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JMIG The Journal of Minimally Invasive Gynecology

Original Article

Use of Music to Reduce Anxiety during Office Hysteroscopy: Prospective Randomized Trial

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ABSTRACT **Study Objective:** To investigate the effects of music on anxiety and perception of pain during office hysteroscopy.
Design: Prospective randomized trial (Canadian Task Force classification I).
Setting: Major university medical center.
Interventions: Three hundred fifty-six patients were enrolled between July 2012 and January 2013. Hysteroscopy was performed in a dedicated ambulatory room, using vaginoscopy and without any type of anesthesia. A Bettocchi hysteroscope 5 mm in diameter was used. All procedures were performed by the same surgeon, a gynecologist with special interest in hysteroscopy.
Measurements and Main Results: Data collected included age, body mass index, number of vaginal deliveries, educational achievement level, and history of endometrial surgery (curettage and/or hysteroscopy). For each patient, vital parameters such as blood pressure, heart rate, and respiratory rate were recorded 15 minutes before the procedure and during hysteroscopy after traversing the cervix. Wait time before surgery and the duration of the procedure were also recorded. A completed Italian version of the state anxiety questionnaire (State-Trait Anxiety Inventory) and a visual analog scale (VAS) were administered to each patient before and after the procedure. The *t* test and Mann-Whitney *U* test was used when appropriate to compare the 2 groups. Statistical significance was accepted at $p = .05$. During surgery, systolic blood pressure and heart rate were significantly lower in the music group compared with the no music group. Women in the music group experienced significantly lower anxiety after hysteroscopy and less pain during the procedure, and a significant decrease in both anxiety and pain scores after hysteroscopy. Postoperative State-Trait Anxiety Inventory form Y1 and VAS scores were significantly lower in the music group.
Conclusion: Music can be useful as a complementary method to control anxiety and reduce perception of pain. The patient is more relaxed and experiences less discomfort. Journal of Minimally Invasive Gynecology (2014) 21, 454–459 © 2014 Published by Elsevier Inc. on behalf of AAGL.

Keywords: Anxiety; Music; Office hysteroscopy; Pain; STAI; VAS

Hysteroscopy can be regarded as the criterion standard for evaluation of the uterine cavity and for detection and treatment of intrauterine disease [1]. Pain experienced during hysteroscopy is the most common reason for failure of the procedure [2,3] and is the main limiting factor to large-scale use of office hysteroscopy [4].

Over the years, to minimize patient discomfort and promote the chance of success of the procedure, hysteroscopy has endorsed new tools such as thinner and/or flexible instruments in an attempt to eliminate any kind of premedication, analgesia, or anesthesia [5,6]. Despite these innovative efforts, patient compliance is still not optimal

The authors declare no conflicts of interest.

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Submitted June 3, 2013. Accepted for publication July 31, 2013.
Available at www.sciencedirect.com and www.jmig.org

1553-4650/$ - see front matter © 2014 Published by Elsevier Inc. on behalf of AAGL.
http://dx.doi.org/10.1016/j.jmig.2013.07.020

because of the discomfort and pain associated with the procedure.

The literature includes an increasing number of studies that highlight how music could be a tool to support patient emotional and psychologic status by creating an environment that stimulates and maintains relaxation, well-being, and comfort. Music can be used as a self-management technique to reduce or control distress [7]. The commonly accepted theory explaining the effect of music in reducing pain, anxiety, and stress is that music is a distracter, focusing patient attention away from negative stimuli to something pleasant and encouraging [8–10].

Music has been documented to reduce patient perceived pain and anxiety in various clinical and surgical areas [11,12]. The present study is the first prospective randomized study to investigate the effects of music on perception of pain and anxiety during office hysteroscopy.

Material and Methods

From July 2012 to January 2013, a prospective randomized trial (No. NCT0170387; www.clinicaltrialgov.org) was performed in the Division of Gynecology of the University Campus Bio-Medico in Rome. All patients referred for office hysteroscopy were considered for inclusion in the study. The study was approved by the hospital institutional review board.

Inclusion criteria were indication for hysteroscopy (abnormal uterine bleeding, abnormal findings at ultrasound or hysterosalpingography, and infertility), signed informed consent, and ability to read and understand Italian. Exclusion criteria were mental impairment, surgical procedure not completed because of stenosis of the cervical canal, and excessive pain reported by patients. After consent was obtained, the patients were randomly assigned to either a music or no-music group by the research nurse, using a computer-generated random number series.

No premedication for cervical ripening was used. According to our protocol, 10 minutes before the procedure a detailed medical history was obtained for each patient, including age, body mass index, educational achievement level, number of vaginal deliveries, and history of endometrial surgery (curettage and/or hysteroscopy). For each patient, vital parameters including blood pressure, heart rate, and respiratory rate were recorded at 15 minutes before the procedure and during hysteroscopy, after traversing the cervix. Wait time before surgery and the duration of the procedure were also recorded. In addition, a completed Italian version of the state anxiety questionnaire (State-Trait Anxiety Inventory [STAI]) and a visual analog scale (VAS) were administered to each patient before and after the procedure. The STAI for adults was used to assess anxiety [13]. It consists of 40 self-reported items that measure state (STAI form Y-1) and trait (STAI form Y-2) anxiety. Scores range from 20 to 80, and the lower the score the lower the anxiety level. In particular, the STAI Y-1 is designed to assess momentary or situational anxiety. The STAI Y-2 is designed to assess trait anxiety, with questions that explore how the subject feels habitually. STAI Y-1 was administrated twice, before and at the end of the procedure, whereas STAI Y-2 was administered only before the procedure to assess homogeneity between trait anxiety of both groups.

Each subject also assessed anticipated pain and real pain experienced during the procedure using VAS. Scores ranged from 0 to 10, with 0 indicating “no pain” and 10 indicating “worst pain possible.”

Before the start of the procedure, patients were asked to indicate their favorite music to be played during hysteroscopy; they could choose among selected pop, jazz, classical, or rock playlists. Music was administered through a stereo to a volume of 50 to 60 dB [14] during hysteroscopy for subjects in the music group, whereas patients in the no-music group were examined in the same setting without music.

Hysteroscopy was performed in a dedicated ambulatory room, using vaginoscopy and without any type of anesthesia, by the same surgeon, a gynecologist with special interest in hysteroscopy. A Bettocchi hysteroscope with a 5-mm diameter was used. Before the procedure, an extensive explanation of the intervention was given. However, during the procedure, the surgeon could provide the necessary information about the examination only if asked by the patient.

Operative time for all procedures was calculated from entry of the hysteroscope into the external uterine orifice to exit from the uterine cervix.

It was expected that VAS scores during hysteroscopy would be proportional to patient comfort and anxiety. The mean decrease in VAS score ranged from 4.5 to 3.5, as reported in the literature [15]. One hundred forty-one patients in each treatment group were required to detect such a difference, with a power of 80% and at significance of 50%. The Student *t* test and Mann-Whitney *U* tests were used when appropriate to compare the 2 groups. A values of $p = .05$ was considered statistically significant.

Results

Between July 2012 and January 2013, 383 eligible subjects were asked to join the study. Five women refused to fill in the questionnaires, and 6 indicated no interest in participating. Thus, 372 women were enrolled in the trial and randomized into 2 groups: 185 in the Music Group (MG) and 187 in the No Music Group (NMG). Fifteen patients (9 in MG and 7 in NMG) did not complete the surgical procedure because of stenosis of the cervical canal and/or excessive pain reported. Data for the remaining 356 patients (176 in MG and 180 in NMG) were considered for statistical analysis.

Patient characteristics including age, body mass index, number of vaginal deliveries, previous endometrial surgery (curettage and/or hysteroscopy), educational achievement level, STAI Y-2, types of procedure, and operative time were comparable between groups ($p > .05$) (Table 1).