

# Uterine Rupture During Labor in a Patient that Had Undergone Repetitive Uncomplicated Hysteroscopic Metroplasty

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Hysteroscopic surgery when performed by a well-trained hysteroscopic surgeon is a safe procedure with an overall complication rate of 3%, and the complications comprise uterine perforation, excessive hemorrhage, air embolus, pulmonary edema, excessive glycine absorption, and infection. After hysteroscopic septum resection, a remnant uterine septum might be visualized on control hysterosalpingography or control hysteroscopy. Kormanyos et al. observed a remnant uterine septum in 38% of patients after initial hysteroscopic metroplasty. In our case hysteroscopy was performed twice without complications. We used two different techniques in the same patient; the first involved a resectoscope with a unipolar electrode and the second involved a Versapoint with a bipolar electrode. Although these two operation types appear to be similar, hysteroscopic metroplasty with Versapoint is a safe and effective alternative to the operative resectoscope. Our case demonstrates a rare but dramatic complication of hysteroscopic metroplasty. Uterine perforation during hysteroscopic metroplasty is accepted as a risk factor for uterine rupture in pregnancy. The extensive enlargement of the uterus during pregnancy might be a reasonable cause of uterine rupture in patients that have undergone hysteroscopic metroplasty previously.

**Key Words:** Hysteroscopy, Metroplasty, Uterine rupture, Uterine septum

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Operative hysteroscopy has replaced abdominal metroplasty in many centers worldwide, with the correction of the septate uterus for improving reproductive outcome.<sup>1</sup> Hysteroscopic surgery when performed by a well-trained hysteroscopic surgeon is a safe procedure with an overall complication rate of 3%, and the complications comprise uterine perforation, excessive hemorrhage, air embolus, pulmonary edema, excessive glycine absorption, and infection.<sup>2-3</sup> Pregnancy wastage in women with recurrent abortions who underwent hysteroscopic resection of an intrauterine septum decreased postoperatively from 87.5% to 44.4%.<sup>4</sup> Uterine rupture is an uncommon complication of hysteroscopic metroplasty with an incidence of 1.5% and it may arise as a late complication during the third trimester of pregnancy.<sup>5-6</sup> The first case report of spontaneous uterine rupture during pregnancy following hysteroscopic septum resection with uterine perforation was documented by Halvorson et al.<sup>7</sup>

After hysteroscopic septum resection, a remnant uterine septum might be visualized on control hysterosalpingography or control hysteroscopy. Kormanyos et al. observed a remnant uterine septum in 38% of patients after initial hysteroscopic metroplasty.<sup>8</sup> A septal endometrium is unsuitable for implantation of the blastocyst.<sup>9</sup> Women with a remnant uterine septum have an increased chance of successful pregnancy with an improved obstetric outcome after normalization of the uterine cavity.<sup>8</sup>

We present a patient who underwent diagnostic laparoscopy with hysteroscopic uterine septum resection and a second procedure because of remnant septum, and experienced uterine rupture during labor.

## Case Report

A 29-year-old, gravid 2 para 0 woman was admitted to our center because of a 2-year history of infertility. Both of her spontaneous miscarriages had been around the 7<sup>th</sup> week of gestation. A full investigation showed no apparent cause for the miscarriages, except for a uterine septum that occupied two-thirds of the uterine cavity, which was diagnosed at hysterosalpingography. Laparoscopy for tubal patency and hysteroscopy for correction of the uterine septum were recommended to the patient. During laparoscopy, there was no re-

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markable pathology and both tubes were patent with methylene blue (Figure 1). Uterine septum was observed in hysteroscopy (Figure 2). The septum was resected using cutting diathermy. The resection continued until the level of the tubal ostia. The incision was stopped along the entire length of the septum as soon as myometrial muscle fibers became visible at the uterine fundus (Figure 3).

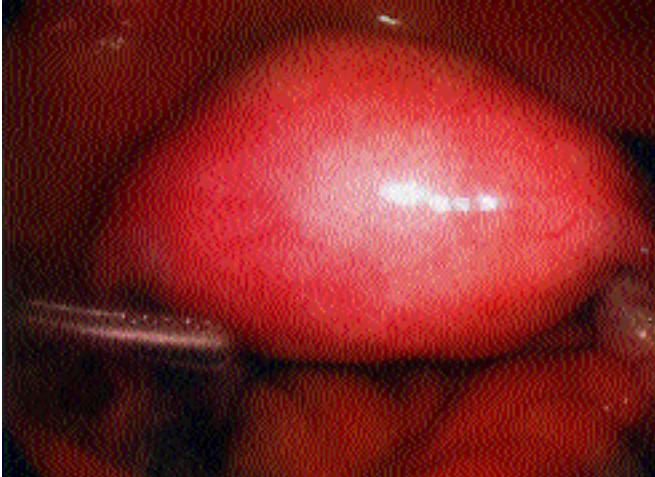


Figure 1:

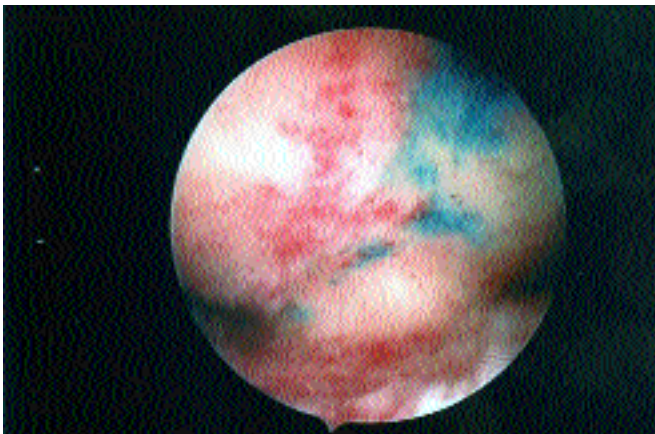


Figure 2:

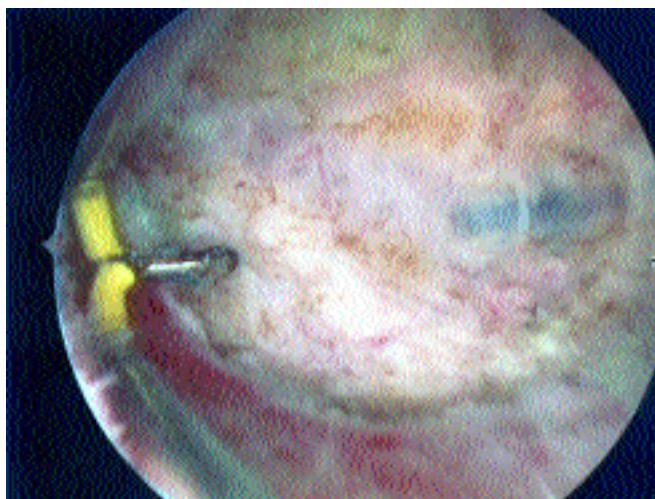


Figure 3:

Two months after hysteroscopic metroplasty, a control hysterosalpingography revealed that there was a remnant septum and a second procedure was performed by office hysteroscopy with Versapoint. During the second procedure, scar-like tissue in the uterine fundal cavity that was assumed to be related to the previous surgery was observed (Figure 4-5).

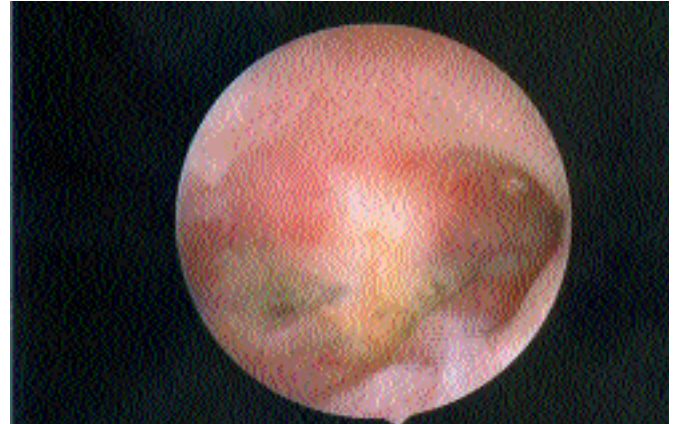


Figure 4:

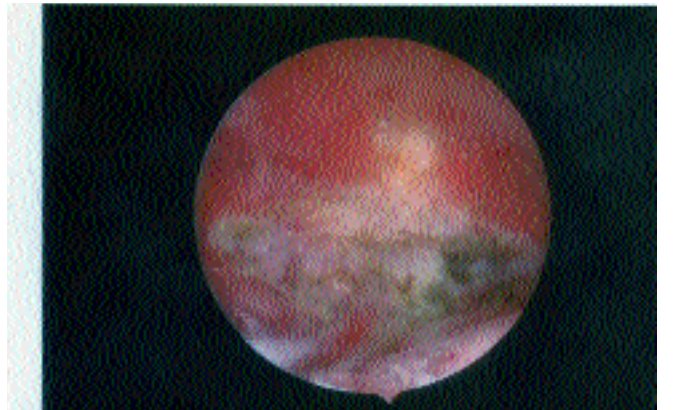


Figure 5:

The patient conceived 7 months after the second operation. During her pregnancy follow-up there was no abnormality. At the 39th week of gestation the patient was admitted to our center for normal vaginal delivery. At the time of admission, her vital signs were normal and stable with blood pressure 110/70 mmHg and heart rate 92/min, and her laboratory findings were within the normal ranges (Hb: 14.3 mg/dl WBC: 9690/mm<sup>3</sup> thrombocyte: 164000/mm<sup>3</sup>). NST was reactive. Epidural anesthesia (3 cc serum physiologic + 3 cc marcaine) was given as a bolus dose when the cervical opening was about 4 cm and effectiveness was 90%. A variable deceleration on NST was observed but quickly disappeared. During the second stage of labor, the patient complained of epigastric pain that was not too severe and could not be attributed to uterine contractions. Fetal bradycardia developed during the second stage of labor and a 3900-g live male baby was delivered by vacuum extraction. He had an Apgar score of 3 after 1 minute and 5 after 5 minutes. He was cyanotic and hypotonic.

The baby had bradycardia with no spontaneous respiration. The cord blood pH was 6.8. He was taken to the Neonatal Intensive Care Unit (NICU). Placental detachment had still not taken place 30 minutes after delivery, and so sedation was applied to the patient in order to allow manual removal of the placenta. At this point uterine rupture was detected and the patient underwent emergency surgery. Laparotomy through a Pfannenstiel's incision was performed and nearly three liters of blood was detected in the abdominal cavity.

A fundal tear 10 cm in length that extended from the left to the right uterine horn was observed (Figure 6). The ruptured myometrium was repaired in 2 layers with 1 vicryl. After abdominal lavage, a drain was placed in the abdominal cavity. Intraoperatively, her vital signs were close to normal; two units of erythrocyte suspension was given. The medio-lateral episiotomy was repaired at the end of the operation. During the postoperative period, Hb levels decreased to 7.7 mg/dl and one more unit of erythrocyte suspension was given. The postoperative period was uneventful and the patient was discharged 6 days after delivery. The newborn had seizures a few days after delivery; brain MRI and EEG were performed. Metabolic abnormalities were investigated but no reliable reason was detected. The seizures ceased after a week with medication. The baby was discharged in healthy condition 16 days after admission to the NICU.

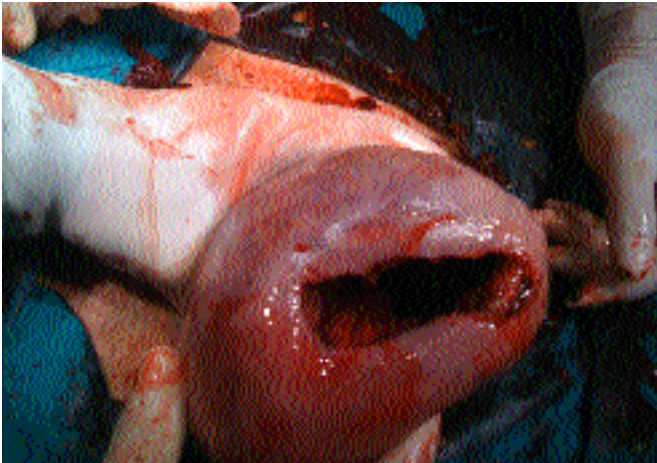


Figure 6:

## Discussion

Our case demonstrates a rare but dramatic complication of hysteroscopic metroplasty. Uterine perforation during hysteroscopic metroplasty is accepted as a risk factor for uterine rupture in pregnancy. In our case hysteroscopy was performed twice without complications. We used two different techniques in the same patient; the first involved a resectoscope with a unipolar electrode and the second involved a Versapoint with a bipolar electrode. Although these two operation types appear to be similar, hysteroscopic metroplasty with

Versapoint is a safe and effective alternative to the operative resectoscope.<sup>10-11</sup> We did not have a chance to evaluate which technique causes more thermal injury to the myometrium. Both types of electrode if used in the same patient might have led to more injury, which may have caused rupture during labor.

Hysteroscopic septoplasty significantly improved reproductive outcome in women with a history of spontaneous abortion.<sup>12</sup> Furthermore, another study suggested that the risk of preterm birth and other correlated complications in women with either a large or fairly common smaller uterine septum could be largely prevented.<sup>13</sup> Recently, one study evaluated the obstetric outcomes of hysteroscopic septum resection and showed that patients that had previously undergone hysteroscopic metroplasty for septate uterus were at increased risk for fetal malpresentation at term, low birth weight infants, and delivery by caesarean section.<sup>14</sup>

A deep incision into the myometrium weakening the fundus or an undiagnosed perforation have been reported as possible predisposing factors for rupture, and laparoscopic control is recommended as a diagnostic method.<sup>15</sup> In the first operation, we performed laparoscopy and did not detect a uterine perforation during hysteroscopy. During the second operation we used a Versapoint bipolar electrode and fundal perforation did not occur. Ultrasonography can be used as a guide that might be reasonable for resection of a remnant septum in order to prevent uterine perforation.

In our case, there was a relative uterine extension due to the 3900-g male baby. The extensive enlargement of the uterus during pregnancy might be a reasonable cause of uterine rupture in patients that have undergone hysteroscopic metroplasty previously. A previous myometrial scar such as from myomectomy is considered a risk factor for uterine rupture during spontaneous delivery. The increased caesarean section rate in patients with a history of previous hysteroscopic septum resection<sup>14</sup> should be kept in mind and it is reasonable to suppose that repetitive hysteroscopic septum resection might be considered as a myometrial scar. Therefore, caesarean section might be contemplated in patients with repetitive hysteroscopic metroplasty in selected cases with excessive uterine distension (multiple pregnancy, fetus large for gestational age, polyhydramnios etc.).

## Komplikasyonsuz Yinelenen Histeroskopik Metroplasti Ameliyatları Sonrası Doğum Esnasında Hastada Gelişen Uterin Ruptur

Histeroskopik cerrahi deneyimli cerrahların uyguladığı güvenli bir işlem olup uterin perforasyon, ciddi kanama, hava embolisi, pulmoner ödem aşırı glisin absopsiyonu ve enfeksiyon gibi toplamda %3 komplikasyon içermektedir. Histeroskopik septum

rezeksiyonu sonrası rezidü septum, kontrol histerosalpingografi ve kontrol histeroskopide görülebilmektedir. Kormanyos ve arkadaşları histeroskopik metroplasti sonrası rezidü septumun varlığının %38 olduğunu bildirmişlerdir. Bizim olgu sunumuzda, histeroskopi komplikasyonsuz olarak iki kez uygulanmıştır. Aynı hastada iki farklı histeroskopi uygulanmış olup, ilk histeroskopide unipolar rezektoskop ve ikinci uygulamada Versapoint kuullanarak septum kesilmiştir. Her iki yöntem birbirine benzer olsa da Versapoint ile uygulanan metroplasti daha güvenli olup operatif histeroskopiye iyi alternatiftir. Bu olgu sunumu nadir ancak dramatic bir histeroskopik metroplasti komplikasyonunu bildirmektedir. Histeroskopik metroplasti esnasındaki uterin perforasyon gebelikte uterin ruptüre için risk olarak kabul edilmektedir. Histeroskopik septum rezeksiyonu yapılmış vakalarda gebelik esnasında uterusun aşırı büyümesi uterin ruptüre için makul bir neden olabilmektedir.

**Anahtar Kelimeler:** Histeroskopi, Metroplasti, Uterin ruptür, Uterin septum

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