Original Research Article

Efficacy of Hysteroscopy in Management of Premenopausal Uterine Bleeding at Tanta University Hospitals

Abstract

Background: Hysteroscopy is a minimally invasive procedure that may be used to analyse data and treat a variety of intrauterine and endocervical issues. The purpose of this work was to evaluate the hysteroscopic diagnostic findings and therapeutic efficacy of hysteroscopy in females with premenopausal uterine bleeding at Tanta University Hospitals.

Methods: This was a prospective cohort observational research enrolled 60 premenopausal females aged from 40 to 52 years and presented with abnormal uterine bleeding. All patients were subjugated full history taking, clinical examination (general examination, pelvic examination and abdominal examination) and investigations (laboratory tests including full blood count, thyroid, iron studies, hemostasis disorders, transvaginal ultrasound to evaluate any organic lesion and hysteroscopy).

Results: The success rate of hysteroscope was 100% in in grade I fibroid uterus and was 30% and 0% in grade II and grade III fibroid uterus respectively. Seventy five percent ~~75% of~~ of atrophic endometrium, 71% of secretory endometrium, 50% of proliferative endometrium, 100% of hyperplastic endometrium, and 100% of endometrial polyp were observed.

Conclusions: The gold standard for diagnosing and treating abnormal uterine bleeding is hysteroscopy in the premenopausal period especially of fibroid uterus and endometrial polyp.

Keywords: Hysteroscopy, Premenopausal Uterine Bleeding, Hysteroscopic Diagnostic Findings, Therapeutic Efficacy of Hysteroscopy

Introduction:

Abnormal uterine bleeding (AUB) is a frequent gynecologic problem which represent about one-third of outpatient visits to gynaecologists and a~~A~~round 70% of all gynaecological consults during the premenopausal and postmenopausal years. AUB may be fairly difficult to diagnose; even with a complete history, multiple testing of the blood, and a comprehensive examination of the pelvic, which frequently includes transvaginal ultrasonography (TVS), the origin of the bleeding is confirmed in only 50-60 % of patients [1].

AUB is defined as "flow that deviates from normal duration, volume, frequency, or regularity". AUB can be caused by anatomic defects of the uterus or by non-structural reasons. The International Federation of Gynecology and Obstetrics (FIGO) proposed a new categorization AUB approach in 2011, which was subsequently accepted by the American Congress of Obstetrics and Gynecology (ACOG) in 2012, in an attempt to standardise the language used to define AUB [2].

This approach, dubbed PALM-COEIN, classifies AUB according to its hypothesised aetiology: adenomyosis; polyp; leiomyoma; hyperplasia and malignancy; coagulopathy; ovulatory dysfunction; iatrogenic; endometrial. and unclassified [2].

The PALM section of the PALM-COEIN addresses the structural factors that contribute to AUB. By contrast, the COEIN acronym refers to the causes of AUB that are not structural, hormonal, or systemic [2].

Premenopause is described as 'the period preceding menopause and is frequently characterised by a variety of physical symptoms such as hot flushes and monthly abnormalities. AUB is the most often seen menstruation issue during pre-menopause, which is described as the 2-8 years prior menopause and 1 year following the last menstrual cycle. TVS is the major uterine imaging test used to diagnose AUB. TVS is a low-cost, non-

invasive, and easy method of seeing the endometrial cavity in an indirect manner. As a result, it is suggested as a first-way diagnostic technique for pathology of the uterus assessment in females who come with AUB. If transvaginal ultrasonographic pictures are insufficient or more assessment of the cavity is required, sonohysterography or hysteroscopy are advised [3].

Hysteroscopy is a technique for seeing and manipulating the endometrial cavity transcervically. "Hysteroscopy is a minimally invasive technique which may be utilized to analyse and cure a variety of endocervical and intrauterine issues.

In contemporary gynaecological practise, a hysteroscopic examination of the cavity of the endometrium and a visually guided biopsy for histopathological assessment are regarded the standard of excellence for examining the endometrium and diagnosing or excluding cancer of the uterus. A precise diagnosis may result in surgical or medicinal treatment tailored specifically at the pathology, therefore avoiding the need for significant surgery [4].

The aim of this work was to evaluate the hysteroscopic diagnostic findings and therapeutic efficacy of hysteroscopy in females with premenopausal uterine bleeding at Tanta University Hospitals.

~~Patients and~~ Methods:

This prospective cohort observational study was carried out on 60 premenopausal females aged 40-52 years and presented with AUB at Department of Obstetrics and Gynecology, Tanta University Hospitals over a period of one year from June 2020 to May 2021.

All patients provided written informed consent. The study was done after approval from the Ethical Committee Tanta University Hospitals.

Exclusion criteria were pregnant females, any metabolic disorder (hypertension, diabetes and thyroid dysfunction), pelvic infections (PI), active bleeding, BMI, contraception, medical problem (cardiac) and anticoagulation.

All cases underwent a thorough history taking (personal history, present history of bleeding pattern, obstetric history, menstrual history and history of medical disorders), clinical examination (abdominal examination, general examination, and pelvic examination) and investigations (laboratory tests comprising, iron studies, full blood count, thyroid, hemostasis disorders, transvaginal ultrasound to evaluate any organic lesion and hysteroscopy).

Hysteroscopic Examination

The hysteroscopic examination was performed according to the standard surgical technique and hysteroscopic guided biopsy for histological evaluation and consequently the intrauterine pathology.

Steps

A rigid hysteroscope was used for the hysteroscopic examination. Hysteroscopic apparatus: (Trophyscopic Karl Storz, Courey), Telescope: 30 rigid, Hamou II Hysteroscope 2633420 Featuring a lens system based on the Hopkins II, sheath base 2-4mm outer diameter.

The uterine cavity was illuminated using a high-intensity cold light source and fiberoptic wire. The medium of distention was (0.9 %) normal saline, that maintained the pressure between 100 and 120 mm Hg. using hysterometer(infusion pump), with the aim to adequately distend uterine cavity allowing good visualization.

The uterus's size was assessed through pelvic examination . The hysteroscope was softly inserted vaginally with its light source and flowing fluid, allowing for progressive distention. Under direct view, the hysteroscope was advanced to the level of the ectocervix and directed into the endocervical canal. After thoroughly exploring the endocervical canal, the endoscope was moved across the internal cervix to provide a panoramic picture of the uterine chamber. When accessing the uterine cavity, a comprehensive examination of the uterine cornua, uterine fundus, tubal ostia, anterior, lateral, and posterior uterine walls was performed. Hystroscopic guided biopsy was taken.

Statistical methods

SPSS v26 was used for statistical analysis (IBM Inc., Chicago, IL, USA). We estimated the frequency, percentage and mean and standard deviation (SD) of quantitative variables. ~~The frequency and percentage values for qualitative variables were used (%).~~

Results:

Error! Not a valid bookmark self-reference. shows patient characteristics and laboratory data of the studied patients.

Table 1: Demographic data of all studied cases

		Cases (n = 60)
Age (years)		46.45 ± 3.60
Occupation	**Housewife**	45 (75%)
	Employed	15 (25%)
Residency	**Urban**	36 (60%)
	Rural	24 (40%)
Gravidity		3.6 ± 1.44
Parity		2.53 ± 1.18
Menstrual Irregularities	**Yes**	57 (95%)
	No	3 (5%)
BMI (kg/m^2)		27.14 ± 2.73

Data are presented as mean ± SD or frequency (%). BMI: Body mass index

Table 5 shows bleeding characteristics of all studied cases.

Table 2: Bleeding characteristics of all studied cases

		Cases (n = 60)
Bleeding Patterns	**Polymenorrhoea**	18 (30%)
	Menorrhagia	37 (61.7%)
	Intermenstrual bleeding	5 (8.3%)
Bleeding heaviness	**Mild**	15 (25%)
	Moderate	31 (51.7%)
	Severe	14 (23.3%)

Data are presented as frequency (%).

Table 3 shows past history of all studied cases

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	Cases (n = 60)

Contraception	**IUD**	7 (11.67%)
	OCP	4 (6.67%)
	Contraceptive injection	2 (3.33%)
	No	47 (78.33%)
Nonsteroidal anti-inflammatory drugs (NSAIDs)	**Yes**	11 (18.3%)
	No	49 (81.7%)

Data are presented as frequency (%), IUD: Intrauterine device, OCP: oral contraceptive pills

Table 4 shows laboratory investigations of all studied cases

Table 4: Laboratory investigations of all studied cases

	Cases (n = 60)
Hemoglobin	8.4 ± 0.7
Platelet	302.95 ± 82.84
TSH	3.61 ± 1.31

Data are presented as mean ± SD. TSH: thyroid stimulating hormone

Table 5 shows Hysteroscopic findings of all studied cases

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Hysteroscopic Findings			**Cases (n = 60)**	**Success rate (%)**
Normal findings	**Secretory**		7 (11.67%)	
	Proliferative		4 (6.67%)	
Abnormal findings	**Fibroid uterus**	**Grade I**	11 (19.3%)	100%
		Grade II	8 (13.33%)	30%
		Grade III	4 (6.7%)	0%
	Atrophic endometrium		4 (6.7%)	0%
	Proliferative endometrium		4 (6.7%)	50%
	Hyperplastic endometrium		11 (18.33%)	100%
	Endometrial polyp		8 (13.33%)	100%

Data are presented as frequency (%).

Table 6: Histopathology of all studied cases

	Cases (n = 60)
Normal endometrium	14 (23.33%)
Fibroid uterus	23 (38.33%)
Atrophic endometrium	3 (5%)
Proliferative endometrium	3 (5%)
Hyperplastic endometrium	10 (16.67%)
Endometrial polyp	8 (13.33%)

Data are presented as frequency (%).

Discussion

Hysteroscopy is a technique for seeing and manipulating the endometrial cavity transcervically. There are several structural or functional causes of AUB. Hysteroscopic for histopathological investigations should be used. The working group on menstruation disorders of the International Federation of Gynecology and Obstetrics has created a system of classification (PALM–COEIN) for the aetiology of AUB in non-pregnant women. There are nine major categories, denoted by the term PALM–COEIN: adenomyosis; polyp; leiomyoma; hyperplasia and malignancy; ovarian disorder; coagulopathy; endometrial; and unclassifiable [5].

As regard hysteroscopy findings in our study, Fibroid uterus was found in 23 (38.33%) cases with grade I in 11 (19.3%), grade II in 8 (13.33%) and grade III in 4 (6.7%). Atrophic endometrium was found in 4 (6.7%) cases, secretory endometrium was found in 7 (11.7%) cases, proliferative endometrium was found in 4 (6.7%) cases, hyperplastic endometrium was found in 11 (18.33%) cases, endometrial polyp was found in 8 (13.33%) cases. According to the research conducted by Mishra and Sultan [5] hysteroscopic findings were (polyp) in 3.81%, (leiomyoma) in 37.28%, (malignancy and hyperplasia) in 10.16%. The endometrial histopathological phases were secretory phase in 41.52%, proliferative phase in 37.28%, Hyperplasia in 8.9, proliferative phase characterised by gland dilatation in 9.3% and atrophic in 2.1%. FIGO supports examination of endometrial tissue as a first line of treatment for premenopausal women with AUB [6].

In another study, the endometrium was histopathologically examined and displayed a range of patterns, functional reasons account for the vast majority of diagnoses. The most often seen kind of endometrial was secretory endometrium, which was observed in 71 instances (32.4 %). While the second was proliferating endometrium most often diagnosed finding on histology, occurrence in 67 (30.5 %) individuals. In 24 women, endometrial hyperplasia was seen (10.9 %) instances, including 19 patients of simple hyperplasia in the absence of atypia,

4 cases of complicated hyperplasia without atypia, and 1 case of complex hyperplasia with atypia. And this order was in accordance with our results. Other diagnoses included disorganised proliferative endometrium, which accounted for the remainder of the functional causes for ABU in 15 instances (6.8%), and luteal phase problems in three cases (1.3 %) **(Jetley et al., 2013)** [7].

In our study, hysteroscopy findings were normal findings in 11 (18.33%) cases of them 7 (11.67%) were secretory and 4 (6.67%) were proliferative. However, in a previous study, histopathology excluded 5 normal cases which were diagnosed falsely as intrauterine lesions by hysteroscopy (false positive). On the other hand, 20 cases with intrauterine lesions (8 cases with endometrial polyps, 11 with endometrial hyperplasia and 1 with submucous myoma) were excluded falsely by hysteroscopy (false negative) in the study of ~~(~~**Hatem et al.~~,~~ 92018)** [8].

In the current study, the success rate of hysteroscope was in 100% of fibroid uterus, 75% of atrophic endometrium, 71% of secretory endometrium, 50% of proliferative endometrium, 100% of hyperplastic endometrium and 100% of polyp of the endometrium. The distinction between clinical and histological diagnosis of polyps was not significant, however the difference between diagnosis clinically and histopathologically of leimyosis was significant. This finding underscores the critical role of histology as a supplemental AUB's diagnostic tool [5]. This is because clinical manifestations, including menstrual history, is vague and bimanual examination reveals a typical tiny uterus [5, 9].

In our study, the success rate of hysteroscope was 100% in grade I fibroid uterus and was 30% and 0% in grade II and grade III fibroid uterus respectively. Similar study explained that submucous fibroids extend into the cavity of the uterus and are often surgically eliminated. In comparison to abdominal myomectomy, this is a less intrusive, easier, and safer procedure. Indeed, submucosal fibroids can be challenging to find during abdominal surgery. Generally,

it is achievable to thoroughly resect the majority of submucosal fibroids of type 0 and type 1 in a single step surgery. For larger type 2 fibroids, a second treatment may be necessary for full excision. Certain practitioners utilise gonadotrophin releasing hormone mimics to shrink the fibroid (GnRHa). Additionally, by minimising the time of the surgery and lowering the amount of blood vessels surrounding the fibroid bed, this kind of pre-treatment may help minimise the danger of fluid overload [10]. Small fibroids (less than two cm in diameter) are now regularly removed in an outpatient clinic [11]. If the myoma is big (>3 cm in diameter), the risk of surgical complications (haemorrhage, perforation, and fluid intravasation) and injury to the surrounding myometrium increases owing to the use of electrosurgery. The alternate is a two-step myomectomy. Following excision or ablation of the myoma's protruding part during first-step hysteroscopy, the leftover intramural component migrates swiftly to the uterine cavity, increasing myometrial thickness in the process, enabling for full and safe myoma excision during second-step hysteroscope surgery [12].

In a previous study by Osorio et al., [13] three submucosal type 2 fibroids were effectively removed with ambulatory hysteroscopic myomectomy using a double-lumen intracervical cannula. The overall duration of the operation was 32 minutes, and the total volume of distension medium (normal saline) utilised was 800 mL with a 50 mL liquid balance.

In another study by **Mazzon et al. (2015)**, onc Cold loop hysteroscopic myomectomy appears to be a safe and successful method of removing submucous myomas with intramural development while maintaining the myometrium's anatomic and functional integrity. The use of a cold loop is related with a low risk of mild intraoperative problems and the absence of significant difficulties during resectoscopic myomectomy [14]. Also, **Moawad et al. (2014)** reported that 75 of the 130 women who received diagnostic office hysteroscopy for irregular bleeding did not require surgery [15].

Hysteroscopy revealed endometrial polyps, submucous fibroid, and all instances of endometrial hyperplasia with a high degree of accuracy. According to research undertaken by the European organisation for human reproduction and embryology, hysteroscopy with endometrial biopsy is the "Gold standard" for detecting AUB. Hysteroscopy had the best accuracy in detecting endometrial polyps but had the lowest accuracy in estimating hyperplasia. Therefore, given the high prevalence of localised lesions in individuals with AUB, it appears that the most advantageous strategy is to initiate hysteroscopy early in the assessment of AUB, supplemented by endometrial biopsy. Nonetheless, the use of distension media to flush the uterine cavity enhances the possibility of retrograde spread of malignant cells into the peritoneal cavity when the endometrium is pathological [16].

Also ~~(~~**Yang et al.~~,~~ ~~(~~2015)** studied 73 (43%) of 168 female with recurrence of polyp following polypectomy hysteroscopically. Multivariate logistic regression analysis found that having extra uterine polyps (P = 0.015) and a more extended follow-up period (P = 0.004) were significantly associated with an increased probability of postoperative polyp recurrence. Endometrial polyp type was not associated with p~~P~~ossibility of recurrence of polyps, however pedunculated endometrial polyps were significantly associated with AUB presentation (P = 0.001) [17]**.**

Manyonda et al., [18] held a multicenter, randomised, open-label experiment comparing myomectomy to embolization of the uterine artery in women with symptomatic uterine fibroids, at two years, individuals who underwent hysteroscopic myomectomy reported a greater quality of life linked to fibroids than those who underwent uterine-artery embolization.

In comparison to simple diagnostic hysteroscopy, hysteroscopic excision of endometrial polyps detected on ultrasound in women preceding to IVF may enhance clinical pregnancy rates [19].

Hysteroscopic management is a safe and successful procedure for individuals with a normal uterus and a few fibroids [20]. For decades, myomectomy hysteroscopically has been a common treatment option for bothersome submucosal fibroids; it is a minimally invasive, low-cost, and low-risk operation with a high rate of patient satisfaction. The surgical technology available for this surgery has advanced at a breakneck pace [21].

Numerous premalignant and malignant lesions are discovered near the polyp base, which contributes to the benefits of hysteroscopic polypectomy. Second, that simple polypectomy carries a considerable risk of recurrence; Third, that polypectomy alone is frequently insufficient to manage AUB satisfactorily. Third, that polypectomy alone is frequently insufficient to manage AUB satisfactorily, [22].

Endometrial ablation of the second generation is an excellent first-line treatment option for severe menstrual bleeding. Outpatient procedures result in a shorter hospital stay, a faster recovery, and eliminate the risks connected with general anaesthesia. It is a less invasive therapy option for adenomyosis in females.

Limitations: The sample size was relatively small. The study was in a single center. The follow up of patients was limited for relatively short period.

Conclusions:

It is concluded that hysteroscopy is the gold standard in diagnosis and treatment of AUB in the premenopausal period especially of fibroid uterus and endometrial polyp.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement

of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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