The Retrospective Analysis on the Influence of Taking Mifepristone and Misoprostol During First-trimester Pregnancy and Its Following Impact on Tissue Residual After Induced Abortion

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Abstract

Objective: To explore the application of mifepristone in the stream of Residual tissue after abortion .

Methods: A retrospective study of 1067 women who selected induced abortion in first-trimester pregnancy(gestational age ≤ 70 days) between January 1st 2018 and May 31st 2019 in Chongqing Health Center For Women and Children . Inclusion criteria: the first pregnancy patients, aged 18-30 years, gestational age ≤ 70 days. Test group (mifepristone + misoprostol) 467 cases. Control group(misoprostol) 600 cases. Analyzing the incidence of residual tissue after induced abortion. Evaluating the preventive effect of preoperative oral mifepristone on abortion incompleteness.

Results: a total of 9 in test group occur residual tissue in uterine cavity，the incidence is 1.93%. In the controlled group, the number of residual tissue is 25,the incidence is 4.16%(P<0.05)，there was statistic difference between two groups. The uterine residue diameter in the test group(1.1±0.31cm) was lower than that in the control group(1.24±0.64cm)，but there was no statistical difference between the two groups of residue diameter (P>0.05)

Conclusion: Oral mifepristone before operation can significantly reduce the incidence of tissue residual after induced abortion.

Introduction

Induced abortion is a common way to terminate pregnancy. one of great side effects of induced abortion is tissue residual in uterine cavity, which may cause abnormal uterine bleeding, endometritis[1]. To remove the tissue from uterine, some people need a second curettage or hysteroscopy. Endometrium gets injured,and significantly increase the rate of Intrauterine adhesion[2]. It brings serious psychological burden to women, which has a deadly influence on reproductive health, especially for the people who never gives birth. Researches show oral mifepristone after operation can reduce the incidence of tissue residual. There have been no reports on the effects of oral mifepristone before operation on tissue residue after induced abortion[3]. In clinic, we find some people who may take mifepristone and misoprostol, while others might take misoprostol before operation alone. We compared the efficacy of pretreatment with mifepristone followed by treatment with misprostol with the efficacy of misoprostol used alone for early pregnancy., Observing the influence of oral mifepristone preoperative on the rate of uterine residue. To analyze the difference of tissue residual between two groups, we selected the people who decided to terminate pregnancy in Chongqing Health Center For Women and Children from January 1st 2018 to May 31st 2019, all of the people are first pregnancies, the reason for terminating pregnancy is not to continue it, Not because of any other disease.

Material And Method

1.1 Study design

A retrospective cohort study was conducted in the Department of Family planning division, Chongqing Health Center For Women and Children, with approval of the institutional ethics committee. 1067 patients were selected who terminated pregnancy between January 1st 2018 to May 31st 2019 in Chongqing Health Center For Women and Children. Data were collected from medical record of the patients. Collected data including the age, gestational age, postoperative ultrasound report and diameter of the residual .

Exclusion criteria

Preoperative color ultrasound indicated uterine malformations, uterine fibroids, adenomyoma and uterine septum; Patients who are not pregnant for the first time. Patients with internal diseases(Including diabetes, hypertension, thyroid diseases, endocrine diseases and cardiovascular disease). We excluded participants for any of the following reasons: allergy or contraindication of mifepristone and misoprostol and with history of smoking or drinking.

Inclusion criteria

All the patients were pregnant for the first time, aged from 18 to 35, gestational age from 6 to 10 weeks, no abnormalities in routine examination of leucorrhea, blood routine, immunity and electrocardiogram before operation. Take mifepristone and misoprostol In test group,467 people were included. Take misoprostol alone In controlled group, including 600 people. The average age of test group is 20.5±1.21(year)the controlled group is 21.2±1.37(year)(P>0.05). Gestational age in test group is 53.6±5.2 daysthe controlled group is 52.4±5.4 days (P>0.05). There were no statistical difference between the two groups in average age and gestatinal age .(Table 1)

Table 1

Comparison of characteristics on test group and control group

Groups	Cases(n)	Average age(Year)	Gestational age(Day)
Test Group (mifepristone + misoprostol)	467	20.5±1.21	53.6±5.2
Controlled Group (misoprostol)	600	21.2±1.37 P>0.05	52.4±5.4 P>0.05

1.2 Methods

The test group was given 150 mg mifepristone the day before operation ,75 mg bid orally, 600 mg misoprostol was taken orally half an hour before operation, According to directions the Misoprostol is absorbed rapidly by oral administration and can be completely absorbed after 1.5 hours. The controlled group received oral misoprostol 600 mg only half an hour before operation. Two attending physicians

performed all operations and patients were randomly assigned. All operations were performed under intravenous anaesthesia by using propofol.

1.3 Statistical indicators

All patients take preoperative ultrasonography to evaluate the gestational age, Ultrasound was performed 7 to 10 days after abortion to check if there was any residual tissue in uterine cavity. The size of residual tissue in patients was also counted.

1.4 Statistical analysis

Statistical analysis was performed using SPSS: package 22 edition. To test the statistical signifcance, the χ2 test or T test is used. T-test is used for comparison of measurement data, χ2 test is used for counting data. P

Results

The test group was given 150 mg mifepristone and 600 mg misoprostol, In the retrospective data, 467 cases were matched with the inclusion criteria performed before, and 9 people had tissue remnants, the incidence is 1.93%。The controlled group was given 600 mg misoprostol only, 600 cases accorded with the inclusive criteria, and 25 people had tissue remnants, the incidence is 4.16 %。The incidance of residue tissue in the group of oral mifepristone and misoprostol before operation was significantly lower than that in the group of misoprostol. Significant difference between the two groups ($P < 0.05$), with statistical significance(Tabel 2). The diameter in test group is 1.1 ± 0.31cm, while in controlled group is 1.24 ± 0.64cm。There was no statistical difference between the two groups ($P > 0.05$).(Tabel3)

Table 2

Incidence of tissue residue in test group and control group after artificial abortion

Groups	Cases(n)	Tissue Residual Rate(n/%)
Test Group (mifepristone + misoprostol)	467	9(1.93)
Controlled Group (misoprostol)	600	25(4.16)
P	< 0.05	
χ^2	4.27	

Table 3

Tissue residual size in test group and control group after artificial abortion

Groups	Cases(n)	Diameter of Tissue Residual (χ±S)
Test Group (mifepristone + misoprostol)	9	1.1 ± 0.31cm
Controlled Group (misoprostol)	25	1.24 ± 0.64cm
P	> 0.05	
t	1.1	

Discussion

Mifepristone and misoprostol are now jointly used in the termination of first early first-trimester pregnancy,The use of adjuvant mifepristone and misoprostol in conjunction with osmotic dilators has been studied for this purpose, and their using demonstrates that adequate cervical dilation can be achieved in less time than with dilators alone. We always use Misoprostol to dilate the cervix, and Misoprostol can induce cervical softening, reduce adverse reactions caused by dilation, and reduce iatrogenic cervical injury on operation[4]. The combination of Mifepristone and misoprostol has been proved more effective than using misoprostol alone. Mifepristone, synthetic 19-norsteroid, blocks the receptor of progesterone and weakens the progesterone function□acting as a contraceptive drug at the level of the decidua[5]. Mifepristone produces its actions both by modulating progesterone action (as a progesterone receptor antagonist or partial agonist) and blocking the glucocorticoid receptors (GR). Blocking the glucocorticoid receptors can increase the sensitivity of the uterus to prostaglandins[6]. Mifepristone increase the expression of MT1-MMP and activation of proMMP-2 in cultured endometrial stromal cells[7]. The decidual cells were denatured and necrotic, the extracellular matrix of the decidual was dismembered, and the decidual and villus tissues were exfoliated[8]. Studies suggest that mifepristone increases the expression of CLs in the decidua, and it provides new insights into the immunologic function of mifepristone as a drug used for pregnancy termination[9].

One of the most serious surgical complications of induced abortion is tissue residual in the uterine cavity, which may cause irregular bleeding for a long time ,and it also the reason why intrauterine infection occurs□which has a terrible effect on women’ s reproductive health[10]. Postoperative residual on traditional treatment is curettage again, reoperation is difficult because the tissue is tightly attached to the wall of the uterus. Some people choose hysteroscopy to remove the residual tissue in the uterine cavity[11]. The reoperation is both physically and mentally traumatic for the patient. Regression analysis results showed significant difference between mifepristone and misoprostol on the influence of residual. In this study, we found that for patients who might undergo an abortion for the first time, preoperative oral mifepristone and misoprostol can be a good option to reduce the incidence of tissue residue after

abortion. We strongly recommend patients to take oral mifepristone and misoprostol before induced abortion.

Abbreviations

MT1-MMP: type-1 matrix metalloproteinase; MMP-2：matrix metalloproteinase-2

Declarations

I confirm that the manuscript has been submitted solely to this journal and is not published, in press, or submitted elsewhere. The authors report no conflicts of interest. The authors alone are responsible for the content and the writing of this article.

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