

Analysis on the Outcome of Tubal Interstitial Pregnancy after Partial Cornual Resection

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[Abstract]

Objective: To investigate the safety of re-pregnancy after partial cornual resection for tubal interstitial pregnancy. **Methods:** The clinical data of 22 cases of re-pregnancy after partial cornual resection from November 2013 to June 2019 were retrospectively analyzed, the operation condition, re-pregnancy outcome and neonatal outcome were analyzed. **Results:** 18 of the 21 cases were tubal interstitial pregnancy, the re-pregnancy interval was 6-36 months, the median delivery time was 17.4 months, the median delivery time was 36 weeks (28-41⁺²W), there was 2 cases of birth weight <2500 g. The remaining 4 cases were interstitial heterotopic pregnancy, the median delivery time was 36 weeks (32⁺⁴-38⁺²W), there was 1 case of birth weight <2500g. Of the 22 patients, 21 were delivered by cesarean section and 1 was vaginal delivery, all the newborns survived. There were no cases of rupture of uterus, adhesion or implantation of placenta at uterine horn. **Conclusion:** The patients with tubal interstitial pregnancy after standard partial cornual resection have a good outcome of re-pregnancy.

[Keywords] tubal interstitial pregnancy; partial cornual resection; uterine rupture; placental implantation

Tob Regul Sci.™ 2021;7(5): 1865 - 1877

DOI: doi.org/10.18001/TRS.7.5.108

The occurrence site of tubal interstitial pregnancy is tubal interstitial part, close to the uterine horn, and its incidence is 2-4% of all ectopic pregnancies^[1]. This rare ectopic pregnancy often occurs after resection of ipsilateral tubal pregnancy or after in vitro fertilization-embryo transfer (in vitro fertilization and embryo transfer, IVF-ET. Williams labor science defines angle implantation as the embryo is located above the side of the normal uterine cavity. Hysteroscopy can detect pregnancy or partial pregnancy in the upper side of the uterine cavity, while tubal interstitial pregnancy cannot see pregnancy in the uterine cavity^[2]. Once the tubal interstitial pregnancy ruptures, it is very easy to appear a large amount of abdominal bleeding in a short period of time, endangering the life of the patient, and surgery is the main means to deal with tubal interstitial pregnancy. Laparoscopic or laparotomy of the affected side of salpingectomy and partial hysterectomy or uterine angle incision of embryo extraction, this part of the patient's subsequent pregnancy risk increased, mainly for uterine rupture at the uterine angle risk, scar placental adhesion and placenta accreta risk. At present, there are few studies on this aspect. This study analyzes the safety of

tubal interstitial pregnancy and the outcome of subsequent pregnancy, which provides a reference for clinical treatment of tubal interstitial pregnancy patients and their subsequent pregnancy management.

Information and methodology

General data collection of clinical data of tubal interstitial pregnancy surgery patients admitted in our hospital from November 2013 to June 2019, Among them, 22 patients with family planning and delivery in our hospital were followed up. Collect patient's basic information (age, pregnancy, history of fallopian tube surgery), Preoperative diagnosis of tubal interstitial pregnancy (preoperative B ultrasound, blood β -HCG), Operation condition (gestational weeks, operation mode, operation time, intraoperative bleeding volume), Re-pregnancy (interval of re-pregnancy, gestational weeks of delivery, mode of delivery, uterine rupture, placental adhesions or implantation, postpartum hemorrhage), Neonatal data (neonatal weight, neonatal 1 min and 5 min Apgar scores, admission to neonatal intensive care unit (Neonatal intensive care unit.); and (NICU)).

Inclusion of standard clinical diagnosis of tubal interstitial pregnancy patients; treatment for surgical treatment: partial hysterectomy or uterine horn incision embryo extraction; postoperative pathology confirmed villi; fertility planning and pregnancy at the same time in our hospital;

Exclusion of standard other parts of pregnancy: such as tubal isthmus pregnancy, tubal ampullary pregnancy, ovarian pregnancy; treatment for conservative treatment of patients, such as looking forward to observation, drug treatment; no re-birth plan patients;

Diagnostic criteria for tubal interstitial pregnancy B overdiagnosis^[3]. Pregnancy mass or gestational sac (Gestational sac, GS) is located in the interstitial part of the uterine horn, with or without fetal heart (Fetal heart rate, FHR), but is not continuous with the intima, the thickness of the surface myometrium ≤ 5 mm; the interstitial line sign can be seen, the fetal size is described by the head and hip length (Crown-rump Length, CRL), double top diameter (Biparietal diameter, BPD); MRI (nuclear magnetic resonance, MRI) diagnosis^[3,4] Pregnancy mass or gestational sac is located in the part of the uterine horn, at the same time is located outside the endometrial binding band, most pregnancy mass maximum diameter line is located outside the uterus; intraoperative diagnosis: pregnancy mass or gestational sac is located at the uterine horn, most of the interstitial process, the mass is located outside the round ligament;

Pregnancy diagnostic criteria IVF pregnancy: transplantation date plus 14 days; natural pregnancy patients: menstrual law according to menopause days, irregular menstruation combined with B excess calculation;

The statistical method uses the SPSS20.0 software to carry on the data analysis, the unit of measurement description is expressed by the median, the $P < 0.05$ is statistically significant.

Results

In general, the average age of 22 patients was 30.7 years (25-37 years), First conception mode IVF and natural pregnancy were 11 cases (50%), 13 cases (59.1%) were IVF pregnant again, A total of 2 new IVF patients underwent partial hysterectomy, One of them was 36 years old, Seven months apart, Because of fallopian tube + ovulation, Another 30- year-old patient, The second trimester is 16 months, The patient was not pregnant for more than one year, The reason of test tube is fallopian tube factor. Of the 22 patients, 18 were simple tubal interstitial pregnancy, the mean interval of re-pregnancy was 17.4 months (6-36 months), and the other 4 were intrauterine

with tubal interstitial pregnancy, continued pregnancy and delivery. The history of 18 patients with tubal interstitial pregnancy was shown in table 1.

All 22 patients underwent partial hysterectomy, Divided into laparoscopic Laparoscope, LSC) Partial resection of the inferior and the affected uterine angles, of these, 16 underwent laparoscopic surgery, Use energy instruments during the operation, such as ultrasonic knife, bipolar electrocoagulation. Open surgery, 6 cases. The operation was removed with a cold knife or electric knife. All 22 patients used absorbable suture to repair the affected uterine horn. Seniority: 4 chief physicians, 5 deputy chief physicians, attending 13.

18 patients with simple tubal interstitial pregnancy mean surgical gestational weeks 7^{+3} Week 5^{+2} - 16^{+5} The average time of operation was 83.3 min (35-155 min), of which 16 were pregnant⁺⁵The bleeding volume of the patients was 1000 ml, and the average bleeding volume of the remaining 17 patients was 61.8 ml (50-100 ml). There were 3 cases of rupture before operation and 5% of gestational weeks at the time of rupture⁺²Week- 6^{+2} 1000 ml-1500ml. bleeding during rupture

The average bleeding was 1100 ml (500-2300 ml), and the main symptoms before rupture were abdominal pain. Of these, 2 were 9 weeks and 14⁺⁶The early pregnancy B ultrasound only indicated intrauterine pregnancy, but not the interstitial mass of uterine horn. In the later stage, due to "lower abdominal pain" emergency treatment, preoperative reexamination B ultrasound showed ectopic pregnancy mass and pelvic effusion. Intraoperative confirmation of tubal interstitial pregnancy rupture.

Of 22 patients with complications during pregnancy, 11(50%) underwent B ultrasound and MRI screening for placenta accreta. B ultrasound and MRI did not indicate placenta accreta. Of the 22 patients, 21 had cesarean section delivery, and no placental adhesion and implantation were found in the uterine angle. No uterine rupture and postpartum hemorrhage occurred in 22 patients.

11(50%) of the 22 patients during the gestational week of delivery and neonatal outcome underwent B hyper monitoring of the thickness of the myometrium of the horn, Monitoring gestational weeks and follow-up nodes were not uniform. One of 18 patients with tubal interstitial pregnancy was vaginal delivery at 28 weeks of gestation due to "cervical dysfunction, 4 h 30min, Total production 1095 g, birth weight Stay in our hospital NICU treatment survival. The remaining 17 patients were delivered by cesarean section, 36% average gestational week⁺⁶Week 34^{+5} - 41^{+2} weeks), 9 cases (52.9%) giving birth before 37 weeks were due to premature rupture (Premature rupture of membranes,%) of the membranes in the gluteal position PROM : 1 case, 2 cases of threatened premature delivery ,6 cases of selective cesarean section (2 cases of twins); One pregnancy in 17 patients⁺⁶The birth weight of two-child newborns is 2105/2045 g, and the birth weight of more than 2500 g. in NICU, infants

Table 2 shows the Clinical data of 4cases of interstitial heterotopic pregnancy. Among 4 patients with intrauterine pregnancy with interstitial pregnancy, 1 pregnancy was 14⁺⁶Patients who underwent partial hysterectomy continued pregnancy after surgery and followed up on the thickness of myometrium at the uterine horn due to ultrasound⁺⁴The birth weight of premature infants was NICU. g,1995 Another 3 patients gave birth 36-38⁺²All newborns weigh more than 2500 g. per week.

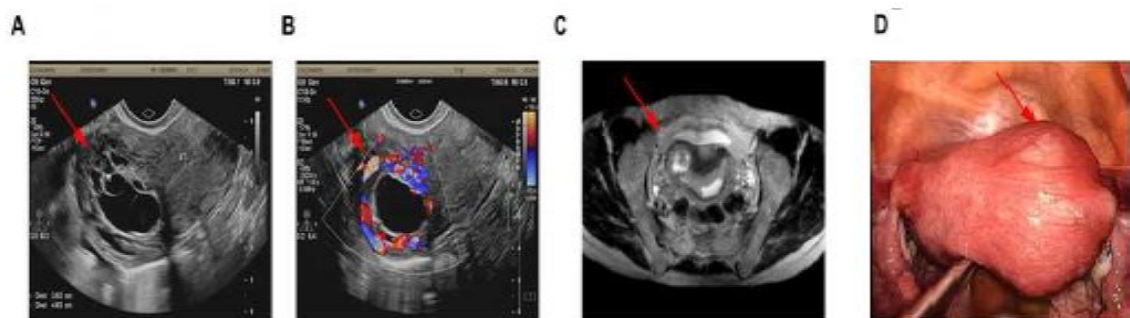


Figure 1. Imaging and laparoscopic tubal interstitial pregnancy

As seen in Figure 1, it shows the Imaging and Laparoscopic manifestations of tubal interstitial pregnancy. The picture A shows the bultrasound of the interstitial mass; the picture B shows the abundant blood flow around the mass; the picture C shows the MRI of the interstitial mass; the picture D shows the interstitial mass under laparoscope.

Table 1. History of 18 patients with tubal interstitial pregnancy

Cas e	Age (year)	Mode of conception	Birth history	Previous tubal surgery	Gestational age at operation	B-ultrasound	β-HCG (mil/ml)	Operation	Mode of re conception	Gestational interval (months)	Delivery weeks	Neonatal outcomes (weight and apagar)
1	35	IVF	0-0-1-0	Bilateral fallopian tube occlusion	9W	Left paraovarian mass 5cm (CRL :7mm)	16676.3	LSC-left partial cornual resection	IVF	16	35+1W	2845 g 10-10
2	32	IVF	0-0-3-0	Bilateral salpingectomy	6W	Right cornual mixed mass 2cm	6526.4	Right partial cornual resection	IVF	26	37W	g 2880 10-10
3	31	Natural	1-0-2-1	None	6+2W	Right cornual mixed mass 4cm	14907.9	LSC-right partial cornual resection and right salpingectomy	Natural	22	34+5W	g 2800 9-10
4	28	IVF	0-0-1-0	Bilateral salpingectomy	7W	Left cornual mixed mass 4cm (GS 7*8*9mm)	6805	LSC-right partial cornual resection	IVF	16.5	37+5W	g 3055 10-10
5	37	IVF	0-0-0-0	Bilateral fallopian	16+5W	The right cornual eminence 6cm	/	Right partial cornual resection and bilateral	IVF	16	36+5W	g 3070 10-10

				tube occlusion		(BPD 37mm, FHR +)		salpingectomy				
6	25	Natural	0-0-3-0	None	6W	Right cornual mixed mass 3cm (CRL 2 mm, FHR-)	13475	LSC-right partial cornual resection and right salpingectomy	Natural	19	34+6W	g 2575 9-10
7	29	IVF	0-0-2-0	None	6W	Right cornual mixed mass 3cm (CRL 6 mm, FHR +)	12203	LSC-right partial cornual resection and right salpingectomy	IVF	9	36W	g 2506 10-10 g 2600 10-10
8	27	Natural	0-0-1-0	None	10W	Light cornual mixed mass 4cm	4205	LSC-left partial cornual resection and left salpingectomy	Natural	14	35+2W	g,2660 10-10
9	32	Natural	1-0-1-1	None	9+3W	Light cornual mixed mass 2cm	4420	LSC-left partial cornual resection and left salpingectomy	Natural	36	37W	g 3225 10-10
10	35	Natural	0-0-1-0	None	7W	Right cornual mixed mass 2.5cm (FHR +)	7758	LSC-right partial cornual resection and right salpingectomy	Natural	6	38W	g 3070 10-10
11	32	IVF	1-0-0-1	None	6W	Right cornual mixed mass 3cm (FHR +)	7635.9	LSC-right partial cornual resection and right salpingectomy	IVF	7	34+6W	g 2105 10-10 g /2045 10-10
12	28	Natural	0-0-0-0	None	7W	Right cornual mixed	76386.2	LSC-right partial cornual	Natural	32	34+6W	g 2695

						mass 4cm (CRL 7 mm, FHR +)		resection and right salpingectomy				10-10
13	36	Natural	0-0-1-0	None	9W	Left paraovarian mass 2cm ,close to the uterus	2704.6	LSC-left partial cornual resection and left salpingectomy	IVF	7	39+4W	g 2645 10-10
14	28	Natural	0-0-4-0	Right salpingo tomy	6+2W	Right paraovarian mass 3cm (Yolk sac +)	19703	LSC-right partial cornual resection and right salpingectomy	Natural	28	39+4W	g 2800 10-10
15	30	Natural	0-0-1-0	None	5+2W	Right cornual mixed mass 2cm (GS4mm)	356.6	LSC-right partial cornual resection and right salpingectomy	IVF	16	38W	g 3300 10-10
16	30	IVF	0-0-1-0	Right salpingo tomy	5+2W	Right cornual mixed mass 6cm	5698	LSC-right partial cornual resection	IVF	19	41+2W	3920 g 10-10
17	29	Natural	0-0-0-0	None	7W	Right cornual mixed mass 2cm (GS 6mm)	6409	LSC-right partial cornual resection and right salpingectomy	Natural	13	36+4W	g 2940 10-10
18	28	Natural	0-0-2-0	None	7W	Right cornual mixed mass 2cm	7393.7	LSC-right partial cornual resection and right salpingectomy	Natural	11	28W	g 1095 5-8

Table 2. Clinical data of 4 cases of interstitial heterotopic pregnancy

Case	Age (year)	Mode of conception	Birth history	Previous tubal surgery	Gestational age of operation	B-ultrasound	Operation	Intraoperative blood loss	Rupture before operation	Delivery weeks	Neonatal outcomes (weight and Apgar)
1	34	IVF	0-0-0-0	Bilateral salpingectomy	5+3W	Intrauterine (FHR +), Right cornual mixed mass 3.5cm	Right partial cornual resection	300 ml	Yes, blood loss : 500ml	36W	g 2600 10-10
2	35	IVF	0-0-0-0	None	14+6W	Intrauterine (FHR +), Right pelvic cavity mixed mass 7cm	Right partial cornual resection and right salpingectomy	ml 200	Yes; blood loss : 2300ml	32+4W	g 1995 8-10
3	34	IVF	0-0-1-0	Left salpingectomy, Right fallopian tube occlusion	9W	Intrauterine (FHR +), Light cornual mixed mass 5cm	Left partial cornual resection	100 ml	Yes; blood loss : 1100ml	38+2W	g 2940 9-10
4	30	IVF	0-0-2-0	Right salpingectomy	5+5W	Intrauterine (FHR +), Left paraovarian mass 3.5cm	Right partial cornual resection	50 ml	Yes, blood loss : 500ml	37+3W	2900 g 9-10

Table 3. Causes of cesarean delivery in patients

Premature delivery			Term labor		
Delivery weeks	Causes of cesarean section	Thickness of cornual myometrium	Delivery weeks	Causes of cesarean section	Thickness of cornual myometrium
35+1W	Threatened preterm birth	35+1W 1.2mm	37W	Selective cesarean section	35W 2.4mm,36W 2.7mm
34+5W	Selective cesarean section	27W 4.5mm,34W3.5mm	37+5W	Selective cesarean section	37W 2.4mm
36+5W	Selective cesarean section	36+5W 3.3mm	37W	Fetal distress	36+5W 4mm
34+6W	Breech, PROM	34+4W 2.8mm	38+1W	Selective cesarean section	
36W	Twin pregnancy ,Selective cesarean section		39+4W	Parturition	
35+2W	Selective cesarean section	32W 3-4mm	39+4W	PROM	
34+6W	Twin pregnancy ,Selective cesarean section		37+6W	Selective cesarean section	
36W	Breech, Selective cesarean section	34W 4.1mm,35W3.2mm,36W 2.1mm	41+1W	Parturition	
36+4W	Threatened preterm birth	34W 3.3mm,36+4W 2.3mm	38+2W	Gestational hypertension, Selective cesarean section	
36W	Selective cesarean section		37+3W	Selective cesarean section	
32+4W	Selective cesarean section	26W 13.6mm,29W12.5mm,32W8.5mm			

Discussion

Safety of second pregnancy after partial hysterectomy

Uterine rupture risk at uterine horn Chi-Yuan 2017 etc^[5]. A total of 29 cases of tubal interstitial pregnancy were treated with absorbable suture during the operation, followed up to 10 cases of re-pregnancy, including 3 cases of uterine rupture, accounting for 30%, all of which occurred in patients with laparoscopic contralateral hysterectomy. Chi-Yuan and other studies showed that angle resection was a suture repair after removing all affected uterine angles. In this study, partial angle resection and intraoperative resection of weak muscle layer were performed, while normal tissue suture repair was retained as far as possible, which had less damage to uterine integrity. Selma 2009^[6]. In 53 cases of tubal interstitial pregnancy, of these, 33 underwent angioplasty, In 13 cases, seven separate salpingectomy, All 53 patients were sutured to repair the affected uterine horn. Ten patients were followed up again and delivered successfully. Of these, 5 were born naturally, 3 full term cesarean delivery, the other two gave birth in their country 24 weeks later, no cases of uterine rupture. The table 3 shows the causes of cesarean delivery in patients. The risk of uterine rupture after salpingectomy was studied, and the literature reviewed and studied that 8 patients with tubal resection had uterine rupture again, 4 of which were partial hysterectomy for tubal interstitial pregnancy, and electrocoagulation was used to stop bleeding at the uterine angle during operation without suture^[7]. The gestational week of uterine rupture was 24⁺2Week-30 weeks, the main symptoms of abdominal pain, often no sudden severe abdominal pain, short-term shock and so on. The other 4 cases had uterine rupture after salpingectomy, 3 of which had 38 weeks-38 weeks of gestation⁺3 Zhou, 1 case occurred postpartum. This study suggests that no suture is carried out after partial hysterectomy, uterine integrity injury is greater, uterine rupture gestational week is relatively early, and salpingectomy may cause slight damage to uterine angle. The muscle layer at the uterine angle is relatively weak and the rupture gestational week is relatively late. Jiang 2018^[8]. In 17 cases of intrauterine tubal interstitial pregnancy, 10 cases were treated by operation, 7 cases were partial angle resection, 3 cases were angle incision and embryo extraction, and 7 cases were followed up by cesarean section, except for one case in 35⁺4The remaining 6 cases were delivered 38 weeks -39 weeks gestation⁺2During the week, the birth weight of newborns exceeded 2500 g, and there were no cases of uterine rupture.

In this study, 16% of 18 patients with simple tubal interstitial surgery⁺5The diameter of the mass was 6 cm., the blood supply was abundant, the intraoperative bleeding was 1000 ml, and the affected uterine angle was repaired carefully during the operation, and the gestational week of pregnancy again was 36⁺5Week, another intrauterine with tubal interstitial pregnancy patients continue pregnancy and delivery, no uterine rupture. Combined with the above literature, it is shown that the treatment of uterine angle may be one of the main factors affecting uterine rupture.

Previous studies on placental adhesions at scar sites and risk of implantation suggest a low incidence of placental adhesions at scar sites after uterine leiomyoma^[9]. Whether it is necessary to screen for placental adhesions and implants during pregnancy is worth exploring. Placental implantation and adhesions were not found in 22 patients in this study, which may be the operation of tubal interstitial pregnancy. But studies have shown that uterine scarring is a high risk factor for placental adhesion and implantation^[10]. The risk of motherhood may be increased if not adequately prepared before delivery. The current pelvic MRI in placenta accreta screening rate is high, for tubal interstitial pregnancy surgical treatment patients, if the operation cannot be clear whether to enter the uterine cavity, it is recommended that pregnancy MRI screening placenta accreta.

Factors affecting the safety of pregnancy outcomes

The main surgical methods of tubal interstitial pregnancy were partial hysterectomy or hysterotomy^[11]. The advantage of partial hysterectomy is that it can completely remove ectopic pregnancy lesions and reduce the risk of persistent ectopic pregnancy after operation. The drawback is that it destroys the integrity of the uterus and may increase the probability of uterine rupture in pregnancy again. The hysterectomy only removed the interstitial pregnancy lesions of the uterine horn, which better preserved the integrity of the uterus, but the rate of persistent pregnancy was slightly higher than that of partial hysterectomy. For the pregnancy mass obvious external process, the

surface muscle layer is weak, even if the embryo is cut, it is necessary to trim the excess tissue for suture reinforcement. Partial hysterectomy does not mean that all prominent uterine angles need to be removed, but that part of the weak muscle layer can be removed to remove the contents. The purpose of the operation is to reduce uterine trauma and completely remove ectopic pregnancy lesions. For the retrospective study, 22 patients were followed up with partial hysterectomy. The average gestational weeks were more than 60% (11/18) cm, the surface myometrium was weak, the blood supply was abundant, and the bleeding was more. However, no matter what the operation, the normal tissue should be preserved as far as possible, less electrocoagulation and hemostasis should be used, the uterine angle should be reshaped by suture, and the wound should be matched as well as possible, which is beneficial to tissue healing.

In World Health Organization (World Health Organization, WHO)^[11], the duration of pregnancy interval is defined as the interval between birth and conception, that is, the interval between the pregnancy interval and the last live birth, while the short interval is 6-18 months \leq the pregnancy interval and the long interval is $>60-75$ months. Long and short intervals have adverse effects on mother and child. The pregnancy interval in this study was the interval between the pregnancy time and the last partial hysterectomy. The interval was mainly related to the risk of uterine rupture. Previous pregnancy intervals for the risk of uterine rupture, mostly based on cesarean section, less than 18 months of pregnancy interval increased the risk of uterine rupture^[12]For patients undergoing hysteromyomectomy, experts have suggested that tissue healing time should be three months, doubling the time, or six months, to consider a second pregnancy^[13]. In this study, 18 patients with tubal interstitial pregnancy had an average interval of 17.4 months (6-36 months). Of these, 5 were 6-12 months (27.8%), 6 cases (33.3 per cent), There were 7 cases (38.9%). In four other cases, after surgery, continue pregnancy to childbirth, among them, 3 cases had 36 weeks $>$ gestational week. So long as the residual layer is sutured, return to normal uterine form, under strict supervision, still safe for pregnancy.

Therefore, we suggest that for patients with simple tubal interstitial pregnancy, the uterine angle partial resection should be individualized according to the intraoperative conditions. If the intraoperative mass is small, the wound is small, and the incision at the uterine angle is shallow, the contraceptive time can be shortened appropriately, such as large mass, large wound and deep incision position. Of course, it is also necessary to combine the patient's family planning and age, rather than generalize. For intrauterine tubal interstitial pregnancy, most patients are IVF postoperative, pregnancy intention is urgent, intraoperative careful suture of the affected side of the uterine angle, postoperative close monitoring of the continuation of pregnancy can be tried, but need to do a good communication with patients, Such patients are advised to be transferred to a hospital with emergency cesarean section and neonatal rescue.

A study on the management of pregnancy re-pregnancy has shown that the risk of subsequent ectopic pregnancy may be increased in patients with a history of ectopic pregnancy. It is suggested that such patients should be B in time during the early pregnancy^[1]. In this study, there were 4 cases of intrauterine simultaneous pregnancy, including 2 cases of early pregnancy B excess only indicated intrauterine pregnancy, but missed tubal interstitial pregnancy, late rupture and bleeding dangerous life. It is suggested that patients with 2 embryos transplanted after IVF should also carefully explore the uterine horn and other parts of the uterus in the early pregnancy B despite the detection of intrauterine pregnancy.

For patients after partial hysterectomy, it is recommended to consult the surgical data of partial hysterectomy during pregnancy, to know the intraoperative situation and postoperative recovery, to perform partial hysterectomy for tubal interstitial pregnancy, not to penetrate the endometrium strictly, not to increase the risk of placenta accreta, but sometimes not to be fully recognized during the operation. Therefore, MRI evaluation of placenta accreta during pregnancy is recommended. Unlike patients with cesarean section, most cases of uterine rupture occur before labor^[7]. Even if there is no uterine contraction, spontaneous rupture can occur with the increase of gestational week due to the weakness of myometrium in the corner of the uterus. Therefore, the need for clinical monitoring of patients throughout the gestational week. For the choice of delivery mode, although studies have shown that some patients with partial uterine angle can give birth at full term^[6]. However, in view of the fact that partial hysterectomy is

similar to classical cesarean section and myomectomy, in order to avoid uterine rupture, cesarean section is recommended in the mode of delivery, and more research is needed in the future.

At present, on the opportunity of re-pregnancy after tubal interstitial pregnancy, some experts suggest that termination of pregnancy before delivery, it is recommended that 37 weeks after elective cesarean section can be considered. At present, there are few such studies. American Society of Obstetrics and Gynecology (The American College of Obstetricians and Gynecologists, ACOG)^[14]. It is suggested that for patients with previous hysteromyomectomy, if cesarean section is required, the gestational week of delivery is 36-39 weeks, and the number, depth and location of uterine myomectomy should be combined. If uterine integrity is seriously damaged, 36 weeks of cesarean section should be considered, such as uterine leiomyoma penetrating the intima, large wound, 37-38⁺⁶Perioperative cesarean section, such as uterine integrity is not significantly damaged, such as hysteroscopic mucosal myomectomy, uterine serous myoma, may consider vaginal delivery. In this study, one vaginal delivery patient was delivered 28 weeks due to "cervical dysfunction ", and the remaining 21 patients were delivered by cesarean section. In 17 cases, the average gestational weeks of cesarean section was 36⁺⁶Week 34⁺⁶-41⁺²The average gestational weeks for 4 intrauterine tubal interstitial pregnancies were 36 weeks (32⁺⁴-38⁺²weeks). Among the 22 patients ,11(50%) were B to monitor the thickness of the horn muscle layer in the third trimester, but the specific monitoring node and the node of termination of pregnancy were not uniform. The thickness of the horn muscle layer in selective cesarean section was not clear, and 1 case was 14⁺⁶Patients undergoing partial hysterectomy with tubal interstitial pregnancy were significantly thinner (26 W 13.6mm, 29W 12.5mm, 32W 8.5mm) due to B over-monitoring of the myometrium of the horn, at 32⁺⁴Zhou cesarean section delivery, neonatal birth weight of 1995 g, NICU, the patient's early termination of pregnancy is insufficient basis. At present, for the study of B super measurement of sarcomere thickness to predict the risk of uterine rupture, the thickness of sarcomere at the lower uterine incision is measured for people who try vaginal delivery again in the history of cesarean section. There are no guidelines recommended for clinical practice because of low specificity and sensitivity^[15]However, studies still suggest that the following segments have a higher risk mm, uterine rupture^[16].

In this study, the preterm delivery rate of the remaining 21 patients was 57.1% (12/21). In order to avoid the risk of uterine rupture, most patients were terminated by early cesarean section. Although the prognosis of newborns is good, premature infants are still at higher risk than full-term infants. Therefore, the choice of gestational weeks for termination of pregnancy should be combined with the previous partial hysterectomy and the complications of this pregnancy.

This study has some limitations. First of all, this study is a single-center retrospective study analysis, there are many influencing factors of bias, such as tubal interstitial treatment standard, surgeon qualification and pregnancy delivery time is not completely unified, the history data is not detailed, such as the description of uterine angle scar during cesarean section. Secondly, the sample size of this study is small.

To sum up, tubal interstitial pregnancy standard implementation of partial hysterectomy, as far as possible to retain the surrounding muscle layer, suture hemostasis reconstruction of uterine horn structure, and appropriate contraception, pregnancy outcome is better, but this study sample size is small, Still need large sample multi-center research clear.

Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

Conflicts of Interest

The authors declare that they have no conflicts of interest.

Acknowledgments

Project supported by scientific research program of Shanghai Health Bureau (no.2007y83).

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