

See and treat hysteroscopy. Future challenges and new prospective

Abstract

Rapid development of technology, which has been achieved over the last decade, has helped decisively in the investigation and treatment planning of pathological conditions in the field of endoscopy and more specifically of hysteroscopic gynecological procedure.

Through endless efforts in the wider medical field, hysteroscopic access of the endocervix and at the same time of the endometrial cavity was established both on a diagnostic and invasive level as an integral tool of gynecological surgery, revealing great sensitivity but also great specificity.

Hysteroscopic intervention provides the possibility of direct visual imaging of endocervix and endometrial cavity and directly optically guided biopsies for histological confirmation.

Globally, performance of hysteroscopy at the level of an outpatient clinic (office hysteroscopy) has a success rate of 98% and is considered a more valid method compared to diagnostic curettage.

Design of increasingly flexible and smaller diameter endoscopic tools achieved the possibility of reviewing the endometrial cavity at the level of an outpatient office (office hysteroscopy), without analgesia.

A study included cases of patients in whom both diagnostic and therapeutic approach were performed. Our study is focused on specific cases involving hysteroscopic procedures performed at the level of an outpatient clinic as part of an initial diagnostic examination and concurrently as part of an invasive treatment result.

As culmination of all above was established hysteroscopic diagnosis and treatment in one session. (See and Treat Hysteroscopy). The aforementioned led to the development of hysteroscopic diagnosis and treatment in the context of See and Treat Hysteroscopy.

Keywords: see and treat hysteroscopy, no touch technique, polyp, myoma

Introduction

Initial terminology of word Hysteroscopy depicts the Greek words hysterion which defines uterus and scopy which defines to look.¹

Before the establishment of this endoscopic technique, the investigation of endometrial cavity was taking place only by dilatation and curettage.

This intervention reflected a blind surgical procedure with many potential intraoperative complications such as perforation of uterine wall, vaginal bleeding and diffuse endometritis.²

Hormonal fluctuations during menstrual cycle affect the configuration of endometrial cavity. Nowadays, hysteroscopic performance with normal saline as dilatation medium and very small instrument's diameter (<3mm) enables visualization of endometrial cavity leading to proper diagnosis and therapeutic mapping.³

In many cases, in order to avoid pain sensation after the use of speculum, Vaginoscopic approach was established, first described by Bettocchi and Selveggi in 1995.⁴

This particular procedure as office hysteroscopy method enables precise visualization of endometrial cavity leading to proper diagnosis of potential uterine wall pathologies and successful operative interventions such endometrial polyp's diameter >1cm and synechies though cervical canal.⁵

No use of analgesics is necessary to perform See and Treat Hysteroscopic interventions. Lack of patient's hospitalization is

Volume 14 Issue 5 - 2023

Sofoudis Chrisostomos,¹ Grozou Fani,² Tsonis Orestis,³ Paschopoulos Minas²

¹Department of Obstetrics and Gynecology, Konstandopoulou General Hospital Athens Greece

²Assistant Professor, Department of Obstetrics and Gynecology, University of Ioannina, Greece

³Senior Clinical Fellow in Reproductive Medicine and Assisted Conception Unit, Guy's and St Thomas' NHS Foundation Trust, London UK

⁴Professor, Department of Obstetrics and Gynecology, University of Ioannina, Greece

Correspondence: Dr. Chrisostomos Sofoudis, MD, PhD, MPH, Department of Obstetrics and Gynecology, Konstandopoulou General Hospital Athens Greece, Ippokratous 209, 11472, Athens, Greece, Email chrisostomos.sofoudi@gmail.com

Received: September 23, 2023 | **Published:** October 04, 2023

strongly accompanied with decreased financial burden and most of all minimized pain score during the procedure.⁶

All above advantages compose a safer and precise surgical procedure.

Aim of our study depicts the establishment of See and Treat Hysteroscopy as gold standard of office hysteroscopy interventions leading to assiduous diagnosis and therapeutic mapping respectively.

Material and methods

This particular study is about a prospective comparative cohort study that includes patient history taking, patient follow-up, diagnostic and invasive hysteroscopic procedure in one session, and pain assessment based on the VAS (Visual Analogue Scale) scale in women aged 18 years and older.

The technique was carried out between January 2020 and April 2022 in the Department of Obstetrics and Gynecology at the University of Ioannina in Epirus, Greece, under the direction of Prof. M. Paschopoulos, pioneer of this procedure.

Initially, 457 women were included, but 54 of them underwent a diagnostic and operative hysteroscopic procedure in one session. (See and Treat Hysteroscopy).

After the end of the hysteroscopic process, a questionnaire was completed with the ultimate goals, among others, of the satisfaction of each patient and the grading of the corresponding Pain Score during the process. The measurement tool used to measure pain was the Visual Analogue Scale (VAS).

A Visual Analogue Scale (VAS), a free-licensed scale depicts a measurement instrument that attempts to measure a characteristic or attitude that is believed to range on a continuum of values and cannot easily be measured directly. For example, the amount of pain a patient feels ranges on a continuum from no pain at all to extreme pain. From the patient's perspective, this spectrum appears continuous \pm their pain does not take discrete jumps, as a categorization of none, mild, moderate, and severe would suggest. It is used to capture this idea of an underlying continuity.

During the conduct of this study, the declaration of Helsinki's ethical principles was considered to be followed during the conduct of this study. The confidentiality and anonymity of the participants was strictly respected. Patients may withdraw their personal data and their subsequent participation in the research throughout its duration.

Inclusions and Exclusions criteria were established as conditions for participation or non-participation in the study.

Inclusions criteria in the research concern:

- a) Patients over the age of 18
- b) Patients capable of consent
- c) Patients speaking Greek (due to the language of the questionnaire)

Exclusions criteria in the research concern:

- a) Patients with dementia or mental retardation syndrome
- b) Patients aged < 18 years
- c) Individuals who cannot consent to participate in the study

Factors recorded during the research contributing in turn to the study of its ultimate purpose included age of the patient, hormonal status (Premenopausal- Postmenopausal women), parity, hormonal replacement therapy (HRT), ultra-sonographic depiction of a hysteroscopic procedure, hysteroscopic depiction, colposcopy (Vaginoscopic approach), cervix dilatation, polyp dissection, myoma dissection, adjunctions dissection, inability to complete the examination (Uncompleted examination), Use of analgesia and therapeutic mapping.

The confidentiality and anonymity of the participants was strictly respected. Patients may withdraw their personal data and their subsequent participation in the research throughout its duration.

Statistical analysis

Measures of central tendency and dispersion were used to describe both quantitative and qualitative variables.

Regarding the quantitative variables, the mean value, standard deviation, median, quartile, and interquartile range were used to describe the above variables.

Frequencies and percentages were used to describe the qualitative variables. Testing for normal distribution of dependent continuous variables was performed by testing measures of central tendency and dispersion.

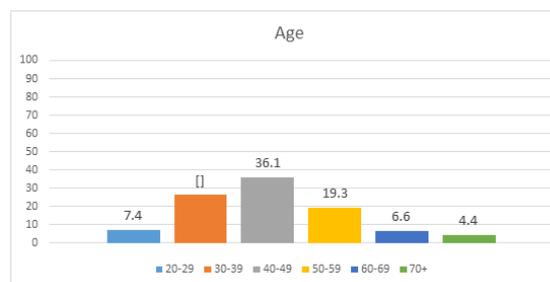
More specifically, the $-2/+2$ criteria were used for skewness and curvature.

The dependent variables, based on the above, present a distribution close to normal, therefore parametric statistical tests will be used to analyze the data. Subsequently, parametric statistical tests (t-test of independent samples and person correlation) were performed to check statistical significance and the existence of correlations.

Significance levels are two-sided and statistical significance was set at 0.05. The statistical program SPSS v.25.0 was used to analyze the data.

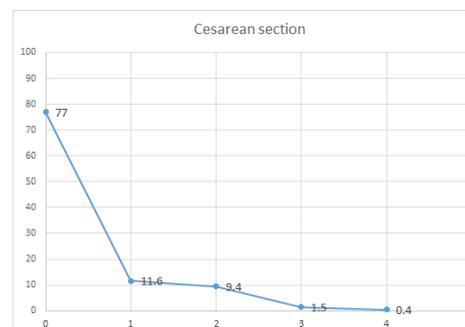
Results

As can be seen in (Graph 1), the majority of women with a percentage of 36.1% were aged between 40-49 years. The categorization of the age groups was carried out taking into account various socio-economic factors of the studied sample. As observed in (Graph 1), the majority of women, or 36.1%, were between the ages of 40 and 49. Various socioeconomic aspects of the sample under study were taken into consideration when classifying the age groups.



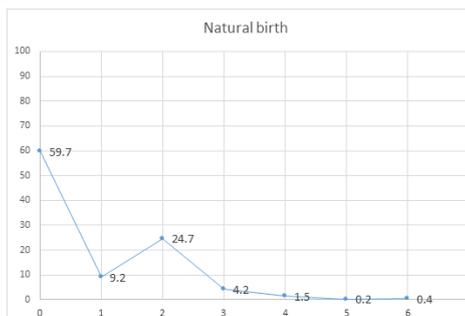
Graph 1 Age classification.

77% the women who took part in the survey did not have a caesarean section. The next highest percentage, i.e. 11.6%, concerns women who have delivered by caesarean section and the remaining options, i.e. 2 caesarean deliveries, 3 caesarean deliveries and 4 caesarean deliveries receive percentages of 9.4%, 1.5% and 0.4%, respectively (Graph 2).



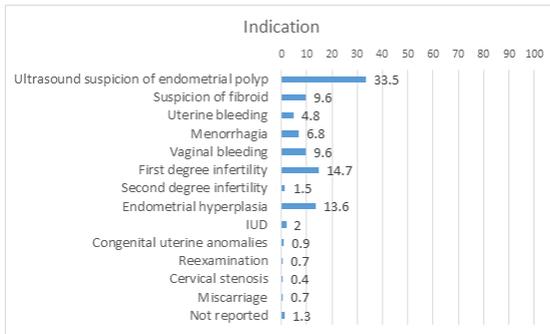
Graph 2 Caesarean birth classification.

59.7% of the women who took part in the survey have not given birth by normal delivery. The next percentage, i.e. 24.7%, refers to women who have given birth naturally with 2 births and the remaining options, i.e. 1 natural birth, 3 natural births and 4 natural births receive percentages of 9.2%, 4.2% and 1.5%, respectively (Graph 3).



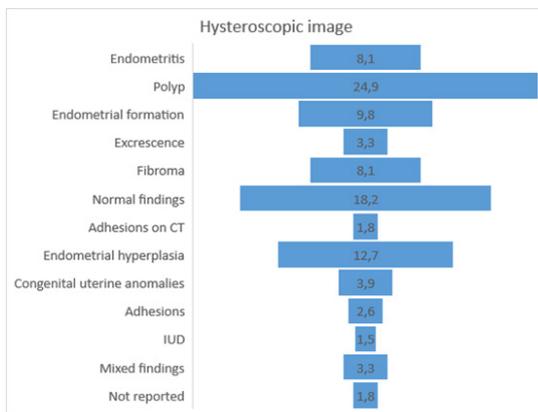
Graph 3 Natural birth classification.

Patients came to the outpatient clinic with various indications. A simple assessment process was carried out during the history taking to more thoroughly record the symptoms. Therefore, the majority of women presented with ultrasound suspicion of endometrial polyp with a rate of 33.5%. Other indications with a significant percentage are primary infertility with a percentage of 14.7%, endometrial hyperplasia 13.6% and with a percentage of 9.6% the indication of suspected fibroid and vaginal bleeding during ultrasound procedure (Graph 4).



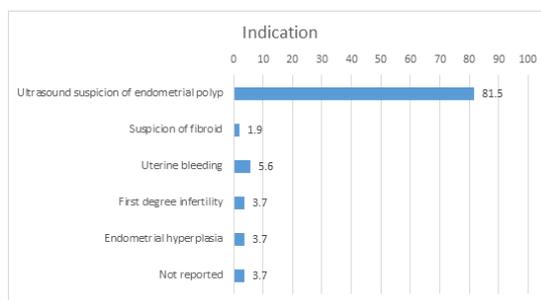
Graph 4 Hysteroscopic indications.

Then, after completing the patients' personal history, the hysteroscopic image was recorded. The presence of polyps occurs in 24.9%. An important finding is 18.2% of women with normal findings and 12.7% with endometrial hyperplasia (Graph 5). Next step will be the classification of the 54 patients who underwent see and treat hysteroscopy.



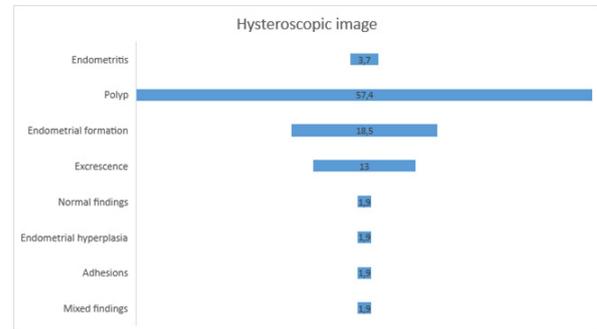
Graph 5 Hysteroscopic depiction.

81,5% main ultra-sonographic indication presented as endometrial polyp, 5,6% as vaginal bleeding, 3,7% endometrial hyperplasia and 1,9% myomas suspicion respectively (Graph 6).



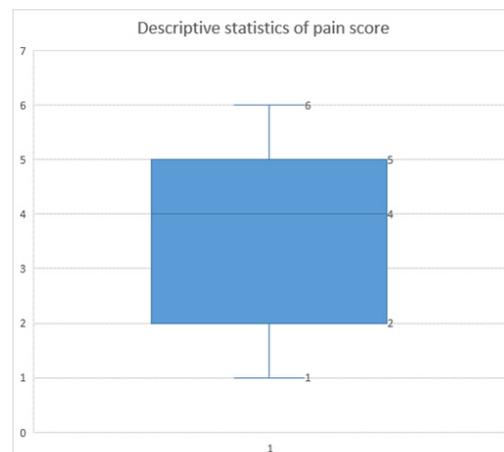
Graph 6 Hysteroscopic indications.

On the other hand, hysteroscopic procedure among 54 patients consisted as 57,4% polyp and 118,5% as endometrial formation respectively (Graph 7).

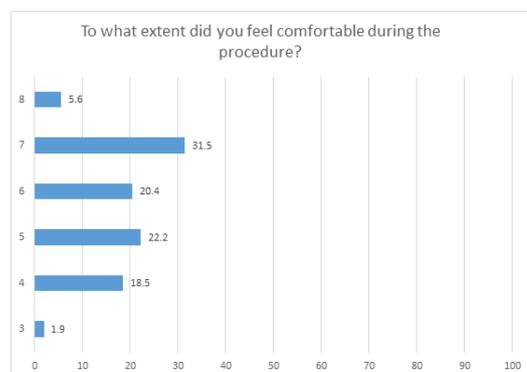


Graph 7 Hysteroscopic depiction.

Two important questions had to be filled after the completion of the procedure. The degree that the patients feel comfortable with during the procedure and the pain score respectively. Main score of the first question counted as 3,65 in a 10th scale with typical deviation 1,35 (Graph 8). According to VAS system, main pain score counted as 5,78 in 10th scale with typical deviation 1,28 (Graph 9). Decoding all previous results, see and treat hysteroscopy consists a safe procedure in outpatient clinic with low score levels of pain score and patient's procedure tolerance settling as corner stone the conditions of therapeutic mapping among uterine pathologic entities.



Graph 8 Descriptive statistics of pain score. Main score of the first question counted as 3,65 in a 10th scale with typical deviation 1,35.



Graph 9 Grade of comfortable during hysteroscopic procedure. According to VAS system, main pain score counted as 5,78 in 10th scale with typical deviation 1,28.

Discussion

In contrast to performing hysteroscopy in an operating room or hospital setting, which necessitates hospital admission, pre-operative exams and the use of general or local anaesthesia, performing hysteroscopy in an outpatient setting consists of a diagnostic and invasive operative technique with many advantages⁷ This practice introduced the concept of a single procedure perfectly integrating the operative part in the diagnostic work-up. This was made possible thanks to the advent of small diameter scopes (with a 5 Fr. operative channel). See and Treat Hysteroscopic technique based on the Vaginoscopic approach depicts new standards regarding therapeutic mapping of uterine pathologic entities. As a result, it becomes clear that through this specific procedure, the period after surgical recovery, the total cost of the procedure and the rate of complications, such as cervical injuries, perforation of the endometrial cavity as well as those due to the dilators (occurrence of electrolyte disturbances) have been reduced.⁸

In a study by Tangri et al.,⁹ a total of 3000 hysteroscopies were attempted, and 98.66% were successfully completed. Vaginoscopic approach was successfully used in all the hysteroscopies.⁹

As per a study done by Cooper NA, vaginoscopic technique was successful in most of the hysteroscopies (83–98%).¹⁰

De Iaco et al.¹¹ performed a prospective study in order to investigate the acceptability and pain tolerance in outpatient hysteroscopy. Mean pain score was 4.7 +/- 2.5; 398 patients (34.8%) experienced severe pain. No additional risk factors were found. Acceptance of the procedure was high, 83.0% (950 women).¹¹

Bettochi et al.¹² developed through vaginoscopic technique a new approach that reduces patient discomfort. During his study (February 1992 and March 1996) 680 out of 1200 hysteroscopies were performed using the vaginoscopic approach. Discomfort was reduced in all patients, cost procedure was decreased. This procedure was ideal for office hysteroscopy especially for postmenopausal women or women with cervix stenosis who otherwise might require general anesthesia.¹²

Guida M et al.¹³ performed a randomized controlled study (300 patients divided in two groups) comparing vaginoscopic approach as office hysteroscopy with traditional method (speculum with or without tenaculum). Although the median total pain scores were 2 in each group, the 95% confidence interval for vaginoscopic hysteroscopy (1.86-2.01) was significantly ($P < 0.05$) lower than that for traditional hysteroscopy (2.10-2.26). No significant differences in terms of duration of the procedure were observed between the two approaches.¹³

Lau WC et al.¹⁴ performed a study of 185 patients undergo hysteroscopic procedure without anesthesia, underlying the rate of acceptance and pain.

The mean pain experienced was 4.7 (SD 2.7) during hysteroscopy and 5.0 (SD 2.9) during endometrial biopsy. The procedure was well accepted (8.3, SD 2.4) and highly recommended by the patients (8.4, SD 2.9).¹⁴ All mentioned conducted studies, describe similar results in relation to our research, certifying decreased pain score and increased acceptance rate. The flexibility of the woman's anatomical pelvis is crucial for completing a hysteroscopic surgery properly in an outpatient clinic.

Previous transvaginal delivery increases the odds of a successful hysteroscopy in an outpatient setting by approximately 21%, and in the case of an episodic procedure, patients with more than one

delivery had an approximately 79% lower risk of analgesia.¹⁵ Direct visualization of endometrial cavity and completion of therapeutic mapping (See and Treat technique) depicts an optimal treatment concerning clinical entities of gynecology spectrum such as polyps or uterine adjustments. Every technique requires a certain level of experience which is equivalent with learning curve achievement respectively.

The educational process following a hysteroscopy can bring a significant degree of difficulty. Both board-certified gynecologists and trainees recognize the importance of acquiring basic endoscopy skills before entering the operating room level. Specifically, to successfully perform hysteroscopic surgery, trainees must become proficient in operating in two dimensions, using a fixed access point with a limited range of motion.

Therefore, the surgeon must master specific psychomotor skills alongside excellent hand-eye coordination to be safe and effective.¹⁶ On the other hand, ethical concerns challenge the traditional model of experiential learning with real patients, and training has moved outside the surgical field.¹⁷

For these reasons, several types of hysteroscopic simulation models have been reported. Animal models, use of fruits and vegetables, synthetic womb simulators and, finally, virtual reality conditions are some of the models currently cited as methods of enhancing hysteroscopic knowledge and skills.

Cost, trainability, realism, preparation, and storage of models are some of the issues that a training center must address when selecting the appropriate model for physician training.¹⁸

Conclusion

The development of continuous hysteroscopic procedures offers a scientific level of minimally invasive approach to common gynecological problems.

Hysteroscopy is an endoscopic procedure that allows direct visualization of the uterine cavity and has become the gold standard in the diagnosis and treatment of many gynecological pathological conditions such as infertility, uterine malformations, cervical and vaginal clinical entities.

The real revolution in performing hysteroscopy took place with the introduction of operative hysteroscopy at an outpatient setting, allowing the reduction of risks associated with the administration of anesthesia, the reduction of costs and the duration of the procedure with the ultimate goal of better patient compliance.

The consideration of diagnostic and interventions operative periods into a single clinical moment described as See and Treat has also been made available by the use of more sophisticated devices. Office hysteroscopy is one example of this.

Acknowledgments

None.

Funding

None.

Conflicts of interest

All authors declare any financial interest with respect to this manuscript.

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