Case 15801

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Volumetric high-intensity focused ultrasound surgery for huge uterine fibroid

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Section: Interventional radiology
Area of Interest: Genital / Reproductive system female
Imaging Technique: MR
Special Focus: Obstetrics Case Type: Clinical Cases
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Patient: 38 years, female

Clinical History:

A nulliparous 38-year-old patient with history of uterine fibroid suffered from urinary retention admitted to department of gynaecology. On physical examination, the clinician found a big pelvic palpaple mass.

Imaging Findings:

MRI findings revealed that on the T2-weighted image (Fig. 1), there was an intramural uterine fibroid located on the anterior wall of anteflexed uterus with diameter of 150 mm considered as a type II (the signal intensity of uterine fibroid was higher than that of skeletal muscle and lower than that of myometrium) [1]. On perfusion-weighted image, uterine fibroid was regarded as a type A (the time signal intensity curve of uterine fibroid was lower than that of myometrium) (Fig. 2) [2]. The patient needed to undergo high-intensity focused ultrasound surgery instead of open surgery.

Discussion:

Uterine fibroid with prevalence of 70-80%, also known as leiomyoma, is one of the most common gynaecological benign tumours that impact negatively on the health of reproductive-age women. High-intensity focused ultrasound was performed based on the biological thermal effect of high intensity focused ultrasound on the convergent tissue to elevate the tissue temperature up to the threshold of coagulative necrosis and protein denaturation. In this case report, we displayed a case of huge uterine fibroid ablated in single phase high-intensity focused ultrasound successfully without any complications. Volumetric high-intensity focused ultrasound surgery under the guidance of magnetic resonance imaging ablation was exploited (Fig. 3), using 50 treatment cells (12 mm, n = 8; 14mm, n = 22; 16 mm, n = 20) and a mean power of 148 W. Placing one-layer cells on the same plane strategy was considered as a main treatment approach (Fig. 4). Posttreatment non-perfused volume ratio of 100% was achieved after 220-minute treatment duration (Fig. 5). At 12-hour post ablation, the patient was discharged without complications. At 6-month follow-up, the complaint symptom was resolved completely. Furthermore, serum anti-mullerian concentration of this case before ablation and after 6 months of treatment was preserved completely [3, 4]. We took advantage of

the thermal accumulation in the near field to enhance the treatment efficacy by using a one-layer strategy. These results were in full agreement with some previous studies [5-7]; therefore, high-intensity focused ultrasound treatment should be considered as an alternative therapeutic method for patients with huge uterine fibroid.

Differential Diagnosis List: Intramural uterine fibroid of 150mm was successfully ablated without any complications, Leiomyosarcoma, Leiomyolipoma

Final Diagnosis: Intramural uterine fibroid of 150mm was successfully ablated without any complications

References:

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7. Kim YS, Bae DS, Kim BG, et al (2011) A faster nonsurgical solution very large fibroid tumors yielded to a new ablation strategy. Am J Obstet Gynecol 205(3):292.e1-5 (PMID: 22071069)

Figure 1

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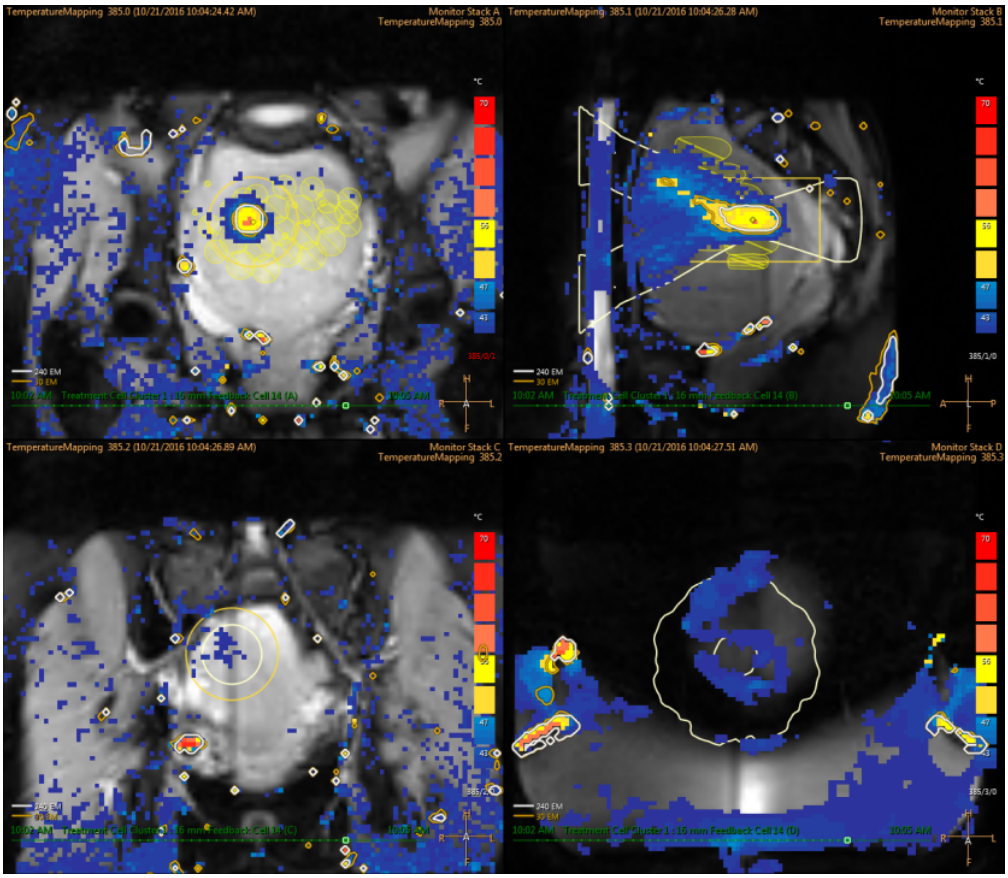

Description: Temperature map images show efficient ablation. **Origin:** Department of Radiology, Pham Ngoc Thach University of Medicine, Vietnam

Figure 2

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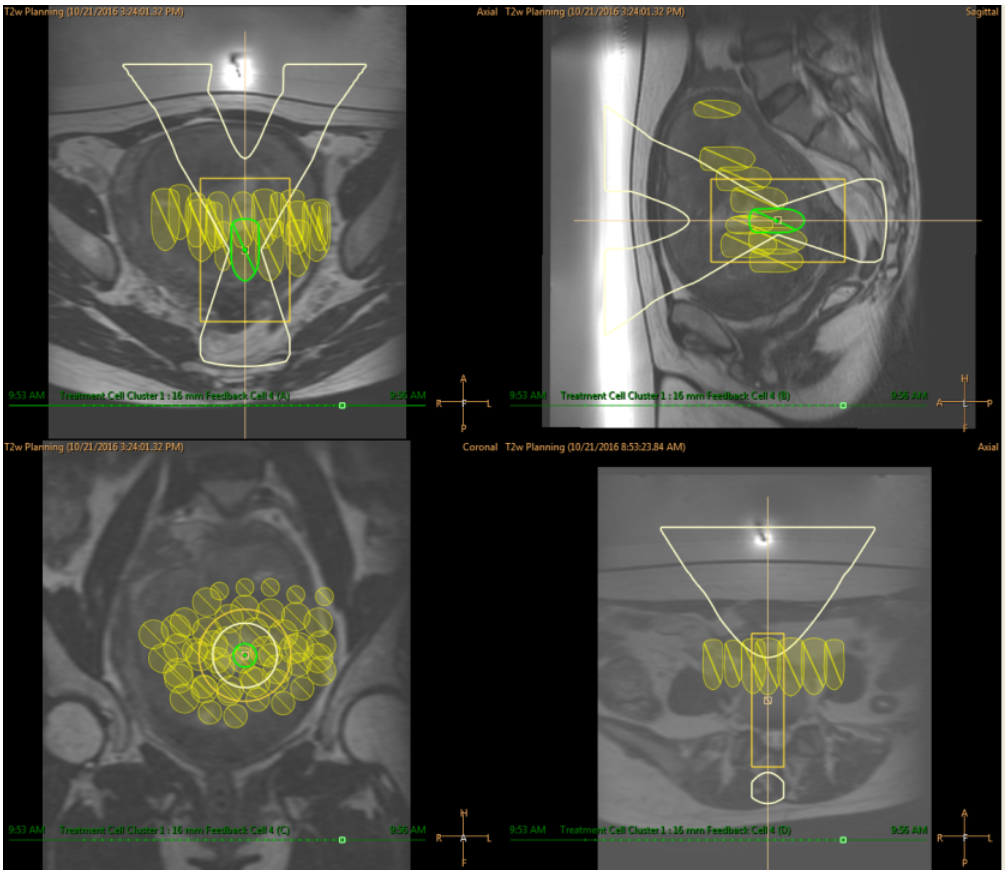

Description: One layer strategy with all treatment cells on the same plane. **Origin:** Department of Radiology, Pham Ngoc Thach University of Medicine, Vietnam

Figure 3

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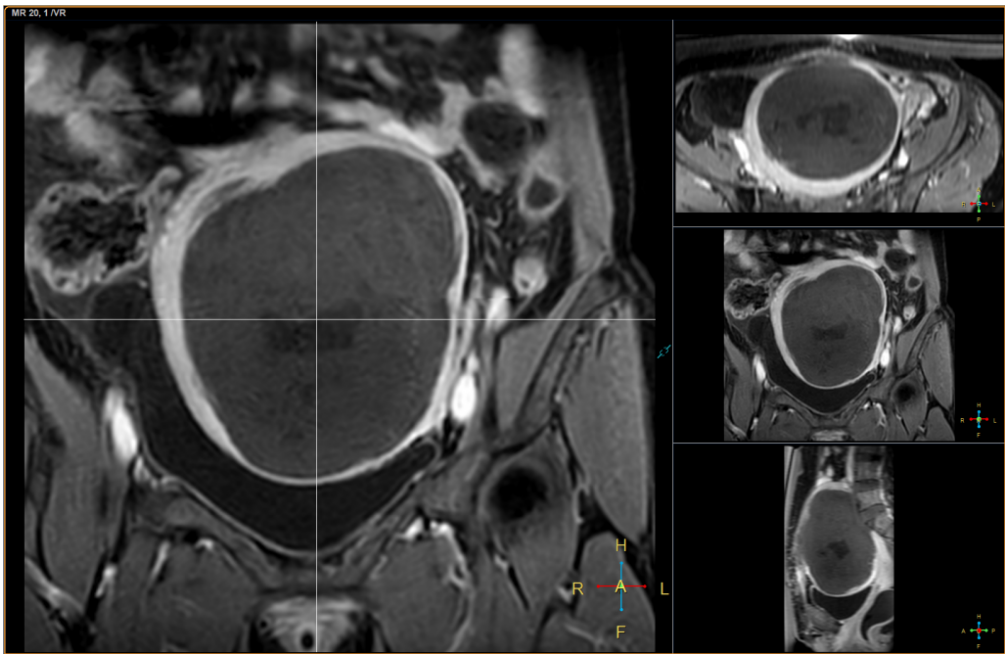

Description: 3-dimension contrast enhancement T1-weighted image after treatment shows near-complete ablation of uterine fibroid. **Origin:** Department of Radiology, Pham Ngoc Thach University of Medicine, Vietnam

Figure 4

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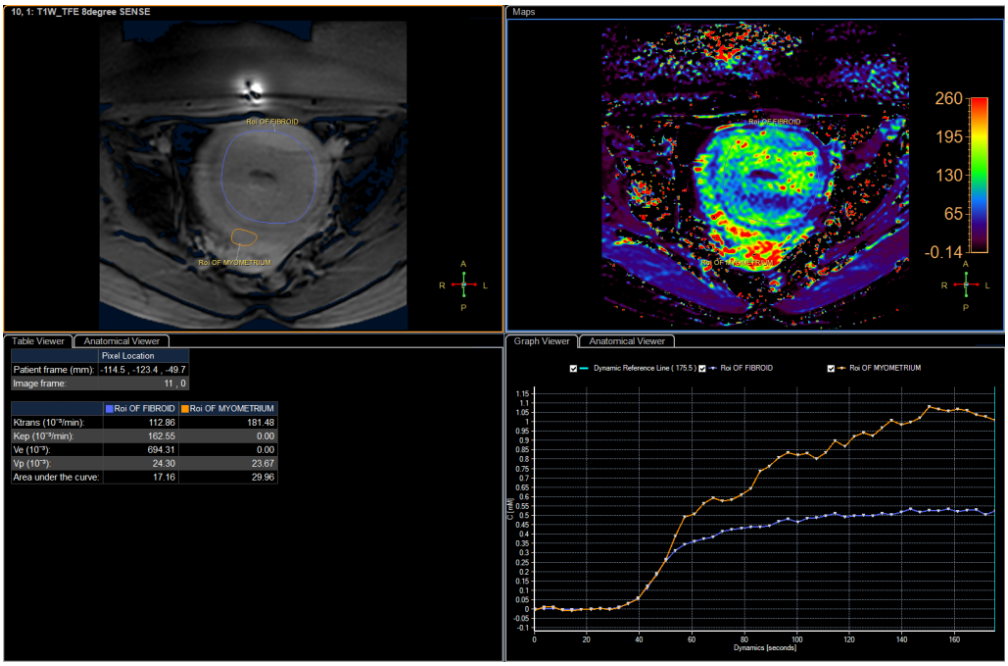

Description: Axial perfusion-weighted image at screening phase shows the time signal intensity curve of uterine fibroid lower than that of myometrium. **Origin:** Department of Radiology, Pham Ngoc Thach University of Medicine, Vietnam

Figure 5

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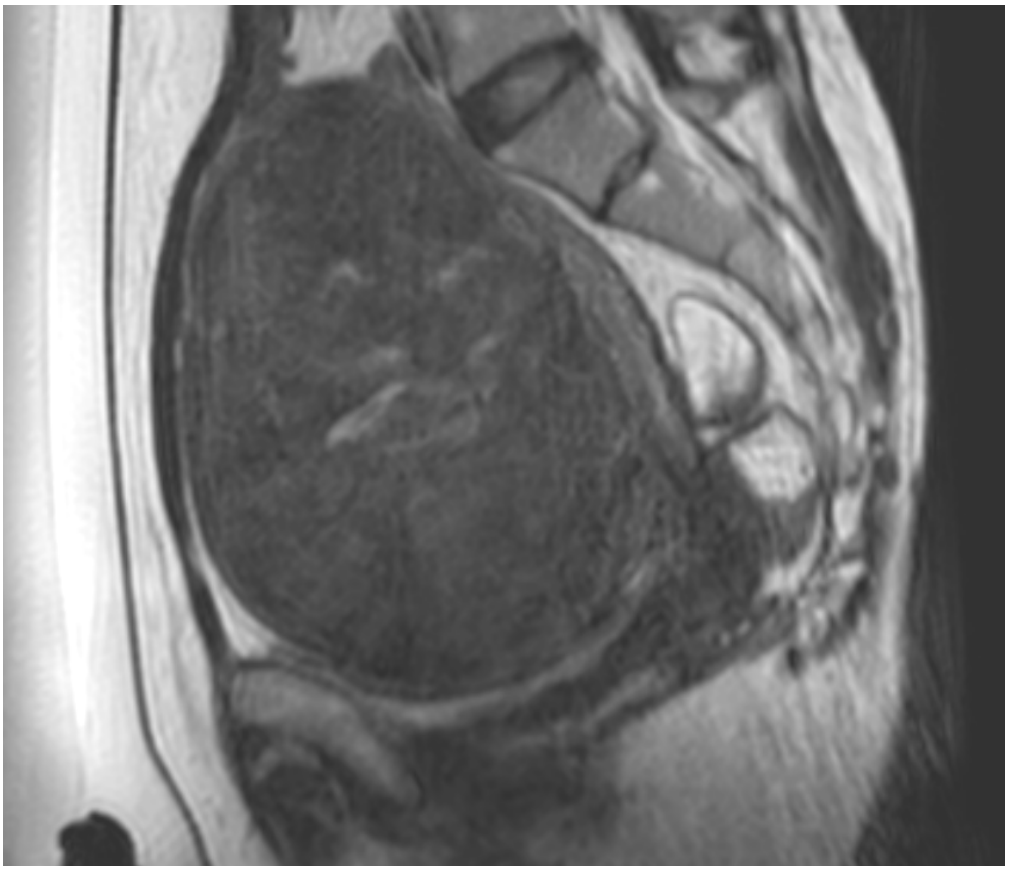

Description: Sagittal T2-weighted image at screeing phase shows a huge uterine fibroid. **Origin:** Department of Radiology, Pham Ngoc Thach University of Medicine, Vietnam