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Original Article

Extraction of endometrial polyps and type 0 submucosal fibroids under ultrasonographic guidance when hysteroscopy is not available

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Abstract

Aim: Endometrial polyp (EP) and type 0-uterine leiomyoma (T0SLM) in the uterus are common pathologies encountered in daily practice. Hysteroscopic resection is the gold standard for removal of these lesions. However, hysteroscopy might not be available in low-source settings. Management of intracavitary lesions by using an ultrasonography-guided approach is presented in this study.

Material and Methods: Between March 2016 and June 2018, 14 out of 67 patients diagnosed with EP and T0SML applied to a gynecology department of a tertiary center when hysteroscopic approach was not available and refused to be referred to another city for hysteroscopic approach. All the patients had a thorough ultrasonographic evaluation and saline infusion sonography prior to the surgery. Surgical intervention of the patients was performed under sedation anesthesia. Using a ring forceps, EPs or T0SML were held under ultrasonographic guidance and then removed completely using rotation and traction.

Results: The age range and the diameter of the lesions ranged between 35-71 years and 21-61 mm respectively. The mean duration of the surgery was 8.5 ± 1.9 minutes. Eight patients had EP while six had T0SML. In the postoperative 4th month follow-up examination via ultrasonographic investigation, no residual lesion was observed in any of the patients.

Conclusion: Although hysteroscopy is the gold standard in the treatment of EP/T0SML, its availability is sometimes limited. Moreover, the cost of hysteroscopy is high in comparison to the conventional methods. Requirement of surgical experience and the necessity of morcellation for the removal of large lesions make hysteroscopy more complicated. Removal of precisely selected large T0SML and EP is effective and cost-effective.

Keywords: Endometrial polyp; ring forceps; submucosal fibroid; ultrasonography

INTRODUCTION

Endometrial polyps (EP) are defined as hyperplastic growth of endometrial glands, stroma and blood vessels covered with epithelium protruding to the endometrial cavity. Although the incidence increases with age, EPs are seen in 8-35% of the general population and in 15-24% of infertile women (1,2). They are mostly asymptomatic, however clinical symptoms, such as infertility and abnormal vaginal bleeding may be encountered in some of the patients. Histopathological evaluation of the specimen after removal is required as they might be accompanied by premalignant and malignant conditions (3).

Leiomyoma (uterine fibroid) originating from the smooth muscle of the uterus is the most common solid tumor of the female genital tract (4,5). Although leiomyoma is seen in 20%-25% of the women of reproductive age, it is mostly asymptomatic, but submucosal localized leiomyomas (SML) usually cause abnormal uterine bleeding and pelvic pain (6).

These two pathologies originating from the uterine cavity must be surgically removed either because they are symptomatic or may be associated with possible premalignant / malignant pathologies. Hysteroscopy is currently the most appropriate surgical method for total resection of EP and SML. However, the high cost, surgical risks and need for trained personnel are the major disadvantages. Access to hysteroscopy can be limited, especially in countries with limited resources. Alternative

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methods should be considered in the treatment of EP and SML where hysteroscopy is not available or it cannot be used due to various reasons. The use of uterine curettage and blinded ring forceps retraction, has been described in the literature, however, its use is not widespread due to its high failure rate (7).

The use of ultrasonography (USG) can eliminate the blindness, since the use of conventional dilatation-curettage and ring forceps is unlikely to be successful because the lesion cannot be seen. This study aimed to present the removal of these intracavitary lesions under ultrasonographic guidance without hysteroscopy. The main goal was to show that treatment of EP and SML can be performed quickly, inexpensively and successfully, even when access to hysteroscopy is limited or unavailable.

MATERIAL and METHODS

This retrospective study was performed at Adiyaman University Obstetrics and Gynecology Clinic after getting approval from the Adıyaman University Regional Board of Ethics Committee (Decision no: 2018 / 8-14).

Patient selection

A total of 67 patients who were admitted to the clinic between March 2016 and June 2018, who were diagnosed with EP and SML on transvaginal ultrasonographic examination and saline infusion sonography (SIS) and whose records could be obtained, were included in the study. In the period when hysteroscopy was not available, these 67 patients were referred to other hospitals in the surrounding provinces for hysteroscopic surgery. Fourteen of these patients with EP and type 0 SML (T0SML) who did not accept the referral for hysteroscopy and opted to be treated at t our center were included in the study. None of the patients had desire for fertility. Women who had not completed their fertility or thought of getting pregnant in the future did not receive this treatment.

All patients were evaluated with transvaginal USG (Voluson P8 2013, GE Medical Systems, Germany) by a single surgeon (Figur 1) and then a saline infusion sonography in early proliferative phase in menstruating patients and at any time in amenorrheic women was performed under sterile conditions after ruling out the presence of an infection or pregnancy. For SIS after placement of a speculum the anterior lip of the cervix was held with a toothed forceps and an insemination cannula is inserted into the cavity. Saline solution introduced through the cannula was used for distension and vaginal ultrasonography was performed simultaneously after the removal of the speculum. . The diameter of the lesion, its localization and its relationship with the myometrium were determined and recorded. All patients were informed about the surgical procedure. Preoperative preparation for the procedure was performed after obtaining detailed consent from the patients who accepted the surgery.

Surgical technique

All patients who underwent preoperative preparations were operated on by a single surgeon in the operating room under sterile conditions. All patients were given

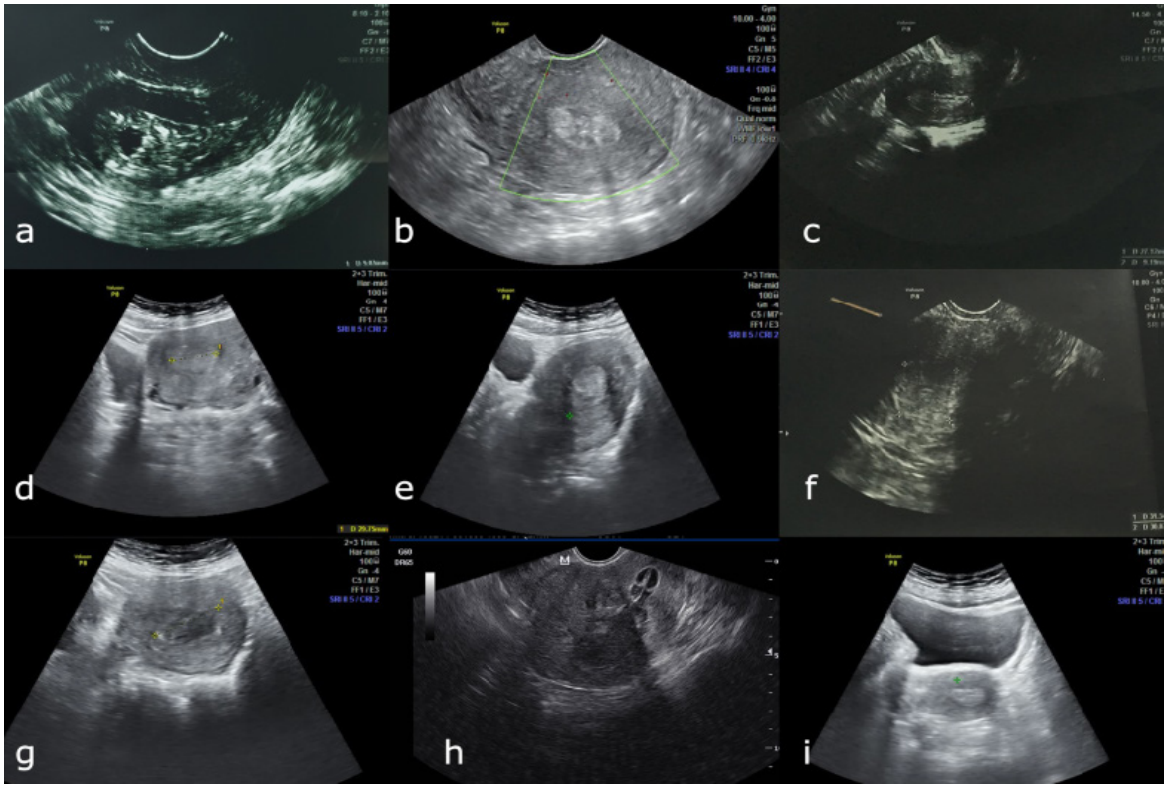

Figure 1. Preoperative evaluation of patients. submucous localised leiomyomas (a,d,f,g,h) and endometrial polyps (b,c,e,i).

200 mcg of misoprostol (Cytotec 200 mcg tablet, Ali Raif Pharmaceuticals Inc., Turkey) intravaginal for cervical preparation 4 hours before surgery. Patients received sedation anesthesia with midazolam (Midaject 15 mg / 3 mL IV, Tüm Ekip Pharmaceuticals Inc., Istanbul, Turkey), propofol (propofol 1% Fresenius 200 mg / 20 mL, Fresenius Kabi Pharmaceuticals AB, Rapsgat, Uppsala, Sweden) and fentanyl (Talinat 0 5 mg / 10 mL IV, VEM Pharmaceutical Industry and Trade Co., Tekirdag, Turkey).

After the patient was prepared in lithotomy position under sterile conditions and draped a speculum was introduced into the vagina. A Foley catheter was inserted into the bladder and the bladder was filled with 50 ml saline. The cervix was seen held from the anterior lip at 11 o'clock and

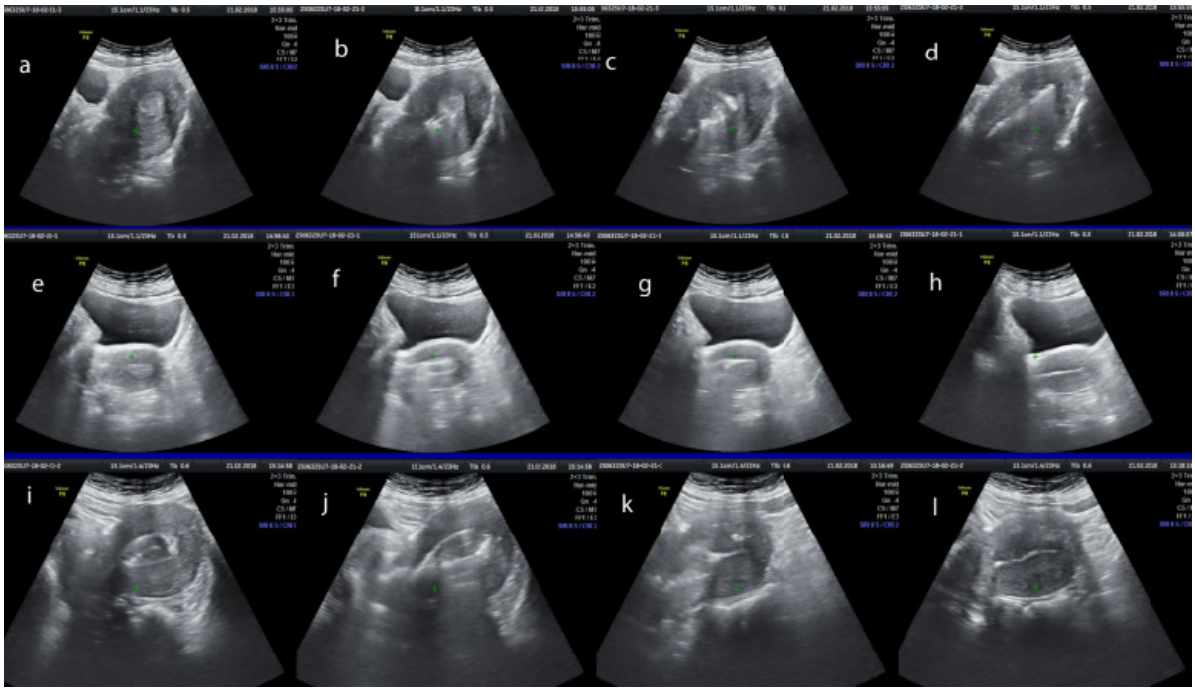

Figure 2. Ultrasonography view of patients during surgery. Preoperative (a, e, i), retention of endometrial pathologies with ring forceps (b, f, j), rotation and traction (c, g, k) and postoperative endometrial cavity (d, h, l)

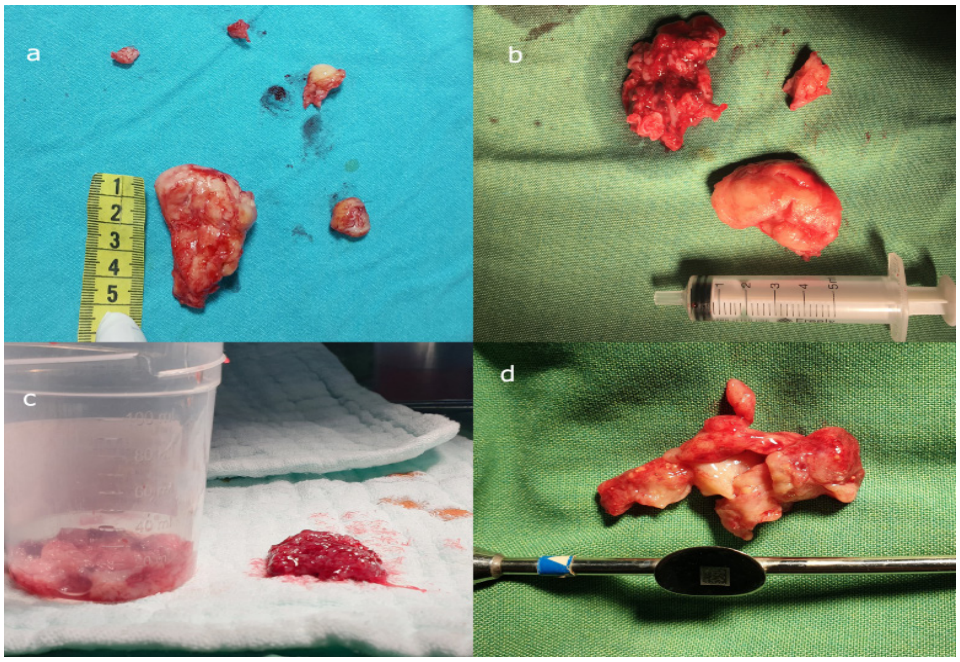

Figure 3. Image of removed submucous localised leiomyomas (a,b,d) and endometrial polyps (c).

1 o'clock direction with a tenaculum (E0110R, Aesculap, Germany). All surgical procedures were performed under ultrasonographic guidance using a 23 Hz abdominal probe (Voluson P8 2013, GE Medical Systems, Germany) (Figur 2a, e, i).

The cervix was dilated up to 11-12 mm with a Hegar cervical dilator (EM 103R - EM 112R, Aesculap, German). Under transabdominal ultrasonographic vision, a ring forceps (BF122R, Aesculap, Germany) was introduced through the cervical canal and then the mass was held and then rotated clock-wise until it is detached (Figur 2b, f, j). Since it was detected on USG that it could be mobilized from the point where it was attached to the uterus, it was delivered from the cervix with traction rotation (Fig 2c, g, k). The same procedure was repeated when there was another lesion in the cavity. The uterine cavity of all patients was scrapped with a sharp curette. (ER241R, Aesculap, Germany) (Figur 2d, h, l). All the extracted materials were sent for histopathological examination (Figur 3). In case of bleeding, a Foley catheter was inserted into the uterine cavity for tamponade. All the patients who did not have any postoperative bleeding and had no complications were discharged 6 hours after the operation with recommendations.

The duration of surgery was determined as the period from the insertion of the speculum to the removal of the speculum after the operation was completed. All patients were called for a postoperative follow-up on the seventh day and the fourth month postoperatively. The patients were immediately evaluated with transvaginal USG and SIS at the end of menses. Successful surgery was defined as presence of no space-occupying lesion inside the cavity.

The ages of the patients, obstetric and gynecologic history, presence of additional diseases, symptoms, pre- and postoperative diagnoses, lesion size, duration of surgery, length of stay and postoperative examination findings were recorded. Data were analyzed using the IBM SPSS Statistics 21.0 (IBM Corp., Armonk, NY, USA).

RESULTS

Of the 67 patients diagnosed with EP or SML, 14 treated with USG-guided cervical dilation, rotation and traction with ring forceps (Table 1) had a mean age of 47.8 ±10.2 and gravida 4 (min: 2, max: 10), parity 2 (min: 1, max: 8) (Table 2). Nine patients (64.3%) had no systemic diseases while three patients (21.4%) had hypertension, one patient (7.1%) had diabetes mellitus and one patient (7.1%) had

Table 1. Clinical data of patients

Patient	Age (Year)	Gravida	Parity	Type of Birth	Accompanying Diseases	Symptom	First Diagnosis	USG Size (mm)	Real Size (mm)	Pathological Diagnosis	Op Time (min)	Hospitalization time (hours)	Follow-up (after 4 months)
1	61	10	8	VB	HT	No	EP	24	27	EP	6	8	Normal
2	53	4	2	CS	DM	AUB	EP	29	31	EP	10	4	Normal
3	48	2	2	VB	Hypothyroidism	No	EP	21	24	EP	6	4	Normal
4	39	3	2	CS	No	Dysmenorrhea	SML	42	41	SML	7	6	Normal
5	47	4	1	CS	No	AUB	SML	31	29	SML	9	6	Normal
6	45	2	2	VB	No	AUB	EP	26	26	EP	8	5	Normal
7	35	5	5	VB	No	Pelvic Pain	EP	27	25	EP	5	6	Normal
8	52	2	1	VB	HT	AUB	SML	29	32	EP	11	6	Normal
9	38	4	3	CS	No	AUB	EP	28	26	EP	9	5	Normal
10	41	3	3	VB	No	AUB	EP	25	25	EP	8	6	Normal
11*	37	5	2	CS	No	No	SML	37	35	SML	9	7	Normal
12	45	2	2	VB	No	AUB	SML	41	40	SML	10	5	Normal
13	71	5	4	VB	HT	PMB	EP	20	23	EP	11	4	Normal
14	57	3	2	VB	No	AUB	SML	61	59	SML	10	8	Normal

VB: Vaginal birth, CS: Cesarean Section, HT: hypertension, DM: Diabetes mellitus, AUB: Abnormal uterine bleeding, PMB: postmenopausal bleeding, EP: endometrial polyp, SML: submucous localised leiomyomas. *: The patient spontaneously conceived in the sixth post-operative month and gave live birth on time

hypothyroidism. Nine (64.3%) of the patients had vaginal delivery and five (35.7%) had delivered by caesarean section.

When the patients' admission complaints were examined, eight patients (57.1%) presented with abnormal uterine bleeding, one (7.1%) had dysmenorrhea, one (7.1%) had pelvic pain, one (7.1%) had postmenopausal bleeding and three had no complaints (21.4%). In the preoperative evaluation, nine (64.3%) patients were diagnosed with EP and five (35.7%) were diagnosed with ESGE T0SML. Pathological examination was consistent with the preoperative initial diagnosis in all cases except in a patient who was evaluated to have an EP preoperatively but was found to have T0SML.

In the preoperative evaluation, mean intracavitary lesion size was measured with USG as 31.5 ± 10.8 mm. After surgical removal, it was 31.6 ± 9.7 mm on average. The mean operation time was 8.5 ± 1.9 minutes and the mean hospital stay was 5.7 ± 0.3 hours. None of the patients developed any surgical complications

At the post-operative fourth month follow-up visit, the endometrial cavities were evaluated as normal in all patients. Although patients who had no desire for future pregnancy were included in the study one patient spontaneously conceived in the sixth post-operative month and had a vaginal live birth at term.

Table 2. Demographic and clinical data of patients

		14 cases
Age (Year) (mean±SD)		47.8±10.2
Gravida (median (min-max))		4 (2 - 10)
Parity (median (min-max))		2 (1 - 8)
Type of Birth (n (%))	Vaginal Birth	9 (64,3)
	Cesarean Section	5 (35,7)
Accompanying Diseases n (%)	None	9 (64.3)
	Hypertension	3 (21.4)
	Diabetes Mellitus	1 (7.1)
	Hypothyroidism	1 (7.1)
Symptom n (%)	None	3 (21.4)
	Abnormal Uterine Bleeding	8 (57.1)
	Postmenopausal Bleeding	1 (7.1)
	Dysmenorrhea	1 (7.1)
	Pelvic Pain	1 (7.1)
First Diagnosis n (%)	Endometrial Polyp	9 (64.3)
	Submucous Leiomyoma	5 (35.7)
USG Size (mm) (mean±SD)		31.5±10.8
Real Size (mm) (mean±SD)		31.6±9.7
Pathological Diagnosis n (%)	Endometrial Polyp	8 (57.1)
	Submucous Leiomyoma	6 (42.9)
Operation Time (min) (mean±SD)		8.5±1.9
Hospitalization time (hours) (mean±SD)		5.7±1.3
Follow-up (after 4 months) n (%)	Normal	14 (100)

DISCUSSION

Hysteroscopic resection is the gold standard treatment modality for uterine intracavitary lesions (7–9) due to the high success rate as they can be removed completely under direct supervision. However, the technical equipment is quite expensive and needs qualified technical support. Dilatation and curettage was the standard approach before development of hysteroscopic procedures. However this blind procedure has a failure rate that varies between 50-80% due to the mobility of these pedunculated sessile lesions (10). Hysteroscopic treatment of intracavitary lesions has been largely used during the last two decades. Therefore, hysteroscopic surgery needs a special training especially if it was not a part of the basic residency training of the gynecologist. Effectiveness of other treatment modalities have been investigated largely (11). Dilatation and curettage or dilatation and curettage after diagnostic hysteroscopy is still performed even in Western countries where hysteroscopy is available (12).

Precise localization of the polyp is important when a blind method is used for removal. Gebauer et al used Randall forceps with curettage in order to improve the detection and removal of EPs however, complete removal was not proven in all of the cases when a second-look hysteroscopy was performed (7). Combined methods are performed for detection and extraction of the resected tissue. Baikpour and Hurd (13) demonstrated that manual vacuum aspiration was efficient in removal of endometrial polyps after hysteroscopic excision. Cheng et al removed the endometrial polyp with Lin's biopsy grasper after detection of the lesion with office hysteroscopy (14).

A national survey that covered 1509 consultant gynecologists from United Kingdom showed that 53% preferred blind removal after hysteroscopic localization of the polyp (15). In diagnosing EP, ultrasonography had a 88.7% sensitivity and 25.4% specificity while these values were 96.4% and 74.6% respectively for hysteroscopy (16). SIS has a very high sensitivity in detection of endometrial polyps (17). Ultrasonography and SIS are also used for detection and mapping of SML. Ultrasonography and SIS have a high sensitivity and specificity in diagnosis of SML (18). Ultrasonography is also used simultaneously during

hysteroscopic resection of the submucous myomas in order to avoid perforation by measuring the depth of the intramural component of submucous myomas (19–22). Hysteroscopic (19,21) and even laparoscopic (23) approach for diagnosis and treatment of SML has been investigated widely. In the presented series, EP and T0SML were removed successfully under ultrasonographic guidance using a forceps. This method also avoids complications related to the use of hysteroscopy such as fluid retention. Ultrasonography and SIS also were efficient in evaluation of the uterine cavity during the postoperative period.

The most important limitation of the study is its being retrospective observational study and having the small sample size. In addition, it is necessary to investigate whether this method has negative effects on cervical insufficiency, endometrial adhesion or receptivity. However, the fact that one of the patients became pregnant in the postoperative period, the endometrium of the other patients in the control transvaginal ultrasonographic examination was intact and menstrual irregularity was not observed in patients who are at reproductive age did not support this speculated negative effect. However, in order to confirm the safety and effectiveness of this method and consider it as a routine approach our findings need to be replicated by randomized controlled trials with larger series.

CONCLUSION

As a result, hysteroscopy is the most important proven procedure for the diagnosis and treatment of intracavitary lesions. However, it is not always possible to perform hysteroscopy for various reasons. In cases where hysteroscopy is not available, even large type 0 SML can be treated with USG-guided removal. The most important issue here is the patient selection.

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Ethical approval: This retrospective study was performed at Adiyaman University Obstetrics and Gynecology Clinic after getting approval from the Adıyaman University Regional Board of Ethics Committee (Decision no: 2018 / 8-14).

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REFERENCES

1. AAGL practice report: Practice guidelines for the diagnosis and management of endometrial polyps. J Minim Invasive Gynecol 2012;19:3-10.
2. Dreisler E, Sorensen SS, Ibsen PH, et al. Prevalence of endometrial polyps and abnormal uterine bleeding in a Danish population aged 20-74 years. Ultrasound Obs Gynecol 2009;33:102-8.
3. Lee SC, Kaunitz AM, Sanchez-Ramos L, et al. The Oncogenic Potential of Endometrial Polyps: A Systematic Review and Meta-Analysis. Obstet Gynecol 2010;116.
4. Gupta S, Jose J, Manyonda I. Clinical presentation of fibroids. Best Pract Res Clin Obstet Gynaecol 2008;22:615-26.
5. Parker WH. Uterine myomas: management. Fertil Steril 2007;88:255-71.
6. Di Spiezio Sardo A, Mazzon I, Bramante S, et al. Hysteroscopic myomectomy: A comprehensive review of surgical techniques. Hum Reprod Update. 2008;14:101-9.
7. Gebauer G, Hafner A, Siebzehnrübl E, et al. Role of hysteroscopy in detection and extraction of endometrial polyps: Results of a prospective study. Am J Obstet Gynecol 2001;184:59-63.
8. Lee YL, Bai YS, Yin CS. Vaginoscopic hysteroscopy in management for women with post-menopausal vaginal bleeding. Taiwan J Obstet Gynecol [Internet]. 2019;58:497-500.
9. Murakami T, Tamura M, Ozawa Y, et al. Safe techniques in surgery for hysteroscopic myomectomy. J Obstet Gynaecol Res 2005;31:216-23.
10. Timmermans A, Gerritse MBE, Opmeer BC, et al. Diagnostic accuracy of endometrial thickness to exclude polyps in women with postmenopausal bleeding. J Clin Ultrasound 2008;36:286-90.
11. Nijkang NP, Anderson L, Markham R, Manconi F. Endometrial polyps: Pathogenesis, sequelae and treatment. SAGE Open Med 2019;7.
12. Van Dijk LJEW, Breijer MC, Veersema S, et al. Current practice in the removal of benign endometrial polyps: A Dutch survey. Gynecol Surg 2012;9:163-8.
13. Baikpour M, Hurd WW. Hysteroscopic endometrial polypectomy with manual vacuum aspiration compared to mechanical morcellation. J Minim Invasive Gynecol 2018;00:1–6.
14. Cheng HY, Lin BL, Tseng JY, Ueno K, et al. Clinical application of Lin's biopsy grasper for intrauterine targeted biopsy and polypectomy during office hysteroscopy. Taiwan J Obstet Gynecol [Internet]. 2018;57:379-82.
15. Clark TJ, Khan KS, Gupta JK. Current practice for the treatment of benign intrauterine polyps: A national questionnaire survey of consultant gynaecologists in UK. Eur J Obstet Gynecol Reprod Biol 2002;103:65-7.
16. De Godoy Borges PC, Dias R, Bonassi MacHado R, Borges JBR, Spadoto Dias D. Transvaginal ultrasonography and hysteroscopy as predictors of endometrial polyps in postmenopause. Women's Heal 2015;11:29-33.
17. La Sala GB, Blasi I, Gallinelli A, et al. Diagnostic accuracy of sonohysterography and transvaginal sonography as compared with hysteroscopy and endometrial biopsy: A prospective study. Minerva Ginecol 2011;63:421-7.
18. Thurkow AL, Admiraal CF, Emanuel MH, et al. Submucous myomas: Diagnosis and therapy. Gynecol Surg 2008;5:93-102.

19. Ludwin A, Ludwin I, Pityński K, et al. Transrectal Ultrasound-Guided Hysteroscopic Myomectomy of Submucosal Myomas With a Varying Degree of Myometrial Penetration. J Minim Invasive Gynecol 2013;20:672-85.
20. Timor-Tritsch IE, Masch RJ, Goldstein SR, et al. Transvaginal ultrasound-assisted gynecologic surgery: Evaluation of a new device to improve safety of intrauterine surgery. Am J Obstet Gynecol 2003;189:1074-9.
21. Korkmazer E, Tekin B, Solak N. Ultrasound guidance during hysteroscopic myomectomy in G1 and G2 Submucous Myomas: For a safer one step surgery. Eur J Obstet Gynecol Reprod Biol 2016;203:108-11.
22. Kang F-W, Yang H-C, Chen M-J, et al. One-step Hysteroscopic Removal of Large Sinking Submucous Myoma. Taiwan J Obstet Gynecol [Internet] 2008 ;47:238-40.
23. Urman B, Boza A, Ata B, et al. Intraoperative endoscopic ultrasound guidance for laparoscopic excision of invisible symptomatic deep intramural myomas. J Obstet Gynaecol (Lahore) 2018;38:85-9.