



## Association for Radiologic & Imaging Nursing

### CLINICAL PRACTICE GUIDELINE

#### Vertebroplasty & Kyphoplasty

##### Overview

Vertebroplasty and kyphoplasty are minimally invasive, imaged-guided percutaneous procedures performed to treat painful vertebral compression fractures (VCF). Vertebroplasty is also known as acrylic vertebroplasty, cement vertebroplasty, percutaneous vertebroplasty, and vertebral augmentation). These procedures are commonly performed as outpatient procedures for treatment of osteoporotic, metastatic, and benign lytic lesions such as hemangiomas of the spine. Vertebral fractures can occur secondary to and further complicate osteoporosis, cancer metastatic disease or tumors, as well as traumatic injury. When fractured, the bone compresses causing pain and possible deformity.

##### Target Audience

Radiologic and imaging nurses working in the interventional radiology department or pre and post recovery areas.

##### Content/Strategies

Vertebroplasty is a procedure injecting cement through a needle percutaneously inserted into the body of the vertebrae to stabilize the compression fracture. The injected cement acts to splint and stabilize the fracture (ACR, 2009). Imaging is used for correct placement of the needle and evaluation of the procedure and may involve fluoroscopy or computed tomography (CT).

Kyphoplasty, also called balloon-assisted vertebroplasty, involves the additional use of a small balloon used to create a space in the vertebrae for the cement injection.

##### Nursing Considerations

1. Contraindications
  - a. Coagulopathies
  - b. Current infection (active osteomyelitis or systemic infection)
  - c. Allergy to the bone cement
  - d. Spinal cord compromise
  - e. Nonsymptomatic compression fractures
  
2. Pre-Procedure
  - a. Review of medications and allergies
  - b. Adequate intravenous access (fluids and prophylactic antibiotics if ordered).
  - c. Proper consent and assessment as required for possible sedation
  - d. Neuro assessment is important to establish baseline neuro deficits.
  - e. Proper positioning – often these patients are frail elders who must be positioned prone for the procedure.
    - i. Bony prominences must be protected
    - ii. Care in moving patients to prevent causing fragility fractures to legs and ribs.

iii. Adequate airway maintenance in the prone position must be assured.

3. Intra-Procedure

- a. Universal protocol according to the Joint Commission is required, including a “timeout” conducted in the setting with the relevant staff in place.
- b. Assist with assuring absolute sterility
- c. Monitor appropriately per sedation protocols
- d. Assess pain, comfort levels, level of sedation, adequacy of ventilation and tolerance of procedure.

4. Post-Procedure

- a. Rest supine. Time required will depend on patient’s condition but typically is 1-2 hours (Singh, 2012).
- b. Monitor vital signs, urinary output, sensory and motor strength.
- c. Neurological status should be assessed at regular intervals and compared to baseline assessment.
- d. Initial ambulation should be assisted and/or observed to assure safety from falls.
- e. Some patients will achieve immediate relief from pain, but may require up to 48 hours for resolution of pain.
- f. Monitor pain
- g. Provide analgesia or other medications or therapies as prescribed.
- h. Monitor signs of complications.

5. Possible Side Effects

- a. Bleeding at the site
- b. Transient increase in pain
- c. Transient fever

6. Complications

- a. Rates of complications are low, but are primarily caused by leakage of PMMA into adjacent structures (Jensen, 2007) or vascularly.
  - i. Leak of PMMA along injection track, through fracture lines, into adjacent spaces.
  - ii. May cause spinal cord or nerve root compression
  - iii. Pulmonary embolism of cement
- b. Cerebrospinal fluid leak
- c. Fractures from lying prone
- d. Bleeding
- e. Infection
- f. Pneumothorax
- g. Allergic reaction

7. Signs of Complications

- a. Worsening pain
- b. Neurologic changes
- c. Respiratory distress
- d. Loss of bladder or bowel control
- e. Itching, hives or symptoms of severe allergic reaction

8. Patient/Family Education

- a. Discharge instructions should include post sedation instructions
- b. Patient should be instructed that there may be a transient fever up to 101 degrees F (due to inflammatory response).

- c. Instruction should include signs and symptoms of complications
- d. Instructions on prescribed medications and/or therapies
- e. Whereas patients may have a temporary worsening of pain, if medications do not give adequate relief they should call their physician or seek immediate medical attention.
- f. Seek immediate medical care for complaints of chest pain, shortness of breath, loss of bowel or bladder control, numbness, or tingling in extremities.

## References

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Date Effective: 2009

Revised: January 2014

Approved by ARIN Board: March 2014

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