# ADVANTAGES OF INTERVENTIONAL UROLOGY PROCEDURES

- Office based and minimally invasive
- Home in the same day
- Quicker recovery times
- Very low complication risks
- No general anesthesia needed
- Multi-disciplinary approach
- Ease of scheduling

#### For UFE



The uterus is spared



No Incision or Scar



Treat the Entire Uterus and Multiple fibroids at once

The procedure usually lasts about 45 minutes with a 2-hour recovery. After the procedure, patients can return home on the same day. Patients can be moderately active immediately after the procedure and return to full activity after 7 days.







51 Obery Street Plymouth, MA 02360

508-731-4800



508-731-4800



# WOMEN'S HEALTH

### **OUR TEAM**

Our Vascular Interventional Radiologists are National Leaders & Experts in the field of Embolization. The team has led numerous clinical trials, pioneering novel techniques for the treatment of several medical conditions, specifically evaluating Embolization and its application for many novel medical applications. For more information about our expert physicians, please visit our website.





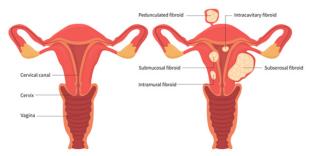


### WHAT ARE UTERINE FIBROIDS?

Uterine fibroids are benign, non-cancerous growths in or on the walls of the uterus, or womb. They can range from less than an inch to more than six inches in diameter.

Most fibroids are asymptomatic and are only discovered when a woman has a routine pelvic examination.

#### **UTERINE FIBROIDS**



### What Are Typical symptoms caused by Uterine Fibroids?

- ✓ Heavy, prolonged menstrual periods, sometimes with clots
- Pain or pressure between the hip bones or in the back of the legs
- Urinary Frequency
- Pain during sexual intercourse
- Constipation or bloating
- An enlarged belly and/or protruding abdomen

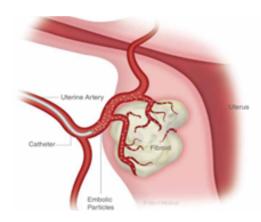
#### **Uterine Fibroid Embolization**

#### **Procedural Details**

A tiny tube called a catheter is inserted into the femoral artery at the top of the leg or into the radial artery accessed through the wrist. The patient is under sedation or in a 'twilight sleep' during the procedure.



- The catheter is then guided into the left and right uterine artery using x-ray and a contrast dye to visualize and map the arteries feeding the fibroids.
- ✓ Tiny embolic particles are then injected through the catheter and into the uterine arteries that feed the fibroids, cutting off their blood supply
- With the blood supply blocked, the fibroids begin to shrink, but the uterus and ovaries are spared



### PELVIC CONGESTION SYNDROME

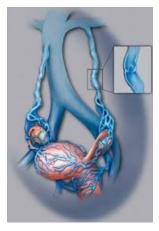
Pelvic congestion syndrome is a medical condition that causes chronic pelvic pain.

The condition is thought to be due to problems with the enlarged veins in your pelvic area. Women of childbearing age who have had more than one pregnancy may have the highest risk of pelvic congestion syndrome.

- Our team performs an office-based minimally invasive procedure called Ovarian Vein Embolization. This technique allows the physician to block, or embolize, the faulty vein by using X-ray to guide a catheter though the venous system.
- Once the vein is blocked, the damaged vein is shut off and the blood flow is redirected to the surrounding, healthier veins. Pressure is eased on the varicocele,

restoring normal function and eliminating pain.

Pressure is eased on the 'abnormal vein' restoring normal function and eliminating pain.



### **ADVANTAGES OF INTERVENTIONAL UROLOGY PROCEDURES**



Office based and minimally invasive



Home in the same day



Quicker recovery times



**Very low** complication risks



No general anesthesia needed



**Multi-disciplinary** approach

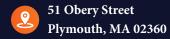


Ease of scheduling











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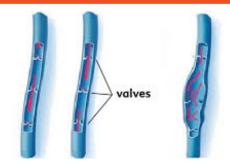
### **VARICOCELE**



### WHAT IS A VARICOCELE?

Male infertility caused by a varicose vein of the testicle and scrotum - called varicoceles - is a very common occurrence, affecting approximately 10 percent of all men.

The varicose vein - very similar to those located on legs - happens when the vein valve fails and blood pools, enlarging the veins around the testicle and causing a varicocele. When this condition occurs, not only does it cause infertility, but it may also cause pain and testicular atrophy.



normal veins

varicocele

### What are Typical symptoms Caused by Varicoceles

Scrotal pain caused by varicoceles varies from person to person. The pain is generally mild to moderate, and has been described as dull, congestive, "toothache" like. The pain worsens with long periods of sitting, standing or physical activity, especially for long periods of time. The pain is typically relieved by lying down. With time, varicoceles may enlarge and become more noticeable. In young men, the presence of a varicocele impairs sperm production and can often be improved with treatment.

### HOW ARE VARICOCELES TREATED?



The physician inserts a small catheter into a tiny incision in the groin area, accessing accessing the femoral vein

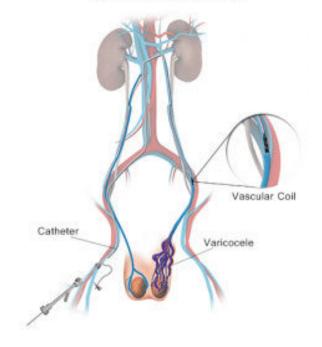


Using x-ray the physician then guides the catheter from the vein, directly to the testicular vein



Once in the testicular vein, contrast is injected in order to map out the problem area so it can be embolized – or "blocked" – using coils.

#### Varicocele Embolization





Once the vein is blocked, the damaged vein is shut off and the blood flow is redirected to the surrounding, healthier veins.



Pressure is eased on the varicocele, restoring normal function and eliminating pain.



The patient is sent home shortly after the procedure and is back to normal activities the next day.

The whole procedure usually lasts about **30-45 minutes** with a two hour recovery and the patient is back to moderate activity withing **24-48 hours.** 



# ADVANTAGES OF INTERVENTIONAL UROLOGY PROCEDURES



Office based and minimally invasive



Home in the same day



Quicker recovery times



Very low complication risks



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Ease of scheduling

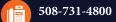














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## INTERVENTIONAL UROLOGY



### PELVIC CONGESTION SYNDROME

- Pelvic congestion syndrome is a medical condition that causes chronic pelvic pain. The condition is thought to be due to problems with the enlarged veins in your pelvic area. Women of childbearing age who have had more than one pregnancy may have the highest risk of pelvic congestion syndrome.
- Our team performs an office-based minimally invasive procedure called Ovarian Vein Embolization. This technique allows the physician to block, or embolize, the faulty vein by using X-ray to guide a catheter though the venous system.
- Once the vein is blocked, the damaged vein is shut off and the blood flow is redirected to the surrounding, healthier veins. Pressure is eased on the abnormal vein, restoring normal function and eliminating pain. The patient is sent home shortly after the procedure and is back to normal activities the next day.

### **UTERINE FIBROID**

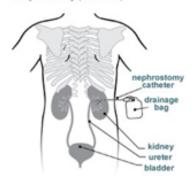
- One of the most common causes of pelvic pain and bleeding are uterine fibroids, sometimes called "fibroid tumors." These benign fibroids grow either inside or outside the uterine wall.
- Our team performs an office-based, minimally invasive procedure called Uterine Fibroid Embolization (UFE). This technique allows the physician to block, or embolize, the artery feeding the fibroids using X-ray to guide a catheter though the arterial system.
- Tiny particles are then injected through the catheter and into the artery that feeds the fibroids, cutting off their blood supply. With the blood supply blocked, the fibroids begin to shrink, but the uterus and ovaries are spared.
- The patient is sent home shortly after the procedure and is back to normal activities within one week.



#### NEPHROSTOMY TUBE

Sometimes the flow of urine is blocked due to stones, infection, congenital abnormalities or trauma. To restore the flow, a nephrostomy tube (small catheter) can be placed through the skin of the lower back into the kidney. As a result, urine will then drain into a small bag connected to the tube. A nephrostomy tube may be in place for days, weeks or months.

Nephrostomy (back view)

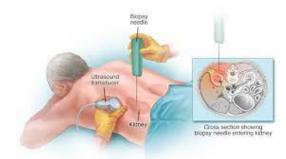


### SUPRA PUBIC CATHETER

A suprapubic catheter is a hollow flexible tube that is used to drain urine from the bladder. It is inserted into the bladder through a cut in the tummy, a few inches below the navel (belly button). This is done under a local anesthetic or a light general anesthetic.

### **IMAGE GUIDED BIOPSY**

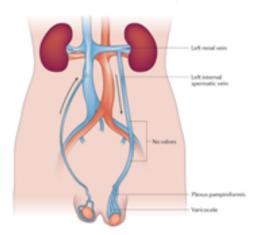
✓ A biopsy is a minimally invasive method of sampling tissue to determine if it is benign, malignant, or infectious. An image-guided biopsy uses imaging technology that enables us to safely insert needles into hard-to-reach places in the body, such as the lungs, kidneys, liver, lymph nodes, and the bones.



MANYO COUNTRATORICOS MEDICAL CONDATION AND RESENOUS AND RESETS RESERVED

### **VARICOCELE**

- The varicose vein very similar to those located on legs happens when the vein valve fails and blood pools, enlarging the veins around the testicle and causing a varicocele. When this condition occurs, not only does it cause infertility, but it may also cause pain and testicular atrophy
- Our team performs an office-based minimally invasive procedure called Varicocele Embolization. This technique allows the physician to block, or embolize, the faulty vein by using X-ray to guide a catheter though the venous system.
- Once the vein is blocked, the damaged vein is shut off and the blood flow is redirected to the surrounding, healthier veins. Pressure is eased on the varicocele, restoring normal function and eliminating pain. The patient is sent home shortly after the procedure and is back to normal activities the next day.



### KIDNEY TUMOR OR ANGIOMYOLIPOMA (AML) EMBOLIZATION

- Embolization is a minimally invasive treatment, which is usually used to treat benign (non-cancerous) masses in the kidney.
- During an embolization procedure, small particles are injected through a catheter into a mass. These particles block blood flow to the mass, taking away its supply of oxygen and nutrients. This causes the mass to die and shrink.

### **SUPERIOR RECTAL ARTERY EMBOLIZATION:**

### PROCEDURAL DETAILS

An Interventional Radiologist performs this minimally invasive procedure under a 'twilight sleep' or under light anesthesia.

- A very small catheter is introduced into the artery either in the groin region, or in the forearm.
- Using x-ray for guidance, the catheter is directed into the pelvis toward the arteries providing blood to the hemorrhoids.
- 3 Those arteries are then blocked off with tiny spherical particles as well as coils.

Because only some of the rectal arteries are blocked, the rectum continues to have an adequate blood supply and is not starved of oxygen. The result is reduced blood flow to the hemorrhoids which prevents further bleeding and reduces or eliminates the pain. The whole procedure usually lasts about one hour with a 2-hour recovery. Patients can be moderately active immediately after the procedure and return to full activity after 3 days. In some patients, it may be necessary to repeat the procedure to achieve maximal symptomatic relief.



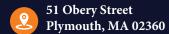


Hemorrhoidal artery coil embolization is a painless technique. The procedure time is approx. 50 min. After the procedure, patients can return home on the same day.









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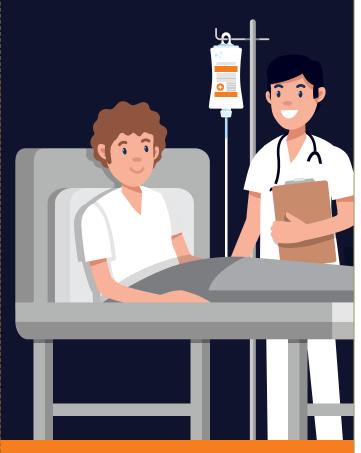
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# HEMORRHOIDAL DISEASE



### **WHAT ARE**

### **HEMORRHOIDS?**

Hemorrhoids are veins found around the anus that can become abnormally enlarged due to chronic constipation or straining (such as in childbirth or weightlifting). When these veins grow they can cause symptoms such as bleeding, pain, or itchiness and can be associated with a change in bowel habits.





Hemorrhoids can be located internal at the upper part of the anal canal in the rectum or external under the skin around the anus.

### **WHAT ARE**

### TYPICAL SYMPTOMS

### **CAUSED BY HEMORRHOIDS?**

**Bleeding** is the most common presenting symptom as hemorrhoidal tissue has increased blood supply.

When internal hemorrhoids prolapse through the anal canal the tissue can become traumatized leading to bleeding that is bright red in color

- Internal Hemorrhoids may cause itching around the anus.
- Prolapsing tissue can lead to "fecal soiling" by impeding the ability of the anal verge to seal
- External Hemorrhoids are typically asymptomatic unless they become thrombosed or inflamed
- External thrombosed Hemorrhoids cause a painful perianal swelling



### **HOW ARE**

# HEMORRHOIDS DIAGNOSED?

#### Medical History



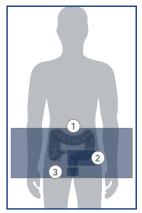
### Physical Examination



A visual inspection of the area around anus area will allow for the description of any external abnormalities.



#### Digital rectal examination



### 1 Colonoscopy

Allows the endoscopic examination of the entire colon.

2 Flexible Sigmoidoscopy

Endoscopic examination of the large intestine from the rectum up to the sigmoid (left side colon).

3 Anoscopy

An anal speculum (anoscope) is used for internal inspection of the lower rectum.

### **WHAT ARE**

## THE TREATMENT OPTIONS FOR HEMORRHOIDS?

There are several suggested treatments, according to the severity of the symptoms:





### Non-surgical minimally invasive treatments



- Rubber Band Ligation
- Radiofrequency Ablation
- Infrared Photocoagulation
- Colourado Inication



# Doppler-guided hemorrhoidal ligation (DGHAL)

Surgery

Minimal invasive

Alternative non-surgical treatment:
Embolization of the Superior rectal arteries

### **ADVANTAGES OF**

### THE EMBOLIZATION TECHNIQUE

- Leaves hemorrhoidal tissue in place
- No general anesthesia needed
- Preserves anal continence
- Does not involve the creation of rectal wounds
- Good results



### PROSTATE ARTERY EMBOLIZATION

### **Procedural Details**

- The doctor makes a small puncture in an artery of the wrist or groin, and guides a microcatheter (small flexible tube similar to a cooked spaghetti noodle) into the prostate arteries
- Microscopic beads are then infused into the arteries, where they lodge and temporarily block blood flow to the prostate gland, causing it to shrink, soften and absorb over time

### What are

# THE ADVANTAGES OF PROSTATE ARTERY EMBOLIZATION?

- No surgical incision or device inserted into the urethra.
- Performed in an outpatient setting under "twilight sleep" with no need for general anesthesia
- Painless procedure lasting approximately 1 hour
- Post-PAE side effects are minimal and usually resolve within 1-3 days
- Very low complication rate and no reports of impotence or incontinence after PAE
- Symptom improvement occurs 2-3 weeks after the procedure



- WWW.IRCENTERS.COM/GBU
- GBU@IRCENTERS.COM
- 2 51 Obery St. Plymouth, MA 02360
- Tel: 508-731-4800 Fax: 508-731-4800

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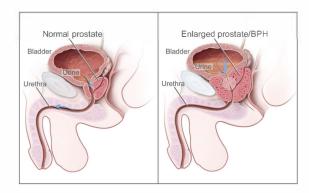
# ENLARGED PROSTATE



### What is

## BENIGN PROSTATIC HYPERPLASIA?

The prostate gland is an accessory organ of the male reproductive system. Its function is to produce fluid that helps preserve sperm after ejaculation. It is located below the bladder and is normally the size of a walnut. Urine travels normally from the bladder through the urethra before passing through the penis.



Enlargement of the prostate – or "Benign Prostatic Hyperplasia" (BPH) – is a benign, non-cancerous cause of increased prostate tissue growth, causing obstruction of the lower urinary tract (bladder and urethra). BPH is very common, and as life expectancy increases, so does the occurrence of BPH and the likelihood of experiencing symptoms.

### What are

### THE COMMON SYMPTOMS

### OF BPH?

- 1 Increased urinary frequency, particularly at night
- 2 Weak/and or interrupted urine stream
- Incomplete emptying of the bladder/difficulty starting urination
- 4 Urgency/difficulty controlling urination
- 5 Inability to urinate leading to catheterization
- Blood in the urine (hematuria)
- Erectile dysfunction (may overlap)

There are other medical conditions or diseases that can produce similar symptoms, so it is important to undergo a complete medical examination to ensure symptoms are related only to BPH.

### How is

### **BPH DIAGNOSED?**



Medical history



Detailed physical examination, including digital rectal exam



Ultrasound or MRI of the prostate gland

### What are

# THE TREATMENT OPTIONS FOR BENIGN PROSTATIC HYPERPLASIA?



#### **MEDICATIONS**

These effectively treat mild to moderate symptoms, but some men experience side effects including erectile dysfunction, difficulty with orgasm/ejaculation, and blood pressure changes.



#### **SURGERY**

The prostate is removed through an incision under general anesthesia



#### TRANSURETHRAL OPTIONS

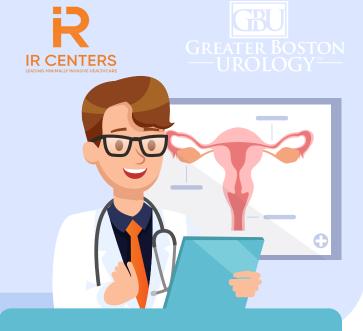
A device is inserted in the urethra to remove prostate tissue ("TURP"), or to destroy the tissue using heat, electricity or laser energy



### PROSTATE ARTERY EMBOLIZATION

This procedure shrinks the prostate gland by cutting off its blood supply





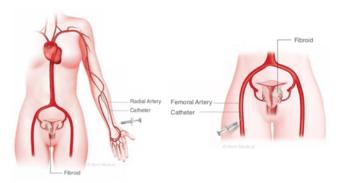
### What is UFE?

Uterine Fibroid Embolization is a nonsurgical procedure that blocks blood flow to the fibroids, causing them to shrink and alleviate associated symptoms

### **Procedural Details**

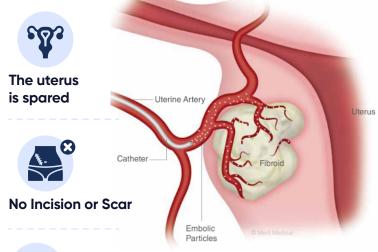
A tiny tube called a catheter is inserted into the femoral artery at the top of the leg or into the radial artery accessed through the wrist. The patient is under sedation or in a 'twilight sleep' during the procedure

- The catheter is then guided into the left and right uterine artery using x-ray and a contrast dye to visualize and map the arteries feeding the fibroids.
- Tiny embolic particles are then injected through the catheter and into the uterine arteries that feed the fibroids, cutting off their blood supply



 With the blood supply blocked, the fibroids begin to shrink, but the uterus and ovaries are spared

### Advantages of the Embolization Technique





Less Risk than surgery



Quicker recovery time (1-2 weeks vs 6 weeks for Surgery)



Treat the Entire Uterus and Multiple fibroids at once

The whole procedure usually lasts about 30-45 minutes with a 2-hour recovery. After the procedure, patients can return home on the same day. Patients can be moderately active immediately after the procedure and return to full activity after 7 day

### **The Facts**



Up to 25% of all women may be affected by symptomatic uterine fibroids and up to 30-40% in perimenopausal aged women



African American women are at an increased risk for fibroids



Symptoms can begin as early as 14 years old



Experts do not fully understand what causes fibroids



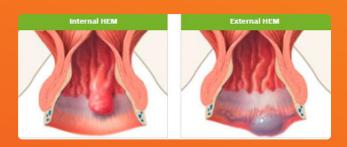






### What are Hemorrhoids

Hemorrhoids are veins found around the anus that can become abnormally enlarged due to chronic constipation or straining (such as childbirth or weightlifting). When these veins grow, they can cause symptoms such as bleeding, pain, or itchiness and can be associated with a change in bowel habits.



An interventional Radiologist performs this minimally invasive procedure under a 'twilight sleep' or under light anesthesia.



A very small catheter is introduced into the artery either in the groin region or in the forearm.



Using x-ray for guidance, the catheter is directed into the pelvis toward the arteries, providing blood to the hemorrhoids.



Those arteries are then blocked off with tiny particles as well as coils

### Advantages of Embolization Procedure



Preserves anal continence



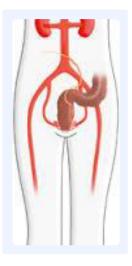
Does not involve the creation of rectal wounds



Leaves hemorrhoidal tissue in place



No general anesthesia needed





Performed in an outpatient lab and an return to full activity after 3 days of the procedure

### By the numbers



More than half of Americans suffer from Hemorrhoids by the

Age of 50



Peak age 45-65 years old



Many women

get hemorrhoids during pregnancy and childbirth



#1 Cause

of internal hemorrhoids is constipation



The recurrence rate after traditional treatment is

49%



Greater

than 90%

success rate



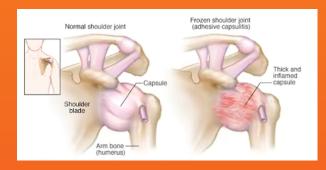






### What is it

Frozen shoulder, or Adhesive Capsulitis, is a painful condition when the joint capsule becomes thick, stiff, and inflamed. The pain and thickening also leads to limited mobility of the shoulder joint.



### Adhesive Capsulitis Embolization (ACE)

The inflammation that contributes to the pain and capsule thickening is caused by abnormal and increased blood flow with new vessels, or hypervascularity, to the joint capsule. ACE is a minimally invasive procedure that injects microspheres into the abnormal vessels, reducing the increased blood flow, and therefore disrupting the pain-inflammation cycle. Restoring normal blood flow to the capsule has shown to reduce pain and restore motion to the shoulder.

### **Procedure Details**

- The interventional Radiologist makes a small needle puncture into a blood vessel at the wrist and guides a microcatheter into the blood vessels that supply the inflamed part of shoulder.
- The procedure is performed under a 'twilight sleep' and is relatively painless.
- Microscopic beads are injected into the areas with abnormal vessels and hypervascularity, reducing the excessive flow causing the pain and inflammation.
- Normal blood flow to the shoulder and its surrounding tissues remains intact after the procedure





### Advantages of ACE



Symptom improvement usually within 3-4 weeks



No surgical incision, manipulation or injection into the shoulder joint



Typically return to work within a day or two without the need for a lengthy recovery



Painless procedure lasting about one hour



Very low complication rate without any effect on future shoulder treatments

### The facts



Symptoms from frozen shoulder can last from 1-3 years



Frozen shoulder most commonly occurs in adults between 40 and 60 years old



Between 10 and 20 percent of individuals with diabetes develop frozen shoulder



Affects more woman than men



It is common to develop frozen shoulder after a shoulder surgery or injury



### What is GAE?

Osteoarthritis is a condition that is caused by Repetitive wear and tear of the joint. Damage To the cartilage results in persistent inflammation that causes tiny new blood vessels and nerves to grow within the knee joint. Geniculate Artery Embolization is a procedure that injects microscopic beads into the areas with abnormal blood vessels so they are reduced, drastically minimizing the pain associated with abnormal vessels.

### **Procedural Details**

 The interventional Radiologist makes a small needle puncture in to a blood vessel at the top of the leg and guides a microcatheter in to the blood vessels that supply the inflamed part of the knee.



- The procedure is performed under a 'twilight sleep' and is relatively painless.
- Microscopic beads are injected in to the areas with abnormal vessels and hypervascularity, reducing the excessive flow causing the pain and swelling.
- Normal blood flow to the knee and its surrounding tissues remains intact after the procedure.

### **Advantages of GAE**



No surgical incision or injection into the knee joint



Painless procedure lasting about one hour



Typically return to work within a day or two without the need for a lengthy recovery



Very low complication rate without any effect on future knee replacement



Symptom improvement usually within 1-3 weeks



### Why GAE?

GAE is useful to relieve knee pain from OA instead of taking frequent medication or getting injections into the knee. It can also be beneficial in those who are not ready to have a knee replacement surgery. Published clinical studies by our team have demonstrated that GAE can provide pain relief without the risks associated with chronic medication or having to get repeat injections. GAE, However, is not necessarily a substitute for total knee replacement and has not been shown to negatively impact future knee replacement surgery when performed with our technique.



### What is PAE?

Prostatic artery embolization (PAE) is a minimally invasive treatment that helps improve lower urinary tract symptoms caused by a Benign Prostatic Hyperplasia (BPH).

### **Procedural Details**

- PAE is performed by an Interventional Radiologist through a small catheter inserted into the artery in your wrist or groin.
- The interventional radiologist will then guide the catheter into the vessels that supply blood to your prostate.
- Tiny round microspheres (particles) are injected through the catheter and into the blood vessels that feed your prostate to reduce its blood supply
- Following this procedure, the prostate will begin to shrink, relieving and improving symptoms usually within days of the procedure.



### What are the Advantages of PAE?

Prostatic artery embolization (PAE) is a minimally invasive treatment that helps improve lower urinary tract symptoms caused by a Benign Prostatic Hyperplasia (BPH).



No surgical incision or device inserted into the urethra.



Performed in an outpatient setting under "twilight sleep" with no general anesthesia.



Painless procedure lasting approximately 1 hour.



Very low complication rate and no reports of impotence or incontinence after PAE.



Symptom improvement occurs 2-3 weeks after the procedure.



Return to full activity within one week.

### By the numbers



As many as 14 million men in the United States have symptoms of BPH



80-90% effective in reduction of symptoms



5-7 years durability for relief of symptoms



By age 60, 50% of men will have some signs of BPH

