=0.04$), and those with polyps $>1\text{cm}$ ($p=0.01$) had longer procedures. Using the Verbal Analog Scale of Pain, the mean score of pain referred by patients during the procedure was 2.93 in the Outpatient Group and, after anesthetic effect, 1.42 in the Conventional Group [17].

Youssef Mouhayar et al., in their study on hysteroscopic polypectomy prior to infertility treatment concluded that hysteroscopic polypectomy prior to IUI based on two randomized controlled trials proved both clinically significant and cost-effective. Their analysis for IVF/ICSI was based on pregnancy rates from two retrospective case control studies and one cross sectional study. A future direction would also be to analyse cost-effectiveness of specific hysteroscopy systems used in the outpatient and inpatient settings [18].

Kodaman PH in his study concluded that hysteroscopic polypectomy is a minimally invasive procedure with little risk of complication and therefore should be performed prior to IVF to optimize chances for successful implantation [19].

Huili Zhu et al., in their study concluded that hysteroscopic polypectomy is an effective procedure for removing endometrial polyps. The mechanism by which endometrial polyps interfere with fertility potential remains unclear, hysteroscopic removal of endometrial polyps of any size appears to help improve the pregnancy outcome of infertile women [20].

Praveen Kumar et al., in their study found the incidence of endometrial polyps to be 5.05% in primary infertility group & 5.29% in secondary infertility. The true incidence of endometrial polyps in the general population is difficult to determine, because many of them are clinically asymptomatic. Hysteroscopic polypectomy remains the gold standard for both the diagnosis and treatment of endometrial polyps. The choice of performing hysteroscopy in the office or outpatient surgical setting is generally dependent on patient preference, physician skill, and instrument availability [1,15,21].

In our study we used tab misoprostol 200 mcg orally 12 hours prior to the procedure which facilitated the specimen removal easier post polypectomy. Misoprostol, a synthetic prostaglandin E1 analogue, has been used for cervical priming prior to its use in office hysteroscopy, but there is still no agreement on the recommended dose, route (oral or vaginal), or time of administration [22,23].

CONCLUSION

Hysteroscopic polypectomy mechanically during office vaginohysteroscopy without the use of energy sources & cervical dilatation is a safe, efficacious, cost effective & feasible surgical option without anaesthesia in an experienced hand with short procedure time & minimal complications. However, we need bigger studies with randomisation to recommend it as the procedure of choice for polypectomy in endometrial polyps.

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