

## **Clinical efficacy of hysteroscopic surgery combined with extensive care by professional nursing teams in the treatment of patients with intrauterine adhesions.**

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### **Abstract**

**Patients with intrauterine adhesions may exhibit serious medical problems such as infertility and miscarriage. In this study, we aimed to evaluate the clinical efficacy of hysteroscopic surgery combined with extensive care during the preoperative, intraoperative and postoperative phase of the procedure by professional nursing teams in the management of patients with intrauterine adhesions. 98 patients with intrauterine adhesions enrolled from October 2013 to June 2016 were randomly divided into a control group (49 cases) who received drug therapy and an observation group (49 cases) who underwent hysteroscopic surgery combined with extensive care during the preoperative, intraoperative and postoperative phase of the procedure. Our data showed that the conception rate in observation group (85.7%) was significantly higher than that of control group (59.2%) ( $P=0.033$ ). Additionally, the abortion rate (0.0%) and the incidence of postoperative complications (8.2%) in the observation group was significantly lower than those in the control group (3.4% and 8.2%) ( $P<0.05$ ). Moreover, satisfaction scores in observation group (100%) is significantly higher than that in the control group (81.6%) ( $P=0.026$ ). Furthermore, there is significant less anxiety or depression in the observation group than in the control group ( $P<0.05$ ). Together, we find that hysteroscopic surgery combined with extensive care during the preoperative, intraoperative and postoperative phase of the procedure by professional nursing teams considerably improve the clinical outcomes of patients with intrauterine adhesions.**

**Keywords:** Asherman's syndrome, Intrauterine adhesion, Hysteroscopy, Pregnancy.

*Accepted on February 22, 2018*

### **Introduction**

Intrauterine Adhesion (IUA), also known as Asherman's syndrome, is a common gynecological condition in which injuries to the endometrial membrane lead to partial or complete occlusion of the uterine cavity [1]. 91% of intrauterine adhesions occur as a complication of abortion and curettage [1,2]. Additionally, endometrial tuberculosis is also an important cause of IUA [2]. Patients with IUA may experience pelvic pain, reduced menstrual bleeding or amenorrhea, infertility and miscarriage [3].

Surgical removal of intrauterine adhesions with hysteroscopic guidance is the main treatment modality for patients with IUA [4-6]. Following removal of the adhesions, temporary placement of a device, such as a plastic catheter, inside the uterus is also recommended to keep the walls of the uterus apart, thereby preventing the reformation of adhesions [5]. Moreover, it has been reported that hormonal treatment with estrogen is frequently prescribed after surgery to reduce the chance of reformation of adhesions [5,6].

In this study, we aimed to assess the clinical efficacy of hysteroscopic surgery combined with extensive care during the preoperative, intraoperative and postoperative phase of the procedure by professional nursing teams in the treatment of patients with intrauterine adhesions. We compared the pregnancy and abortion rate, the incidence of post-treatment complications, post-treatment satisfaction scores and incidence of anxiety or depression between the control and observation groups. Our findings may provide important guidelines for the management of IUA patients in the future.

### **Subjects and Methods**

#### **Patients**

Ninety eight patients with intrauterine adhesions were enrolled in the Minimally Invasive Intervention Center of our hospital from October 2013 to June 2016. Patients were randomly assigned using a computer-generated randomization number to a control group (49 cases) who received drug therapy and an observation group (49 cases) who underwent hysteroscopic surgery combined with extensive care during the preoperative,

intraoperative and postoperative phase of the procedure as described in more details below.

In the control group, the patients received drug therapy and routine care and were also instructed to maintain a balanced diet and hygiene particularly in the vagina area. By comparison, in the observation group, the patients underwent hysteroscopic procedures combined with extensive care as follows. (1) Preoperative care: patients with intrauterine adhesions are provided with instruction information about the hysteroscopic procedures as detailed in the next section to relieve their anxiety or stress, since most patients are concerned about the efficacy and safety of the operation. In the meantime, the vaginal areas were disinfected with 0.5% povidone-iodine scrub and the cervix was softened with misoprostol before surgery. (2) Intraoperative care: Extensive care was taken to prevent air embolism and patients' conditions were carefully monitored during the surgery. (3) Postoperative care: The amount of vaginal bleeding and secretions was closely monitored. Pads were worn to maintain the cleanliness of the vulva area. Additionally, postoperative intrauterine injection of sodium hyaluronate was used to prevent bacterial infection. Estrogen, diethylstilbestrol and medroxyprogesterone was also prescribed to promote endometrial proliferation and prevent the reformation of adhesions [5,6]. (4) Guidance after discharge was given to maintain genital cleansing, refrain from sexual activity and continue to take estradiol valerate for three months.

Written informed consents were obtained from all patients and this study was approved by the Ethics Committee of the Institutional Review Board.

### **Hysteroscopic procedures**

Before surgery, the patients received ultrasound examinations and blood and urine testing. All hysteroscopic procedures were performed under general anesthesia with the patients in the lithotomy position. Following the disinfection of vulva and vaginal areas, the uterine cavity was distended with a 5% GS solution. Hysteroscopy was then slowly advanced into the uterus after the air between the outer sheath and the optical channel of the hysteroscopy was released. After the intrauterine adhesions were located, minimally invasive surgery was then conducted to remove the adhesions and restore the normal shape of the uterus. Meanwhile, estradiol valerate and progesterone were given to the patients to promote the recovery of the endometrium [4,6].

### **Patient follow-up**

The patients were followed up for 3-33 months. The two groups were compared in terms of pregnancy rates, abortion rates, postoperative satisfaction, the incidence of postoperative complications and degree of anxiety and depression using self-evaluation form (SAS) and depression self-assessment form (SDS) [7]. On a scale of 39 points, scores greater than 7 indicates no anxiety or depression; scores between 7 and 11

means mild anxiety or depression; scores greater than 11 indicates the presence of anxiety or depression [7].

### **Statistical analysis**

Quantitative data are expressed as mean  $\pm$  standard deviation. Difference between the control and observation groups was considered statistically significant when P value is less than 0.05. All statistical analyses were performed using SPSS17.0 software (SPSS Inc., Chicago, IL).

## **Results**

### **Patient characteristics**

Ninety eight patients with intrauterine adhesions were recruited to this study from October 2013 to June 2016. The patients ranged in age from 20 to 41 y with a mean age ( $29.1 \pm 3.2$  y). Among the patients, there were 73 patients with a history of reduced menstrual bleeding and 25 patients with amenorrhea. Additionally, 87 patients experienced dysmenorrhea, whereas the other 11 patients did not. In terms of pregnancy history, there were 19 cases of infertility and 79 patients with successful pregnancy in which 62 patients had a history of painless abortion and the other 17 patients exhibited no abortion history. The patients were randomly divided into the control group (49 cases) who received drug therapy and an observation group (49 cases) who underwent hysteroscopic surgery combined with extensive care during the preoperative, intraoperative and postoperative phase of the procedure. There is no significant difference in age and other demographic data between the two groups of patients ( $P>0.05$ ).

### **Pregnancy rates, abortion rates and patients' satisfaction scores**

We first compared the pregnancy rates, abortion rates and patients' satisfaction scores between the control and observation groups. As shown in Table 1, the pregnancy rate (85.7%) in the observation group is significantly higher than that in the control group (59.2%) ( $P=0.033$ ), whereas the abortion rate is significantly lower in the observation group (0.0%) compared with that in the control group (3.4%) ( $P=0.042$ ). Consistently, patients in the observation group (100%) is significantly more satisfied with the results than those in the observation group (81.6%) ( $P=0.026$ ).

### **Post-treatment complications**

We then examined the difference in the complication rates between the control and observation groups. Notably, patients in both groups experience varying degrees of nausea, vomiting, abdominal pain and bloating, back pain and vaginal bleeding. However, the overall complication rate is significantly lower in the observation group (8.2%) than that in the control group (18.4%) ( $P=0.043$ ) (Table 2).

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### A comparison of SAS and SDS scores between the control and observation groups

Next we compared the SAS and SDS scores between the two groups. As illustrated in Table 3, patients in the observation group exhibit significantly higher SAS (87.8%) and SDS (91.8%) scores that indicate no anxiety and depression, compared with those in the control groups (18.4% and 14.3%) ( $P<0.05$ ). In agreement with these data, the SAS and SDS scores that indicate mild to severe anxiety and depression are significantly lower in the observation group than those in the control group ( $P<0.05$ ) (Table 3).

**Table 1.** A comparison of pregnancy rates, abortion rates and patients' satisfaction (n, %).

Group	n	Pregnancy	Abortion	Satisfaction	Dissatisfaction
Observation	49	42 (85.7)	0 (0.0)	49 (100)	0
Control	49	29 (59.2)	1 (3.4)	40 (81.6)	9 (18.4)
P		0.033	0.042	0.026	0.039

n: number of cases; P: P value

**Table 2.** The complication rate in the control and observation groups (n, %).

Group	n	Vaginal bleeding	Nausea and vomiting	Abdominal and back pain	Bloating	Incidence
Observation	49	1 (2.0)	2 (4.1)	1 (2.0)	0 (0.0)	4 (8.2)
Control	49	2 (4.1)	4 (8.2)	2 (4.1)	1 (2.0)	9 (18.4)
P		0.32	0.221	0.263	0.179	0.043

n: number of cases; P: P value

**Table 3.** A comparison of SAS and SDS scores between the control and observation groups (n, %).

	Group	n	No anxiety	Mild anxiety	Anxiety
SAS	Observation	49	43 (87.8)	5 (10.2)	1 (2.0)
	Control	49	9 (18.4)	21 (42.8)	19 (38.8)
SDS	Observation	49	45 (91.8)	3 (6.1)	1 (2.0)
	Control	49	7 (14.3)	27 (55.1)	16 (32.6)

n: number of cases; SAS: self-evaluation form; SDS: depression self-assessment form

## Discussion

In recent years, abortion rate has been increasing gradually, resulting in the increase in the incidence of IUA year by year

[8]. IUA not only affects the physical health of patients, but also cause psychological changes, including anxiety and depression and even lead to infertility [1,3]. With the rapid development of modern medical technology, minimally invasive techniques such as hysteroscopic surgery have become increasingly popular [9,10]. Hysteroscopy has allowed us to clearly view and detect the pathological changes in the uterine cavity and subsequently perform minimally invasive and incredibly safe procedures that cause minimum trauma and bleeding. It has offered great benefits in the treatment of gynecological diseases including intrauterine adhesions [10,11].

As the preferred option for treatment of intrauterine adhesions, hysteroscopic surgery requires highly skilled medical personnel to operate [12-14]. Intriguingly, in this study, our findings showed that extensive care during the preoperative, intraoperative and postoperative phase of hysteroscopic surgery by professional nursing teams helps to keep the patients in a relaxed mood and considerably improve the recovery of the patients, which significantly increases pregnancy rate and reduces abortion rates and other post-treatment complications.

It is worth noting that this study was conducted in a single center. In our study, all hysteroscopic procedures were carried out by professional teams with more than 5 years of experience in these techniques and extensive care expertise in managing patients with IUA. Additionally, the patients enrolled in this study are Chinese women. Thus, it will be very interesting to extend these findings to other centers and different ethnic populations in future studies with larger sample sizes.

Taken together, our data demonstrated that hysteroscopic surgery combined with extensive care during the preoperative, intraoperative and postoperative phase of the procedure by professional nursing teams substantial improves the clinical outcomes of patients with IUA. These findings may provide valuable insights into the management of IUA patients in the future.

## Conflicts of Interest

The authors have no conflicts of interest to declare regarding this article.

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