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SURVIVAL GUIDE SERIES

GI/GU/REPRODUCTIVE SERVICE LINE

THE ESSENTIALS OF GI/GU/REPRO SERVICE LINE PROCEDURES

Brought to you by:

Procedural Education Committee of the GI/GU/Reproductive Service Line- Resident and Fellow Section, Society of Interventional Radiology

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UTERINE FIBROID EMBOLIZATION

INDICATIONS

1. Symptomatic leiomyoma
   A. Pelvic pain: secondary to degeneration, torsion, etc.
   B. Pelvic pressure
   C. Infertility (rare): compromise fallopian tube patency, endometrial irritation, distortion of the endometrial cavity
   D. Abnormal bleeding: menorrhagia or menometrorrhagia
   E. Dyspareunia: commonly associated with pedunculated, submucosal fibroids
   F. Urinary symptoms: retention, frequency, urgency, incontinence and hydronephrosis

ABSOLUTE CONTRAINDICATIONS

1. Pregnancy
2. Known or suspected gynecologic malignancy
3. Uterine or adnexal infection

RELATIVE CONTRAINDICATIONS

1. Coagulopathy
2. Renal insufficiency
3. Severe contrast allergy (e.g. anaphylaxis)

PREOPERATIVE PREPARATION

1. Detailed gynecologic history: prior gynecologic conditions, reproductive history and interest in future pregnancy
2. Menstrual history: length of cycle, number of heavy-flow days, and frequency of sanitary protection change
3. Physical Exam
4. Labs: basic metabolic panel, PT/INR, PTT, platelets, pregnancy test
5. Current PAP smear
6. Pre-procedure imaging
   A. Ultrasound: initial diagnostic procedure of choice
   B. MRI: preferred modality for pre-procedural planning as it helps to determine fibroid location, size, number and vascular supply
      i. MRI protocol (with and without gadolinium): Multiplanar T1, T2, Proton Density and Post-contrast T1 sequences
7. NPO, 6 hours prior to the procedure

CONSENT

1. Anesthesia risks
2. Procedure risks
   1. Post-embolization syndrome
   2. Venous thromboembolism
   3. Fibroid expulsion
   4. Infection
   5. Ovarian failure
   6. Arterial injury
   7. Non-target embolization
   8. Uterine infarction
   9. Access site complications
3. Alternative treatments
   A. Hysterectomy
   B. Myomectomy
   C. Gonadotropin-releasing hormone analogs: down regulating estrogen receptors will decrease uterine volume, Fibroid volume and bleeding

D. MR-guided High Intensity Focused US (HIFU): FDA approved for use in the U.S. in 2004. Very low morbidity with rapid recovery; however, is not recommended in those to desire future fertility
E. Transvaginal or laparoscopic RFA
F. Expectant therapy

PROCEDURE

1. Sedation (IV Fentanyl and Versed)
2. Prophylactic antibiotics: Many interventionists give a single dose of Cefazolin 1gr IV
3. IV analgesics: eg. IV Ketorolac, IV Acetaminophen, PCA pump
4. Intravenous hydration
5. Foley catheter (Optional)
6. Unilateral or bilateral femoral access with placement of 4Fr or 5Fr vascular sheath
   A. Transradial access may be considered. Current literature describes decreased access-site related complications when compared with traditional transfemoral approach. (2.0-2.6% vs 3.1-11.4%)
7. Pelvic angiogram with pigtail positioned at level of renal arteries followed by pelvic arteriography (30 mL at 15 mL/s)
8. Select uterine artery with angled 5-Fr catheter (RUC, Cobra, SOS), microcatheters are often preferred due to spasm. A repeat angiogram is then performed to confirm catheter position and demonstrate the fibroid blood supply.
9. Embolic material: permanent particles (usually 500-700 or 700-900 micron) such as trisacryl gelatin microspheres (Embospheres, Merit Medical Systems Inc, Jordan, UT) or PVA microspheres (Counter SE, Boston Scientific, Natick, MA)
   A. The syringe containing embolic material and a 5-10 mL syringe with contrast are connected through a three-way stopcock. The contrast is then aspirated into the embolic syringe to create a uniform suspension.
10. Administer embolic particles slowly under continuous fluoroscopic guidance to avoid reflux until there is cessation of flow to the perifibroid arterial plexus. This is indicated by delayed arterial washout (~5 heartbeats) and presence of tendency toward reflux at catheter tip.
11. Repeat steps 7-9 from the contralateral side
    A. In cases of unilateral femoral access a Waltman loop formed with the Cobra-1 catheter can be used to select the ipsilateral internal iliac artery.

POST-OPERATIVE CARE

1. Admit for up 24 hours of extended recovery if required for pain control, otherwise may be performed as outpatient.
2. Pain management is critical (combination of NSAIDs, PCA +/- IV acetaminophen and/or hypogastric plexus block)
3. Antiemetics (Zofran or Compazine) PRN
4. Stool softeners (combat effects of opioids)
5. Encourage PO intake
6. Discharge when pain is adequately controlled with oral pain medications and antiemetics

POSSIBLE EARLY COMPLICATIONS

1. Fibroid passage (submucosal) (5%): Can present as severe menstrual cramping with or without discharge, heavy bleeding, Infection. (3-6 months up to 3 years following the procedure)
2. Post embolization syndrome: anorexia, nausea, malaise, low grade fever
3. Pulmonary embolus (0.25%): transient hypercoagulability following UFE, uses of intermittent pneumatic compression devices may reduce the risk, for high risk patients LMWH prophylaxis should be considered.
4. Vascular access complications: hematoma, vascular or nerve injuries.
5. Infection (approx. 1.2%): endometritis, tubo-ovarian abscess and pyomyoma or pyometra
6. Uterine ischemia and necrosis (rare)
7. Myometrial injury
8. Non-target embolization

POSSIBLE LATE COMPLICATIONS

1. Ovarian failure: age dependent with highest rates in patients >45 years, due to non-targeted embolization
2. Fibroid passage
3. Secondary amenorrhea (7.3%)

FOLLOW UP

1. Clinic visit at 2 weeks and 3 months; clinic visit and MRI at 6 months
2. Management of procedural complications
   A. Post embolization syndrome: IV fluid, analgesia, antiemetic, and reassurance
   B. Pulmonary embolus: Therapeutic anticoagulation, catheter directed thrombolysis/thrombectomy based on the severity
   C. Fibroid passage: conservative, IV antibiotics for infection, D&C and fibroid extraction
   D. Uterine infarction: hysterectomy
   E. Infection: IV antibiotics, may require surgical debridement

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