

How effective is the nonsurgical management of uterine myomas?

Editorial

Uterine myomas represent a very common clinical entity, especially in young female patients. Approximately 20%-40% of the women at reproductive age have uterine myomas.¹⁻⁵ However, their incidence shows a significant decrease in menopause.²⁻⁶ They are benign tumors and usually are asymptomatic. However, sometimes they related with abnormal uterine bleeding, pelvic pain, pressure complaints, infertility and pregnancy-related complications.^{1-3,5-7}

Nowadays, various treatment protocols have been proposed for patients with uterine myomas. These protocols include either surgical or nonsurgical management.^{2,3,5-7} Among them, the surgical management (myomectomy, hysterectomy) of uterine myomas with preoperative preparation with GnRH analogues, remains the treatment of choice.^{1-3,5,8-14} It can be performed either with the standard (laparotomy, mini laparotomy) or the minimally invasive (laparoscopy, robotic-assisted surgery, hysteroscopy) approach.^{1-3,5,8-17} In contrast, the nonsurgical management (embolization, focused ultrasound surgery) of uterine myomas, shows promising results regarding safety (EMMY trial), quality of life (REST trial) and long-term outcome (FIBROID Registry) in carefully selected patients.^{1-3,5,8-14,18-23}

To begin with, uterine artery embolization (UAE) is a nonsurgical procedure that uses transcutaneous unilateral common femoral artery approach with the Seldinger technique. Both uterine arteries are selectively catheterized with a catheter or micro-catheter.^{11,22-24} The tip of the catheter or micro-catheter is placed beyond the origin of the cervicovaginal branch, in order to exclude it from embolization.^{22,24,25} Subsequently and under angiographic control, an embolic agent (trisacryl gelatin microspheres, spherical polyvinyl alcohol) is injected and the UAE is completed.^{7,11,22-27} The main role of UAE, is the essential reduction in uterine blood flow at the arteriolar level.^{22,23,26} In this way, UAE causes irreversible ischemia and leads to necrosis and shrinkage of uterine myomas.^{11,22,23,26,28}

The main target group for UAE, are patients who want to preserve their uterus and avoid any surgical procedure. Likewise, patients who reject blood transfusion for health concerns or religious reasons, are candidates for UAE.^{2,3,5,7,18,22-24,27,29,30} Additionally, patients with relevant co-morbidities (obesity, coronary artery disease) and increased risk for perioperative complications, are also eligible for UAE.^{2,3,5,22,23,26} The total number and the topography of uterine myomas play a crucial role, in patient selection process.^{2,3,5,22,26} The main absolute contraindications for UAE, are: pregnancy, active pelvic inflammatory disease, genital cancer, previous pelvic radiation and impaired immune status.^{2,3,5,7,18,22,24,26,27,29,31} Similarly, the main relative contraindications for UAE, are: severe vascular disease, severe allergy in radiographic contrast media, coagulopathy, impaired renal function and desire for future fertility.^{2,3,5,7,18,22,24,26,27,29,31,32}

According to EMMY trial, the main advantages of the UAE compared with the standard surgical management, are: the shorter operative time, the less intraoperative blood loss and the less postoperative pain. Moreover, EMMY and REST trials show an essential decrease in the total hospital stay and a faster recovery and return to daily activities in patients treated with UAE.^{2,3,5,19-23,29,30,33,34}

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Georgios Androutsopoulos, Georgios Adonakis, Georgios Decavalas

Department of Obstetrics and Gynecology, University of Patras, Greece

Correspondence: Georgios Androutsopoulos, Department of Obstetrics and Gynecology, University of Patras, Medical School, Rion 26504, Greece, Tel 306974088092, Email Androutsopoulosgeorgios@hotmail.com, androutsopoulos@upatras.gr

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Based on the results from the FIBROID Registry, there is a substantial and durable improvement in general symptoms and the quality of life aspects, in patients treated with UAE.^{2,3,5,7,18,19,22-24,26} According to the Society of Interventional Radiology (SIR), there is a great reduction in bulk symptoms (88-92%), an elimination of abnormal uterine bleeding (>90%) and a successful control of symptoms (75%), in patients treated with UAE.^{22,23,26,34} Moreover, there is a significant reduction in myoma (50-60%) and uterine (40-50%) size, that becomes noticeable in several weeks and sustains for 3-12 months after UAE.^{22,23,26,30,34,35} Additionally, the overall satisfaction rate among patients treated with UAE is comparable with the satisfaction rate among patients treated with the standard surgical management.^{2,3,5,19,22,23,26,29,30,33,36}

Overall, the intraprocedural complication rate has no significant differences between patients treated with UAE and total hysterectomy (8.6-25% vs. 2.7-20%).^{20,22,23,33,34} According to the EMMY trial, the intraprocedural major complication rate between patients treated with UAE and total hysterectomy is almost equal (1.2% and 1.3% respectively).^{20,22,23} Moreover, the most common intraprocedural complications in patients treated with UAE, are: pulmonary embolism, arterial spasm, postpuncture hematoma, nerve injury at the puncture site, allergy in the radiographic contrast media, nephrotoxicity and uterine artery dissection during catheterization.^{2,3,5,20,22,23,26,27,30,34}

It is worth noting, that most treatment failures in patients treated with UAE, occur the first 2 years of follow up.^{22,23,29,33,35,36} Probably, an incomplete uterine artery infarction results in regrowth of uterine myomas, despite the initial reduction in size.^{22,23,30,37} In this light, the secondary intervention rates at 2 and 5 years of follow up among patients treated with UAE, is 23.5% and 28.4% respectively.^{19,22,23,33,35}

The clinical implications of UAE on ovarian reserve, are not well-established.^{2,3,5,22,23,38} However, there are no significant differences on follicle stimulating hormone (FSH) levels between patients treated

with UAE and total hysterectomy.³⁸ Moreover, a future pregnancy is feasible in patients treated with UAE.^{39,40} Nevertheless, it is strongly recommended a close monitoring of the placental status, because of the increased risk for obstetric complications (miscarriage, abnormal placentation, preterm labor, malpresentation and postpartum hemorrhage).^{2,3,5,22,23,30,39-41}

On the other hand, magnetic resonance imaging-guided focused ultrasound surgery (MRgFUS) is another nonsurgical procedure that combines the magnetic resonance imaging (MRI) with the therapeutic potential of focused ultrasound (FUS).^{2,3,5,42,43} More specifically, the MRgFUS uses high intensity ultrasound waves to penetrate soft tissues and produce well defined regions of protein denaturation and irreversible cell damage.^{2,3,5,7,42,44} In this way, MRgFUS causes coagulative necrosis and leads to shrinkage of uterine myomas.^{2,3,5,7,22,42,44}

The main target group for MRgFUS, are patients who want to preserve their uterus and avoid any surgical procedure.^{2,3,5,7} Moreover, patients with relevant co-morbidities (obesity, coronary artery disease) and increased risk for perioperative complications, are also candidates for MRgFUS.^{2,3,5} Similarly, patients who reject blood transfusion for health concerns or religious reasons, are eligible for MRgFUS.^{2,3,5,7} The main advantages of the MRgFUS compared with the standard surgical management, are: the shorter operative time, the less intraoperative blood loss and the less postoperative pain [2,3,5,8,42,45,46]. Furthermore, there is a significant decrease in the total hospital stay and a faster recovery and return to daily activities. Besides that, there is a substantial improvement in general symptoms and the quality of life aspects, in patients treated with MRgFUS.^{2,3,5,42,45,46}

The clinical implications of MRgFUS in patients with uterine myomas, are not well-established. However, in pregnancy after MRgFUS treatment, it is strongly recommended a very careful ultrasound evaluation of the placental site and status in order to ensure appropriate medical care and reduce the risk for obstetric complications.^{2,3,5,47}

Conclusion

In conclusion, UAE and MRgFUS have shown promising results regarding safety, quality of life and long-term outcome in carefully selected patients with uterine myomas, minimizing the need for any surgical management.^{2,3,5,22,23} However, the nonsurgical management does not represent the treatment of choice for infertile women and for women wanting to preserve their childbearing capability.^{2,3,5,9,22,23}

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Conflicts of interest

None.

References

1. Wallach E, Vlahos N. Uterine myomas: an overview of development, clinical features and management. *Obstet Gynecol.* 2004;104(2):393–406.
2. Androutsopoulos G. How effective are current treatment strategies, in patients with uterine myomas? *J Community Med Health Edu.* 2012;2(6):e107.
3. Androutsopoulos G, Decavalas G. Management of uterine myomas: a critical update. *Int J Translation Community Dis.* 2014;2(1):1–3.
4. Ryan G, Syrop C, Van Voorhis B. Role, epidemiology, and natural history of benign uterine mass lesions. *Clin Obstet Gynecol.* 2005;48(2):312–324.
5. Androutsopoulos G, Decavalas G. Uterine myomas: recent advances in their treatment. *J Gynecol Women's Health.* 2016;1(2):555–560.
6. Parker W. Etiology, symptomatology and diagnosis of uterine myomas. *Fertil Steril.* 2007;87(4):725–736.
7. ACOG. ACOG practice bulletin. Alternatives to hysterectomy in the management of leiomyomas. *Obstet Gynecol.* 2008;112(2 Pt 1):387–400.
8. Lethaby A, Vollenhoven B, Sowter M. Efficacy of pre-operative gonadotrophin hormone releasing analogues for women with uterine fibroids undergoing hysterectomy or myomectomy: a systematic review. *BJOG.* 2002;109(10):1097–1108.
9. Olive D, Lindheim S, Pritts E. Non-surgical management of leiomyoma: impact on fertility. *Curr Opin Obstet Gynecol.* 2004;16(3):239–243.
10. Sankaran S, Manyonda I. Medical management of fibroids. *Best Pract Res Clin Obstet Gynaecol.* 2008;22(4):655–676.
11. Ravina J, Herbreteau D, Ciraru-Vigneron N, et al. Arterial embolisation to treat uterine myomata. *Lancet.* 1995;346(8976):671–672.
12. Nezhat C, Nezhat F, Silfen SL, et al. Laparoscopic myomectomy. *Int J Fertil.* 1991;36(5):275–280.
13. Glasser MH. Minilaparotomy myomectomy: a minimally invasive alternative for the large fibroid uterus. *J Minim Invasive Gynecol.* 2005;12(3):275–283.
14. Falcone T, Parker WH. Surgical management of leiomyomas for fertility or uterine preservation. *Obstet Gynecol.* 2013;121(4):856–868.
15. Zygouris D, Grigoriadis C, Derdelis G, et al. Total hysterectomy by mini-laparotomy (using vacuum extractor). *Gynecol Surg.* 2010;7(Suppl 1):S83.
16. Zygouris D, Androutsopoulos G, Grigoriadis C, et al. The role of mini laparotomy in patients with uterine myomas. *Int J Gynaecol Obstet.* 2012;119(Suppl 3):S684.
17. Zygouris D, Androutsopoulos G, Grigoriadis C, et al. The role of mini laparotomy in patients with uterine myomas. *Clin Exp Obstet Gynecol.* 2013;40(1):137–140.
18. Goodwin S, Spies J, Worthington-Kirsch R, et al. Uterine artery embolization for treatment of leiomyomata: long-term outcomes from the FIBROID Registry. *Obstet Gynecol.* 2008;111(1):22–33.
19. Edwards R, Moss J, Lumsden M, et al. Uterine–artery embolization versus surgery for symptomatic uterine fibroids. *N Engl J Med.* 2000;343(4):360–370.
20. Hehenkamp W, Volkens N, Donderwinkel P, et al. Uterine artery embolization versus hysterectomy in the treatment of symptomatic uterine fibroids (EMMY trial): peri- and postprocedural results from a randomized controlled trial. *Am J Obstet Gynecol.* 2005;193(5):1618–1629.
21. Hehenkamp W, Volkens N, Birnie E, et al. Pain and return to daily activities after uterine artery embolization and hysterectomy in the treatment of symptomatic uterine fibroids: results from the randomized EMMY trial. *Cardiovasc Interv Radiol.* 2006;29(2):179–187.
22. Androutsopoulos G, Karnabatidis D, Michail G, et al. Uterine artery embolization as an alternative to hysterectomy, in patients with uterine myomas. Approaches to hysterectomy: *In Tech.* 2015;p.35–47.
23. Androutsopoulos G, Michail G, Decavalas G. Uterine artery embolization: an innovative treatment approach of uterine myomas. *OA J Gynecol.* 2016;1(2):000110.

24. Gonsalves C. Uterine artery embolization for treatment of symptomatic fibroids. *Semin Interv Radiol.* 2008;25(4):369–377.
25. Worthington-Kirsch R. Uterine artery embolization: state of the art. *Semin Interv Radiol.* 2004;21(1):37–42.
26. Stokes L, Wallace M, Godwin R, et al. Quality improvement guidelines for uterine artery embolization for symptomatic leiomyomas. *J Vasc Interv Radiol.* 2010;21(8):1153–1163.
27. Goodwin S, Bonilla S, Sacks D, et al. Reporting standards for uterine artery embolization for the treatment of uterine leiomyomata. *J Vasc Interv Radiol.* 2003;14(9 Pt 2):S467–S476.
28. Colgan T, Pron G, Mocarski E, et al. Pathologic features of uteri and leiomyomas following uterine artery embolization for leiomyomas. *Am J Surg Pathol.* 2003;27(2):167–177.
29. Gupta J, Sinha A, Lumsden M, et al. Uterine artery embolization for symptomatic uterine fibroids. *Cochrane Database Syst Rev.* 2006;25(1):CD005073.
30. Bradley L. Uterine fibroid embolization: a viable alternative to hysterectomy. *Am J Obstet Gynecol.* 2009;201(2):127–135.
31. SOGC. SOGC clinical practice guidelines. Uterine fibroid embolization (UFE). Number 150. *Int J Gynaecol Obstet.* 2005;89(3):305–318.
32. Usadi R, Marshburn P. The impact of uterine artery embolization on fertility and pregnancy outcome. *Curr Opin Obstet Gynecol.* 2007;19(3):279–283.
33. van der Kooij S, Bipat S, Hehenkamp W, et al. Uterine artery embolization versus surgery in the treatment of symptomatic fibroids: a systematic review and meta analysis. *Am J Obstet Gynecol.* 2011;205(4):317.e1–317.e18.
34. Pinto I, Chimeno P, Romo A, et al. Uterine fibroids: uterine artery embolization versus abdominal hysterectomy for treatment—a prospective, randomized, and controlled clinical trial. *Radiology.* 2003;226(2):425–431.
35. Volkers N, Hehenkamp W, Birnie E, et al. Uterine artery embolization versus hysterectomy in the treatment of symptomatic uterine fibroids: 2 years' outcome from the randomized EMMY trial. *Am J Obstet Gynecol.* 2007;196(6):519.e1–519.e11.
36. van der Kooij S, Hehenkamp W, Volkers N, et al. Uterine artery embolization vs hysterectomy in the treatment of symptomatic uterine fibroids: 5-year outcome from the randomized EMMY trial. *Am J Obstet Gynecol.* 2010;203(2):105.e1–105.e13.
37. Kroencke T, Scheurig C, Poellinger A, et al. Uterine artery embolization for leiomyomas: percentage of infarction predicts clinical outcome. *Radiology.* 2010;255(3):834–841.
38. van der Kooij S, Ankum W, Hehenkamp W. Review of nonsurgical/minimally invasive treatments for uterine fibroids. *Curr Opin Obstet Gynecol.* 2012;24(6):368–375.
39. Pron G, Mocarski E, Bennett J, et al. Pregnancy after uterine artery embolization for leiomyomata: the Ontario multicenter trial. *Obstet Gynecol.* 2005;105(1):67–76.
40. Walker W, McDowell S. Pregnancy after uterine artery embolization for leiomyomata: a series of 56 completed pregnancies. *Am J Obstet Gynecol.* 2006;195(5):1266–1271.
41. Goldberg J, Pereira L, Bergella V, et al. Pregnancy outcomes after treatment for fibromyomata: uterine artery embolization versus laparoscopic myomectomy. *Am J Obstet Gynecol.* 2004;191(1):18–21.
42. Hesley G, Gorny K, Henrichsen T, et al. A clinical review of focused ultrasound ablation with magnetic resonance guidance: an option for treating uterine fibroids. *Ultrasound Q.* 2008;24(2):131–139.