Experience of hysteroscopy indications and complications in 5,474 cases

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Summary

Objective: To evaluate the indications, intraoperative diagnoses, and complication rates of both diagnostic and operative hysteroscopic procedures. *Materials and Methods:* Five thousand four hundred seventy-four (5474) hysteroscopic procedures performed in the department of gynecologic endoscopy unit between May 2005 and December 2012 were retrospectively analyzed from the archives. Indications, intraoperative diagnosis, and complications of all gynecological endoscopic procedures are recorded. *Results:* Abnormal uterine bleeding in premenopausal and postmenopausal women was the most frequent indication for diagnostic hysteroscopies in 1,887 (40%) cases. The most common preoperative indication for operative hysteroscopy was endometrial polyps in 469 (55.7%) cases and submucous leiomyomas in 151 (17.9%) cases. In this series, the most common complication was uterine perforation which occured in 15 (0.27%) out of 5,474 cases and the rate for diagnostic hysteroscopy and operative hysteroscopy was 0.06% and 1%, respectively. *Conclusion:* Hysteroscopy is a safe and effective minimally invasive procedure with very low complication rate.

Key words: Hysteroscopy; Indications; Complications.

Introduction

Hysteroscopy is performed for evaluation and also for treatment of abnormal uterine bleeding, infertility, and recurrent pregnancy loss. It is an easy procedure with less morbidity ratios compared with other, more invasive procedures [1]. The increased clinician training, advances in the equipment, and distention media, and development of small diameter instruments have led to a widespread use of this procedure. The authors aimed to evaluate the indications, intraoperative diagnoses, and complication rates of both diagnostic and operative hysteroscopies.

Materials and Methods

This study was designed to asses all diagnostic and operative hysteroscopic procedures, 5,486 cases in total, from the hospital archives database of the gynecologic endoscopy unit at Zeynep Kamil Women and Children Diseases Training and Research Hospital in Istanbul, between May 2005 to December 2012. The authors could not access reports of 12 (0.21%) patients, therefore a total of 5,474 patients were analyzed.

Indications for diagnostic hysteroscopy depended on: patient complaints, preoperative uterine ultrasound scan, and abnormal hysterosalpingographic findings. Diagnostic hysteroscopy was performed without anesthesia. A 5.5-mm rigid hysteroscopy was inserted into uterine cavity and for distention of uterus, low-viscosity liquid electrolytic media (saline) was used. At the diagnostic hysteroscopy procedure the authors defined hysteroscopic findings as the diagnostic impression based on the appearance of the uterine cavity. Peduncle lesions which were sessile, shiny, vascularized, and covered with endometrial tissue were diagnosed as endometrial polyps. However if these peduncle lesions were not covered with endometrial tissue, they were diagnosed as submucous myoma [2]. During the procedure, biopsy was taken from the lesion which were not defined by their appearances as polyp or myoma. Accuracy of hysteroscopy to diagnose polyps and submucous myomas were determined in correlation with postoperative histopathological findings. Although several reports have been reported in the literature to discuss the accuracy of hysteroscopy to diagnose uterine pathology as polyp, myoma, hyperplasia and cancer, this comprehensive report of conditions is beyond the scope of this article [3, 4].

Operative hysteroscopy was performed under general anesthesia after dilatation of the cervix to Hegar number 9. A nine-mm rigid resectoscope was inserted into the uterine cavity. Distention of cavity was achieved using 1.5% glycine with an inflow pressure of 110 mmHg. Procedures included polypectomy, myomectomy, septum resection, endometrial ablation, and removal of the intrauterine device which was malpositioned and extended into the myometrium. In some situation an ultrasonography (USG) was used to perform cervical dilatation safely; also USG guidance enabled to safely perform a septum resection, endometrial ablation, and dissection of uterus in Asherman's syndrome.

These findings were recorded in an Excel program and analyzed using statistical software package, version 7.0.

Results

A total of 5,474 hysteroscopic procedures were performed over the seven-year period and 4,633 of these procedures were diagnostic and 841 of them were operative hysteroscopies. The mean age of patients was 43 years (range 34 - 53).

Diagnostic hysteroscopy indications and postoperative hysteroscopic diagnosis are shown in Table 1. The most common indication for diagnostic hysteroscopy was ab-

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Table 1. — *Diagnostic hysteroscopy indications and postoperative hysteroscopic diagnosis.*

Dx H/S 84.6% (n=4633)	Abnormal uterine bleeding 40% (n = 1,887)	Abnormal USG or sonohysterography findings 17% (n = 818)	Amenorrhea 1,7% (n=82)	Abnormal HSG findings or recurrent IVF failure 31% (n = 1463)	Recurrent pregnancy loss 8% (n = 371)	IUD 0.02% (n = 12)
Uterine polyps	517(27%)	658 (80%)	-	246 (16%)	48 (3.2%)	-
Submucous myoma	207 (10%)	77 (9%)	-	78 (5%)	21 (1.4%)	-
Irregular endometrium	346 (18%)	36 (4%)	-	-	-	-
Normal cavity	798 (42%)	47 (5%)	64 (78%)	978 (67%)	162 (11%)	-
Septate uterus	-	-	-	93 (6%)	97 (6.6%)	-
Uterine synechiae	19 (1%)	-	18 (22%)	27 (1.8%)	10 (0.6%)	-
Other mullerian anomalies	-	-	-	41 (2.8%)	33 (2.2%)	-
IUD	-	-	-	-	-	12 (100 %)

normal uterine bleeding as menorrhagia, metrorrhagia, menometrorrhagia, and polymenorrhea in perimenopausal or postmenopausal period in 1,887 (40%) of the cases. The second most common indication was evaluation of infertile patients with abnormal hysterosalpingography or recurrent IVF failure in 1,463 (31%) of the cases. The most common pathologic finding of the diagnostic hysteroscopy was polyp with the ratio of 31.7% (1,469) and than submucous myoma with the ratio of 8.2% (383).

The main indications for operative hysteroscopy were mostly: removal of endometrial polyps, submucous leiomyomas, and resection of intrauterine septum at the rate of 469 (55.7%), 151 (17.9%), and 122 (14.5%), respectively (Table 2).

Table 2. — *Details of operative hysteroscopy.*

	N	%
Op H/S	841	15.3%
Polyp	469	55.7%
Myoma	151	17.9%
Polyp+ myoma	34	4.04%
Septum resection	122	14.5%
Ablation	10	1.18%
Removing IUD	7	0.83%
Asherman's syndrome	48	5.70%

In the present study; complications occurred in 15 (0.27%) out of 5,474 patients. The most common complication was uterine perforation. The rate of uterine perforation for diagnostic hysteroscopy was 0.06% (three cases). During operative hysteroscopy, nine cases had perforation at the rate of 1%. The other complications seen during operative hysteroscopy were bleeding in two cases and infection in one case (Table 3). When the complication occurred during the operation, operative hysteroscopy was stopped, four patients required diagnostic laparoscopy, and two patients required laparatomy due to suspicion of thermal bowel injury. The other three perforations which occurred during cervical dilatation were followed with hemodynamic status of patients without operation. Intraoperative bleeding was encountered during the submucous myomectomy. In one patient bleeding was controlled with electrocautery and in other patient bleeding could not be controlled by electrocautery; a foley catheter was inserted into uterine cavity and the bulb inflated with 20 to 30 ml of liquid to tamponade the bleed-

Table 3. — *Complications of diagnostic and operative hysteroscopy.*

Dx	H/S	Op H/S	Age	Surgery	Parity	Surgeon	Indication	Intervention	Complication	Post-op approach
01	x		31		G3 P1 D&C2	Experienced	Asherman	Dx H/S	Perforation	Follow up
02	x		34		G0P0	Trainee	Infertility	Cervical dilatation	Perforation	Follow up
03	x		58		G3P3	Trainee	Postmenoupausal bleeding	Dx H/S	Perforation	Follow up
04		x	44	x	G2P1	Trainee	Adhesion	Cervical dilatation	Perforation	Follow up
05		x	42	x	G1P1	Trainee	Myoma	Cervical dilatation	Perforation	Follow up
06		x	32		G2P0	Experienced	Septum	Septum resection	Perforation	L/T
07		x	63		G4P4	Trainee	Polyp	Cervical dilatation	Perforation	Follow up
08		x	29		G1P0	Trainee	Septum	Septum resection	Perforation	L/S
09		x	35		G2P1 A1	Trainee	Myom	Myomectomy	Perforation	L/S
10		x	48		G3P2 D&C1	Experienced	Anormal uterine bleeding	Ablation	Perforation	L/S
11		x	34	x	G3P2 A1	Trainee	Asherman	Adhesiolysis	Perforation	L/T
12		x	29		G3P2 D&C1	Trainee	Asherman	Adhesiolysis	Perforation	L/S
13		x	45		G5P5	Trainee	Anormal uterine bleeding	Ablation	Infection	Follow up
14		x	34		G1P1	Trainee	Myoma	Myomectomy	Bleeding	Follow up
15		x	46		G4P3 D&C1	Experienced	Anormal uterine bleeding	Ablation	Bleeding	Follow up

ing and the catheter was removed after 24 hours. Infection as a late complication was reported in only one case of operative hysteroscopy (Table 3). No case of fluid overload, urinary tract or bowel injury was noted. The complication rate was related to experience of the surgeon as 11 out of 15 complications were experienced by staff with a less than one year of experience.

Discussion

Improvement in technology and increased clinician training have led to a widespread use of hysteroscopy and thus has become the method of choice for the treatment of intrauterine pathologies.

In the present study, the most common indication for diagnostic hysteroscopy was abnormal uterine bleeding (40%) as in other studies [5-7]. During diagnostic hysteroscopy, the most common abnormal finding was endometrial polyps (31.7%). Transcervical removal of endometrial polyps at the rate of 55.7% was the most common procedure of operative hysteroscopy. In the Lansmar *et al.* study, endometrial polys were reported in 33.9% of the diagnostic hysteroscopies [6]. This data is in accordance with the present study with regards to the identification of endometrial polyps as the most frequent finding in patients with abnormal uterine bleeding.

The acute complication rate associated with both diagnostic and operative hysteroscopy was in total 0.27 % in 5,474 cases. According to Passini *et al.* exact complications rates are difficult to determine owing to the natural tendency to report successes but not complications [8]. Other published reports cite the overall complication rates ranging widely between at least 0.22% in 21,676 case and maximum to 13.6% in 697 case [8, 9]. In the present study the complication of operative hysteroscopy is higher than diagnostic hysteroscopy; the rates were 1% and 0.06%, respectively. Also in other studies the complication rate has been reported to be higher with operative hysteroscopy [7, 10]. During operative hysteroscopy, uterine perforation, bleeding, and air emboli because of used distention medium and hyponatremia which resulted from infusion of large amounts of distention medium into circulation and allergic reactions can occur [11]. The main complications in the present study were found to be uterine perforation with a rate of 0.06% for diagnostic hysteroscopy and 1% for operative hysteroscopy, which is similar to that reported by other authors [9, 10].

Hysteroscopic complications vary depending on the type of intervention. Among hysteroscopic procedures, myomectomy, resections of uterine septa, dissection of uterus in Asherman's syndrome or endometrial ablation have significantly higher rates of complications, especially uterine perforation and bleeding. Propst *et al.* evaluated complications in 925 women and found that those who had operative hysteroscopic myomectomy and septum resection had greater odds for complications than those who had polypectomy or ablation procedures; 7.4 and 4.0 versus 0.1 and 0.4, respectively [12].

The knowledge of risks are important to avoid any complications of hysteroscopy during diagnosis or treatment. Dilatory agent or cervical softening can be used if deemed necessary for cervical dilatation. In order to minimize perforation risk, it is important to perform the procedure with the guidance of ultrasonography. Also it is important to keep in mind that the thickness of myometrial layer can be less than one cm when the uterine cavity is distended. Hysteroscopy can also be guided by concomitant laparoscopy. Shokeir *et al.* reported that previous uterine surgery among young women with reproductive failure whether the uterine cavity is opened or not does not appear to affect adversely the performance and safety of subsequent major surgical hysteroscopy guided by concomitant diagnostic laparoscopy [13].

Training and experience of the surgeon are not the only factors that affect the safety of the procedure. Working with the experienced anesthesiologist who knows good fluid management is also important for the safety. The present authors did not observe fluid overload. Propst *et al.* reported fluid overload as the most common complication [12]. In Pasini *et al.* study, excessive intravasation of electrolyte-free fluid occurred in 35 patients [8]. This may be due to the present authors' principles that they prefer to stop the intervention when deficit reached 1,000-2,000 ml or if serum sodium level reached 130 mmol/l. These precautions might limit the serious complications of these procedures.

In conclusion, as a consequence of increased experience and also technological advancements, an increasing number of gynecological conditions, traditionally treated by laparotomy, can now be treated safely and effectively by operative hysteroscopy. In order to minimize risk, it is important to perform the procedure with the guidance of ultrasonography. Safety is the result of the team work of a experienced surgeon with an anesthesiologist who performs good fluid management. Experience of the surgeon plays an important role for the safety of the procedure in terms of where and when to stop the procedure.

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