



Marcus Neuroscience Institute
BAPTIST HEALTH SOUTH FLORIDA

Vertebral Compression Fractures

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Disclosures

Frank D. Vronis, M.D., Ph.D., faculty for this educational activity, has no relevant financial relationships with ineligible companies to disclose, and has indicated that the presentation or discussion will not include off-label or unapproved product usage.

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Objectives

At the end of this lecture, participants will be able to:

- Explain how to determine the stability of the spine in light of malignant disease and indications/options for surgical intervention

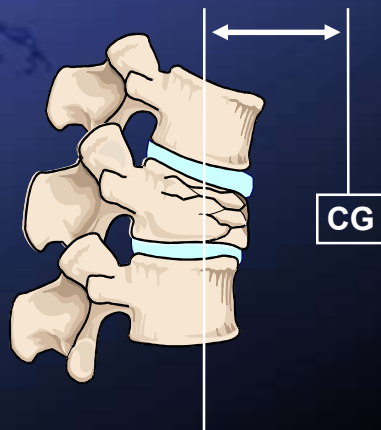
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Biomechanics of Spine Fractures

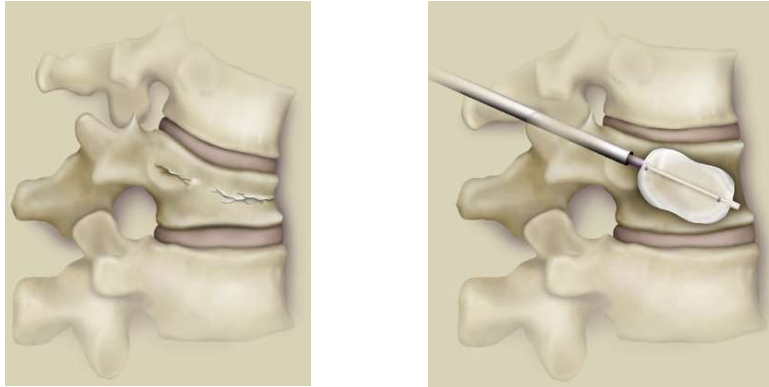
- Center of gravity (CG) moves forward
- Large bending moment created
- Posterior muscles and ligaments must counterbalance increased bending



White III and Panjabi 1990

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New VCF Treatment Option



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Filling The Void With Cement



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Technical Points

- Some relationship between pain relief and amount of cement
- Symmetrical distribution of cement may be more important than the injected volume
- This can be accomplished by a bipedicular or a unipedicular approach
- Slow injection

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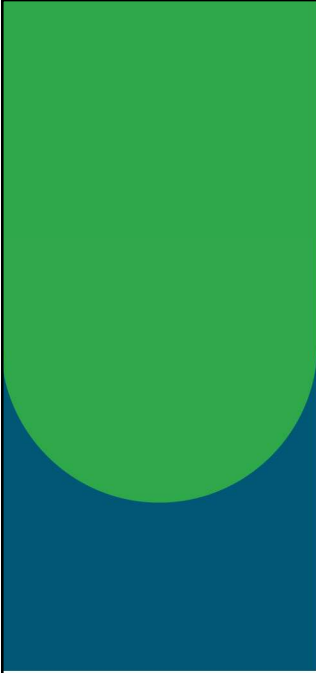


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Kyphoplasty (overall)

- Height regained ~ 4.5 mm
- Kyphosis correction 4° – 7°
- Height regained: mid body > anterior > posterior
- Kyphosis correction: thoracic > lumbar
- Pain relief 90%
- Asymptomatic leakage ~ 10%

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- Cancer-related fractures of the spine are different from osteoporotic ones
- Favorable natural course less likely due to tumor osteolysis, chemotherapy, radiation therapy, gonadal ablation, poor nutrition, chronic steroid use, osteoporosis.
- Also, limited life expectancy and importance of quality of life make cancer patients less amenable to conservative treatment and prolonged immobilization.



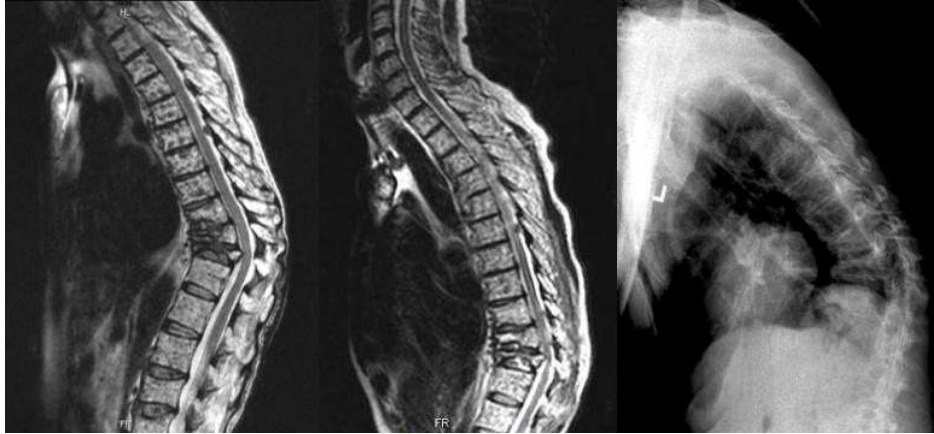
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Pathologic Compression Fx



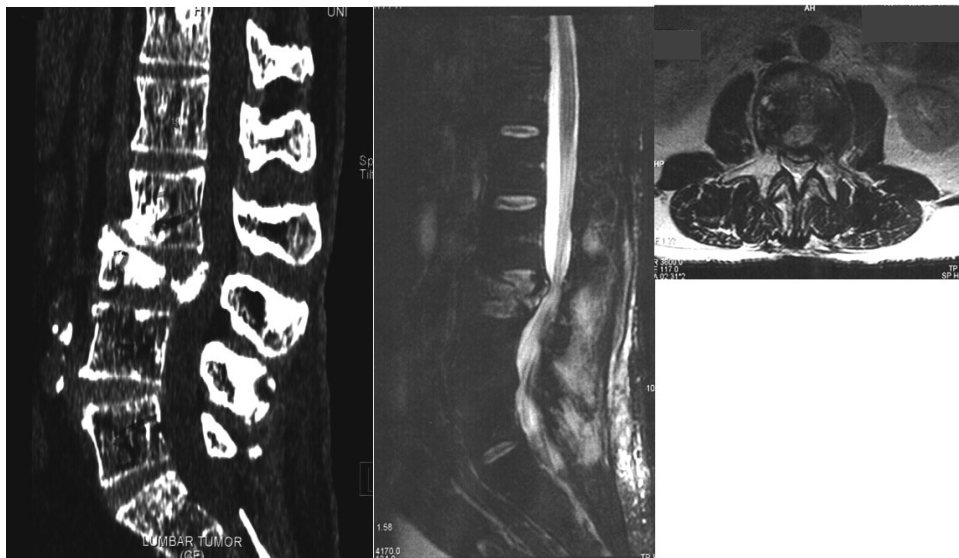
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Myeloma, Kyphosis

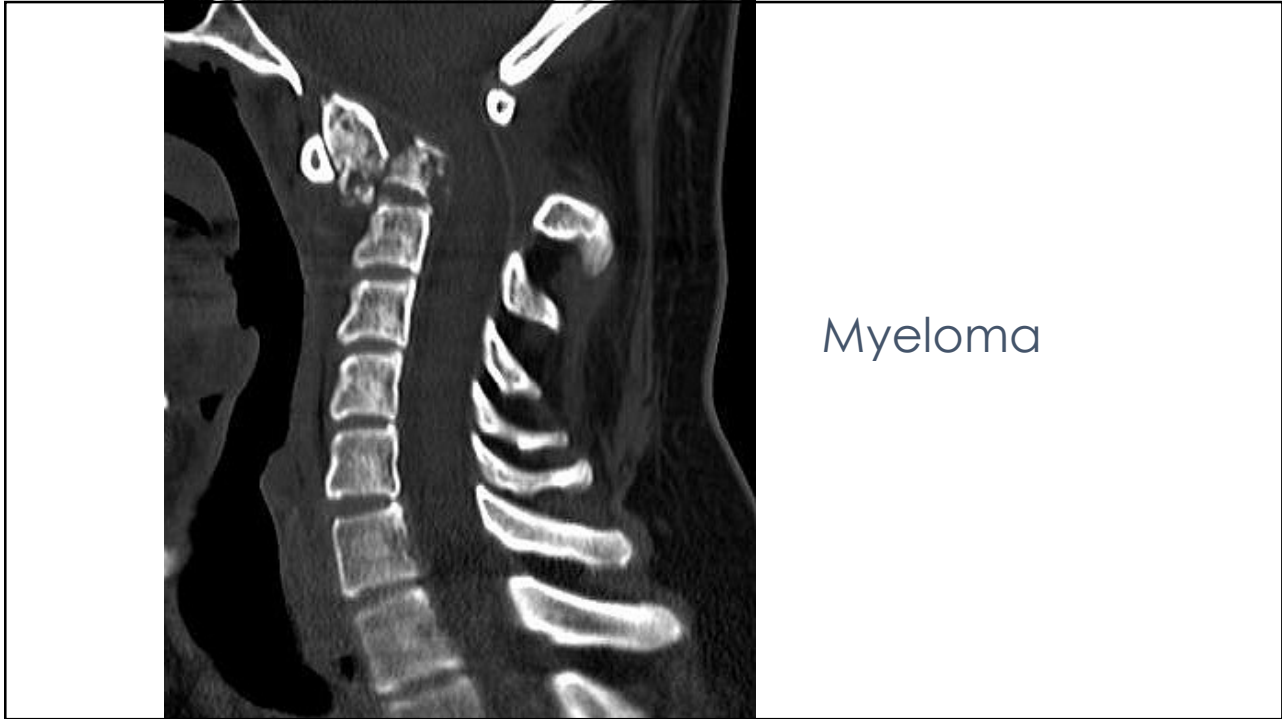


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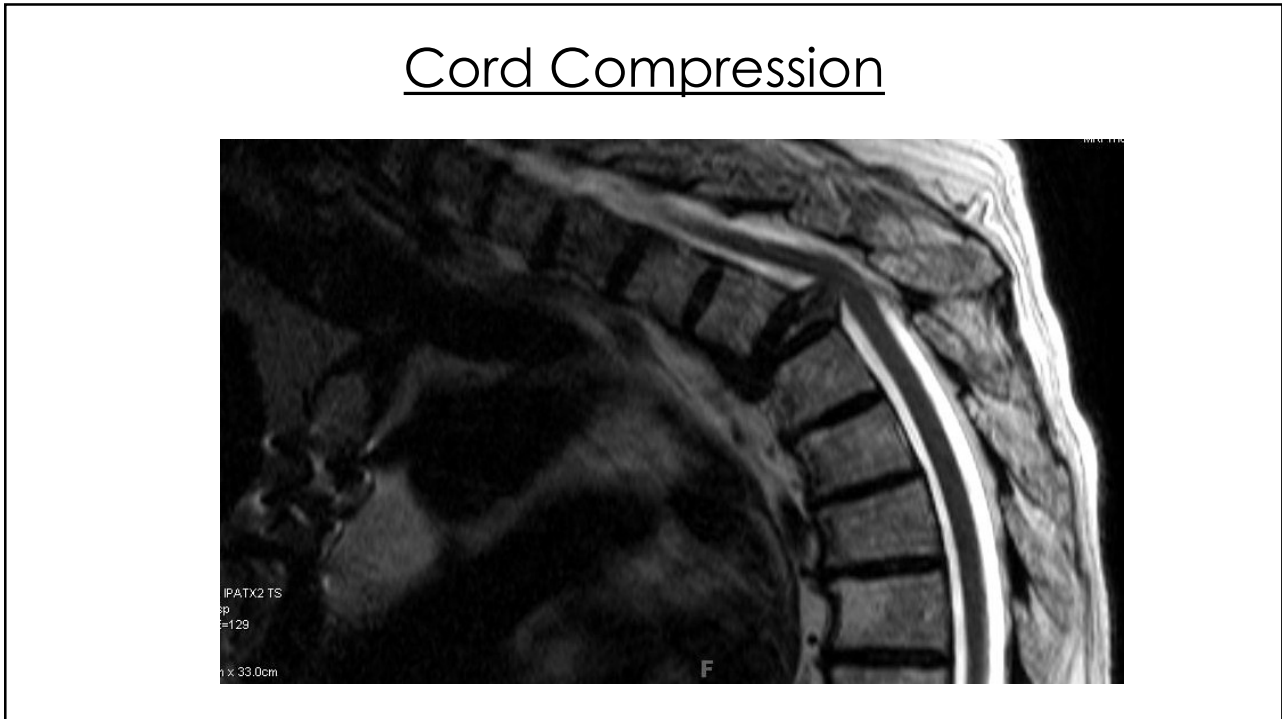
Multiple Myeloma, Retropulsion



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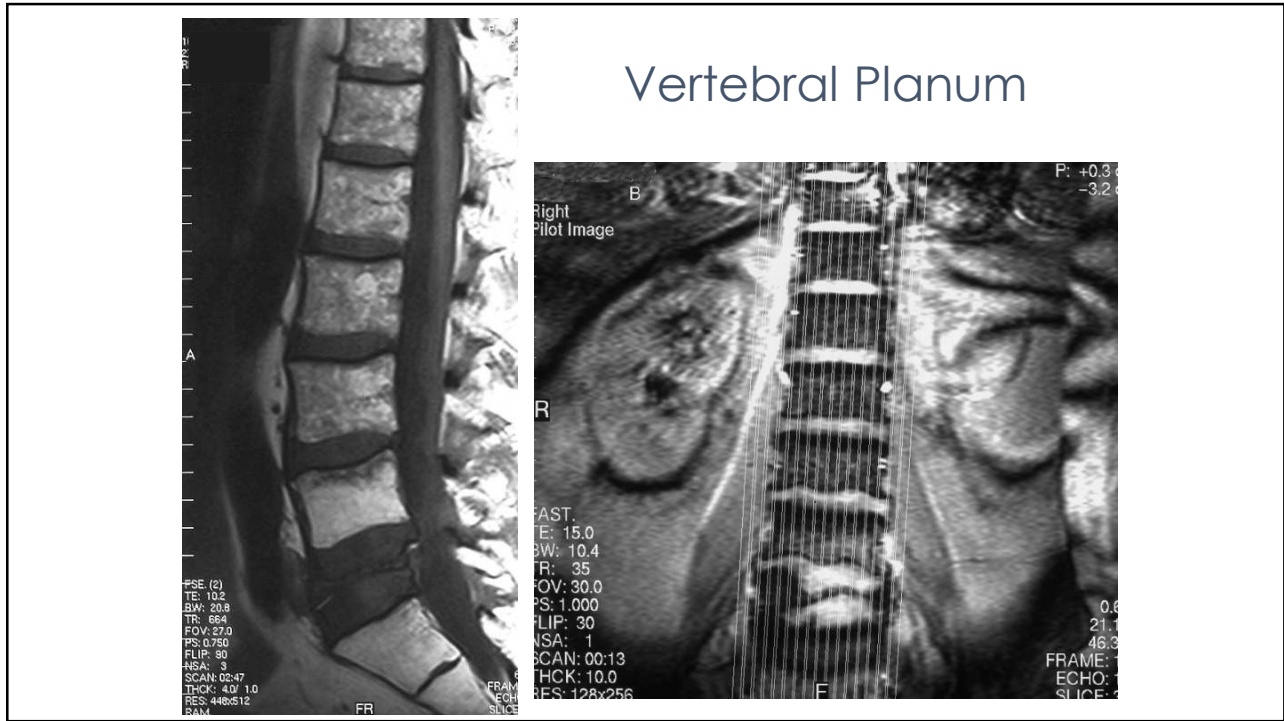
J. Papanastassiou & F. Vronis, JNS Spine, 2009

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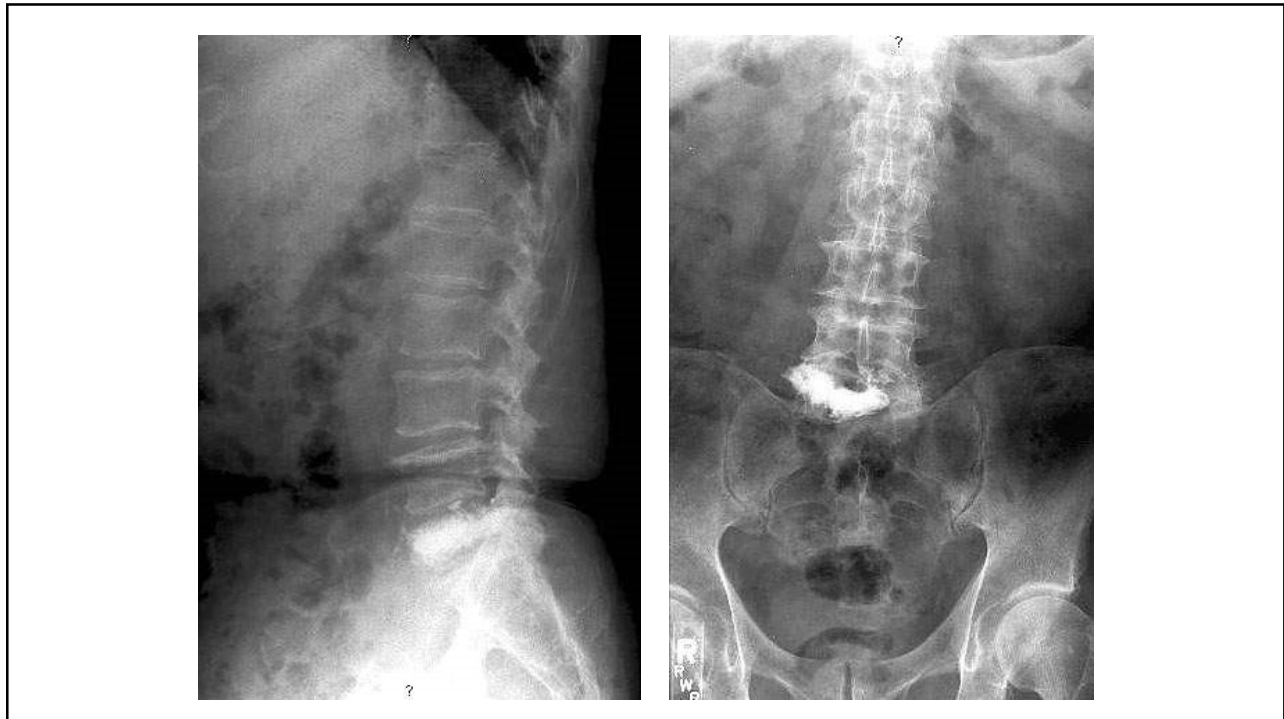
Impending Fracture



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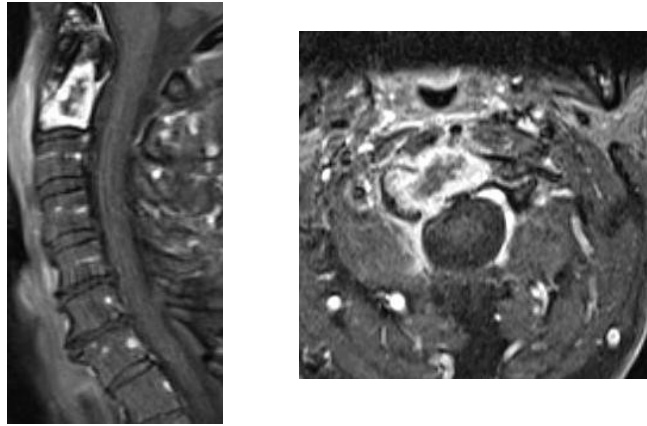


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An MRI of his cervical spine showed enhancing abnormality at the C2 vertebra



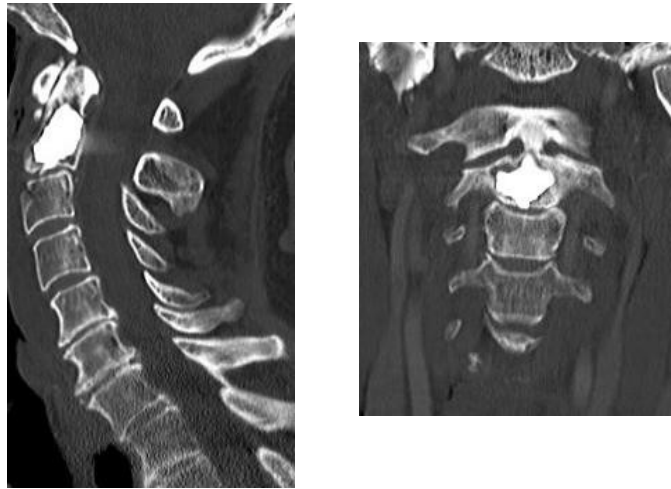
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C2 Kyphoplasty and Biopsy



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Post-op Scan



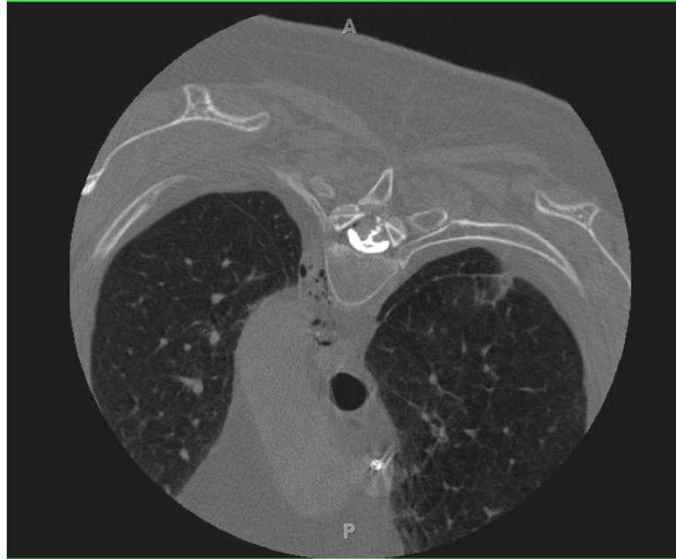
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Potential Complications

- Cord compression (canal)
- Radiculopathy (foramen)
- PE, pneumothorax
- Retroperitoneal hematoma
- Infection

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Cement in the Canal



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Infection

Where and who should be doing this procedure?



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CAFE (Cancer Patient Fracture Evaluation)

- Multicenter, randomized, controlled trial
- Balloon kyphoplasty vs. Non-surgical management in cancer patients
- Originally, study was designed to enroll 200 subjects
 - With 2/3 enrollment, sample size re-evaluated using standard deviation of the control group Roland-Morris 1-month data
 - Analysis indicated that only 43 patients in each group were required to assess the primary endpoint
 - Enrollment was stopped at 134 patients
 - 22 sites in US, Europe, Canada, Australia
- Patient randomization was stratified by study center, gender, and cancer type
- Cross-over to balloon kyphoplasty after 1 month if indicated
 - Of the 64 subjects randomized to NSM, 38 subjects Crossed-over to get BKP treatment (as allowed by the protocol)
- Follow-up visits: 7-10 days (telephone) and visits at 1, 3, 6, 12 months

Berenson & Vronis, Lancet Oncology, 2011

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Conclusion

Kyphoplasty or vertebroplasty should be offered to any cancer patient with

1. Significant pain (VAS ≥ 4)
2. Due to vertebral compression fracture(s) as seen on MRI
3. That corresponds to the clinical examination (exclude degenerative causes of pain).
4. A biopsy should also be done simultaneously.

Similarly, for anybody with osteoporotic compression fracture after 4-6 weeks of bracing and conservative tx

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References

- Berenson & Vrionis, Lancet Oncology, 2011
- J. Papanastassiou & F. Vrionis, JNS Spine, 2009

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Thank You.

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