Clinical Image

Embolic Microspheres Observed during Metroplasty

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Uterine leiomyomas are the most common gynecologic benign tumor. While numerous patients are asymptomatic, others present abnormal uterine bleeding, pelvic pain, or abdominal bulk. In addition, depending on number, size, and location, leiomyomas may impair fertility.

According to the Federation of Gynecology and Obstetrics nomenclature published in 2011, leiomyomas are classified based on their location in relation to the uterine wall (0–2 are predominantly submucous, 3–5 intramural, 6 and 7 subserous, and 8 a miscellaneous of other locations).[1]

Leiomyomas are usually diagnosed by pelvic ultrasound. Furthermore, magnetic resonance imaging may help mapping the distribution of the leiomyoma within the uterus, especially if they are large and numerous. In addition, depending on their location, hysteroscopy, or laparoscopy may lead to the diagnosis.[1]

Classically, leiomyomas are treated surgically. While combined contraceptive pills, Gonadotropin-releasing hormone agonists, and other hormonal modulators, such as ulipristal acetate, may temporarily control bleeding disorders and eventually lead to a small reduction in leiomyoma's size and volume, they do not provide a definitive treatment. Surgical treatments, on the other hand, provide a definitive solution, but are more invasive and may compromise future fertility. Theoretically, myomectomies may restore uterine anatomy, improving reproductive outcomes. However, depending on the size, number and location of the tumors, as well as the skills of the surgeon, it may not be possible to restore a functional cavity and there is a risk of ending up in a hysterectomy.

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Uterine artery embolization (UAE) is being used for the last years to treat symptomatic uterine leiomyoma with promising results. In spite of being benign, leiomyomas are highly vascularized, hence presumably the blockage of their blood supply would induce necrosis and regression of the tumor.[2]

Fertility after this procedure is a major concern, especially regarding its potential harmful effect on ovarian reserve (due to possible involvement of the ovarian blood supply) and the commitment of the uterine irrigation itself, which may compromise not only the endometrium but also placental supply during pregnancy. Until date, scientific evidence on the effect of this technique on female fertility is still sparse.[3]

The technique consists on the blockage of the uterine artery with embolic agents, usually through catheterization of the femoral or radial arteries. There are three main different types of agents that can be used to perform this technique: Gelatin sponge, nonspherical polyvinyl alcohol particles, and calibrated microspheres such as tris-acryl gelatin microspheres. The first ones are cheaper and usually reabsorbed within 4–6 weeks. Microspheres, in turn, cause a more selective occlusion of the perifibroid plexuses, sparing the main and proximal branches, thus theoretically providing a better option if fertility is to be preserved. The classical microspheres are nonabsorbable, in contrast to gelatin sponges. Although the safety, efficacy, and performance of permanent embolic agents are well established, there may be still some concerns regarding the introduction of a permanent foreign body. Thus, more recently degradable microspheres have been developed. Despite these differences between

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the diverse embolic agents, there is no evidence of distinct efficacy, safety, or reproductive outcomes.[2,4,5]

A 41-year-old female patient came to our clinic due to primary infertility of 2 years, in search of pregnancy with donated sperm. She had been submitted to UAE due to symptomatic leiomyomas 6 years before. Furthermore, she reported having 2 previous Intracytoplasmic sperm injection (ICSI) cycles in other centers with recurrent implantation failure (a total of 6 good quality blastocysts transferred). According to the patient, embryos were of good quality but the endometrial lining was always thin on ultrasound, both in natural, stimulated, or hormonally replaced cycles. On infertility workup, she was diagnosed poor ovarian reserve based on low antral follicle count and anti- Müllerian hormone levels. In addition, pelvic ultrasound revealed a heterogeneous uterine wall with disperse hyperechogenic foci all over the myometrium [Figure 1]. Three-dimensional ultrasound raised the suspicion of a "T-shape" uterine cavity. The Endometrial Receptivity Analysis-ERA® test revealed a prereceptive endometrium, the window of implantation was so displaced that a new test was needed to confirm findings. Given these findings, the patient was proposed to hysteroscopic metroplasty.

During hysteroscopy, a "T-shape" cavity was observed, with a narrow body and widely separated deep tubal ostia. At first site, adenomyosis was suspected due to the presence of fibrotic adhesions of the fundus. When sectioning the uterine walls to amplify the cavity and correct the defect, abundant fibrosis was noted [Figure 2] and disperse greenish smooth spheres, with 5 mm of diameter were present within the fibrotic tissue and the myometrium [Figures 3 and 4].

This is a case of an unusual finding during hysteroscopy. It is important to highlight that metroplasty is not only and important procedure to improve reproductive outcomes in patients with uterine cavity defects but also to explore deeper

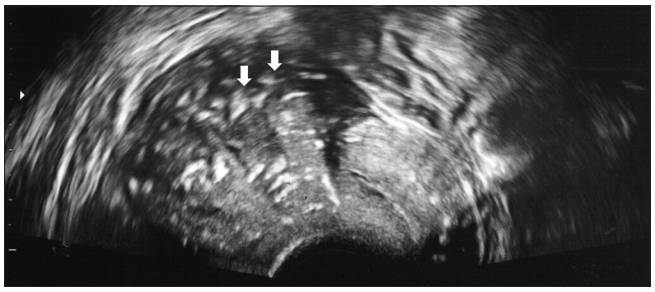

Figure 1: Two-dimensional pelvic ultrasound revealing a heterogeneous uterine wall, with disperse hyperechogenic foci all over the myometrium (white arrows)

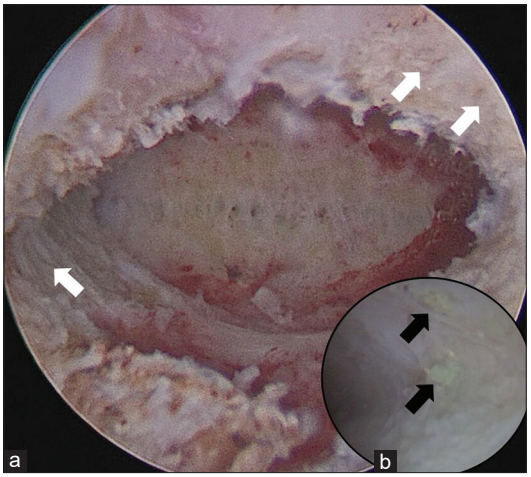

Figure 2: (a) Uterine cavity overview during metroplasty. Fibrotic tissue may be seen in uterine walls (white arrows). (b) Magnification of the sectioned left uterine wall, with disperse greenish smooth small spheres (black arrows) within the fibrotic tissue (white arrows)

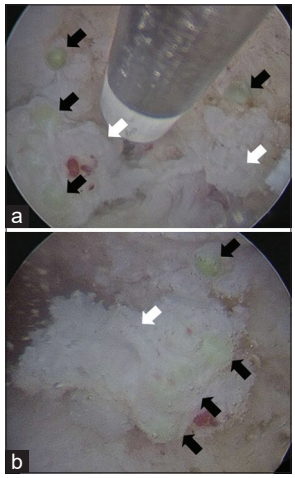

Figure 3: (a) Uterine wall during metroplasty showing abundant fibrosis (white arrows), involving disperse greenish spheres (black arrows). (b) Spheres being detached from the uterine wall (black arrows), involved by fibrosis (white arrows)

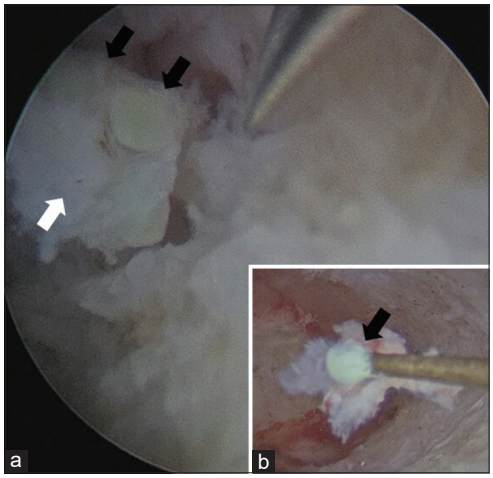

Figure 4: (a) Conglomerate of spheres removed from the uterine wall (black arrows), involved by fibrosis (white arrow). (b) Greenish smooth sphere with around 5 mm of diameter, extracted from the uterine wall (black arrow)

layers of the uterine wall during hysteroscopy, up to the archimyometra, if an infiltrative disease such as adenomyosis is suspected.[6]

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form, the patient has given her consent for her images and other clinical information to be reported in the journal. The patient understands that her name and initial will not be published and due efforts will be made to conceal her identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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