INTERVENTIONAL RADIOLOGY

PROCEDURE / CPT CODE	MODALITY	COMMON INDICATIONS	PRE PROCEDURE CONSULTATION	PRE PROCEDURE IMAGING	PRE PROCEDURE LABS	POST PROCEDURE FOLLOW-UP	SEDATION AVAILABLE
VASCULAR SERVICES							
ANGIOGRAM / STENT (CAROTID / CEREBRAL) Performed to characterize and treat abnormalities affecting the blood vessels in the neck and brain. MULTIPLE	IR / Angiography	TIA, stroke, carotid stenosis	PRN	PRN	See Preprocedure Considerations	UVIA Clinic and/or PCP	Yes
ANGIOGRAM / ANGIOPLASTY / STENT (RENAL, VISCERAL, PERIPHERAL) An angiogram is first performed to characterize narrowed or clotted blood vessels. A balloon and/or stent are then used to widen or open the narrowed or clotted vessels. MULTIPLE	IR / Angiography	HTN, claudication, non-healing ulcers	PRN	PRN	See Preprocedure Considerations	UVIA Clinic and/or PCP	Yes
UTERINE ARTERY EMBOLIZATION A catheter is inserted in the uterine artery and particles are injected into the vessels feeding the uterine fibroid thereby shrinking it. 37210	IR / Angiography	Heavy menses, bulk symptoms	PRN	Pelvic MRI	See Preprocedure Considerations	UVIA Clinic and/or PCP	Yes

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VASCULAR SERVICES							
EMBOLIZATION (VISCERAL, PERIPHERAL) An angiographic guided proceedure to occlude abnormal vessels with coils, particles or glue. MULTIPLE	IR / Angiography	Bleeding, vascular malformations, tumors	PRN	PRN	See Preprocedure Considerations	UVIA Clinic and/or PCP	Yes
FISTULAGRAM +/- REVASCULARIZATION (LYSIS, PTA, STENT) A small catheter is placed into the fistula. Images are obtained in order to diagnose and/or treat blood clots or narrowing. MULTIPLE	IR / Angiography	Decreased flow, edema, thrombosis	PRN	PRN	See Preprocedure Considerations	PRN	Yes
VENOGRAM A catheter is placed in a vein, and images are taken while contrast is injected in order to detect narrowing of the vein or blood clots. MULTIPLE	IR / Angiography	Venous insufficiency or obstruction	PRN	PRN	See Preprocedure Considerations	PRN	Yes
GONADAL / OVARIAN VEIN EMBOLIZATION A catheter is inserted into the gonadal/ovarian veins and contrast is injected. Then coils are used to permanently close the diseased vein. MULTIPLE	IR / Angiography	Pelvic venous insufficiency, varicocele	Yes	Pelvic venous insufficiency: pelvic US Varicocele: scrotal US	See Preprocedure Considerations	PRN	Yes

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VASCULAR SERVICES							
IVC FILTER PLACEMENT / RETRIEVAL A filter device is placed in the inferior vena cava (IVC) through a vein in the groin or neck. The purpose of the filter is to prevent blood clots from traveling to the lungs. MULTIPLE	IR / Angiography	High risk venous thromboembolism, contradictions to anticoagulation, post-trauma, prior to surgery	Yes	No	Stay therapeutic on anticoagulation. See contrast considerations *(found in Preprocedure Considerations).*	UVIA Clinic and/or PCP	Yes
PICC LINES / PORT-O-CATH / HEMODIALYSIS CATHETER PLACEMENT Fluoroscopy and ultrasound are used to guide a catheter into vein of interest. The catheter is used for long term IV therapy and/or hemodialysis. Eliminates the necessity for multiple needle punctures. MULTIPLE	IR / Angiography	IV Access	Yes	PRN	No	PRN	Yes
THROMBOLYSIS A device is used to break up the clot and infuse medication that dissolves thrombus. 37201	IR / Angiography	Acute Thrombosis (venous or arterial)	Yes	PRN	See contrast considerations *(found in Preprocedure Considerations)*.	UVIA Clinic and/or PCP	Yes

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DRAINAGE / BIOPSY							
THORACENTESIS A thin needle or tube is placed into the chest in order to remove fluid for diagnosis and/or reduce discomfort. 32421	Ultrasound / CT	Pleural effusion	No	Chest X-ray or CT	See Preprocedure Considerations	PRN	Yes
PARACENTESIS A thin needle or tube is place into the peritoneal space in order to remove fluid for diagnosis and/ or reduce discomfort. 49080	Ultrasound	Ascites	No	CT or Ultrasound	See anticoagulation considerations. *(found in Preprocedure Considerations)*	PRN	Yes
LUMBAR PUNCTURE / EPIDURAL INJECTION Fluroscopy is used to guide a small needle into or around the spinal canal. 62311	IR	Headache, meningitis, white matter disease,	PRN		See anticoagulation considerations. *(found in Preprocedure Considerations)*	Referring physician or UVIA Clinic or UVPM Clinic	Yes
BILIARY TUBE/ STENT PLACEMENT Fluroroscopy is used to guide a catheter and/or stent into the biliary ducts of the liver. This is performed to relieve biliary obstruction. In some cases, ductal stones can be removed. 47511	IR	Biliary tract obstruction / ductal stones	Yes	CT	See anticoagulation considerations. *(found in Preprocedure Considerations)*	UVIA clinic and/or PCP	Yes

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DRAINAGE / BIOPSY							
NEPHROSTOMY TUBE PLACEMENT Fluoroscopy is used to guide a cather into the kidney. This is performed to relieve the buildup of urine caused by an obstruction. 50392	IR	Urinary tract obstruction	PRN	Ultrasound or CT	Yes	UVIA clinic and/or PCP	Yes
PERCUTANEOUS ABSCESS DRAINAGE A thin catheter is placed through the skin to drain an infected collection in the body. MULTIPLE	CT / Ultrasound	Abscess	PRN	Ultrasound or CT	See anticoagulation considerations. *(found in Preprocedure Considerations)*	UVIA clinic and/or PCP	Yes
IMAGE-GUIDED PERCUTANEOUS BIOPSY A needle is advanced into the desired location using imaging guidance in order to obtain a small piece of tissue. MULTIPLE	CT, Ultrasound, or IR / Angiography	Mass	Yes	CT, Ultrasound, or MRI. Please send outside film prior to biopsy	See anticoagulation considerations. *(found in Preprocedure Considerations)*	PRN	Yes

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INTERVENTIONAL ONCOLOGY							
RADIO FREQUENCY ABLATION (RFA) OF TUMORS Using CT or Ultrasound guidance, a probe that emits radio frequency waves that generate heat within tissue is used to "burn" (ablate) various types of tumors (i.e. liver, lung, adrenal, kidney).	US or CT	Primary and metastatic liver lesions, osteoid osteoma, renal mass	Yes	Yes	See anticoagulation considerations *(found in Preprocedure Considerations).*	UVIA Clinic	Yes
HEPATIC TRANSARTERIAL CHEMOEMBOLIZATION (TACE) Using fluoroscopic guidance, a catheter is directed into the hepatic artery and chemotherapeutic agents are infused directly into a tumor.	IR / Angiography	Primary and metastatic liver lesions	Yes	Yes	1. See anticoagulation considerations *(found in Preprocedure Considerations).* 2. Baseline liver function testing.	UVIA Clinic	Yes

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SUPERFICIAL VENOUS DISEASE*							
ENDOVENOUS THERMAL ABLATION A catheter is inserted into a varicose vein. Using heat, the vein is permanently closed. 36478	Ultrasound	Superficial venous insufficiency	Yes	Yes	No	IVC Clinic	Yes
SCLEROTHERAPY Using ultrasound, a needle is guided into varicose veins and a medication is injected to permanently close the vein. 36470	Ultrasound	Superficial venous insufficiency	Yes	Yes	No	IVC Clinic	Yes
AMBULATORY PHLEBECTOMY A small tool is used to remove diseased varicose veins through 2-3mm incisions. 37766	Direct visualization	Superficial venous insufficiency	Yes	Yes	PRN	IVC Clinic	Yes

** Schedule through the Intermountain Vein Center at 801.379.6700.*

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PROCEDURE / CPT CODE	MODALITY	COMMON INDICATIONS	PRE PROCEDURE CONSULTATION	PRE PROCEDURE IMAGING	PRE PROCEDURE LABS	POST PROCEDURE FOLLOW-UP	SEDATION AVAILABLE
PAIN MANAGEMENT							
JOINT INJECTION Steroid medication is injected into the symptomatic joint to decrease pain and swelling. MULTIPLE	Fluoroscopy / IR	Pain, DJD	No	PRN	No	PRN	No
SPINAL INJECTION (EPIDURAL, NERVE ROOT, FACET, AND SACROILIAC) Anesthetics and/or steroid medications are injected in the spine to reduce back and/or leg pain. These can be both diagnostic and therapeutic. MULTIPLE	Fluoroscopy / IR	Axial and radicular pain	Yes	Yes	See anticoagulation considerations *(found in Preprocedure Considerations).*	PRN	Yes
VERTEBROPLASTY / KYPHOPLASTY Fluoroscopy is used to place a needle into a fractured vertebra. Bone cement is then injected to stabilize the fracture. MULTIPLE	IR	Acute compression fracture	Yes. Must have either MRI or CT + bone scan prior to evaluation.	MRI is preferred. CT and radionuclide bone scan can be substituted if necessary.	See anticoagulation considerations *(found in Preprocedure Considerations).*	UVIA clinic and/or PCP	Yes

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PAIN MANAGEMENT							
SACROPLASTY Imaging is used to guide needles into a fractured sacrum. A mixture of bone cement and contrast is then injected into the sacrum though the needles to stabilize the fracture. 0200T	CT / Ultrasound	Acute insufficiency fracture	Yes. Must have either MRI or CT + bone scan prior to evaluation.	MRI is preferred. CT and radionuclide bone scan can be substituted if necessary.	See anticoagulation considerations *(found in Preprocedure Considerations).*	UVIA clinic and/or PCP	Yes
EPIDURAL BLOOD PATCH Epidural Blood Patch (EBP) is used to treat spinal headaches that are most commonly encountered after dural puncture. The blood patch acts as a gelatinous glue which prevents cerebrospinal fluid (CSF) leakage and allows the dura hole to heal. 62273	IR / Fluoroscopy	Spinal headache (CSF leak)	PRN	No	See anticoagulation considerations *(found in Preprocedure Considerations).*	PRN	Yes

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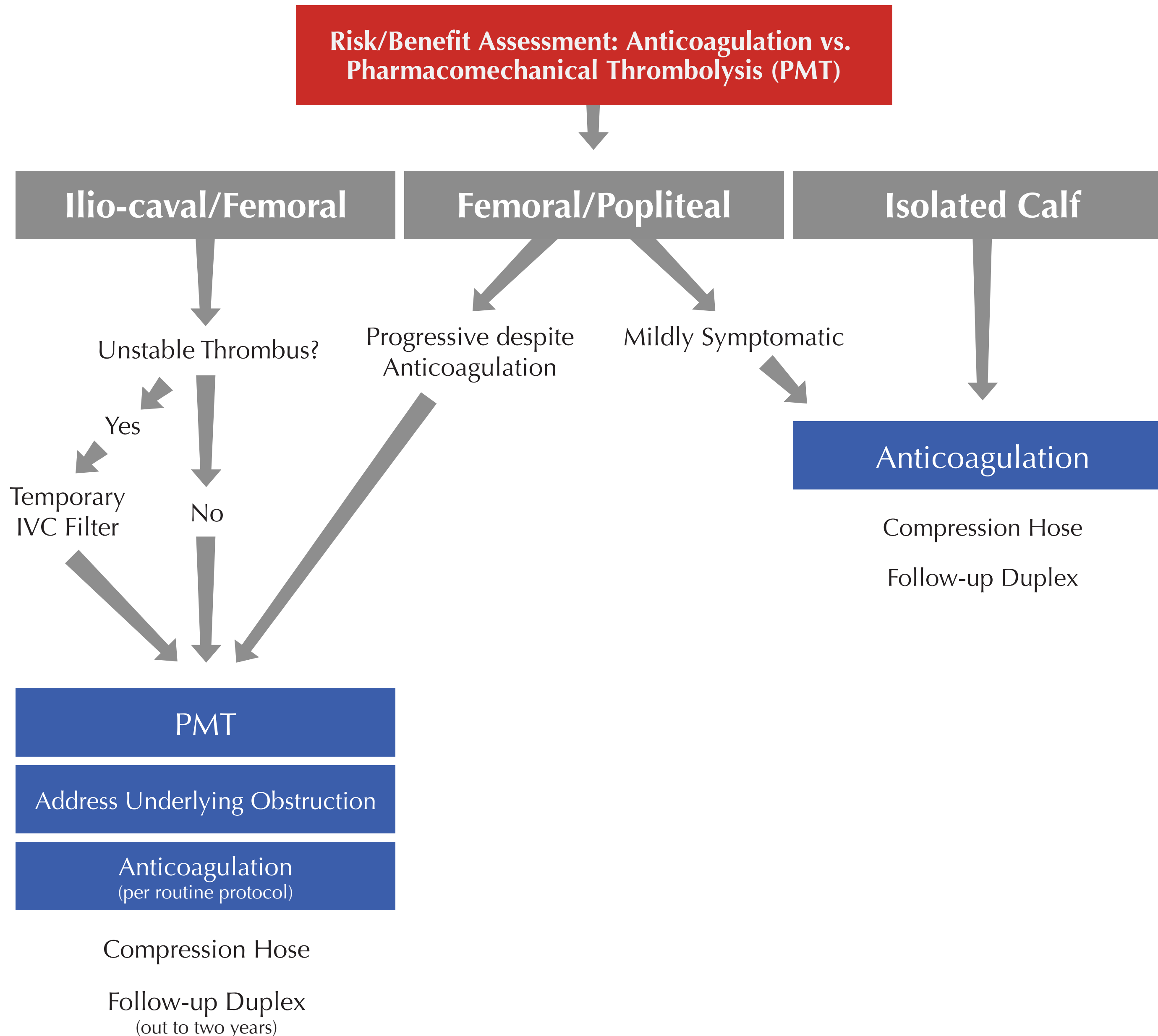
DVT MANAGEMENT STRATEGY

Consider predisposing hypercoagulable risk factors.



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IVC FILTER PLACEMENT, MANAGEMENT AND RETRIEVAL

IVC Filter Placement

INDICATIONS

- **Complications with anticoagulation (hemorrhage)**
- **Recurrent PE or progression of DVT despite adequate anticoagulation**
- **Contraindication to anticoagulation**
- **Pulmonary embolus with poor cardiopulmonary reserve**
- **Free floating Iliofemoral or IVC thrombus**
- **History of DVT with planned surgery or multiple risk factors for venous thromboembolism in preoperative patient**
- **Prophylactic use for massive trauma including complex pelvic or multiple long bone fractures, penetrating spinal cord injury with quadriplegia/paraplegia, head trauma or hemorrhage with GCS >8**

Schedule through Interventional Radiology
801.357.1171 / 801.701-6581 - 24 / 7
Can be placed or removed while on full anticoagulation

*IVC Filter Removal

All filters will be considered temporary unless there are permanent indications.

FILTER REMOVAL

- **Schedule Follow up in UVIA Clinic**
- **Additional imaging may be indicated depending on particular case**
- **Can be placed or removed while on full anticoagulation**

PERMANENT INDICATIONS

- **Long-term contraindication to anticoagulants**
- **Limited life expectancy with indication for IVC filter**
- **Irretrievable due to filter design or anatomic considerations**

**IVC Filter removal decision will be made by the interventional physician in conjunction with ordering physician.*

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LOWER EXTREMITY ULCER PROTOCOL

The non-healing ulcer evaluation/treatment. Consider underlying pathology.

Venous vs. Arterial

Venous / Arterial

Referral to Wound Care / Podiatry Clinic for management of ulcer

Venous:

Comprehensive Venous workup in Vein Clinic

Superficial vs. Deep Venous Reflus

Superficial Venous Reflux

Endovenous ablation with supplementary measures

Lifelong concervative measures
- Comp stocks
- Activity
- Elevation

Deep Venous Hypertension/ Outflow Compromise

Primary: Idiopathic valvular incompetence

Secondary: Obstructive outflow compromise

DDx:
- DVT
- May-Thurners
- Pelvic mass

Consider for possible revascularization

Podiatry / Wound Care Clinic for long-term management of ulcer

Arterial:

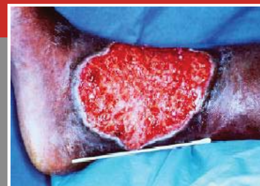
Comprehensive PVD Work-up

Candidate for interventional endovascular treatment

Endovascular Tx:
- PTA/Stent
- Subintimal PTA
- Athrectomy
- Other

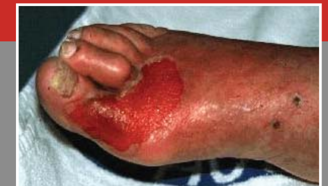
Podiatry / Wound Care Clinic for long-term management of ulcer

Venous Ulcer Characteristics:



- Typically located low on the ankle (Medial > Lateral).
- Ulcers may be multiple or single.
- Typically tender, shallow, and often exudative.
- Frequently associated with surrounding hyperpigmentation, lipodematosclerosis, eczematous changes, and edema.

Arterial Ulcer Characteristics:



- Decreased or absent pedal pulses.
- Ankle Brachial Index (ABI) of < 0.90
- Ulcers usually occur over pressure points.
- Are usually dry and puncuate.
- Surrounding tissue may appear ischemic.

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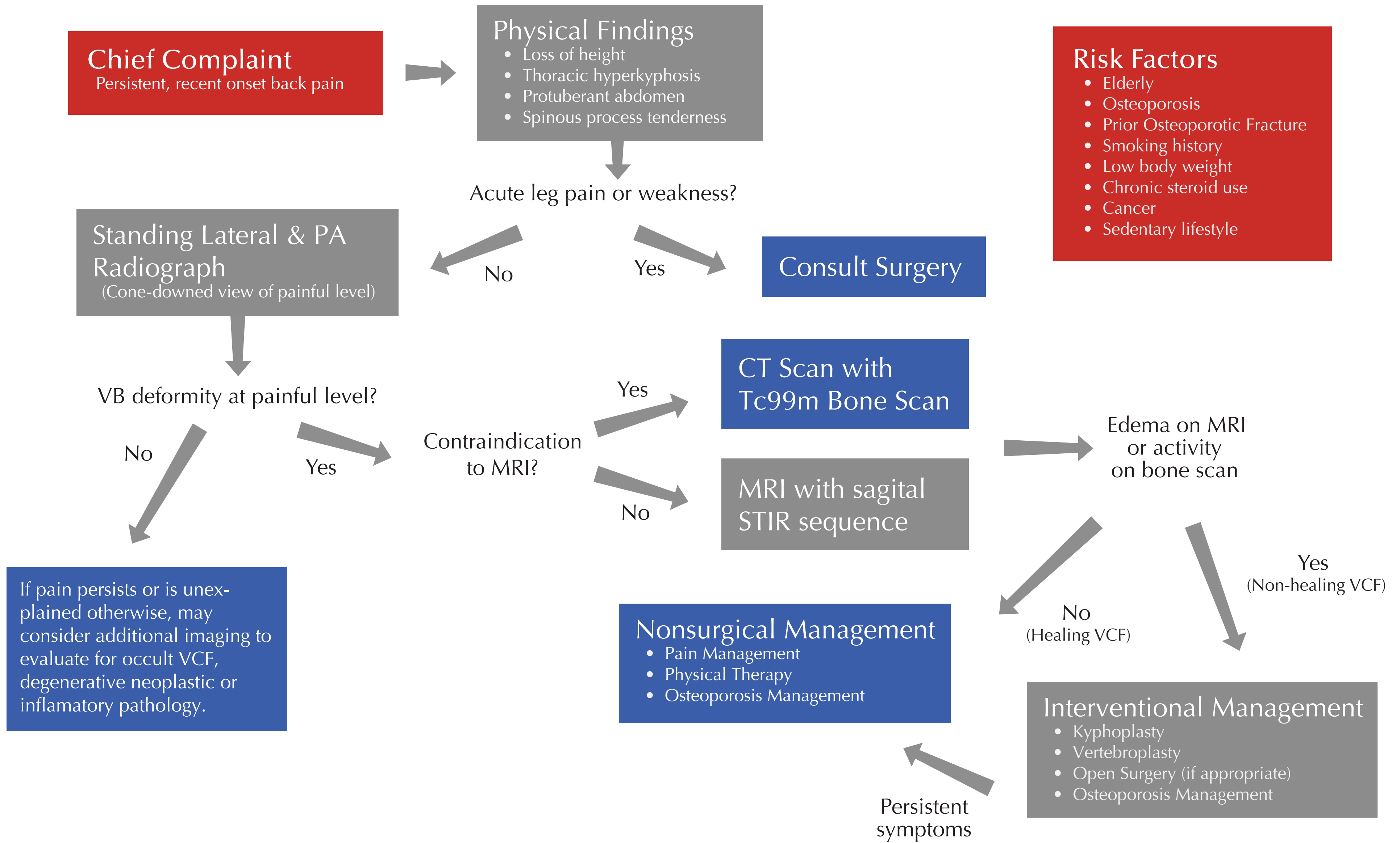
VERTEBRAL COMPRESSION FRACTURES (VCF's)

Management Algorithm for Acute and Subacute Painful Vertebral Compression Fractures.



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NECK / BACK PAIN

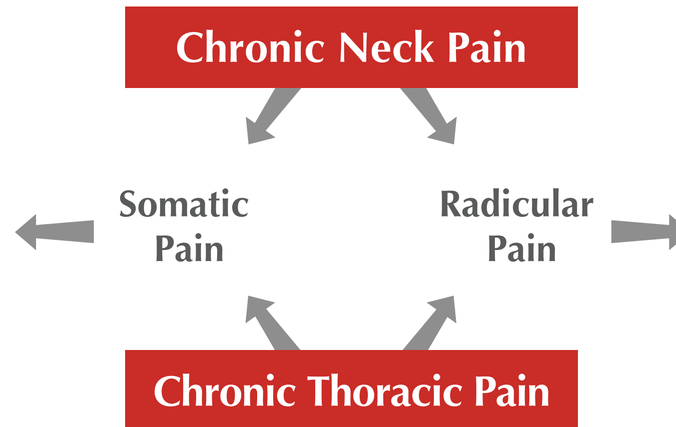
Algorithm for Interventional Pain Management for Pain of Spinal Origin

(Note--this does not include physical therapy, pharmacological management or psychological strategies including interdisciplinary pain management strategies that may be helpful in patients with chronically painful conditions)

I. Facet joint pain
- Diagnostic medial branch blocks
- Medial branch radiofrequency lesioning if medial branch blocks confirm facet joint pain

II. Discogenic pain
- Interlaminar epidural steroid injection.
- If unresponsive and pain is severe, consider consultation with a spine surgeon
- A diagnostic discogram may be considered pre or post surgical consultation

III. Muscular pain
- Trigger point injections may be helpful



- If progressive neurological deficit, spine surgery consultation is necessary.

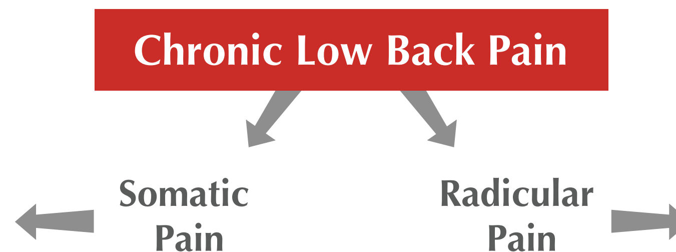
Otherwise
- Consider interlaminar epidural steroid injection.
- If unresponsive and pain is severe, consider spine surgeon consultation
- If prior history of spine surgery, and not a candidate for further surgery, consider spinal cord stimulation

I. Facet joint pain
- Diagnostic medial branch blocks
- Medial branch radiofrequency lesioning if medial branch blocks confirm facet joint pain
- Occasionally intra-articular injections are performed instead of radiofrequency lesioning

II. Discogenic pain
- Epidural steroid injection (interlaminar versus transforaminal depending on pathology)
- If unresponsive and pain is severe, consider consultation with a spine surgeon.
- A diagnostic discogram may be considered pre or post surgical consultation

III. Sacroiliac joint pain
- Sacroiliac joint intra-articular injection
- If response only temporary, consider combining sacroiliac joint injection with sacroiliac joint radiofrequency (literature not as supportive for this option).

IV. Muscular pain
- Trigger point injections may be helpful



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Otherwise
- Consider interlaminar epidural steroid injection.
- If unresponsive and pain is severe, consider spine surgeon consultation
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