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APPLICATION OF SURGICAL HYSTEROSCOPY IN THE TREATMENT OF UTERINE DISORDERS THAT CAUSE INFERTILITY

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Abstract: Objective: To analyze the application of surgical hysteroscopy in the treatment of uterine disorders that cause infertility in women of reproductive age. Methodology: A bibliographic review covering the period from 2018 to 2023 was carried out, using the Scielo and PubMed databases. 114 articles were found, of which 16 studies were selected according to the inclusion criteria. Results: The effectiveness of the treatment is directly related to the choice of technique and instruments used, taking into consideration, the need and medical preference, as well as the complexity of the clinical case. Surgical hysteroscopy has advantages such as low cost, quick recovery, dependence on the operator to ensure effectiveness, minimally invasive character allowing its performance both in clinical and hospital environments. In addition to its application as a diagnostic technique, it can be used in surgical procedures. The absence of scars, hospital discharge on the same day without the risk of complications, and direct access to the uterus stand out, enabling precise and specific therapeutic interventions, which results in improvements in the subsequent pregnancy rate in specific situations. Conclusion: Surgical hysteroscopy demonstrates a high success rate in the treatment of uterine disorders that cause infertility, contributing to the improvement of reproductive health and the increase in the pregnancy success rate in women with these disorders. To establish conclusions and clinical considerations about this procedure, additional studies and research are needed.
Keywords: Hysteroscopy; Female Infertility; Uterine Diseases.

INTRODUCTION

Hysteroscopy is an endoscopic procedure widely used for diagnosis, treatment of intrauterine pathologies and as a method of surgical intervention. According to Pérez

et al. (2020) and Stamenev et al. (2022), hysteroscopy is considered a gold standard tool for the diagnosis and treatment of infertility caused by congenital anomalies and acquired diseases of the uterus. Infertility caused by uterine factors represents about 25% of infertility cases (ÁLVAREZ et al., 2019).

The technique allows the enlargement of the uterine cavity, improving endometrial vascular perfusion and decreasing uterine contractility, making it more prone to embryo implantation. It is also used in submucosal fibroid removal procedures up to 5 cm in diameter (STAMENOV et al., 2022). Hysteroscopy is especially important to evaluate infertile women with endometrial polyps, submucosal fibroids, uterine adhesions, Mullerian malformations and endometrial hyperplasia, which are the main findings and causes of infertility and reduced pregnancy rates (ÁLVAREZ et al., 2019).

Thus, hysteroscopy is a surgical technique of great value for maintaining women's reproductive health, since it is painless, accessible and can perform diagnosis and treatment in an exceptional way (PÉREZ et al., 2020). Therefore, the present study aims to analyze how surgical hysteroscopy can be used in the treatment of uterine disorders that cause infertility in women of reproductive age.

METHODOLOGY

The present work consists of a bibliographic review conducted according to the criteria of the PVO strategy, which means research population or problem, variables and outcome. The research was guided by the following question: "How can surgical hysteroscopy be used to treat uterine disorders that cause infertility in women of reproductive age?". The population or problem of interest was defined as women of reproductive age who have uterine disorders, and who, when undergoing new hysteroscopy surgical techniques, have better prognoses and reversal of infertility. Bibliographic searches were carried out in PubMed and Scientific Electronic Library Online (SciELO) databases. The descriptors used were combined with the Boolean term "AND" and "OR": Hysteroscopy and Infertility or Female Infertility and Uterine diseases. The initial search resulted in 114 articles, which were submitted to selection criteria. Articles in English and Spanish, published between 2018 and 2023, that addressed the themes proposed for this research, including systematic review and meta-analysis studies available in full, were included. Duplicate articles, abstracts that did not directly address the studied proposal and articles that did not meet the inclusion criteria were excluded. After applying the inclusion and exclusion criteria, 16 studies were selected to compose the final collection. Of these, 13 articles were identified in the PubMed database and 3 articles in SciELO.

RESULTS

EFFECTIVENESS OF SURGICAL HYSTEROSCOPY

Hysteroscopy is part of the list of most used procedures in the world due to its wide application in the field of gynecology and obstetrics, facilitating the management of various gynecological conditions. It is considered the gold standard in many clinical and surgical practices, with low cost and fast recovery. Its main indications are related to diseases such as endometrial polyps, adenomyosis, adhesions, fibroids, endometrial atrophy, endometrial renal carcinoma and uterine malformations in general (STAMENOV et al., 2022).

The present study evaluated relevant evidence on the effectiveness of surgical hysteroscopy in improving reproductive health and increasing the pregnancy success

rate in infertile women with uterine disorders. According to Marchand et al. (2023), hysteroscopy is a procedure that allows the visualization and treatment of dysfunctions present in the uterus, such as polyps, fibroids, endometritis and intrauterine adhesions. Thus, it has great potential in reversing infertility, as it ensures the detection of intrauterine changes that are capable of interfering with embryo implantation (LEZAMA-RUVALCABA et al., 2018).

In this context, it is important to discuss the effectiveness of surgical hysteroscopy in patients with septate uterus. According to Krishnan et al. (2021), hysteroscopic resection of the uterine septum resulted in a significant decrease in the risk of miscarriage and poor presentation during labor, demonstrating benefits of this technique in infertile patients. However, surgical hysteroscopy did not improve live birth and clinical pregnancy rates, nor did it reduce preterm delivery in women undergoing this procedure. Therefore, the hysteroscopic procedure may be beneficial, but larger prospective studies are needed to establish clinical conclusions regarding the application of this technology in patients with a septate uterus.

In addition, the use of hysteroscopy before performing assisted reproduction techniques was evaluated. According to Marchand et al. (2023), there was a relevant increase in the clinical pregnancy rate, but there was no improvement in the live birth rate, miscarriage rate, fertilization rate, chemical pregnancy rate, multiple gestation, number of embryos transferred and number of oocytes retrieved. The exact way in which hysteroscopy increases the clinical pregnancy rate is still unknown, but it is suggested that this is due to the treatment of small intrauterine lesions. Therefore, conclusive studies are needed on performing the hysteroscopic technique before artificial fertilization.

On the subject, updating surgical instruments is of paramount importance to contribute to better adherence by patients and a better postoperative period, as is the case of the new hysteroscopic tissue recovery (HTR) systems that were created with the objective of reducing endometrial trauma in submucous fibroid removal surgeries. The new technique demonstrated a positive impact in reducing infertility and postoperative complications among patients (RIEMMAA et al., 2022).

In the context of comparing surgical and outpatient hysteroscopy, Bennett et al. (2018) stated that, in an analysis of 10 studies, a sensitivity of the outpatient technique ranging from 72% to 90% was identified, while the specificity of the surgical technique ranged from 91% to 93%. Based on this foundation, they stated that, although surgical hysteroscopy achieves success and patient satisfaction due to the shorter procedure time and the lack of need for general anesthesia, further studies are still needed on the safety of procedures outside the hospital environment, the feasibility economic and prognosis of patients, such as cases of postoperative pain, as concluded in the study.

From another point of view, the study by Parodi et al. (2022), in which the efficacy of surgical hysteroscopy for the treatment of infertility in patients with Müllerian malformations was established. The surgical technique proved to be the gold standard of choice for symptomatic patients, being safe and effective. In addition, there was a decrease in the rate of spontaneous abortions and complications throughout the pregnancies, proving the success of the new surgical technique.

SURGICAL HYSTEROSCOPY VERSUS OTHER SURGICAL TECHNIQUES

According to Stamenov et al. (2022), hysteroscopy is considered the current "gold

standard" approach for evaluating the uterine cavity in the diagnosis and treatment of female infertility, as well as in the treatment of endometrial polyps, allowing diagnosis and polypectomy simultaneously. However, Lezama-Ruvalcava et al. (2018) state that this technique is still consolidating its efficacy and effectiveness in improving the prognosis of infertile couples, despite being routinely used in the study of infertility.

Advances in ultrasound technology have allowed clinicians to identify most uterine pathologies without the need for more invasive diagnostic procedures. However, when high-resolution transvaginal ultrasound is not optimal due to patient-related factors such as obesity, endometriosis, and fibroids, hysteroscopy plays an important role in confirming the normality of the uterine cavity.

According to Bennett et al. (2018), there is no concrete evidence to conclude that hysteroscopy performed in an outpatient setting or in the operating room is comparable in terms of treatment success when compared to other surgical techniques. The study suggests that there is an increase in postoperative pain in the outpatient setting. However, other studies and systematic reviews have supported the accuracy and feasibility of ambulatory hysteroscopy, even though there are no studies directly comparing the diagnostic accuracy of ambulatory hysteroscopy versus operating room hysteroscopy.

The review by Parodi et al. (2022) showed that hysteroscopy is an effective, safe, and minimally invasive approach, and must be considered the first choice for symptomatic patients affected by uterine malformation. In addition, surgical treatment is associated with favorable fertility outcomes, such as a reduction in the rate of miscarriage and obstetric complications. However, there is no reliable statistical evidence to support intervention in asymptomatic patients with regard to fertility symptoms.

According to Nian et al. (2021), laparoscopy and hysteroscopy are effective treatments for infertility. Pelvic adhesions, twisted/bent fallopian tubes, hydrosalpinx and damage to the fimbriae of the fallopian tubes can affect post-operative pregnancy outcomes and lead to failure of a natural pregnancy after the operation. Furthermore, the incidence of ectopic pregnancy can occur after both procedures, and it increases with the degree of twisting/kinking of the fallopian tubes and the degree of damage to the fimbriae of the fallopian tubes.

Septate uterus is a congenital uterine anomaly, with an estimated prevalence of 0.2% to 2.3% in women of reproductive age. Women with a septate uterus are at increased risk of subfertility, pregnancy loss, and preterm delivery. Although hysteroscopic septal resection is considered current standard practice to restore normal uterine anatomy and obtain better reproductive outcomes, there are still disagreements among medical societies regarding the effectiveness of this procedure (RIKKEN et al., 2021).

The American Society for Reproductive Medicine (ASRM) recommends hysteroscopic septal resection in cases of recurrent pregnancy loss. However, the European Society for Human Reproduction and Embryology (ESHRE), the National Institute for Health and Care Excellence (NICE) and the Royal College of Obstetricians and Gynecologists (RCOG) do not recommend this procedure routinely due to a lack of reliable evidence. on its effectiveness (RIKKEN et al., 2021).

Regarding the comparison between surgical hysteroscopy and other surgical techniques for the treatment of infertility, Rikken et al. (2021) state that hysteroscopic septal resection does not improve live birth rates or other reproductive outcomes such as ongoing pregnancy, pregnancy loss,

and preterm delivery rate. In addition, the procedure carries the risk of perioperative uterine perforation, without reliable evidence of efficacy and significant benefit. Therefore, resection of the uterine septum would not be recommended as a routine procedure in clinical practice.

However, it is important to point out that the randomized study by Rikken et al. (2021) presented some limitations, such as the lack of evaluation of the effect of the procedure in women with pregnancy loss compared to those with subfertility, the number of pregnancy losses and the possible differential effect of the size of the septate uterus. Furthermore, to assess subtle improvements in live birth rates (such as an improvement of less than 10%), much larger sample sizes would be required, which would make it difficult to conduct the study at an international level.

Regarding fibroids, they are the most common benign tumors of the female genital tract and usually affect women of reproductive age. They can cause difficulty conceiving or problems during pregnancy, such as miscarriage and premature birth. Myomectomy, which is removal of the fibroid while preserving the uterus, can be performed by laparotomy, laparoscopy, or hysteroscopy, depending on the location and size of the fibroid.

Currently, there is consensus, based on case-control studies and meta-analyses, that submucous fibroids are associated with a negative impact on fertility, whereas subserosal fibroids appear to have little or no effect. However, regarding intramural myomas, there is still controversy, as some studies suggest a negative effect, while a more recent study indicates that the quality of evidence is too low to draw definitive conclusions. This makes decision-making regarding surgical intervention difficult, especially considering potential fertility risks such as intrauterine and pelvic adhesions. Current evidence does not provide a definitive solution to this dilemma (METWALLY et al., 2020).

According to Metwally et al. (2020), there is no clear evidence to define which myomectomy method is superior in terms of fertility results, when compared to laparotomy or mini-laparotomy with laparoscopic myomectomy. Likewise, there is no clear definition of which type of resectoscope (monopolar or bipolar) is superior in hysteroscopic myomectomy with regard to fertility outcomes such as live birth rate, clinical pregnancy rate, and miscarriage rate.

Furthermore, the comparison between laparoscopy and laparotomy for myomectomy did not demonstrate clear benefits regarding fertility outcomes, despite advantages in terms of postoperative recovery and morbidity. Variation in surgical practice, including factors such as surgeon skill, surgical technique, and use of non-adherent agents, also contributes to the difficulty of comparing and reaching definitive conclusions. Therefore, further studies are needed in this area (METWALLY et al., 2020).

However, due to the stronger association of submucosal fibroids with impaired fertility, hysteroscopic myomectomy is considered the most appropriate surgical approach. Although there is limited high-quality evidence regarding reproductive outcomes, it is important to consider the potential fertility implications when deciding on the procedure (METWALLY et al., 2020).

CONCLUSION

Surgical hysteroscopy represents the gold standard for the diagnosis and treatment of infertility caused by abnormal uterine findings. Despite its potential in reversing infertility, due to the numerous advantages, safety and accuracy of the technique, it is important to emphasize that the treatment

of intrauterine lesions does not necessarily guarantee the restoration of fertility. Each case must be approached individually, considering the clinical picture, the patient's personal history, in addition to the surgical instruments used and the experience of the medical team, in order to guarantee efficient results. However, additional studies and research are needed to establish conclusions and clinical considerations for this procedure.

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