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Pain during diagnostic hysteroscopy: what is the role of the cervical canal? A pilot study

Ivan Mazzon [a], Alessandro Favilli [b], Stefano Horvath [a], Mario Grasso [a], Gian Carlo Di Renzo [b], Elena Laurenti [b], Vittorio Bini [b], Sandro Gerli [b,*]

[a] "Arbor Vitae" Centre, Clinica Nuova Villa Claudia, 00191 Rome, Italy
[b] Department of Obstetrics and Gynecology, University of Perugia, S.M. della Misericordia Hospital, 06156 Perugia, Italy

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ABSTRACT

Objective: To evaluate whether a correlation exists between the pain perceived during diagnostic anesthesia-free hysteroscopy and the characteristics of the cervical canal.
Study design: Prospective observational pilot study of 255 women undergoing diagnostic hysteroscopy. Data analysis included characteristics of the patient and the cervical canal, and the pain experience during the procedure, assessed by visual analog score (VAS). A multiple logistic regression was then carried out in order to exclude confounding factors.
Results: The degree of pain during hysteroscopy was equal to a median VAS score of 2 (range 0–10). Bivariate analysis between patients with VAS >3 and patients with VAS ≤ 3 demonstrated a significant correlation between pain and the presence of synechiae in the cervical canal ($P = 0.022$), the patient's age ($P = 0.003$) and parity ($P = 0.001$). Multivariate analysis revealed that the presence of cervical synechiae ($P = 0.0001$) [OR = 4.99 (95% CI 2.13–11.70)] and parity ($P = 0.014$) [OR = 0.42 (95% CI 0.21–0.83)] were significantly correlated with pain. There was no significant correlation with the different angles of the cervical canal.
Conclusion: Cervical synechiae appear as a major factor influencing pain during hysteroscopy. While parity acts as a protective factor, the angle of the cervical canal does not seem to play an important role for pain during diagnostic hysteroscopy.

Introduction

Diagnostic hysteroscopy is the gold standard in the study of uterine cavity morphology and in diagnosis of endocavitary pathologies [1], as it offers elevated sensitivity and specificity, a high feasibility and a low complication rate [2]. Nonetheless, hysteroscopy is often considered a painful procedure that is poorly tolerated by patients [3], with difficulties in reaching the uterine cavity [4]. For this reason, numerous studies have evaluated the effectiveness of alternative solutions in an attempt to make the investigation less painful. These include the use of normal saline instead of carbon dioxide (CO_2) [5], the use of small-calibre [6] or flexible [7] hysteroscopes, a vaginoscopic approach [8], the administration of prostaglandins to induce cervical dilation [9], and recourse to analgesia [10] or local anaesthesia [11]. Some studies have sought to identify the variables responsible for pain during diagnostic hysteroscopy [12–14], but none of them has studied the correlation between pain and the characteristics of the cervix, particularly the morphology of the cervical canal. The aim of our study is to evaluate whether a correlation exists between the pain perceived while the procedure is being carried out and the characteristics of the cervix, the angle and the morphology of the cervical canal.

Materials and methods

This prospective observational study was conducted at "Arbor Vitae" Endoscopic Center, Rome from October 2012 to April 2013. The study population consisted of 255 women who were consecutively subjected to diagnostic hysteroscopy. The findings and implications were all discussed with the patient and verbal consent was obtained. Institutional Review Board approval was obtained for data collection.

The patients were all Caucasian and able to communicate the perceived pain. Indications for hysteroscopy were abnormal uterine bleeding, infertility, recurrent miscarriage, fibroids, polyps,

* Corresponding author. Tel.: +39 075 578 3231; fax: +39 075 572 5088.
E-mail address: sandro.gerli@unipg.it (S. Gerli).

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uterine malformation and endometrial thickening. Women who had previously undergone a diagnostic hysteroscopy were excluded from enrolment. The other exclusion criteria were ongoing pregnancy, cervical carcinoma, pelvic inflammatory disease, excessive uterine bleeding and the performance of an endometrial biopsy during the procedure.

Once informed consent was obtained, the investigation was carried out by one expert surgeon (M.G.), in an outpatient office setting, using a rigid telescope with a diameter of 4 mm and a 30° forward-oblique covered with a single-flow examination sheath of 5.1 mm diameter (Hamou II, Karl Storz, Tuttlingen, Germany). Distension of the uterine cavity was achieved through the use of carbon dioxide supplied by an electronic hysteroflator (Hamou Hysteroflator; Karl Storz, Tuttlingen, Germany) at a flow rate of 30 mL/min and a maximum pressure of 75 mmHg.

The cervix was visualized by positioning a bivalve speculum, which was removed immediately after introducing the hysteroscope in the cervical canal. In women of childbearing age, the investigation was carried out during the proliferative stage of the menstrual cycle. As the use of 30° optics resulted in a forward-oblique view, navigation of the cervical canal took place by placing the image at the 6 o'clock position on screen. The angle of the canal was then followed, being careful that the tip of the hysteroscope did not make even minimal contact with the walls. In no case was a tenaculum used to grasp the cervix, nor was recourse made to cervical dilation or the administration of prostaglandins. In no case was local anaesthesia carried out, nor were analgesic or antispastic medications administered before or after the procedure.

In order to avoid shoulder tip pain, at the end of hysteroscopy we invited patients to remain lying for a few minutes while deep breathing to absorb the gas from the abdominal cavity.

The first part of our study was conducted to analyze the characteristics of the patients and the cervical canal and to assess the pain intensity during the procedure.

The duration of the investigation was measured from the moment of the insertion of the hysteroscope through the external uterine orifice until its removal. The main characteristics of the patients and the cervix were also recorded, which described the morphology of the cervical canal (Fig. 1 a-d) and any presence of endocervical polyps, synechiae (Fig. 2 a-b), and/or stenosis of the external uterine orifice (EUO). We considered a cervical canal without an angle between cervix and body of uterus as straight. When the investigation was completed, the patients were asked to express the pain intensity they felt during the performance of the hysteroscopy on a visual analog scale (VAS) from 0 to 10, where 0 corresponds to no pain and 10 to the worst pain imaginable. The VAS scale is reliable, accurate and nowadays widely accepted and utilized in evaluating pain intensity [14–18].

Afterwards the population was divided into two groups based on the severity of pain, with a cut-off score of VAS > 3 being largely considered in the literature as the perception of significant pain [15,16].

A bivariate analysis was undertaken to analyze all the variables considered as potential causes of pain. A multiple logistic regression was then carried out, using a score of VAS > 3 as the dependent variable and the independent variables being all those factors which are potentially responsible for severe pain during a hysteroscopy.

Statistical analysis

For data analysis, Mann–Whitney non-parametric tests were used for independent data and Wilcoxon non-parametric tests were used for paired data. Categorical data were analyzed with a χ^2 test with Yates' correction for continuity. The relationships between variables were studied through the use of multiple logistic regression analysis, from which odds ratio (OR) values were obtained with the relative confidence intervals. All calculations were carried out with SPSS for Windows (ver. 17.0; SPSS Inc., Chicago, 2009), and the statistical significance level was set at 0.05.

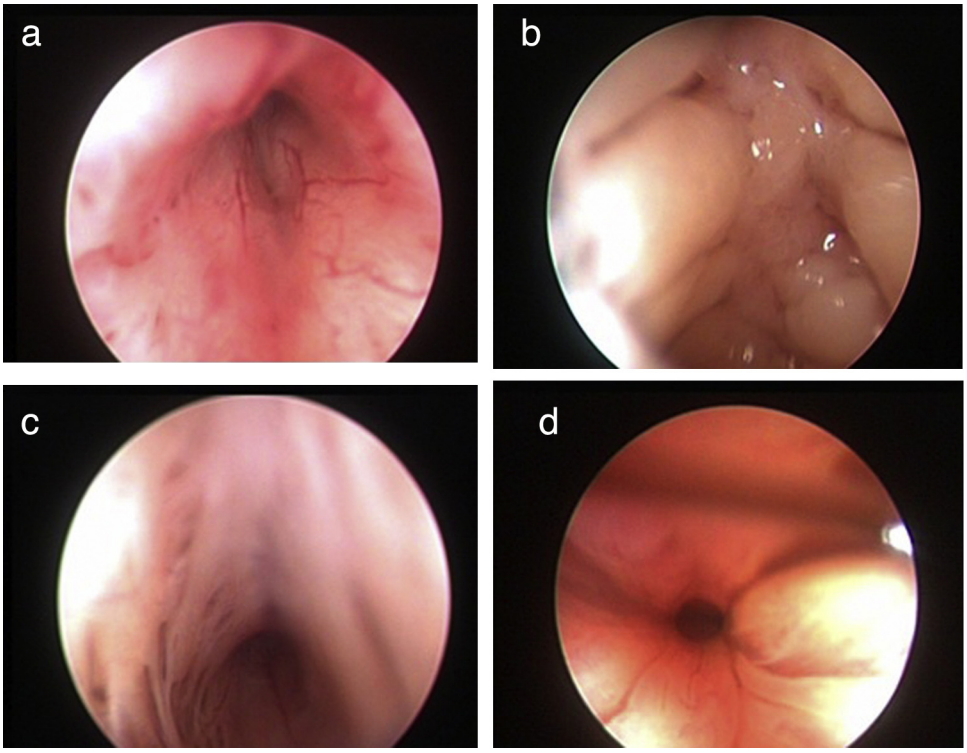

Fig. 1. (a) Anteverted cervical canal. (b) Retroverted cervical canal. (c) Mixed cervical canal (retroverted and then anteverted). (d) Straightway cervical canal.