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INTERVENTIONAL UPDATE

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Women's Health Issues-How Interventional Radiology Can Assist



Daniel Dall'Olmo, MD
Grand Traverse Radiologists, P.C.

This issue of imaging update focuses on the role of Interventional Radiology in treating a variety of health issues specific to women's health. Most often when one considers Interventional Radiology as related to women's health, one thinks of uterine artery

embolization for the treatment of symptomatic fibroids. This is a well established procedure as an alternative to hysterectomy for symptomatic fibroids and I will discuss this further below. However, there are other women's specific health issues that can involve Interventional Radiology. Pelvic congestion syndrome is a source of chronic pelvic pain and treatment with ovarian vein embolization or internal iliac vein embolization is an option for treatment of this entity. Fallopian tube recanalization has been used for many years in the treatment of infertility caused by proximal fallopian tube occlusion. Emerging from this technology are newer techniques similar to embolization for fallopian tube occlusion. This offers an alternative to surgical tubal ligation. Additionally there are emerging breast interventions usually managed by our breast imaging colleagues that include local tumor therapy such as radiofrequency ablation and cryoablation for limited breast disease.

Finally although not specific to women, many of our standard vascular, renal and biliary procedures as well as spine procedures such as vertebral augmentation are excellent alternatives of surgical treatment for women with these disease entities.

UTERINE FIBROID EMBOLIZATION

Minimally invasive therapy for the treatment of symptomatic fibroids was initially reported in 1997 as an alternative to hysterectomy or myomectomy. This provides women with uterine preservation and/or the avoidance of surgical intervention. Fibroids (leiomyomas) are estrogen responsive tumors composed of uterine smooth muscle and connective tissue. It is the most common tumor in the female reproductive tract occurring in more than 40% of premenopausal females. Typically, 25-30% of women will have symptoms related to their uterine fibroids and it is the most common indication for hysterectomy (30% of annual hysterectomy volume in the United States). Symptoms of fibroids include menstrual disturbances (prolonged and excess bleed, frequent menstruation) and bulk related symptoms (back and leg pain, pelvic pressure, urinary frequency and constipation).

IDEAL CANDIDATES

The ideal candidates for uterine fibroid embolization are females with symptomatic fibroids who express the desire for uterine preservation and/or the avoidance of surgical intervention.

WHAT IS INVOLVED

Preprocedural evaluation includes history and physical, thorough gynecological exam performed by a gynecological specialist, pap smear and endometrial biopsy. Imaging documentation of uterine fibroids is also essential. This is best performed with magnetic resonance imaging.

EXCLUSION CRITERIA

Exclusion criteria include pregnancy, patients with ovarian, cervical or endometrial cancer, pelvic inflammatory disease and endometriosis. The role of uterine fibroid embolization in patients who wish to maintain fertility is still under investigation however if other therapies have been exhausted, uterine fibroid embolization remains a viable alternative for the patient wishing to maintain fertility, as there are numerous reports of uncomplicated pregnancy after uterine fibroid embolization.

TECHNIQUE

The technique of uterine fibroid embolization involves bilateral selective uterine artery catheterization and embolization with microspheres in the size range of 500-700 microns. Occasionally ovarian artery embolization may be required because of significant ovarian artery collateral supply to the fibroids.

RESULTS/OUTCOMES

Results of uterine fibroid embolization have been documented in many multicenter studies over the last decade. The well known fibroid registry enrolled 3,160 patients at 72 sites. Measured outcomes included symptomatic improvement and health related quality of life scores. Expected outcomes were defined as fibroid and uterine size reduction of 50-60% and 40-50% respectively. Reduction and bulk related symptoms were expected to be between 80 and 92%. Elimination of dysfunctional uterine bleeding in greater than 90% of patients. Only 6% of women failed to demonstrate any clinical improvement.

POTENTIAL COMPLICATIONS

Complications of fibroid embolization include transient amenorrhea (0.1%) permanent amenorrhea (in patients less than 45 years of age

3%, greater than 45 years of age 15%). Transcervical fibroid expulsion (5%), uterine infection (2%) and uterine necrosis (1%). The complication of nontarget embolization was also noted in 1% of individuals.

CONCLUSION

In conclusion, uterine fibroid embolization is a safe effective option for patients with symptomatic uterine fibroids. It provides improvement in health related quality of life and symptomatic control for most patients. It is associated with a very low complication rate and durability is similar to myomectomy and is now considered a first line treatment for women with symptomatic uterine fibroids.

PELVIC CONGESTION SYNDROME

Women with chronic pelvic pain have been frustrated by the lack of treatment options for decades. Also frustrated are the physicians ordering endless negative laboratory and imaging tests. The last 10 years has seen an improvement in the understanding and awareness of pelvic congestion syndrome.

DIAGNOSIS

Typically a diagnosis of exclusion, the differential list is quite long and includes gastrointestinal pathology, gynecological pathology including endometriosis, fibroids, ovarian pathology, pelvic inflammatory disease, uterine prolapse, neurological pathology, urological pathology and even orthopedic pathology.

Clearly an evaluation by an obstetric gynecologist specialist is fundamental to these patients' assessment however input from other specialists such as gastroenterology, anesthesia, general surgery, neurology, orthopedics, urology and psychiatry may be necessary.

Chronic pelvic pain accounts for 10-15% of gynecological evaluation in the United States. The association of pelvic pain and pelvic varices was clinically described in 1949 and is now referred to as pelvic congestion syndrome.

SYMPTOMS

Clinically, this is a characteristic dull aching pain felt to be a result of pelvic ovarian varices much like leg pain with lower extremity varicosities. This condition is more prevalent in multiparous females (possibly secondary to recurrent venous distension with pregnancy and ultimate failure of venous competency). Typically females are 25-40 years of age. Obstructing lesions such as retroaortic left renal vein, compression of the

left renal vein by the superior mesenteric artery (nutcracker phenomenon) and left iliac vein compression by right iliac artery (May-Thurner syndrome) can all result in pelvic varices. Clinical presentation is noncyclical pain greater than 6 months duration. Pain is intensified by sitting, standing, end of the day, intercourse or just before menses. Other nonspecific symptoms include lethargy, depression, abdominal pain, vaginal discharge, and swollen vulva, rectal discomfort and urinary frequency. Physical exam can reveal uterine or ovarian tenderness. Hemorrhoids are often associated with this entity. Varicosities of the perineum, buttock and lower extremities are also noted.

DIAGNOSTIC TOOLS

Once consideration of pelvic congestion syndrome is entertained, how does one make the diagnosis? First a thorough history and physical by a gynecologist is in order. Ultrasound and CT may reveal pelvic varicosities but often these are overlooked because scans are done with the patient in a supine position. These exams do however help rule out additional pathology. The best first imaging choice when considering pelvic congestion syndrome is an MRI or MRV which shows dilated tortuous veins. Laparoscopy has been used and can help rule out other pelvic pathology. However varices can be overlooked again because the patient is in a supine position.

GOLD STANDARD DIAGNOSTIC TOOL

The gold standard for diagnosis of pelvic varicosities is a diagnostic ovarian venogram. Typical findings in pelvic congestion syndrome include dilated ovarian veins of greater than 6 mm, retrograde venous flow, tortuous dilated venous collaterals and stagnation of contrast post injection. Although more invasive than an MRV it offers the ability to treat pelvic congestion syndrome at the same sitting using embolization.

TREATMENT

Treatment historically has been quite varied including physical therapy, progestin, gonadotropin receptor agonist, hormone replacement therapy, ergotamine and nonsteroidal anti-inflammatory drugs. However with the understanding of the patho-physiology, treatment

revolves around the exclusion of the left ovarian vein. This has been accomplished surgically but results are few and varied. Laparoscopic ligation of the ovarian vein has also been utilized with some success. The real break through came with the utilization of embolotherapy and sclerotherapy which has improved clinical results and reduced perioperative and postoperative morbidity. The procedure is performed at the same time as the diagnostic venogram and a variety of embolic agents have been used with success including coils and sclerosants.

RESULTS/OUTCOMES

Reports from the 1990's show reduction in chronic pelvic pain from 50 to 80%.

FALLOPIAN TUBE RECANALIZATION

The fallopian tube is the anatomic pathway to human reproduction. Tools are now available to access these structures for promoting or preventing pregnancy.

TECHNIQUE

With respect to fertility, recanalization can be accomplished using guidewires and catheters to unobstruct proximally occluded tubes. This procedure is an extension of the hysterosalpingogram, where after contrast demonstrates occlusion of the tube, a catheter and wire combination can be used to pass the obstruction and remove obstructing debris from the proximal tube.

RESULTS/OUTCOMES

Recanalization rates are as high as 90%. Pregnancy rate post-tubal recanalization approach 60% if the distal tube is noted to be normal. With the respect to the prevention of pregnancy numerous materials and devices have been tested to block fallopian tubes. The Essure coil is an FDA approved device used to occlude fallopian tubes. These can be placed hysteroscopically or fluoroscopically.

CONCLUSION

In conclusion, Interventional Radiologists have many minimally invasive procedures that can assist in the specific arena of Women's Health.

DIAGNOSTIC RADIOLOGY

Daniel Boss, M.D.
Richard Cover, M.D.
Steven Hodges, M.D.
Ryan Holmes, M.D.
Jesse Johnson, M.D.
Todd Kennell, M.D.
Steven Klegman, D.O.
C. David Phelps, M.D.
Todd Space, M.D.
C. Paul Williams, M.D.

INTERVENTIONAL/ VASCULAR RADIOLOGY

Frederick Brodeur, M.D.
Daniel Dall'Olmo, M.D.
Michelle Lung, M.D.
James Picotte, Jr., M.D.

MAMMOGRAPHY

Deborah Crowe, M.D.
Charles Weitz, M.D.
Todd Wilson, M.D.

NEURORADIOLOGY

L. Nicholas Richmond, M.D.
David Steffey, M.D.
Edward Stilwill, M.D.

PEDIATRIC RADIOLOGY

Linnea Priest, M.D.

ADMINISTRATION

Jennifer Coleman, MHSA, FACHE
Charly King, CPC, RCC

WHO TO CALL FOR MORE INFORMATION

If you have any questions regarding any of the above procedures or any questions regarding minimally invasive Radiology guided procedures, feel free to call the Interventional Radiology Clinic at 231.935.2861. As always, an Interventional Radiologist is available 24/7 for emergent procedures. They can be reached through the Munson Hospital operator.