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## Uterine Fibroid Embolization as a Minimally Invasive Therapy for Symptomatic Uterine Fibroids

Fibroids are a very common and often diagnosed entity in Women's Health. They range in spectrum from being asymptomatic to lifestyle limiting symptoms such as bleeding, pain and bulk symptoms. Uterine fibroids are the most common pelvic mass in women in the United States, in the U.S. the prevalence may be as high as 40% in some areas. Only a quarter seek medical attention, most commonly for 1) extremely heavy menses, which often leads to anemia, 2) bleeding in between periods, 3) pelvic pain and 4) pressure on the bladder and other organs. Approximately 600,000 hysterectomies are performed annually in the United States, of which about one-third are done for fibroids.

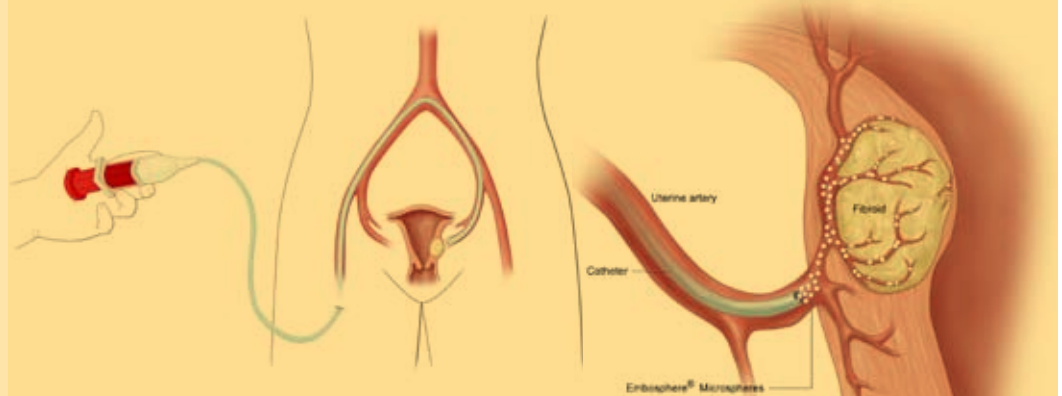
Traditionally, treatment of symptomatic fibroids has been hysterectomy. The uterine-sparing surgical procedure of myomectomy involving excision of a specific fibroid is also an alternative, although it may miss the culprit fibroid and report a recurrence rate between 15 and 25%. While uterine-sparing treatments do maintain fertility potential, the surgery takes longer and often results in much greater blood loss and perioperative morbidity. The use of hormones, typically estrogen-containing compounds or GnRH antagonists, while effective, is not a good long term strategy. Moreover, when therapy is discontinued, the fibroids typically regrow.

In 1997, Scott Goodwin and his colleagues at UCLA reported the first U.S. experience. All eleven patients in their series had failed conventional therapy. One patient was lost to follow-up and one required hysterectomy but seven of the remaining nine patients had significant clinical improvement. The uterine fibroid embolization(UFE) procedure typically takes between one and two hours. It starts with a pelvic angiogram to delineate the anatomy. Both uterine arteries need to be selectively catheterized and embolized for successful treatment. Typically, embolization is performed with Tris acrylic gelatin microspheres(TAGM) particles which are sized in the submillimeter range. These occlude the arterioles and preferentially devitalize the fibroids, while sparing the uterus. Immediately following embolization, all patients experience significant pelvic pain, which may be accompanied by nausea and vomiting and typically happens immediately which is why we will admit them under the care of the Interventional Radiology Service for an overnight stay.

The use of a dilaudid or morphine PCA (patient controlled analgesia) pump is essential to patient comfort, and most patients will be well enough the following morning to begin taking their medications orally. As soon as patients are tolerating oral intake, Ibuprofen or a similar non-steroidal anti-inflammatory drug is started and patients are also given Tylenol for fever control.

Abdominal pain typically is the worst within the first few days, and tapers off by the third to fifth day. Most patients are back to work within a week.

After discharge, patients are reassured by a follow-up phone call at one week to make sure that their recuperation is going as planned. If fever or symptoms persist there maybe a smoldering infection, which needs to be acted upon quickly. Also, patients may experience →



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some bleeding afterwards and even pass tissue fragments from submucosal fibroids. Patients then have a one month and six month clinic follow up visit with their interventional radiologist.

The risk of infection is extremely low and is probably less than one percent. In the surgical series for pelvic embolization for post-partum hemorrhage and trauma the overall infection rate is around four percent. The risks for angiographic-related vascular injury, the other main type of complication is also extremely low.

There have been studies looking at the effects of radiation in women of childbearing age which have shown no documentation of a threshold dose above which there is an increase in the number of pelvic malignancies or congenital birth defects. The overall dose to the pelvic organs is higher than most diagnostic tests, but well within acceptable range.

While there have been several surgical series which have noted pregnancies after uterine artery ligation or embolization for indications other than fibroids, this specific issue has not yet been addressed for this procedure. The series that have been reported in the literature of uterine artery embolization for symptomatic fibroids have all included patients who have become pregnant afterwards, although most women were screened first and claimed not to desire pregnancy. Therefore, it is not truly known whether someone desiring to maintain fertility will suffer any negative impact as a result of this procedure, although it seems unlikely.

When screening patients, it is extremely important to rule out all other causes for their symptoms. Often there are other issues that are important. Most importantly is whether or not the women seek future child bearing, and if so then myomectomy is the preferred treatment for them at this time. However, if the fibroids are too large or numerous that a myomectomy may result in a hysterectomy, uterine artery embolization may still be advised. The studies that are available in the literature with a small series show a 38% pregnancy rate for those patients trying to get pregnant.

Many hundreds of patients have been treated in the United States with this procedure, although the numbers in the literature are substantially lower. Nevertheless, all series report average technical success rates of about 98 percent. Most also show a high rate of clinical success, in that over 90 percent will have a significant enough decrease in their bleeding or mass effect symptoms that they require no further treatment. Despite a high rate of symptomatic relief, most patients have only modest volume reductions.

On the negative side, the common post-embolization syndrome of crampy abdominal pain, nausea, vomiting, and fever, can be quite severe and debilitating. Patients will be informed completely about this, and will be reassured that every effort will be made to maximize their comfort and pain control.

In summary, the treatment of symptomatic fibroids by uterine artery embolization appears to be safe, technically feasible with standard equipment, and easily tolerated. Most patients experience significant symptomatic improvement within a few weeks.

Raleigh Radiology was the first to offer this procedure and has been providing this service to the Triangle population for more than 10 years. If patients have known or suspected fibroids and would like a consultation with our radiologists they will need an MRI of the pelvis with and without contrast to better delineate the fibroids and make sure they enhance. The MRI can be performed at our Raleigh Radiology Blue Ridge Road location and on Tuesday's and Thursday's, patients can then go straight to the Interventional Radiologists office to view the results of the MRI with the physician and have a consultation to determine if they are a candidate for the procedure. UFE consults can be scheduled by calling 781-1437 or patients can go to [raleighrad.com](http://raleighrad.com) and request a consult online.



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