

Hysteroscopic outcomes after radiofrequency ablation of myomas: Two case reports and literature review

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Summary

Objective: The aim of this study was to investigate by hysteroscopy two cases of symptomatic uterine myomas several years after initial Radiofrequency Ablation (RFA) myolysis treatment. The related literature was also reviewed. **Case reports:** Two patients aged 43 and 45 years presented with the same clinical history of prolonged menstrual period following RFA of uterine myomas. Hysteroscopy showed a mass in the posterior uterine cavity which was removed using hysteroscopic resection technique. No further clinical issues were reported after one month follow-up. **Conclusion:** Hysteroscopic intervention after RFA of uterine myomas is necessary in order to determine the presence of necrotic tissue and to alleviate any clinical symptoms. The long-term outcome of this method needs to be addressed in order to establish the efficiency of RFA.

Key words: Hysteroscopy; Myoma; Radiofrequency ablation.

Introduction

Uterine myomas are the most common benign tumor in women of reproductive age [1]. Approximately 25% of women with myomas experience symptoms including menorrhagia, pressure symptoms, dyspareunia, secondary dysmenorrhea, associated anemia and pelvic pain. Additionally, reproductive problems such as infertility and miscarriage are often a serious concern. Because of these issues, uterine myomas often require medical therapy and surgical intervention [2]. However, these approaches involve a variety of problems. For example, long-term drug treatment is associated with a variety of drug-related side effects, while a high frequency of surgical intervention can cause surgical trauma [3].

In recent years, there has been an increasing need for safer options to treat symptomatic uterine myomas, thus avoiding major surgical intervention. Radiofrequency ablation (RFA) of uterine myomas was introduced in Europe in the late 1980's. RFA refers to the destruction of uterine myomas using heat generated from medium frequency alternating current in a process known as myolysis [4]. Many studies have confirmed the safety and efficacy of RFA in the treatment of uterine myomas [5]. However, one of its limitations is the need for follow-up analyses, including evaluation of the intrauterine tissue following treatment. Several years of follow-up are required in order to fully evaluate the safety of myolysis and to determine its effects on the duration of menstruation.

In this study, we report two cases of hysteroscopy outcomes following RFA treatment of myomas, as well as reviewing the relevant literature.

Case Report

Two women aged 43 and 45 years presented to our gynecologic clinic with prolonged menstrual periods following RFA ablation of uterine myoma. Pelvic examination showed no abnormality except a mildly enlarged uterus. Transvaginal ultrasound showed a high echogenic mass with no blood flow on the sagittal scan (Figure 1A). The size of these masses was 3.2×0.9 cm and 0.7×0.4 cm.

After thorough patient counseling regarding the potential risks and benefits, the hysteroscopy procedure was carried out. The two patients provided written informed consent and the study was approved by the Clinical Ethics Committee, Tongde Hospital, Zhejiang Province, China.

Hysteroscopy was performed under anesthesia and showed a gray/yellow colored mass in the posterior region of the uterine cavity (Figure 1B). The mass was subsequently removed using hysteroscopic resection (Figure 1C). There were no further clinical issues afterward for one month of follow-up. The final histopathology analysis showed the mass was composed of necrotic cells (Figure 1D).

Discussion

Uterine myomas are the most common benign tumor in women of reproductive age. The management of women with this pathology depends on their age and symptoms, as well as the size and location of the myomas. These are classified according to their location in the submucosal, subserosal and intramural regions. Submucosal myomas often cause abnormal uterine bleeding, menstrual abnormalities and subfertility, while subserosal and intramural myomas

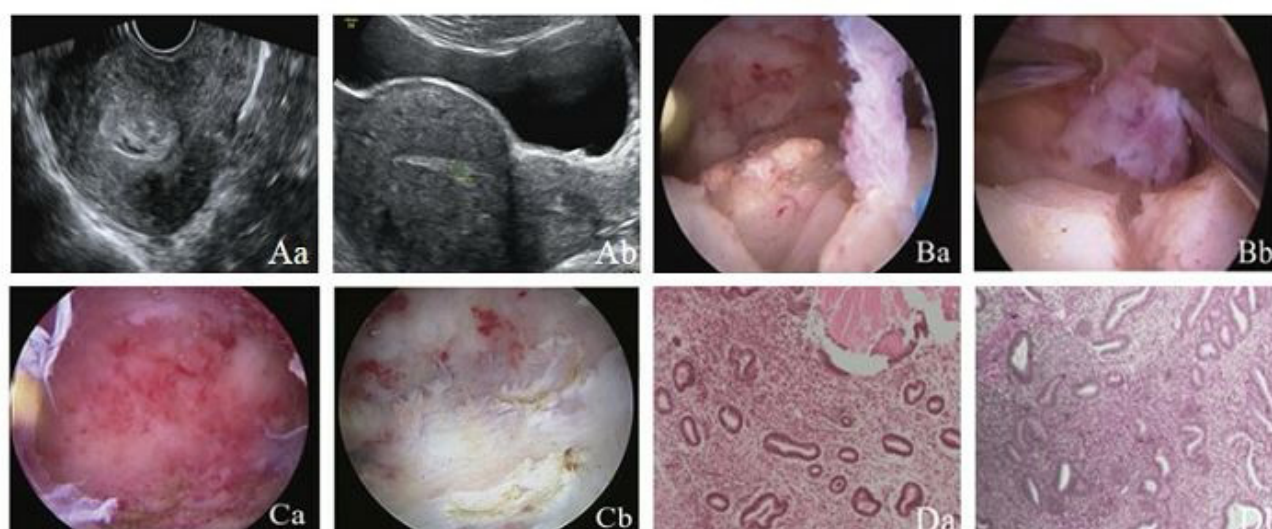


Figure 1. — (A) Preoperative ultrasound images show a high echogenic mass on the sagittal scan (the diameter is 3.2×0.9 cm (Aa) and 0.7×0.4 cm (Ab), respectively). (B) Hysteroscopic view shows a grayish yellow mass at the posterior of the uterine cavity (Ba and Bb). (C) Hysteroscopic resection was performed and the uterine cavity was smooth after surgery (Ca and Cb). (D) Histological examination showed hyaline degeneration and necrosis due to thermal coagulation, including gyrate degenerated cell structure of smooth muscle. Magnification $40\times$ (Da and Db).

always lead to pressure symptoms [6]. Treatment methods for uterine myoma include expectant management, medical treatment, uterine artery embolization, excision or ablation of the myoma, hysterectomy by laparoscopy, or hysteroscopic resection of the myomas [7].

Increasingly, women are seeking minimally invasive alternatives for the treatment of symptomatic myomas. The conventional treatments are laparoscopic hysterectomy, laparoscopic myomectomy, and hysteroscopic myomectomy, all of which can cause physical and mental trauma [8]. Therefore, less invasive treatments have become the focus of interest in recent years. Several approaches including medical therapy, uterine artery embolization and high-intensity focused or radiofrequency myolysis have been used as conservative treatments in order to avoid hysterectomy or myomectomy [9].

RFA was initially introduced in Europe in the late 1980's as a conservative treatment for the safe and effective removal of uterine myomas. This procedure is carried out by placing a probe inside the myoma under the guidance of ultrasonic real-time imaging. More than 50% reduction in the volume of myoma has been reported with the use of RFA [10]. This form of myolysis is well tolerated by patients and has many advantages including no post-ischemic pain and rapid recovery. Most importantly, it results in asymptomatic relief and an overall improved quality of life. The present study found that ultrasound-guided RFA for uterine myoma is a safe, accessible and effective treatment, especially for women with one fibroid of size less than 180 cm^3 [11]. However, RFA does have some disadvantages including difficulty in obtaining histopathological diagnosis of the tissue and in performing transvaginal sonography. More-

over, it is not as useful as hysteroscopy or laparoscopy in assessing the degree of intracavitary development of the myoma. Despite these disadvantages, RFA is an ideal procedure for the conservative treatment of eligible women with symptomatic myomas. Recently, newer techniques such as laparoscopic radiofrequency thermal ablation and high intensity focused ultrasound (HIFU) have also been used for the treatment of symptomatic uterine myomas. One advantage of these techniques is that they can determine the exact location of uterine myomas [12, 13].

RFA is an efficient, non-surgical alternative treatment for uterine myomas because it avoids surgical trauma while retaining the advantages of minimally invasive procedures, such as minimal blood loss and rapid recovery. RFA can also be used to treat multiple myomas of different sizes. A previous study has shown that RFA of uterine myomas relieves the symptoms associated with myomas such as heavy bleeding and bulk-related symptoms [14]. However, to date there are no published studies that prospectively investigate patient follow-up after RFA treatment in terms of menstruation status and hysteroscopic results [15].

To evaluate the abovementioned disadvantages and to improve the RFA procedure, we report here on two cases with hysteroscopic review and menstruation status following RFA of uterine myomas. We found that RFA treatment caused the development of a large, *in situ* necrotic mass. Removal of the necrotic tissue was performed by hysteroscopy at 1.5 and 3 years after the RFA intervention. The necrotic mass in the cavity of the uterus developed after ablation of the myoma and was found to be the cause of irregular vaginal bleeding. Histopathology analyses showed the necrotic mass originated from smooth muscle tissue, con-

sistent with it being a benign myoma. Finally, the two patients recovered normal menstruation within one month of follow-up after hysteroscopic surgery.

In conclusion, RFA of symptomatic uterine myomas appears to be a valuable alternative to major surgery and shows a low probability of recurrence within 1 to 3 years after treatment. Subsequent hysteroscopic treatment removes necrotic tissue and alleviates the clinical symptoms. However, the long-term outcome of this approach needs to be investigated further in prospective, randomized trials in order to confirm the safety and efficacy of RFA prior to its widespread clinical application.

Ethics Approval and Consent to Participate

Written consent were obtained with the informed consent of all participants. The institutional review board of the Tongde Hospital of Zhejiang Province approved the study, code [2019]010.

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Conflict of Interest

The authors declare no conflict of interest.

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