Uterine artery embolization: A soccou for bleeding uterus

Percutaneous transcatheter embolization is being used in a variety of clinical situations in the pelvis since last few decades ever since it was used the 1st time in 1979 to treat a case of obstetrical hemorrhage.[1] Embolization has been used to arrest bleeding following major pelvic trauma, in the postpartum period, following hysterectomy, in advanced pelvic cancer and for patients with gestational trophoblastic disease.[2] Embolization may be used as an adjunct to surgery in cases of vascular tumors and arteriovenous malformations. It may help to debulk or devascularize the tumors thus making the operation easier and reducing the transfusion requirements. Embolization has recently also been considered for the treatment of uterine fibroids as these are common tumors often associated with abnormal bleeding.

The aim of the embolization is to effect complete occlusion of the bleeding uterine arteries and the uterine vascular bed with multiple small particulate emboli. As the uterine arteries are the major supply to the uterus, there is concern that this may result in massive necrosis.[3] However this has not been observed in selective embolization of bleeding vessels in cases of uterine fibroids, gestational trophoblastic tumors or uterine arteriovenous malformations. The alternative approach is the ligation of both internal iliac for massive post-partum hemorrhage. The abundant collateral circulation in the pelvis probably protects against serious effects of uterine artery occlusion. The embolic agent used and the size of the particulate emboli are generally felt to be critical in achieving the optimum level at which occlusion occurs for treating fibroids and controlling uterine bleeding. Currently, three types of embolic material are used: Gelatin sponge pledgets, polyvinyl alcohol particles and tri-acryl gelatin microspheres.[4]

The success of the procedure is also predicated on an adequate installation of particles. Development of arterial spasm may reduce the amount of particles injected before stasis supervenes, giving rise to a false end point of embolization. Hence vasodilators may be used to improve the flow of particles. Utilization of special catheters (like microcatheters) may help to access the inaccessible sites. Success rate of bilateral uterine artery embolization (UAE) is between 95% and 100% respectively.[5]

The failure rate is approximately 10% which may be due to incomplete or unilateral embolization, extremely large fibroids, presence of uterine leiomyosarcoma, coexisting adenomyosis and presence of collateral blood supply.[6]

An important complication is the development of amenorrhea associated with apparent ovarian failure. It is seen in approximately 5% of the patients.[7] The effect of fibroid embolization on fertility is unknown. There is no evidence that previously fertile women have become infertile following pelvic embolization’s. On the contrary, women who have had embolization for various reasons have become pregnant and had successful deliveries. Ultrasound and magnetic resonance imaging examinations following embolization demonstrate rapid revascularization of the normal myometrium and an essentially normal appearance of the endometrium at 6 months. However it may still be preferable to hysterectomy that such patients may need to undergo for intractable bleeding. Several studies have reported successful pregnancies following uterine embolization.[8] There does not appear to be any major excess obstetric risk associated with these pregnancies except for a finitely increased risk of delivery by cesarean section, when the demographics of the population in question is considered.

A special concern of embolization is exposure of women to radiation during the procedure, particularly to the ovaries. It is important to keep the radiation dose to an absolute minimum, especially as some women may want another pregnancy. Here comes the role of experienced angiographers with experience of embolization and use of specialized low dose equipment. The mean radiation exposure is approximately 4-65 cGy[9] (equivalent to the pelvic radiation dose for one to three barium enema.) It is ideally performed as a day case procedure.

The incidence of hysterectomy has now peaked. Nearly 18% of the hysterectomies are performed for hemorrhage.[10] It
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would certainly decline in incidence, with an ever increasing number of alternative treatments for menorrhagia. Many women who have been offered a hysterectomy or myomectomy in the past for fibroid, or persistent bleeding are unwilling to undergo lose their uterus. UAE is well-tolerated, with reduced hospital stay and good functional recovery. Stays for UAE are usually less than 48 h, whereas hospital stays for hysterectomy are approximately 6 days. Post-procedure, women return to normal activities within 14 days. A low rate of infection leading to hysterectomy may however be an unavoidable consequence of embolization. Early recognition of infective complications is important to avoid potentially fatal septic shock.

Hence UAE is here to stay. UAE is a very promising and minimally invasive procedure with favorable results. UAE is an invaluable alternative to hysterectomy and possibly myomectomy in some cases. The benefit lies in fewer complications, a reduced hospital stay and convalescence and reduced cost of treatment. Last but not the least, the patient has a sensible chance to conserve the uterus and hence a definite chance of future pregnancies.

Keeping in view the social and medical importance of this procedure, this edition of the journal brings to the reader the study on the use of UAE in obstetrical hemorrhage. This study by Tandon et al. tends to prove the fact that UAE is a successful and well-accepted alternative to surgery. This study adds to the growing number of reported cases of pregnancy following UAE. However the long-term results and the complications of the procedure still needs to be observed and any such study would be welcome.

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