European Journal of Obstetrics & Gynecology and Reproductive Biology 201 (2016) 61–64

Contents lists available at ScienceDirect

European Journal of Obstetrics & Gynecology and Reproductive Biology

journal homepage: www.elsevier.com/locate/ejogrb

The incidence of post-operative adhesion following transection of uterine septum: a cohort study comparing three different adjuvant therapies

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ARTICLE INFO

Article history:
Received 15 November 2015
Received in revised form 21 January 2016
Accepted 29 January 2016

Keywords:
Uterine septum
Intrauterine adhesions
Foley balloon

ABSTRACT

Objective: To investigate the clinical efficacy of postoperative estrogen therapy, intrauterine device (IUD) and intrauterine balloon in preventing intrauterine adhesions after transcervical resection of septum (TCRS).

Study design: 238 patients who underwent TCRS in our hospital from March 2012 to December 2013 were allocated into one of four groups. In Group 1 (50 patients), women received postoperative estrogen therapy. In Group 2 (59 patients), an intrauterine contraceptive device (IUD) was placed into the uterine cavity at the end of the operation. In Group 3 (75 patients), a Foley catheter with the balloon inflated with 4 ml of normal saline solution was placed into the uterine cavity at the end of the operation for five days. In Group 4 (54 patients), women did not receive any of the above treatment (comparison group). All subjects underwent two further hysteroscopy, one and three months after the initial surgery.

Results: The intrauterine adhesion rates among the four groups at one month were 22.0%, 28.81, 26.7% and 24.1% ($p > 0.05$); and at the third month were 0%, 1.7%, 1.3% and 3.4%, respectively ($p > 0.05$).

Conclusions: The use of postoperative estrogen therapy, IUD or intrauterine balloon did not appear to have any benefit in reducing the incidence of postoperative intrauterine adhesion formation.

Introduction

The uterine septum (US) is the most common congenital uterine malformation [1,2], accounting for about 75% of Mullerian anomalies [3]. Earlier studies had shown that US was associated with recurrent miscarriage, premature birth, fetal growth restriction and a number of obstetric complications [4,5]. Transcervical resection of septum (TCRS) has been shown in several cohort studies to improve outcome, although evidence from prospectively conducted randomized trial is lacking. TCRS is generally considered to be safe but there is a concern that it may be complicated by post-operative formation of intrauterine adhesions. Some investigators therefore recommend the use of postoperative adjuvant therapies with a view to preventing adhesion formation, as in the case of hysteroscopic surgery for Asherman syndrome [6]. The adjuvant measures proposed include postoperative estrogen therapy, the placement of an intrauterine device (IUD) or Foley catheter in the uterine cavity. Unlike the case of Asherman syndrome in which these various adjuvant therapies are often used and appear to be of benefit, it is uncertain if any of these adjuvant measures are of benefit or necessary in the case TCRS. In this cohort study, we compared the postoperative adhesion formation rates who received one of three adjuvant therapies and those who did not receive any to determine the usefulness of the adjuvant therapies in reducing postoperative adhesion formation.

Material and methods

Subjects

In this study, a total of 238 women with uterine septum who underwent hysteroscopic transection of uterine septum between March 2012 and December 2013 at the Hysteroscopy Center, Fuxing Hospital, Beijing were included. The Hysteroscopy center is a national training center for hysteroscopic surgery in China and performed an average of 2000 operative hysteroscopy and 5500 diagnostic hysteroscopy every year over the last 5 years.

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[1] Supported by the Sea Poly Project of Beijing Overseas Talents.

http://dx.doi.org/10.1016/j.ejogrb.2016.01.039
0301-2115/

The patients received one of three adjuvant therapies or none of any adjuvant therapies after completion of hysteroscopic surgery according to surgeon's preference. The operations were performed by one of three experienced surgeons using similar techniques. Group I (Hormone group, 50 patients): women in this group received estrogen and progestogen treatment according a standardized protocol in use in our center for the treatment of Asherman syndrome; Group II (Coil group, 59 patients): women in this group had an IUD inserted into the uterine cavity at the end of the hysteroscopic surgery, which stayed in situ and was removed at the time of the second look hysteroscopy; Group III (Balloon group, 75 patients): women in this group had a Foley balloon inserted into the uterine cavity and inflated with 4 mls of normal saline solution at the end of the hysteroscopic surgery and stayed in situ for 5 days; Group 4 (control group, 54 patients): subjects in this group did not receive any additional treatment after the surgery had been completed. The protocol was approved by Fu Xing Hospital, Capital Medical University IRB.

Hysteroscopic surgery

Hysteroscopic surgery was performed under general anesthesia for all patients. Misoprostol 400 mg were placed inside the vaginal fornix 8–12 h before surgery to induce cervical softening. The cervix was dilated under ultrasound guidance with Hegar's dilators up to size 10. A 8.5 mm working element along with the outer sheath and 4 mm 12° telescope (Olympus, Germany) equipped with a hysteroscopic bipolar needle or loop was introduced into the uterine cavity. Normal (0.9%) saline solution was used as the distending medium through an automated hysteroscopic distension pump; the distention pressure was set as 100 mmHg. The loop or needle electrode were used to completely resect or incise the uterine septum under ultrasound guidance or additionally laparoscopic guidance if the latter was performed at the same time to provide evaluation of pelvic anatomy or treatment of concurrent pelvic pathology. The length of the uterine cavity and septum was routinely measured immediately prior to resection by the use of a sound. In women with complete uterine and cervical septum, the cervical septum was left undisturbed. However, any co-existing vaginal septum was removed in all cases prior to resection of the septum. The IUD placed was copper T-380 IUD. There was no intra- or postoperative complications.

Adjuvant treatments

In Group I (Hormone group), subjects received postoperative hormone therapy as per the protocol in use in our center for Asherman Syndrome. Immediately after the operation, the subjects were started on a 3-month course of cyclical hormonal therapy, consisting of orally administrated oestradiol valerate 2–4 mg/day for 21 days, orally administrated medroxyprogesterone acetate 8 mg/day from day 12 to 21 of the oestradiol valerate therapy. The second treatment cycle started one week after the completion of the first cycle, and the third treatment cycle started 1 week after the second cycle. In Group II (Coil group), a copper T-380 IUD was fitted into the uterine cavity at the end of the hysteroscopic surgery which stayed in situ until the third look hysteroscopy (scheduled 3 months after the initial hysteroscopic surgery), when it was removed. The presence of the coil in the cavity did not interfere with the assessment of adhesions or removal of adhesions during the second look hysteroscopy. In Group III (Balloon group), a 16-f Foley catheter was placed in the uterine cavity under abdominal ultrasound guidance and the balloon filled with 4 ml of normal saline. The balloon catheter was removed five days after surgery. In Group IV (control group), subjects did not receive hormone therapy, nor did they had IUD or Foley balloon fitted at the end of the hysteroscopic procedure.

Second look and third look hysteroscopy

The second look and third look hysteroscopy have been performed as routine procedures in our center for over 10 years following hysteroscopic adhesiolysis or transection of septum. The procedure was carried out as an outpatient procedure with the use of vaginoscopy or no touch technique, that is, the introduction of the hysteroscope into the vagina, cervix and uterine cavity without prior digital vaginal examination, speculum or any instrument applied to the cervix. No anesthesia or analgesia was required. A 30° 3.1-mm-hysteroscopy was used, with an outer sheath diameter of 4.5 mm (Olympus, Germany). The distending medium used was 0.9% saline solution, at a distention pressure of 100 mmHg. The second look hysteroscopy was carried out 4 weeks after the initial hysteroscopic surgery whereas the third look hysteroscopy was carried out 3 months after the initial hysteroscopic surgery. If adhesions were noted at the time of the second look or third look hysteroscopy, they were divided at the same time either with the tip of the hysteroscopy or scissors.

Outcome measure

During the second-look and third-look hysteroscopy, the extent and severity of adhesions, if any, was evaluated according to the scoring system proposed by the American Fertility Society [7].

Statistical analysis

The SPSS 11.5 statistical software was used for to analyze the clinical data. Data which are normally distributed were compared with independent *t* test or analysis of variance. Data which are not normally distributed were compared with non-parametric tests. Contingency table analysis was used for comparison of categorical variables. A p value of <0.05 was considered as statistical significant.

Results

The demographic details of the four groups of subjects are summarized and compared in Table 1.At the second look hysteroscopy, the incidence of intra-uterine adhesion was found to be 22.0%, 28.8% 26.7% and 24.1%, respectively in Groups I, II, III and VI (Table 2). There was no significant difference in both the incidence and severity of adhesions (as measured according to the AFS scoring system) between the groups. In general, the adhesions were filmy ones over the site of the transected septum (Figure). In addition, in the majority of cases, the endometrium had grown over the site of the transection which appeared to have well healed. In some subjects, there was incomplete epithelialization. During the examination, any adhesions formed over the previous surgical site were separated.

At the third look hysteroscopy, the site of previous surgery had completely healed in all cases. The incidence and adhesion score at the third look hysteroscopy in the 4 groups of subject were compared in Table 2. Among all 4 groups, the incidence of adhesion at the third look hysteroscopy was significantly lower than that observed at second look hysteroscopy ($p < 0.05$). There was no difference between the groups. Among the patients in Group I, three subjects exhibited features of polypoid hyperplasia. In one subject in Group II, fibrous, membrane-like adhesions were noted over one arm of coil.