

Effects of Pre_Operation Desogestrel Estradiol in Endometrial Preparation at Hysteroscopic Polypectomy

Farahnaz Mardanian¹, Ferdous Mehrabian¹, Safura Rouholamin¹, Somayeh Izadpanahi¹, Maryam Hashemi²

¹Department of Obstetrics and Gynecology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran, ²Department of Minimally Invasive Gynecologic Surgery, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran

Abstract

Background: Hysteroscopic surgery is a common gynecologic process in many conditions. Endometrial thinning is the main successful key for this process associated with many preoperative preparations. This study aimed to evaluate DE (Desogestrel-estradiol) to reduce endometrial thickness in comparison with the control group.

Materials and Methods: This Randomized clinical trial was done on the patients candidate for polypectomy that were randomly divided into two groups of intervention and control; the first group received DE OCP (oral contraceptive pill with 30 microgram Ethinyl estradiol + 150 micro gram Desogestrel) once daily from the 1st to 5th day of the menstrual cycle for 21 days and then in the first day of next menstruation cycle, the drug was used up to one day before hysteroscopy done in the 5th to 8th day of the cycle. The second group received no drugs. Hysteroscopy was done in the early follicular phase in both groups and all the subjects received one dosage of Misoprostol a night before surgery.

Results: There were no significant differences between the parity, polyp size, and BMI (Body Mass Index) in the two groups. The mean duration of surgery, mean endometrial thickness before hysteroscopy, the quality of endometrial tissue, and surgeon satisfaction were significantly difference between the two groups. However, the quality of the surgeon's vision in the intervention group was better than the control group but there was no significant difference between the two groups.

Conclusion: Pre-operation endometrial thinning by oral contraceptives such as DE could be an effective method and reduce the duration of surgery.

Keywords: Endometrium, ethinyl estradiol-desogestrel combination, hysteroscopic surgical procedures, polyps

Address for correspondence: Dr. Somayeh Izadpanahi, Resident of Gynecology and Obstetrics, Department of Obstetrics and Gynecology, School of Medicine, Isfahan University of Medical Sciences, Isfahan, Iran.

E-mail: sizadpanahjazi@yahoo.com

Submitted: 27-Jul-2021; **Revised:** 02-May-2022; **Accepted:** 21-May-2022; **Published:** 27-Apr-2024

INTRODUCTION

Endometrial polyps are one of the most common causes of abnormal uterine bleeding and histologically involve glands, stroma, and blood vessels.^[1] Hysteroscopy is a minimally invasive approach and also a diagnostic and therapeutic method for intrauterine and endocervical problems.^[2]

In many developed countries, hysteroscopy has replaced open surgeries with the benefits of surgery-related pain relief, improved cosmetic results, lower costs, and faster recovery^[3-5].

Endometrial preparation for hysteroscopy procedure improves surgical outcomes,^[6] so thin endometrium in the early follicular phase provides a better diagnosis of a lesion such as myomas or polyps and better access to intrauterine maneuvers and interventions.^[7] GnRH (Gonadotropin-releasing hormone) agonist drugs, Dienogest, Qlaira, Danazole, etc., are used for this purpose^[8] by reducing the endometrial thickness, and providing a better surgical view, the good distinction between normal tissue and pathologic lesions, shorter duration

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

How to cite this article: Mardanian F, Mehrabian F, Rouholamin S, Izadpanahi S, Hashemi M. Effects of pre_operation desogestrel estradiol in endometrial preparation at hysteroscopic polypectomy. *Adv Biomed Res* 2024;13:32.

Access this article online

Quick Response Code:



Website:
www.advbiores.net

DOI:
10.4103/abr.abr_227_21

of surgery, fewer side effects of surgery (such as the risk of fluid intravasation) and improves surgeon satisfaction.^[9,10] Regarding the cost-effectiveness evaluation of the mentioned drugs, which have higher prices in some interventions and due to difficult access to drugs and more side effects, we decided to investigate the use of Desogestrel-Ethinyl estradiol (DE) oral contraceptive (0.15 mg Desogestrel and 30 µg Ethinyl-estradiol) in endometrial preparation at hysteroscopic polypectomy.

MATERIALS AND METHODS

This randomized clinical trial study was done on one hundred premenopausal women (age range of 30-45 years) who were referred to Shahid Beheshti teaching hospital- Isfahan-Iran from February 2020 to February 2021. Those who had inclusion criteria were divided into two groups of intervention (n = 50) and control (n = 50) by non-selective random method. Based on the previous researches the samples were calculated as 100 with 80% power, confidence level of 5%, and *P* value of <0.5. The study has been registered in the Iranian Registry of Clinical Trials (www.irct.ir) with the code IRCT20200825048515N28.

Inclusion criteria were to be in premenopausal age, BMI: 23-28, parity: 0-3, hysteroscopic diagnosis of single polyp, polyp size <2.5 cm, and having normal menstrual periods during the last 6 months.

Exclusion criteria were endometrial polyp size >2.5 cm, contraindication of the OCP, having hormone therapy during the last 12 weeks, utero-adnexal disorders such as cervical or endometrial cancers, diabetes mellitus (DM), history of intrauterine surgeries and cardiovascular, hepatic and renal diseases.

The intervention group received DE OCP (Marolin, Aboureyhan Co, Iran) daily from the first to the fifth day of the menstrual cycle for 21 days, and then on the first day of the next menstruation cycle, the drug was used again up to one day before hysteroscopy was done in the 5th to 8th day of the cycle. In the intervention group (OCP group) endometrial thickness was measured at the study onset (before taking the first dose of OCP) and one day before the procedure and in the control group it was done at the study beginning and the day before hysteroscopy using transvaginal ultrasonography (TVS) by an expert radiologist.

Hysteroscopy was done in the early follicular phase, in both groups, and all the polyps were incised by scissors and removed by hysteroscopic grasper. All the patients have received one dosage of Misoprostol a night before surgery.

Hysteroscopy was performed under general anesthesia by a surgeon and a hysteroscope (lens with an outer diameter of 4 mm, Xenon light source with up to 300W, and a 24-inch monitor). Sterile saline infusion for distention of the uterine cavity was used. The surgeon who was unaware of the treatment was asked to score the visual quality of the uterine cavity Considering visualization of the right and left tubal

ostia, anterior and posterior wall, and fundus of the uterus (one score for each parameter) from 0-1 (minimal) to 5 (maximal). It was measured in the presence of the both researcher and also the data collector. During hysteroscopic procedure endometrial features were assessed directly by the vision and classified as followed: atrophic if the endometrium was thin, regular, and pale; normal if the endometrial appearance was compatible with the proliferative phase, normal with the small hyperplastic area if the only small focused areas of thickness were observed and hyperplastic if a diffuse thick polypoid endometrium was presented. Then surgeon's satisfaction considering endometrial preparation, visual quality, and surgical easiness was scored from 0-1 (minimal) to 5 (optimal). At the end of surgery duration of the procedure was calculated (from the time of entrance to the exit of the hysteroscope). Data were analyzed using SPSS version 23.

RESULTS

This study was performed to evaluate the effect of DE contraceptives on endometrial preparation in hysteroscopic polypectomy in patients referred to Beheshti Hospital from 2020 to 2021. For this purpose, 50 women in each of the two intervention and control groups were studied. The age range of the subjects was 32-45 years and 31-45 years in the intervention and control groups respectively.

The mean BMI in the intervention group was 25.1 ± 1.5 (mean \pm SD) and in the control group was 25.2 ± 1.6 (mean \pm SD) kg/m².

Independent *t*-test showed that the mean number of pregnancies, body mass index, and age were not significantly different between the two groups (*P* > 0.05) [Table 1].

Independent *t*-test showed that the mean duration of surgery in the intervention group was significantly shorter than the control group (*P* < 0.05), but the mean size of the polyp and endometrial thickness at the beginning of the study and endometrial thickness before hysteroscopy were not significantly different between the two groups (*P* < 0.05). Analysis of covariance by modifying endometrial thickness at the beginning of the study showed the mean endometrial thickness before hysteroscopy in the intervention group was significantly lower than the control group (*P* < 0.05). Paired *t*-test showed that the mean endometrial thickness in the

Table 1: Mean number of pregnancies, body mass index and age in the two groups

Variable	Intervention group		Control group		<i>P</i>
	Mean	Standard deviation	Mean	Standard deviation	
Parity (number)	1.3	1	1.2	1	0.56
Body mass index (BMI)	25.1	1.5	25.2	1.6	0.80
Age (year)	39	3.8	38.7	4.01	0.90

intervention group before hysteroscopy was significantly lower than at the beginning of the study ($P < 0.05$) but in the control group, no significant difference was observed between these two times ($P > 0.05$) [Table 2].

Mann-Whitney test showed that the quality of endometrial tissue was significantly better and the surgeon's satisfaction in the intervention group was higher than the control group ($P < 0.05$). The quality of the surgeon's vision in the case group was better than the control group but there was no significant difference between the two groups ($P > 0.05$) [Table 3].

DISCUSSION

Hysteroscopy is best to be performed in a thin endometrium situation, so it's easier for the surgeon to explore and evaluate intrauterine lesions such as polyps and myomas. In this situation smaller lesions will be better detected and removed, the operation duration will be shorter and it will be associated with higher surgeons and patient satisfaction.

Our results showed that although there was no significant difference between the intervention and control groups considering endometrial thickness at the beginning of the study, before hysteroscopy in DE group endometrial thickness was significantly lower compared to basic endometrial thickness ($P < 0.001$) and in the control group there was no significant difference before hysteroscopy ($P > 0.05$).

The thin endometrium is a golden success key in hysteroscopy. Thin endometrium reduces the duration of surgery and the severity of bleeding. In addition, it makes intrauterine procedures easier.^[11] Based on our study data, Desogestrel-ethinyl estradiol (DE) has an acceptable effect on the preoperative endometrial preparation of hysteroscopic surgery in patients that are the known case for endometrial polyp. So that according to the results of the current study in the intervention group, there was a significant difference in the endometrial thickening compared with the control group. It confirmed the results of the previous studies and also it significantly decreased the duration of surgery in the intervention group. Other variables including endometrial tissue quality and surgeon's satisfaction were also statistically

Table 2: Mean polyp size, endometrial thickness at the beginning of the study, endometrial thickness before hysterectomy and duration of surgery in both groups

Variable	Intervention group		Control group		P
	Mean	Standard deviation	Mean	Standard deviation	
Polyp size (mm)	14.6	3.8	14.2	4.5	0.60
Endometrial thickness at the beginning of the study (mm)	6.2	2.2	5.84	2.01	0.36
Endometrial thickness before hysterectomy (mm)	5.1	2.3	5.79	2.4	0.001
Duration of surgery (min)	6.2	1.5	7.3	1.9	0.003

Table 3: Frequency distribution of endometrial tissue, surgeon's vision quality and surgeon satisfaction in two groups

Endometrial tissue quality	Intervention group		Control group		P
	Number	Percentage	Number	Percentage	
Atrophic	24	48	16	32	0.01
Normal	15	30	19	38	
Normal with small hyperplastic area	6	12	7	14	
Hyperplastic	5	10	8	16	
Surgeon's vision quality	Intervention group		Control group		P
	Number	Percentage	Number	Percentage	
Very poor	0	0	0	0	0.14
Poor	0	0	2	4	
Moderate	6	12	6	12	
Good	10	20	13	26	
Very good	34	68	29	58	
Surgeon satisfaction	Intervention group		Control group		P
	Number	Percentage	Number	Percentage	
Very low	0	0	0	0	0.02
Low	1	2	3	6	
Moderate	5	10	8	16	
High	14	28	15	30	
Very high	30	60	24	48	

significant in the intervention group. Although, the surgeon's vision quality has borderline significant effect compared to the control group. Perhaps the reason that the quality of the surgeon's vision was not significantly different, but the surgeon's satisfaction was significantly different was that in addition to the quality of vision, the surgeon's satisfaction was affected by the readiness of the endometrial tissue and the difficulty of the operation. Overall, the findings confirmed most related previous studies^[12-16] and there were few differences in this regard.^[12] It is noteworthy that the drug used in this study had fewer side effects, price, and duration of use than drugs used in other studies such as GnRH and Danazol.

In theory, progestin led to endometrial atrophy that plays an important role to reduce intraoperative endometrial damage and bleeding, surgery duration, and other postoperative complications in GYN (Gynecologic) surgeries. It should be considered that hormonal therapy had some side effects such as nausea and vomiting, spotting between menstruation, mastalgia, headache, increased risks of DVT (Deep vein thrombosis) and PTE (Pulmonary thromboembolism), mood disorders, weight gain, and female sexual dysfunction.^[17] Despite this, our study showed no short-term complication in the intervention group. All Gyn surgeons should be aware of potential complications of hormonal therapy before surgery and evaluate risk-benefit before administration of hormonal treatment. On the other hand, other factors such as insurance coverage and economic status should be in consideration for making proper decisions about each patient and every individual should be evaluated separately.

Based on a systematic review by Lagana *et al.*^[18] before hysteroscopy prescription of Dienogest may be effective and safe. In another study, it has been reported that desogestrel can be considered as a hormonal pretreatment before hysteroscopic procedures. It was clearly effective and assessed as useful by the operating surgeon in many patients who were orally administered 75 µg daily as a pretreatment and it is a cheap, accessible, safe, and quite efficient alternative for endometrial preparation before these procedures, although, the findings are based on few reports.^[19] Our findings also support this study but further studies on the other drugs should be done as well as other RCTs with more groups. In addition, combined oral contraceptives or another mixed method should be in consideration.

CONCLUSION

Pre-operation endometrial thinning by oral contraceptives such as DE could be an effective method and reduce the duration of surgery.

Ethics approval and consent to participate

The current study followed the Declaration of Helsinki on Biomedical Research Involving Human Subjects and the ethics committee of Isfahan University of Medical Sciences approved it (code: IR.MUI.REC.1398.641). Afterward, we obtained the written informed consent from all subjects and randomly assigned them into two groups using randomized allocation.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

REFERENCES

- Raz N, Feinmesser L, Moore O, Haimovich S. Endometrial polyps: Diagnosis and treatment options—a review of literature. *Minim Invasive Ther Allied Technol* 2021;30:278-87.
- Loffer FD, Bradley LD, Brill AI, Brooks PG, Cooper JM. Hysteroscopic training guidelines. The ad hoc committee on hysteroscopic training guidelines of the American Association of Gynecologic Laparoscopists. *J Am Assoc Gynecol Laparosc* 2000;7:165.
- Fard SA, Ebrahimi FS, Montazeri F, Mashrabi O. Diagnostic features and therapeutic consequences of hysteroscopy in women with abnormal uterine bleeding and abortion. *Am J Applied Sci* 2012;9:13-7.
- Cooper JM, Brady RM. Hysteroscopy in the management of abnormal uterine bleeding. *Obstet Gynecol Clin North Am* 2017;26:217-36.
- Vercellini P, Zaina B, Yaylayan L, Pisacreta A, De Giorgi O, Crosignani PG. Hysteroscopic myomectomy: Long-term effects on menstrual pattern and fertility. *Obstet Gynecol* 2016;94:341-7.
- Vercellini P, Perino A, Consonni R, Trespidi L, Parazzini F, Crosignani PG. Treatment with a gonadotrophin releasing hormone agonist before endometrial resection: A multicentre, randomized controlled trial. *Br J Obstet Gynaecol* 2018;103:562-8.
- Rai VS, Gillmer MDG, Gray W. Is endometrial pre-treatment of value in improving the outcome of transcervical resection of the endometrium? *Hum Reprod* 2000;15:2010-3.
- Fedele L, Bianchi S, Gruffi L, Bigatti G, Busacca M. Danazol versus a gonadotrophin-releasing hormone agonist preoperative preparation for hysteroscopic metroplasty. *Fertil Steril* 2014;65:186-8.
- Marchini M, Fedele L, Bianchi S, Di Nola G, Nava S, Vercellini P. Endometrial patterns during therapy with gestrinone for endometriosis: Structural and ultra structural study. *Hum Pathol* 2016;23:51-6.
- Florio P, Imperator A, Litta P, Franchini M, Calzolari S, Angioni S, *et al.* The use of nomegestrol acetate in rapid preparation of endometrial before operative hysteroscopy in premenopausal women. *Steroids* 2010;75:912-7.
- Laganà AS, Dababou S, Bosco M, Zorzato PC, Pomini P, Di Paola R, *et al.* The role of hormone therapy before hysteroscopic myomectomy. *Clin Exp Obstet Gynecol* 2021;48:1259-66.
- Haimovich S, Mancebo G, Alameda F, Agramunt S, Hernández JL, Carreras R. Endometrial preparation with desogestrel before essure hysteroscopic sterilization: Preliminary study. *J Minim Invasive Gynecol* 2013;20:591-4.
- Vetvicka V, Laganà AS, Salmeri FM, Triolo O, Palmara VI, Vitale SG, *et al.* Regulation of apoptotic pathways during endometriosis: From the molecular basis to the future perspectives. *Arch Gynecol Obstet* 2016;294:897-904.
- Laganà AS, Triolo O, Salmeri FM, Granese R, Palmara VI, Ban Frangež H, *et al.* Natural Killer T cell subsets in eutopic and ectopic endometrium: A fresh look to a busy corner. *Arch Gynecol Obstet* 2016;293:941-9.
- Angioni S, Cofelice V, Pontis A, Tinelli R, Socolov R. New trends of progestins treatment of endometriosis. *Gynecol Endocrinol* 2014;30:769-73.
- Bizzarri N, Remorgida V, Leone Roberti Maggiore U, Scala C, Tafi E, Ghirardi V, *et al.* Dienogest in the treatment of endometriosis. *Expert Opin Pharmacother* 2014;15:1889-902.
- Williams WV, Brind J, Haynes L, Manhart MD, Klaus H, Lanfranchi A, *et al.* Hormonally active contraceptives part I: Risks acknowledged and unacknowledged. *Linacre Q.* 2021;88:126-48.
- Laganà AS, Vitale SG, Muscia V, Rossetti P, Buscema M, Triolo O, *et al.* Endometrial preparation with Dienogest before hysteroscopic surgery: A systematic review. *Arch Gynecol Obstet* 2017;295:661-7.
- Ciebia M, Zgliczyńska M, Zgliczyński S, Sierant A, Laganà AS, Alonso Pacheco L, *et al.* Oral desogestrel as endometrial preparation before operative hysteroscopy: A systematic review. *Gynecol Obstet Invest* 2021;86:209-17.