Factors affecting pain perception in outpatient hysteroscopy

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ABSTRACT

Background and Purpose: The aim of the study was to evaluate pain severity during and 24 hours after office hysteroscopy in an unselected population.

Methods: A total of 200 women undergoing diagnostic hysteroscopy with different indications were enrolled in the study. Immediately after the examination and at 24 hours visual analog scale (VAS) scores for pain severity were collected. Data on patient age, parity, menopausal age, consumption of anti-inflammatory drugs and biopsy of the endometrium were also collected.

Results: Perceived pain was greater at the end of examination than after 24 hours ($p<0.01$). Associations were found between higher VAS score and age >50 years, menopausal age, and consumption of analgesics after the intervention. Conversely, there was no association with parity or with the indication for the examination.

Conclusions: The present data confirm that ambulatory hysteroscopy is acceptable to most patients and is safe and reliable.

KEYWORDS

Diagnostic hysteroscopy, office hysteroscopy, vaginoscopy, pain, visual analog scale.

Introduction

First performed by Pantaleoni in 1869 to remove a uterine polyp, hysteroscopy became an effective diagnostic tool only in the 1970s [1]. Since then, continuous development of techniques for distension and illumination of the uterine cavity, together with incessant upgrading of instrumentation, has made hysteroscopy the gold standard examination for study of the uterine cavity. It is indeed an easily implementable, economical and, in most cases, safe technique [2].

Although in recent years modern and innovative techniques such as 3D transvaginal ultrasound and magnetic resonance imaging have been included in diagnostic pathways, hysteroscopy remains the standard approach in the study of the uterine cavity [3, 4]. Moreover, an office hysteroscopy can be performed without the use of local or general anesthesia. Indeed, the vaginoscopic approach (intended to eliminate the need for a tenaculum or a speculum), the creation of more flexible instruments, and the use of saline solution have together reduced discomfort during this examination.

Diagnostic hysteroscopy is defined as an exploration of the uterine cavity without biopsy, and it is extremely useful in several situations: for differentiating normal and abnormal endometrium [5], detecting endometrial inflammation [6], and enabling a diagnosis of endometrial carcinoma [7]. Nevertheless, in some cases, as in the presence of an unevenly shaped or thick endometrial mucosa or an anatomically distorted uterine cavity, it is often necessary to perform a biopsy [7]. Pain and low tolerance are the most common causes of failure of diagnostic hysteroscopy. Today, the need for anesthesia or analgesia during hysteroscopy is still a matter of debate. Several factors, related to the technique used, patient characteristics and the indication for the intervention, explain the lack of agreement concerning the use of anesthesia in hysteroscopy [8-10].

Although local anesthesia is commonly used for gynecological procedures, a multimodal approach may be more effective, and this applies to hysteroscopy [11]. In addition to technical factors, the various instruments and the approach used, operator expertise, duration of the examination, different definitions of diagnostic hysteroscopy, and the possibility of combining the exploration phase with endometrial biopsy or with surgical treatment of the disease diagnosed ("see-and-treat approach") must all be considered. Furthermore, uterine characteristics or abnormalities, such as cervical stenosis, and patient psychological characteristics influence the perception of pain and the acceptability of the technique [12]. The traditional diagnostic hysteroscopy technique involved the use of > 5-mm hysteroscopes, a speculum, a tenaculum, cervical dilators, and carbon dioxide (CO_2) for uterine distension [13-19]. All of these factors contributed to the risk of discomfort and vasovagal reactions, in about 15% of patients [20, 21]. Operative procedures

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using instruments 7 mm or larger for hysteroscopy were considered painful, and they required that analgesia be performed in the operating room. In the last decade, however, substantial changes both in the instrumentation and the technique used have made diagnostic hysteroscopy a completely different examination terms of its feasibility and acceptability [22, 23].

Notwithstanding the popularity of hysteroscopy, there currently exist no precise guidelines on the use of anesthesia or analgesia in diagnostic or operative hysteroscopy, and often the same procedures are performed in women under general, local or even no anesthesia. Consequently, the possibility of time-consuming procedures being performed in the office setting is increasing, and this, without adequate evaluation and control of pain, could affect the feasibility and acceptability of the technique. In particular, nulliparous, menopausal and anxious women most often report significant pain symptoms, which can result in interruption of the examination.

Therefore, the aim of our study was to evaluate pain perception, expressed as a visual analog scale (VAS) score, in women immediately after and 24 hours after this examination.

Materials and Methods

The present study was performed at the University of Siena between January 2013 and December 2013. A group of women (n=200) undergoing diagnostic hysteroscopy were enrolled. The indications for performing an office hysteroscopy were multiple: abnormal uterine bleeding, endometrial thickening, suspicion of endometrial polyp or myoma during an ultrasound examination, and infertility. The office hysteroscopy was always performed by a specializing physician. A 5-mm continuous-flow operative office hysteroscope was used. All the patients signed an informed consent document before undergoing the procedure. The hospital ethics committee approved the study.

To evaluate pain perception, VAS scores were collected immediately after the examination and then again 24 hours later (by telephoning the patients the day after surgery). The VAS consisted of questions where the patient chose a number from 0 to 10 to indicate the severity of the pain she perceived, with 0 meaning no pain and 10 the worst possible pain.

Other data that may be associated with hysteroscopy-related pain were also collected, such as patient age, parity, menopausal age, and use of anti-inflammatory drugs before or after the examination (the most frequently used analgesics included paracetamol, nimesulide or butylscopolamine). The execution of biopsy during the examination was also considered, to assess whether or not it was associated with a higher VAS score.

Statistical analysis: normal distribution of quantitative clinical data was assessed using the Kolmogorov-Smirnov test. Data analyzed by descriptive statistics are presented as means ± standard deviations. Comparing the two groups, the paired t test was used to compute statistical significance. Qualitative variables were compared by the Fisher's exact test. Statistical analysis was performed using the GraphPad Prism version 5.00 for Windows (GraphPad Software, Inc., San Diego, California, USA). For all analyses, $p<0.05$ was taken as the level of statistical significance.

Results

Perceived pain was found to be greater during the execution of the examination than 24 hours after it. In particular, during hysteroscopy, 23 patients (12%) reported no pain, with a VAS score of 0; otherwise, 72 patients (36%) reported mild pain, with a VAS score of between 1 and 4; 72 patients (36%) reported moderate pain, with a VAS score of between 5 and 7, and 33 patients (16%) reported severe pain with a VAS score of 8 or more (Figure 1).

Evaluation of pain scores at 24 hours after hysteroscopy revealed that 136 patients (68%) had no pain, as shown by a VAS score of 0, while the remaining 64 patients (32%) all reported mild pain, with VAS scores of between 1 and 4 (Figure 2).

Details of patient age, parity, menopausal age, consumption of anti-inflammatory drugs before and after the intervention, and indication for the examination are shown in Table 1.

Patients aged 50 years or more gave higher VAS scores

Figure 1 VAS score immediately after hysteroscopy.

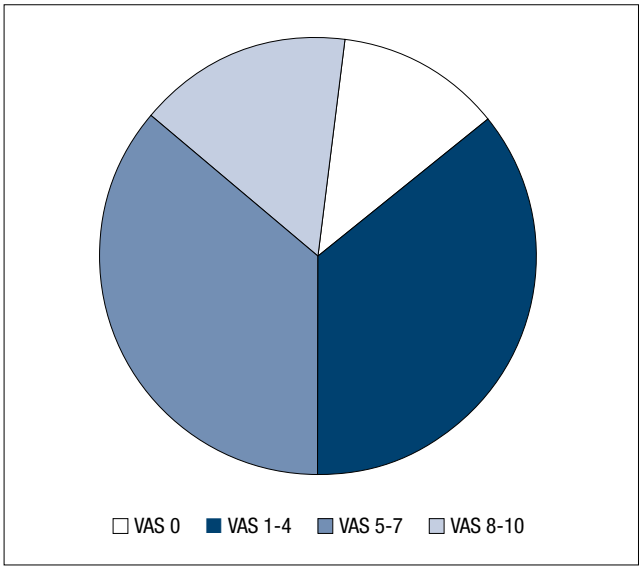
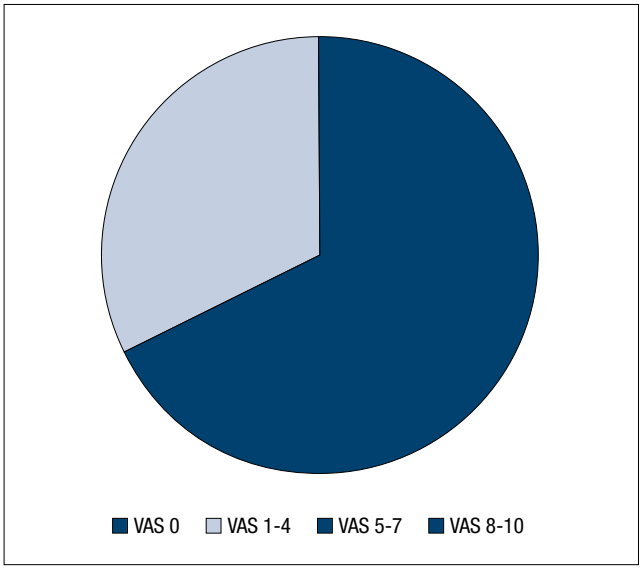


Figure 2 VAS score 24 hours after hysteroscopy.



(4.7) after examination compared with the others (3.7) with p=0.0103. Postmenopausal women gave higher VAS scores (median value of 4.62) than patients of reproductive age (median value of 3.7) with p=0.039 (Figure 3). No difference in VAS score was found between patients with a previous vaginal delivery (median VAS of 4.14) compared with nulliparous patients (median VAS of 4.54).

Furthermore, there was no difference in VAS score between the women who underwent the examination for infertility and those who underwent it for other reasons, such as metrorrhagia, endometrial thickening, or suspicion of endometrial polyp or submucosal myoma. No significant difference was observed between the group of women who took anti-inflammatory drugs and the group of women who did not (p=0.058).

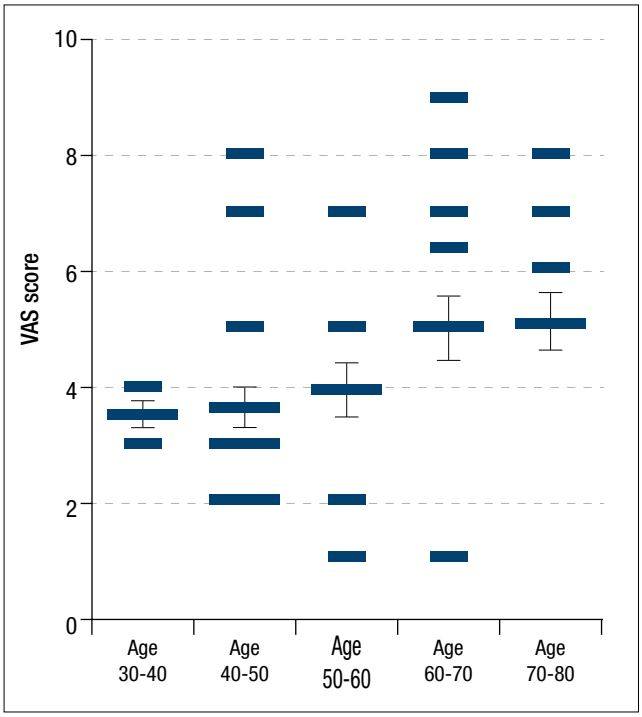
Women who used drugs such as paracetamol, nimesulide or butylscopolamine recorded higher VAS scores after surgery (p< 0.0001) compared with those who did not use these analgesics, while there was no statistical difference in their VAS scores at 24 hours after hysteroscopy.

There were no differences in postoperative VAS and 24 hours VAS between the group undergoing biopsy and the group of women who did not have a biopsy.

Table 1 Association between higher VAS score and different parameters.

Parameter	Statistical Significance
Menopausal age	p < 0.05
Age > 50	p = 0.01
Parity	Ns
Indication: infertility	Ns
Anti-inflammatory before intervention	Ns
Anti-inflammatory after intervention	p < 0.0001
Biopsy	Ns

Figure 3 Postmenopausal women showed greater VAS score compared to patients of reproductive age.



Discussion

For the diagnosis and, in some cases, treatment of abnormal uterine bleeding ambulatory hysteroscopy is a safe, reliable alternative that is acceptable to patients when compared with hysteroscopy under general anesthetic [24]. The vaginoscopic approach, in which neither a speculum nor a tenaculum are used, while saline solution at low pressure is used for distending the uterine cavity, has contributed substantially to these improvements. Moreover, thanks to the use of thin endoscopes, diagnostic hysteroscopy is considerably less painful and easier to perform, even for operators with minimal training, and it is becoming a popular technique [25,26]. Due to the innovations in this setting, anesthesia is now finding only limited space, even though several studies over the years have examined the use of various anesthetic techniques, such as transcervical block, paracervical block, intracervical block, topical anesthesia and non-steroidal anti-inflammatory drugs [24, 27-29]. Although miniaturized instruments are making hysteroscopy in the office setting possible in a growing number of women, the primary limitations to its widespread use are pain and low patient tolerance, as severe pain and adverse effects may rarely occur even when using mini-instruments.

Generally, women with a history of cesarean section, chronic pelvic pain or anxiety should be considered at risk of pain perception, whereas in our study we found that older women experienced more pain than younger ones in a statistically significant manner.

Focusing on older age and in particular on menopause in women, the Study of Global Ageing and Adult Health reported an increase in the prevalence of pain with increased age. Old age predisposes to frequent occurrence of chronic pain connected both with involuntary changes of the elder organism and with multiple morbidities characteristic of that period of life [30].

In addition, it is well known that menopause, which is a normal event for women, is associated with several symptoms, such as vasomotor dysfunction and vaginal dryness or mood changes, sleep disturbances, urinary incontinence, cognitive changes, somatic complaints, sexual dysfunction, and, in general, with a reduced quality of life [31]. Pain in menopause is a problem that involves various aspects, e.g. musculoskeletal, sexuality, the cranio-facial region. However, hysteroscopy remains a first-line technique for investigation of abnormal uterine bleeding and other diseases involving the uterine cavity.

Therefore, our study, like most of the literature, suggests that in experienced hands, office hysteroscopy is well tolerated, and analgesia is required only in selected patients. In our experience, these selected patients, who could benefit from an analgesic treatment prior to this fundamental procedure, are the oldest group. With the general aging of the population, old age is becoming an increasingly important focus of aging research

and public health [32].

With more and more people reaching very old age it is necessary to improve treatments and therapies that may protect their health and their quality of life. From this perspective, pain control during hysteroscopy makes sense.

References

1. Pantaleoni DC. On endoscopic examination of the cavity of the womb. Medical Press Circular. 1869; 8:26-7.
2. Bakour SH, Jones SE, O'Donovan P. Ambulatory hysteroscopy: evidence-based guide to diagnosis and therapy. Best Pract Res Clin Obstet Gynaecol. 2006;20:953-75.
3. Serden SP. Diagnostic hysteroscopy to evaluate the cause of abnormal uterine bleeding. Obstet Gynecol Clin North Am. 2000;27:277-86.
4. Nagele F, O'Connor H, Davies A, Badawy A, Mohamed H, Magos A. 2500 outpatient diagnostic hysteroscopies. Obstet Gynecol. 1996;88:87-92.
5. Garuti G, Sambruni I, Colonnelli M, Luerti M. Accuracy of hysteroscopy in predicting histopathology of endometrium in 1500 women. J Am Assoc Gynecol Laparosc. 2001;8:207-13.
6. Cicinelli E, Resta L, Nicoletti R, Zappimbulso V, Tartagni M, Saliani N. Endometrial micropolyps at fluid hysteroscopy suggest the existence of chronic endometritis. Hum Reprod 2005;20:1386-9.
7. Clark TJ, Voit D, Gupta JK, Hyde C, Song F, Khan KS. Accuracy of hysteroscopy in the diagnosis of endometrial cancer and hyperplasia: a systematic quantitative review. JAMA. 2002;288:1610-21.
8. Tangsiriwatthana T, Sangkomkamhang US, Lumbiganon P, Laopaiboon M. Paracervical local anaesthesia for cervical dilatation and uterine intervention. Cochrane Database Syst Rev. 2009; (1):CD005056.
9. Ahmad G, Duffy J, Watson AJ. Pain relief in hysterosalpingography. Cochrane Database Syst Rev. 2007;(2):CD006106.
10. Lopez LM, Bernholc A, Zeng Y et al. Interventions for pain with intrauterine device insertion. Cochrane Database Syst Rev. 2015;(7):CD007373.
11. Allen RH, Micks E, Edelman A. Pain relief for obstetric and gynecologic ambulatory procedures. Obstet Gynecol Clin North Am. 2013;40:625-45.
12. Gulumser C, Narvekar N, Pathak M, Palmer E, Parker S, Saridogan E. See-and-treat outpatient hysteroscopy: an analysis of 1109 examinations. Reprod Biomed Online. 2010;20:423-9.
13. Goldstein SR. Modern evaluation of the endometrium. Obstet Gynecol 2010;116:168-76.
14. Brusco GF, Arena S, Angelini A. Use of carbon dioxide versus normal saline for diagnostic hysteroscopy. Fertil Steril. 2003;79:993-7.
15. Rullo S, Sorrenti G, Marziali M, Ermini B, Sesti F, Piccione E. Office hysteroscopy: comparison of 2.7- and 4-mm hysteroscopes for acceptability, feasibility and diagnostic accuracy. J Reprod Med. 2005;50:45-8.
16. Wang CJ, Mu WC, Yuen LT, Yen CF, Soong YK, Lee CL. Flexible outpatient hysterofibroscopy without anesthesia: a feasible and valid procedure. Chang Gung Med J. 2007;30:256-62.
17. Ross JW. Numerous indications for office flexible minihysteroscopy. J Am Assoc Gynecol Laparosc. 2000;7:221-6.
18. Marsh F, Duffy S. The technique and overview of flexible hysteroscopy. Obstet Gynecol Clin North Am. 2004;31:655-8.
19. Agostini A, Bretelle F, Cravello L, Maisonneuve AS, Roger V, Blanc B. Acceptance of outpatient flexible hysteroscopy by premenopausal and postmenopausal women. J Reprod Med. 2003;48:441-3.
20. Finikiotis G. Side-effects and complications of outpatient hysteroscopy. Aust N Z J Obstet Gynaecol. 1993;33:61-2.
21. Cicinelli E, Didonna T, Ambrosi G, Schönauer LM, Fiore G, Matteo MG. Topical anaesthesia for diagnostic hysteroscopy and endometrial biopsy in postmenopausal women: a randomised placebo-controlled double-blind study. Br J Obstet Gynaecol. 1997;104:316-9.
22. Bettocchi S, Nappi L, Ceci O, Selvaggi L. Office hysteroscopy. Obstet Gynecol Clin North Am. 2004;31:641-54.
23. Pluchino N, Ninni F, Angioni S, et al. Office vaginoscopic hysteroscopy in infertile women: effects of gynecologist experience, instrument size, and distention medium on patient discomfort. J Minim Invasive Gynecol. 2010; 17:344-50.
24. Readman E, Maher PJ. Pain relief and outpatient hysteroscopy: a literature review. J Am Assoc Gynecol Laparosc. 2004;11:315-9.
25. Campo R, Molinas CR, Rombauts L, et al. Prospective multicenter randomized controlled trial to evaluate factors influencing the success rate of office diagnostic hysteroscopy. Hum Reprod. 2005; 20:258-63.
26. Di Spiezio Sardo A, Taylor A, Tsirkas P, Mastrogamvrakis G, Sharma M, Magos A. Hysteroscopy: a technique for all? Analysis of 5,000 outpatient hysteroscopies. Fertil Steril. 2008;89:438-43.
27. O'Flynn H, Murphy LL, Ahmad G, Watson AJ. Pain relief in outpatient hysteroscopy: a survey of current UK clinical practice. Eur J Obstet Gynecol Reprod Biol. 2011;154:9-15.
28. Török P, Major T. Evaluating the level of pain during office hysteroscopy according to menopausal status, parity, and size of instrument. Arch Gynecol Obstet. 2013;287:985-8.
29. Cicinelli E. Hysteroscopy without anesthesia: review of recent literature. J Minim Invasive Gynecol. 2010;17:703-8.
30. Dziechciaż M, Balicka-Adamik L, Filip R. The problem of pain in old age. Ann Agric Environ Med. 2013; Spec no. 1:35-8.
31. Nelson HD. Menopause. Lancet. 2008;371:760-70.
32. Weon BM. A solution to debates over the behavior of mortality at old ages. Biogerontology. 2015;16:375-81.

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