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Pregnancy outcomes after transvaginal myomectomy by colpotomy

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ABSTRACT

Objective: To examine long-term effects of transvaginal myomectomy by colpotomy on uterine ruptures, fertility and pregnancy outcome.
Study design: Transvaginal myomectomy by colpotomy was performed for sixteen patients who had symptomatic uterine leiomyomas and wished to preserve their fertility. Data on possible pregnancies, infertility treatments, hysterectomies and other reoperations during a follow-up period of ten years were retrospectively collected from the hospital records. Those who had no outpatient contacts in the hospital records were interviewed by telephone.
Results: Eight (50%) of the 16 patients tried actively to conceive and they produced 14 pregnancies: six of them had two pregnancies and two had one. The median interval between the transvaginal myomectomy and the first pregnancy was 17 months (range 14–68 months). All pregnancies were uneventful and ended in full-term delivery of a healthy infant. Uncomplicated vaginal delivery was recorded in 10 (71%), vacuum extraction in one (7%) and cesarean section in three (21%) out of 14 cases. Uterine rupture or heavy postpartal bleeding was not reported.
Conclusions: Pregnancies after transvaginal myomectomy by colpotomy were uneventful and no uterine ruptures were detected during a long-term follow-up. Pregnancy rates after the procedure appear to be similar to results after abdominal or laparoscopic myomectomy. Transvaginal myomectomy by colpotomy is a safe and feasible treatment option for selected patients wishing to preserve their ability to conceive.

1. Introduction

Uterine leiomyomas have a major impact on women's health, as they can cause significant morbidity, including heavy or prolonged menstrual bleeding, pelvic pressure or pain, and, more rarely, reproductive dysfunction [1]. As uterine artery embolization [2] and new mini- or non-invasive methods such as transvaginal temporary uterine artery occlusion [3] or MRI-guided focused ultrasound [4] are still under evaluation in the treatment of leiomyomas, surgery remains the cornerstone of treatment for these tumors. Hysterectomy serves as a terminal procedure, while myomectomy is the operation of choice for symptomatic women who desire to retain the potential for childbearing or for other reasons [5–7]. Abdominal myomectomy has been the traditional approach, but a variety of endoscopic alternatives, including laparoscopic, hysteroscopic and robotic surgery have come to be widely used in the removal of these tumors [8–10].

Transvaginal myomectomy by colpotomy is a feasible, safe procedure and is associated with short operating time and recovery, although only few reports have been published on the method [11–20]. There are no earlier studies in the literature concerning fertility after vaginal myomectomy. We have recently described our own modification of the technique involving extraction of the myoma and uterine fundus through colpotomy into the vagina by screw traction [17]. The aim of the present study was to establish the long-term effects of this method on uterine ruptures, fertility and pregnancy outcome.

2. Materials and methods

The study group comprised 16 patients who had symptomatic uterine leiomyomas and wished to preserve their fertility. Patients were consecutively operated during the period from January 2001 to August 2006 by the senior author at the Department of Obstetrics and Gynecology, University Hospital of Tampere, Finland. Oral informed consent was obtained from all subjects for the study. The study protocol was approved by the Ethics Committee of the University Hospital of Tampere. The design of this single-center study was retrospective. During the same period,

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68 patients underwent myomectomy at laparotomy and 11 patients myomectomy at laparoscopy.

The preoperative diagnosis of leiomyomata was reached after thorough preoperative pelvic examination and transvaginal ultrasound in all patients. The size and location of the myomas were examined to evaluate the patient's suitability for the operation. The inclusion criteria for vaginal myomectomy were anterior or posterior leiomyoma palpable upon vaginal examination, good uterine mobility, adequate vaginal access, well-delineated leiomyoma, and no adnexal pathology detectable in preoperative transvaginal ultrasound scanning. The diameter of a myoma suitable for traction myomectomy was estimated to be less than 10 cm. Only one patient received GnRH agonist to reduce the size of the myoma. The women were apprised of the possibility of laparotomy if surgery could not be completed vaginally and of the possible necessity of hysterectomy in the case of uncontrollable hemorrhage.

The surgical technique has been described in detail elsewhere [17]. In brief, posterior or anterior vaginal colpotomy was performed and the uterine serosa covering the myoma grasped with Schroeder forceps and directed to the colpotomy incision. A midline incision was made on the myoma up to the pseudocapsule. A Doyen myoma screw was then twisted into the myoma until firmly in place. Constant traction was maintained by the screw following extraction of the myoma together with the uterine fundus through the colpotomy into the vagina (Fig. 1). The myoma was then enucleated and extracted under visual control. The uterine incision was repaired in layers using conventional instruments and sutures. The uterus was replaced in the peritoneal cavity and the colpotomy incision closed. Operative aspects such as prophylactic antibiotics, anticoagulant therapy and mode of anesthesia have previously been described [17].

All patients were seen at the outpatient clinic two months after the operation. The median follow-up period was 94 months (range 53–120 months). At least one vaginal ultrasound examination was made for each patient during that time. Data on possible pregnancies, infertility treatments, hysterectomies and other reoperations during the follow-up period were collected from the hospital records. Those who had no outpatient contacts in the hospital records were interviewed by telephone.

Categorical variables were described by number of patients with percentages. Continuous variables were shown by means with standard deviations or in most cases by medians with ranges due to the skew distributions and small sample size.

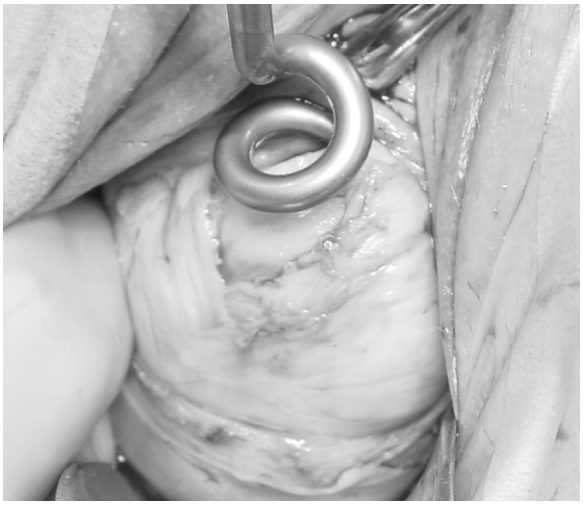

Fig. 1. After posterior colpotomy and incision of the uterine serosa, the myoma screw is twisted into the myoma followed by traction and extraction of the myoma. The uterine incision is repaired in layers and the uterus replaced in the peritoneal cavity.

Table 1
Characteristics of 16 patients undergoing transvaginal myomectomy by colpotomy.

Characteristics	
Age (years), mean (SD)	32 ± 4.8
Nulliparous, *n* (%)	9 (56)
BMI (kg/m^2), mean (SD)	23.2 ± 2.7
Sonographic myoma size (mm), mean (SD)	65 ± 13
Indication for operation, *n* (%)	
Pelvic pain	8 (50)
Menorrhagia	7 (44)
Growing myoma	3 (19)
Primary infertility	1 (6)
Secondary infertility	1 (6)
Miscarriage	1 (6)
Urinary urgency	1 (6)
Myoma weight (g), median (range)	132 (32–300)
Myoma location, *n* (%)	
Posterior	13/16 (81)
Anterior	3/16 (19)
Myoma type, *n* (%)	
Pedicled subserous	3 (19)
Subserous	3 (19)
Intramural	6 (38)
Mixed	4 (25)
Duration of operation (min), median (range)	63 (35–135)
Estimated blood loss (ml), median (range)	350 (50–1000)
Duration of hospitalization (h), median (range)	24 (24–48)

3. Results

Table 1 summarizes the patients' characteristics and data on leiomyomas and surgery. None had previous pelvic surgery. The diameter of the myomas ranged from 35 to 80 mm (median 63 mm). Traction myomectomy was completed vaginally in all patients and none underwent laparotomy. Vaginal laceration did not occur in any case. The right uterosacral ligament had to be cut in two cases for better vaginal access to the myoma and the ligament was sutured back to the uterus after removal of the myoma. In four cases the endometrial cavity was opened during the operation. All patients had a single leiomyoma except for three, one of whom underwent laparoscopic removal of an intraligamentary myoma and another hysteroscopic removal of a 1.5 cm submucous myoma prior to vaginal myomectomy. A 0.5 cm pedunculated subserous myoma was removed from the third patient besides the dominant leiomyoma during the vaginal procedure.

The estimated blood loss was less than 400 ml in 14 and 1000 ml in two cases. Postoperatively four (25%) of the 16 patients required blood transfusions, including two with preoperative anemia. Postoperative readmissions to the hospital did not occur. One patient developed a 4 cm anterior hematoma which was treated conservatively. Since the vaginal myomectomy, no hysterectomies or reoperations were performed among the patients during the follow-up period.

Eight (50%) of the 16 patients had pregnancies and the remaining eight had not conceived after transvaginal myomectomy by colpotomy during the follow-up period. None of the latter had actively tried to conceive or had sought infertility treatment postoperatively. Five of them were aged 35–40 years at the time of surgery and one of these remained single and suffered a severe neurological illness. The three remaining patients were younger than 35 years at the time of surgery but had delivered prior to transvaginal myomectomy.

Eight women produced 14 pregnancies: six of them had two pregnancies and two had one. The median interval between the