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Review

Prevention of intrauterine post-surgical adhesions in hysteroscopy. A systematic review

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ABSTRACT

Objective: The purpose of the present review is to provide a survey of the various measures of preventing adhesions used in hysteroscopic surgery.
Study Design: A systematic computerized literature search was conducted to provide a survey of the various measures used in hysteroscopic surgery to prevent adhesions. Finally, 29 studies were included in the analysis, showing a wide variety of methods and agents advocated in international literature. They are explained in various sections, based on the IUA prevention approach adopted (surgical technique, early second-look hysteroscopy, barrier method, pharmacological therapy).
Results: The results of our review show that (i) use of surgical techniques which reduce the use of electrosurgery should be preferred whenever possible (Level of evidence: 4); (ii) an early second-look hysteroscopy would appear to be an effective preventive, as well as therapeutic, strategy regarding IUA but studies on the topic are too few for relevant evidence; (iii) barriers methods are the most widely used and, among these, gel barriers have been proven to have a significant clinical effect on IUA prevention, because of higher adhesiveness and prolonged residence time on the injured surface (Level of evidence: 1b); (iv) the role of hormonal and antibiotic therapy in the prevention of post-operative IUA is difficult to evaluate as it has been used in association with other prevention strategies in most studies included in our review.
Conclusions: Robust and high quality randomized trials to assess the effectiveness of different anti-adhesion therapies are still needed before one or more of these strategies may be strongly recommended for improving clinical outcomes in women treated by operative hysteroscopy.

Contents

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1. Introduction

Uterine adhesions are adhesive processes that affect the uterine corpus [*intrauterine adhesions* (IUA)] or the uterine cervix (*cervical synechiae*). Subject to the predominant component (mucosa, muscular, or fibrous), IUA appear as dense or filmy adhesion bands with clear or irregular margins; they can be partial or complete, which lead to reduced volume and deformation, and ultimately may provoke a complete obliteration of the cavity.

IUA are classified as primary when forming '*ex novo*', and as secondary when recurring at sites where adhesiolysis has been performed [1,2].

They are frequently detected in patients with a prior history of procedures involving the use of gynecological instruments both for diagnostic and therapeutic purposes, or with an intracavitary trauma precipitating the formation of scars in the endometrium and its basal membrane, resulting in approximation and subsequent fusion of surfaces of opposing uterine walls (e.g., after prior elective abortions, post-abortion or postpartum revisions of the uterine cavity) [3,4].

IUA are a relevant short- or long-term result of hysteroscopic surgery, and the rate by which they develop depends mainly on the type of surgical procedure, being particularly high in the case of metroplasty, myomectomy, and endometrial ablations [3,5–7]. Although intentional IUA, such as those produced from endometrial ablation for treatment of AUB-E [8], do not generally require any treatment, they may sometimes become symptomatic (i.e. pain, hematometra) and consequently need a surgical approach.

Trauma is the major cause of IUA; less frequently, they may occur secondary to infection (e.g., genital tuberculosis, endometritis or previous septic abortions) or a mullerian anomaly, since women with congenital uterine anomalies have a higher risk of recurrent pregnancy loss, and are more frequently prone to undergo explorations of the uterine cavity involving the use of gynecological instruments [4,7]. In addition, predisposition to form synechiae seems to be linked to individual factors, such as age, race, nutritional status, and the concomitance of other diseases or infectious processes.

IUA represent an important clinical issue since they may result in infertility, recurrent miscarriages, menstrual abnormalities with dysmenorrhea and pelvic pain. Furthermore, IUA partially or completely obstructing either the isthmus or the internal uterine ostium may cause hematometra, severe (cramping) pelvic pain, as well as difficulty in accessing the uterine cavity at hysteroscopy [5,6,9].

The purpose of the present review is to provide a survey of the various measures of preventing adhesions used in hysteroscopic surgery.

2. Materials and methods

2.1. Data sources

An electronic literature search through Medline, EMBASE and Cochrane library was conducted using mesh combinations of the following key words: *anti-adhesions* and *uterus*, *adhesion-barrier* and *uterus*, *intrauterine adhesions* and *prevention*, *adhesions* and *uterus*, *intrauterine adhesions* and *metroplasty*, *intrauterine adhesions* and *myomectomy*, *intrauterine adhesions* and *hysteroscopy*, *intrauterine adhesions* and *prophylaxis*. This review was performed under the auspice of the *European Society of Gynecological Endoscopy* (*ESGE*).

Three authors (ADSS, MS and GC) independently screened titles and abstracts of studies obtained in the search. All cross-references were also hand-searched. It was decided to limit the search to articles published from January 1990 to May 2015, so as to ensure the character of relevance of the paper. Only scientific publications in English were included. All reports related to experimental studies conducted on in vitro or animal models were excluded from the analysis.

Proceedings of scientific meetings and abstracts were not considered. All types of studies were selected and each potentially relevant study was obtained in full text and assessed for inclusion independently by the authors.

2.2. Study selection

All articles describing the use of a measure/strategy for preventing IUA formation after hysteroscopic surgery were