Disintegration and stepwise expulsion of a large uterine leiomyoma with restoration of the uterine architecture after successful uterine fibroid embolization: Case report

Thomas J.Kroencke¹,³, Annett Gauruder-Burmester², Christian N.H.Enzweiler¹, Matthias Taupitz¹ and Bernd Hamm¹

¹Department of Radiology and ²Department of Gynecology and Obstetrics, Charité, Medizinische Fakultät, Humboldt-Universität zu Berlin, 10098 Berlin, Germany
³To whom correspondence should be addressed at: Institut für Radiologie, Universitätsklinikum Charité, Humboldt-Universität zu Berlin, Schumannstraße 20/21, 10098 Berlin, Germany. E-mail: thomas.kroencke@charite.de

Uterine fibroid embolization (UFE) is a new minimally-invasive treatment option for leiomyomata of the uterus leading to symptomatic improvement and shrinkage of the fibroids. We present a case of restoration of the uterine architecture after disintegration and stepwise expulsion of infarcted leiomyoma tissue 7 months after UFE for leiomyoma-related menorrhagia.

Key words: embolization/expulsion/fibroid/uterus

Introduction

Uterine fibroid embolization (UFE) of symptomatic uterine leiomyomata was first reported by Ravina et al. in 1995 (Ravina et al., 1995). Studies performed since then have shown the short- and midterm effectiveness of UFE in relieving bleeding and bulk symptoms associated with fibroid disease (Ravina et al., 1997; Hutchins and Worthington-Kirsch, 2000; Pelage et al., 2000; McLucas et al., 2001a; Spies et al., 2001; Katsumori et al., 2002). UFE leads to infarction with subsequent shrinkage of targeted fibroids while preserving the perfusion of the normal myometrium (deSouza and Williams, 2002). The general policy so far has been not to offer UFE to patients who particularly want to conceive because perfusion and architectural integrity of the uterus might be compromised after UFE. We present a patient in whom follow-up magnetic resonance imaging (MRI) 7 months after UFE showed restoration of the uterus following sloughing and stepwise expulsion by the vaginal route of an 8 cm intramural fibroid.

Case report

A 48-year-old primigravid patient with known fibroid disease for several years but an otherwise uneventful gynaecological history presented to our hospital with menorrhagia, urinary frequency during day-time hours, and a feeling of tightness and pressure in the pelvic area. Menstrual bleeding had worsened over the preceding 8 months and remained unchanged despite medical therapy. One month prior to admission the patient had a dilatation and curettage with resection of an endometrial polyp in another hospital. Hysterectomy was offered for treatment of menorrhagia. The patient refused surgery and opted for uterine fibroid embolization instead and was referred to our hospital. MRI on admission showed an 83 mm × 71 mm × 84 mm intramural leiomyoma distorting the uterine cavity (Figure 1a,b) and a 23 mm × 23 mm × 28 mm subserosal leiomyoma (not shown). Under local anaesthesia angiography-guided access to the uterine artery was established and transarterial catheter-directed bilateral embolization of the fibroids was performed using 700–900 µm tris-acryl gelatin microspheres (Embosphere; Biosphere Medical, Paris, France). The procedure itself was uneventful. Contrast-enhanced MRI obtained 48 h after UFE showed complete infarction of the large fibroid (Figure 2) while perfusion of the surrounding myometrium was preserved.

The patient returned for follow-up 7 months after UFE and reported complete resolution of her symptoms. Menstrual bleeding was described as light and regular while tightness and pressure in the pelvic area had completely resolved. In addition she reported a vaginal discharge for about 4 months with expulsion of tissue fragments. Discharge and tissue passage were considered a minor problem by the patient and antibiotics were given by her gynaecologist although an infective agent could not be isolated. The discharge had stopped 4 weeks prior to 7 month follow-up at our institution. MRI performed on follow-up showed a regular uterine architecture and a fibroid remnant of 10 mm at the site of the large leiomyoma seen before treatment (Figure 3a,b). The second intramural fibroid had shrunk to a size of 12 mm × 11 mm × 8 mm (not shown).
Discussion
Partial or complete expulsion of leiomyomata has been reported in the literature after successful uterine fibroid embolization (Abbara et al., 1999; Berkowitz et al., 1999). It has also been observed after laparoscopic bipolar coagulation of uterine arteries and as a result of GnRH agonist therapy (Liu et al., 2001; Yu et al., 2001). Since uterine fibroid embolization is being used increasingly as the primary treatment option in patients with symptomatic uterine fibroids one has to be aware of the possibility of fibroid expulsion occurring weeks to months after the intervention. Patients may present with different symptoms ranging from cramping pain with or without evidence of infection and continuous bleeding to minor symptoms like vaginal discharge and passage of tissue fragments, as in our case. Appropriate management includes expectant management with administration of drugs for pain relief and antibiotics if there is evidence of infection. Hysteroscopic evaluation and resection/evacuation of infarcted fibroid tissue may be necessary in patients who do not respond to supportive treatment and in patients who are not able to pass the fibroid tissue on their own. Furthermore, if patients present with prolonged discharge after UFE that does not respond to antibiotics, dilatation and curettage or hysteroscopy should be considered rather than continued use of antibiotics.

MRI with its excellent soft tissue contrast and unrestricted ability to evaluate the uterine architecture as well as perfusion of the uterus and fibroids is a very useful tool in directing treatment in equivocal cases and ruling out treatment failure due to fibroid re-growth. Full-term pregnancies have been reported after successful UFE but given the current lack of data on fertility rate and outcome of pregnancies UFE should be reserved for women who do not desire future fertility unless there is no alternative to hysterectomy or myomectomy (Ravina et al., 2000; McLucas et al., 2001).

Theoretically UFE may lead to perfusion changes with atrophy of the endometrium and malnourishment of the implant due to insufficiency of the placenta. However, studies using contrast-enhanced MRI after UFE showed normal myometrial and endometrial perfusion 1 month after UFE and restriction of infarction to the fibroids treated (deSouza and Williams, 2002). Shrinkage of fibroids after UFE may be impressive and reduce

Figure 1. (a) Sagittal T2-weighted MRI (TR 5200 ms/TE 115 ms) reveals an enlarged uterus due to an 8 cm intramural fibroid (arrowheads); (b) Axial T2-weighted MRI (TR 4150 ms/TR 98 ms) depicts the relation of the fibroid to the uterine cavity. There is distortion of the uterine cavity due to the mass effect of the fibroid (arrow).

Figure 2. Sagittal T1-weighted contrast-enhanced fat-suppressed MRI (TR 187.8 ms/TE 4.1 ms) 48 h after uterine fibroid embolization reveals complete infarction of the fibroid while surrounding uterine tissue is well perfused.
uterine wall with fibroid remnants within a localized defect presumably representing ulceration after partial fibroid expul-
duction was reported after UFE by De Iaco and colleagues (De Iaco
et al., 2002). While such a finding may warrant treatment if the
patient presents with new onset of menorrhagia, our case
demonstrates that expulsion of even a fibroid as large as 8 cm
can occur without any complications or the necessity to
intervene. Moreover, expulsion or disintegration of fibroids
following UFE may lead to a nearly complete architectural
restoration of the uterine cavity as reported by Felemban et al.
2001 and illustrated by our case. Although this may occur in
the minority of cases only, and especially in patients with
intramural and submucous fibroids, this observation has
potential implications for the possibility of future pregnancies
in patients who undergo UFE for symptomatic fibroid disease.

References

Abbara, S., Spies, J.B., Scialli, A.R., Jha, R.C., Lage, J.M. and Nikolic, B.
(1999) Transcervical expulson of a fibroid as a result of uterine artery
Vaginal expulsion of submucosal fibroids after uterine artery embolization.
De Iaco, P.A., Muzzupapa, G., Golferi, R., Ceccarini, M., Roset, B. and
deSouza, N.M. and Williams, A.D. (2002) Uterine arterial embolization for
leiomyomas: perfusion and volume changes at MR imaging and relation to
repeated expulsion of myomas after uterine artery embolization. J. Am.
397–405.
artery embolization using gelatin sponge particles alone for symptomatic
expulsion of submucous myomas after laparoscopic-assisted uterine
McLucas, B., Adler, L. and Perrella, R. (2001a) Uterine fibroid embolization:
nonsurgical treatment for symptomatic fibroids. J. Am. Coll. Surg., 192,
95–105.
McLucas, B., Goodwin, S., Adler, L., Rappaport, A., Reed, R. and Perrella, R.
Obstet., 74, 1–7.
Pelage, J. P., Le Dref, O., Soyer, P., Kardache, M., Dahan, H., Abitbol, M.,
menorrhagia: treatment with superselective embolization of the uterine
Ravina, J.H., Bouret, J.M., Ciraru-Vigneron, N., Repiquet, D., Herbreteau, D.,
particular arterial embolisation in the treatment of some uterine leiomyoma.
Ravina, J.H., Herbreteau, D., Ciraru-Vigneron, N., Bouret, J.M., Houdart, E.,
myoma. Lancet 346, 671–672.
29–34.
submucosal leiomyoma after administration of a gonadotropin-releasing

Submitted on October 28, 2002; accepted on December 12, 2002

865

Figure 3. (a) Sagittal T2-weighted MRI (TR 7000 ms/TE 112 ms)
obtained 7 months after uterine fibroid embolization shows a
normal-sized uterus and restoration of the uterine architecture as
well as the remnant (arrow) of the embolized fibroid; (b) Axial T2-
weighted MRI (TR 4300 ms/TE 96 ms) depicts the relation of the
remnant (arrow) to the uterine cavity.

distortion of the uterine cavity thus enabling implantation of the
embryo. Nevertheless, infarcted fibroids may represent a weak
point in the uterine wall and increase the risk of uterine rupture
during pregnancy, although this possible risk has not been
mentioned in the literature to date. Partial disruption of the