How to access a bone lesion?

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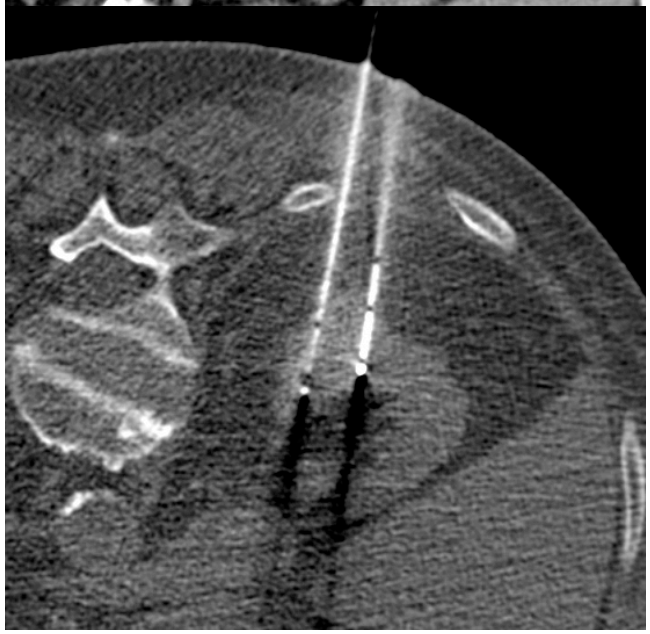
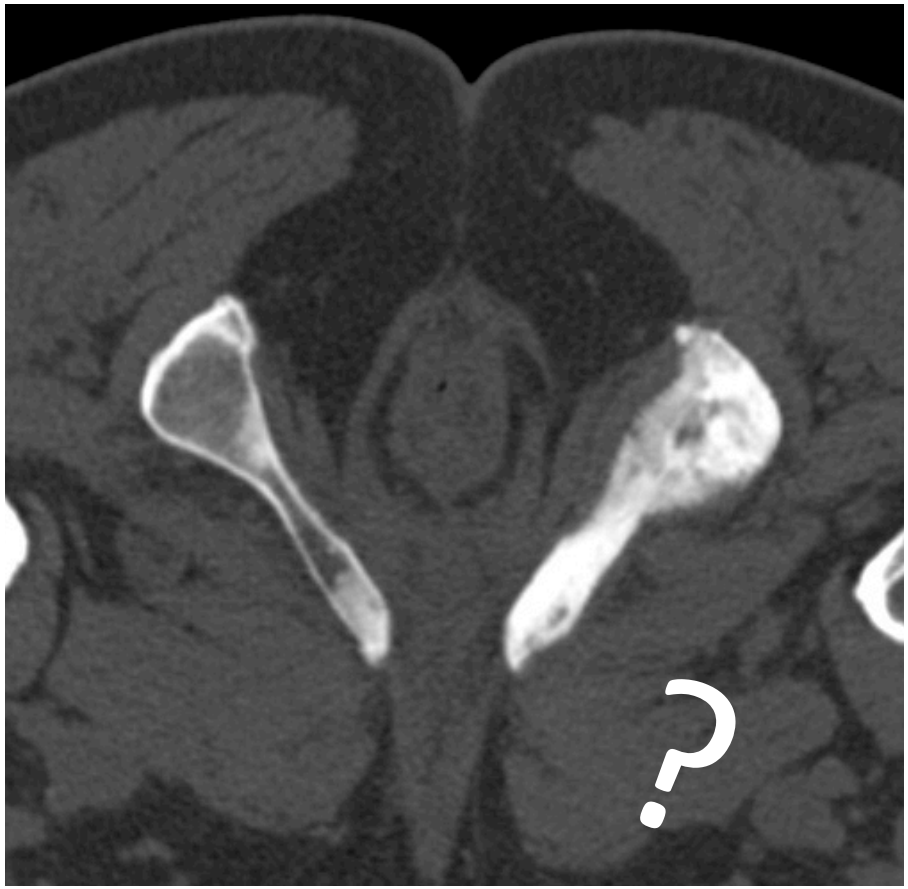
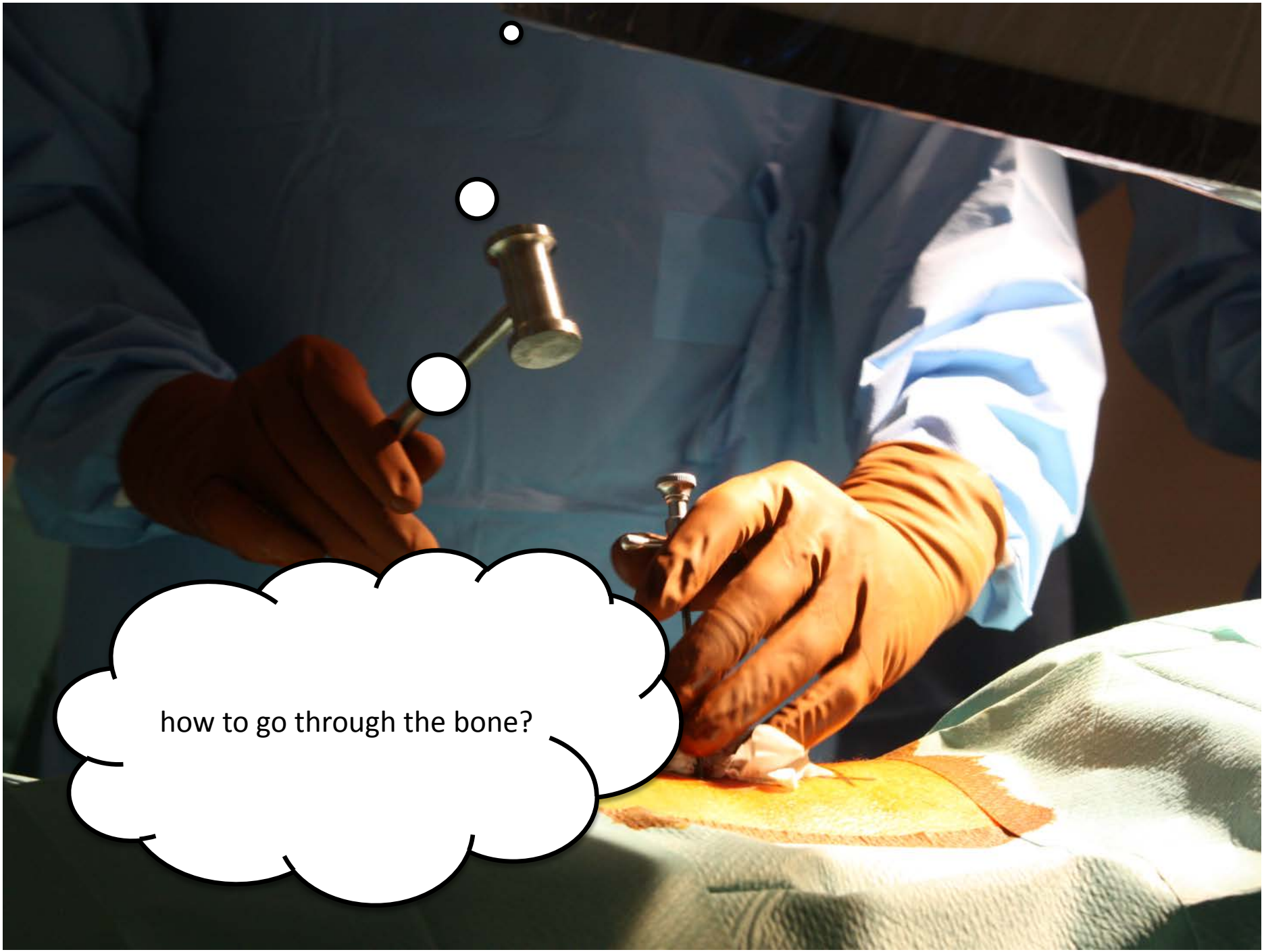
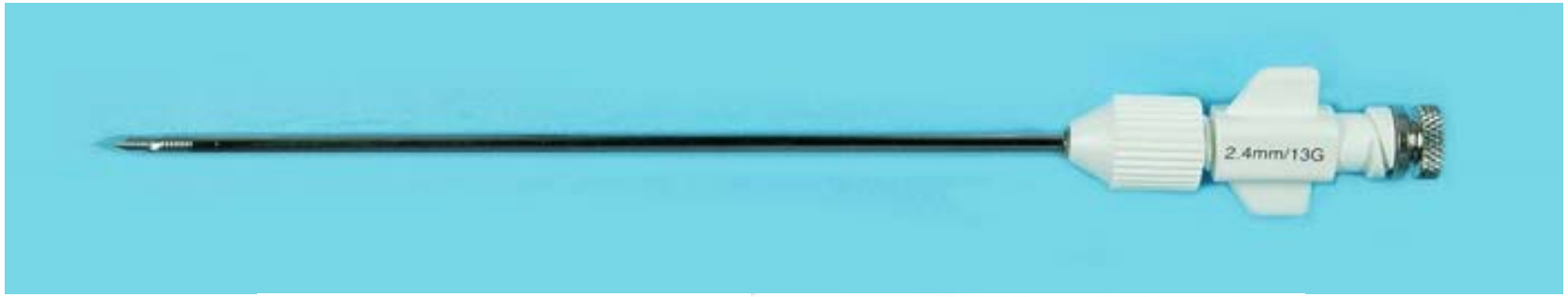


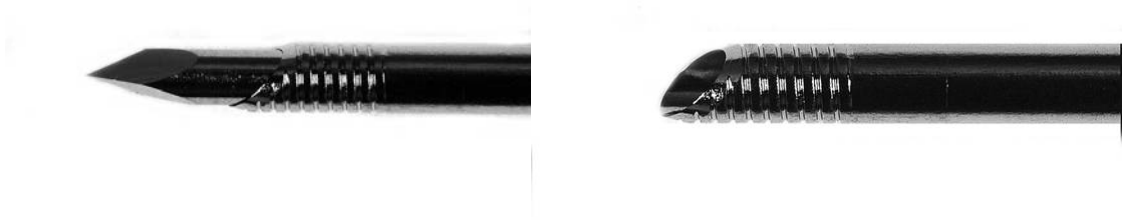



how to go through the bone?

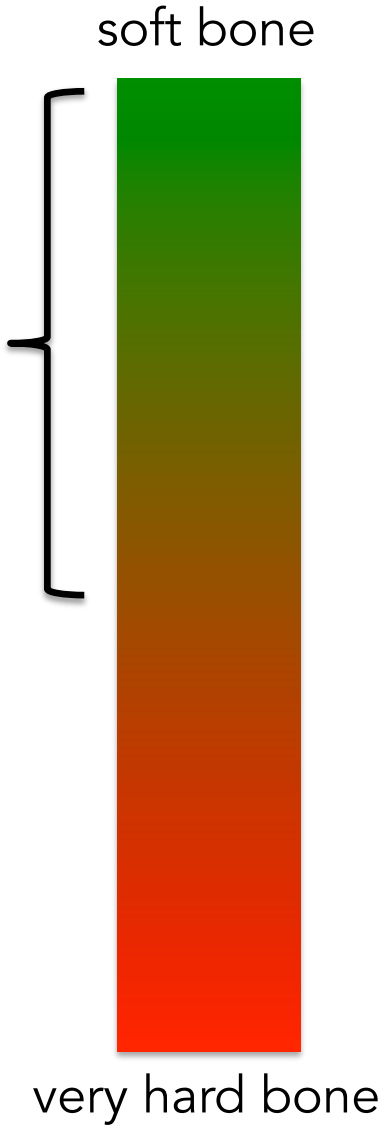
bone biopsy trocar

- diameter > 13G
- diamond tip
- manual &/or hammer



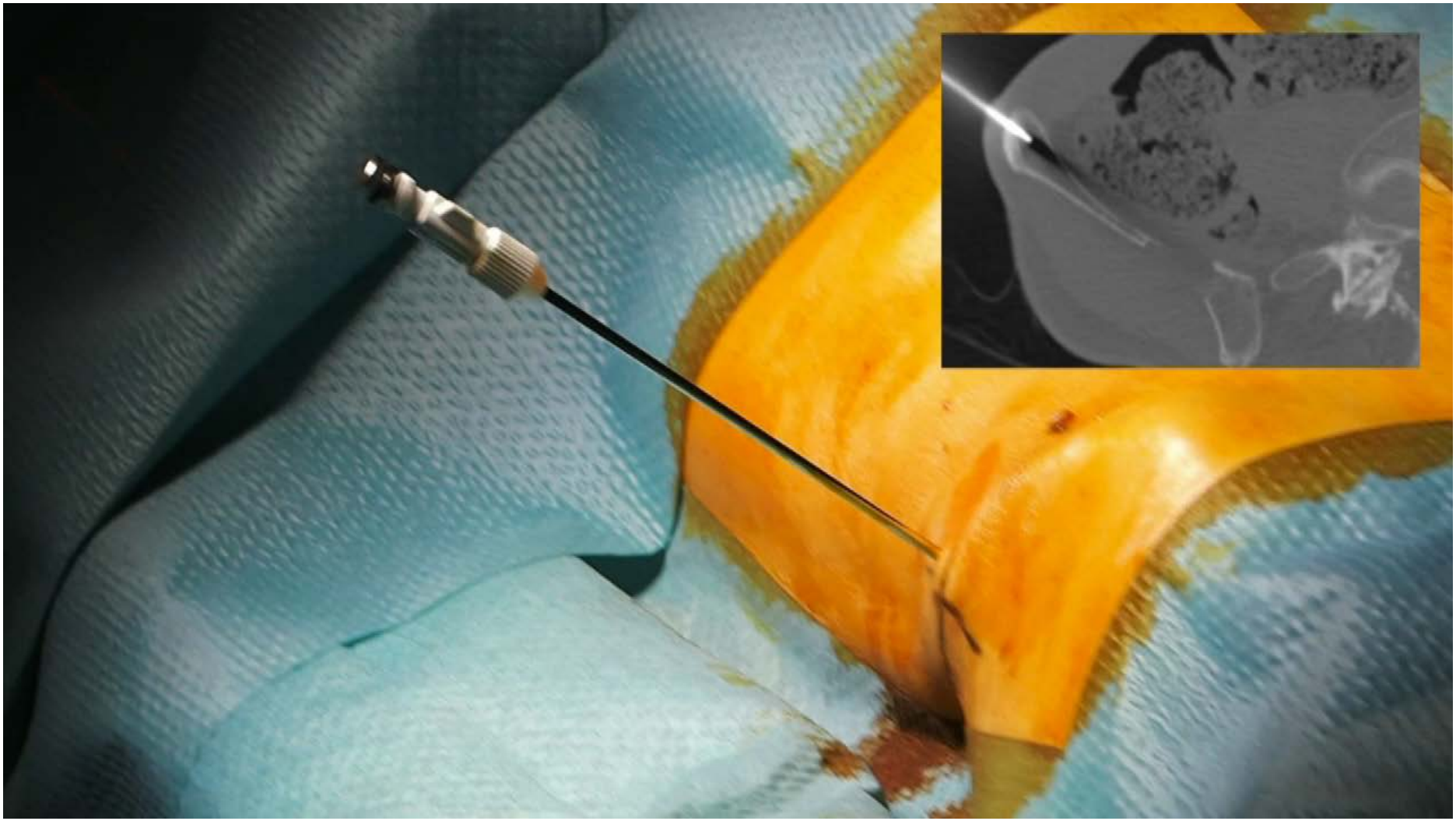


bone biopsy trocar



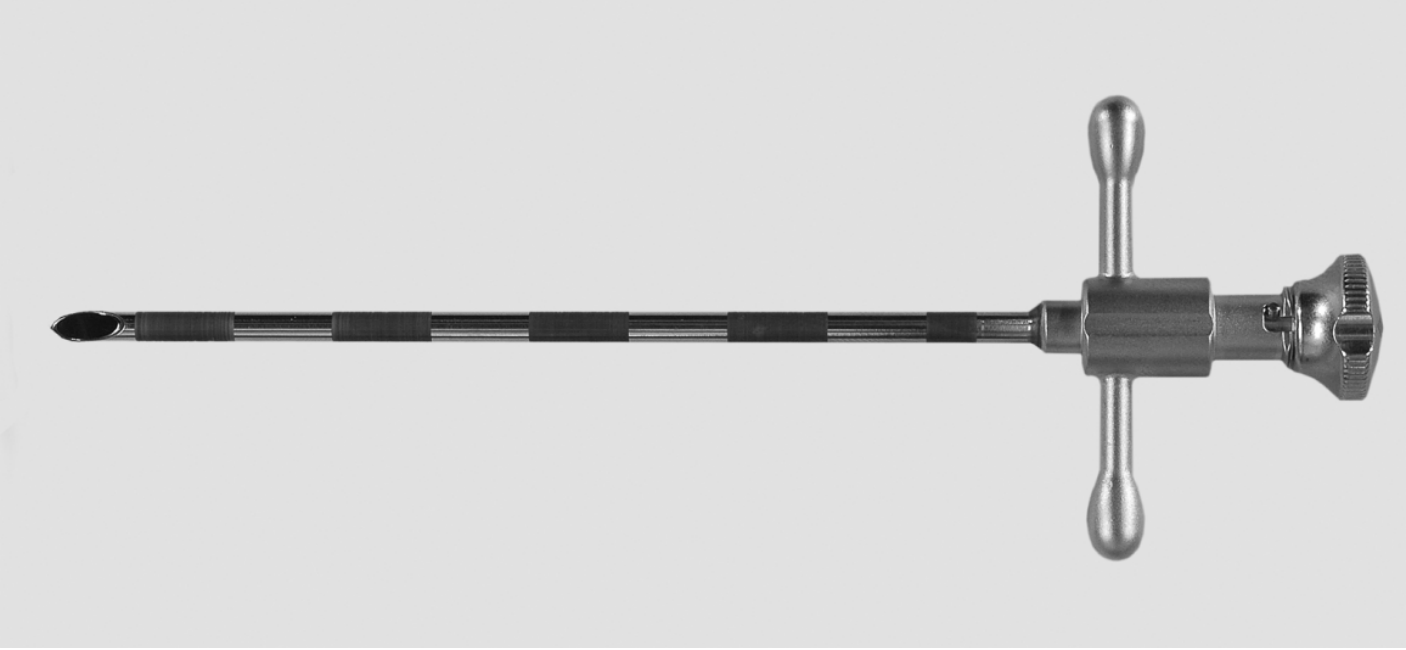
- limited change of direction
- risk of breakage

bone biopsy trocar

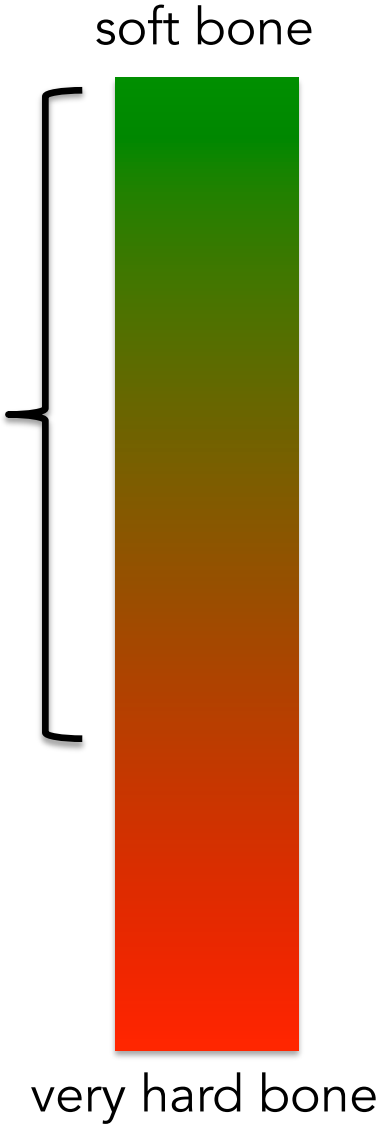


vertebroplasty needle

- diameter up to 8G
- diamond or beveled tip
- manual &/or hammer

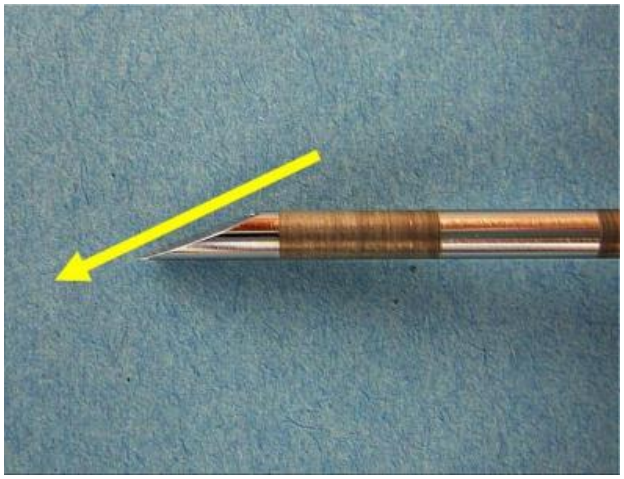


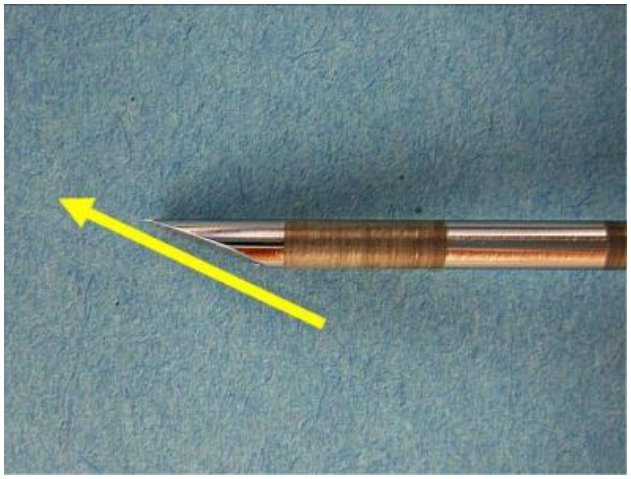
vertebroplasty needle

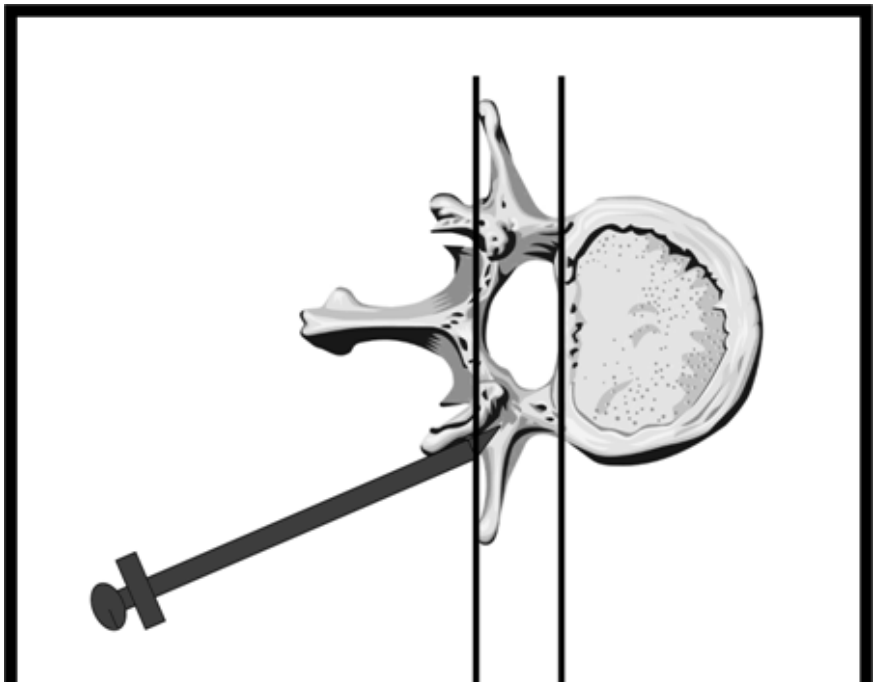


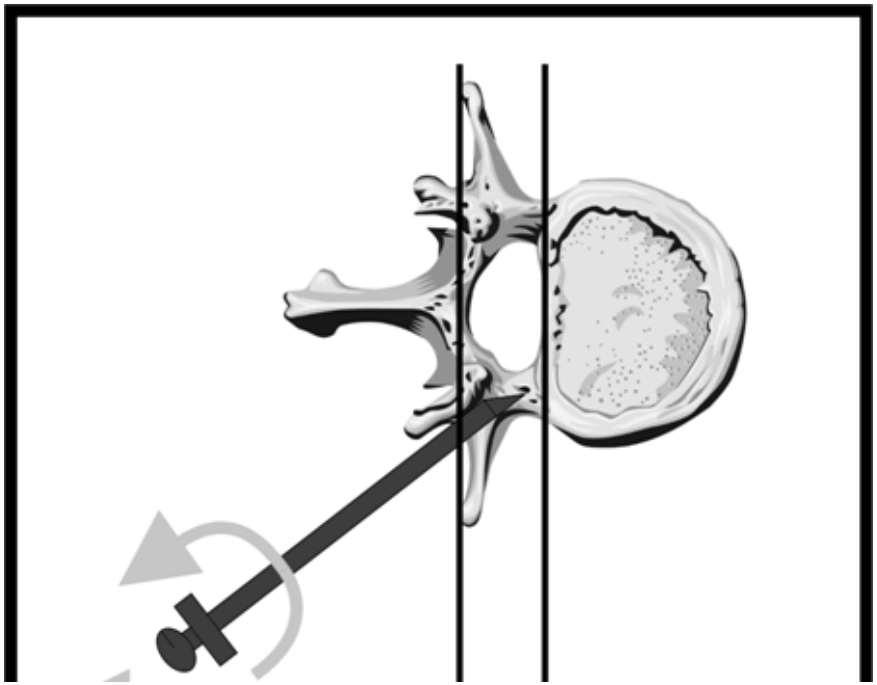
- easier to change direction
- risk of breakage in case of sclerotic lesion

vertebroplasty needle

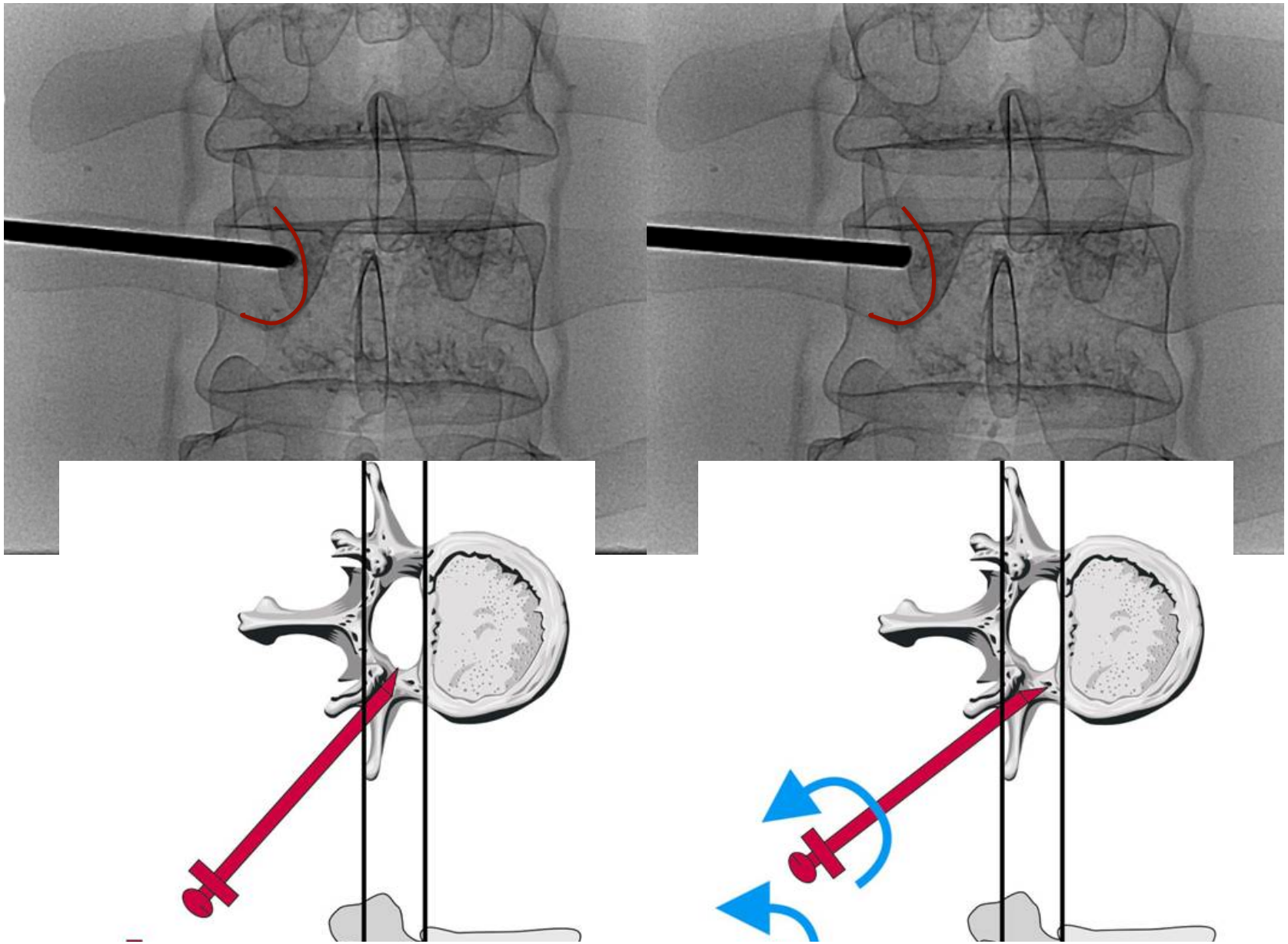






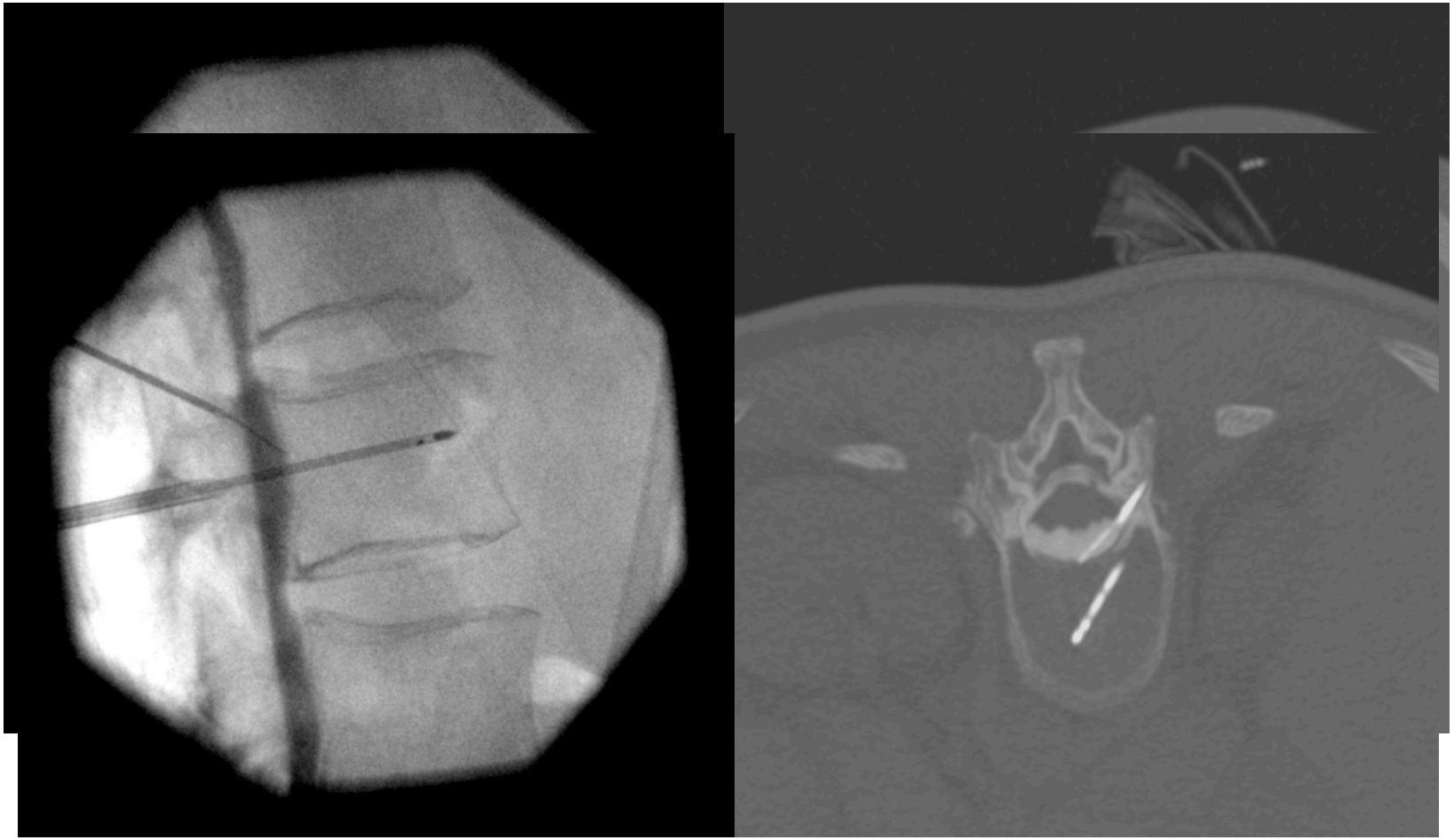


vertebroplasty needle

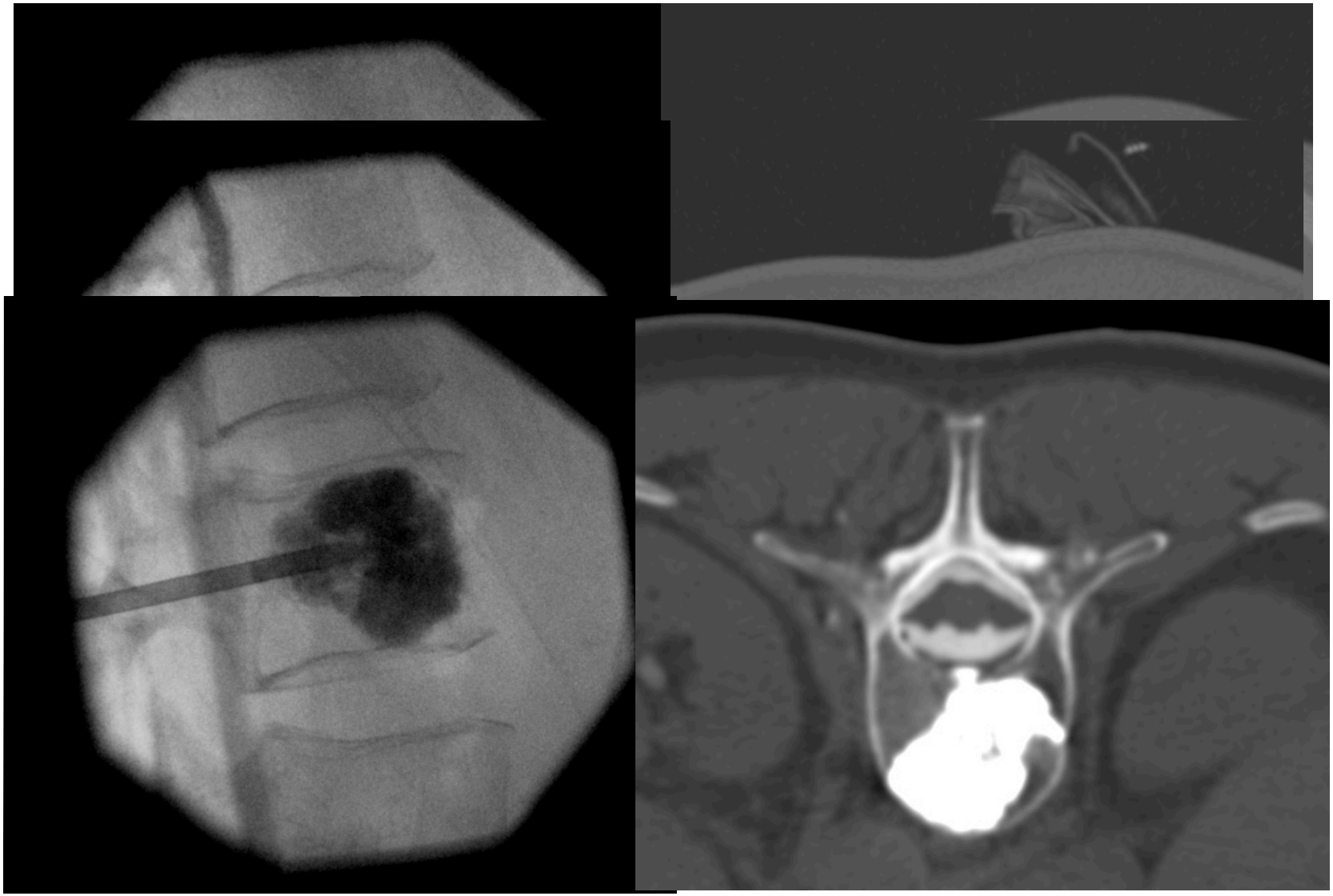


vertebroplasty needle

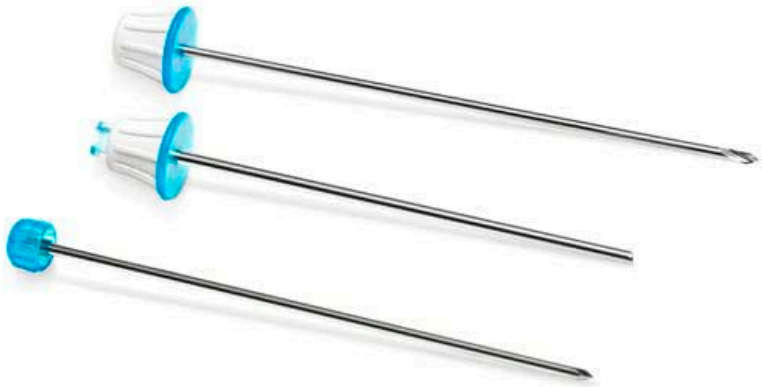
vertebroplasty needle

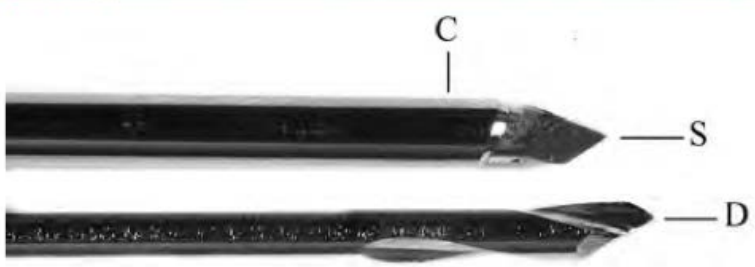


vertebroplasty needle

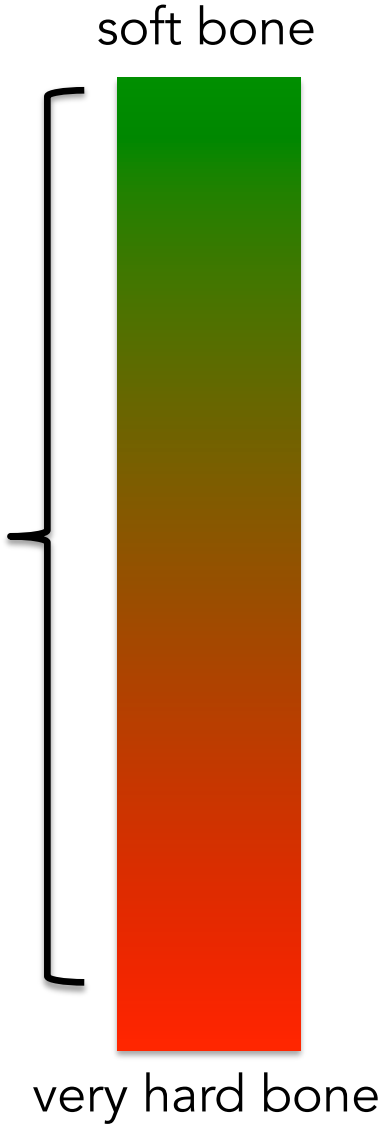


bone trocar with manual drill



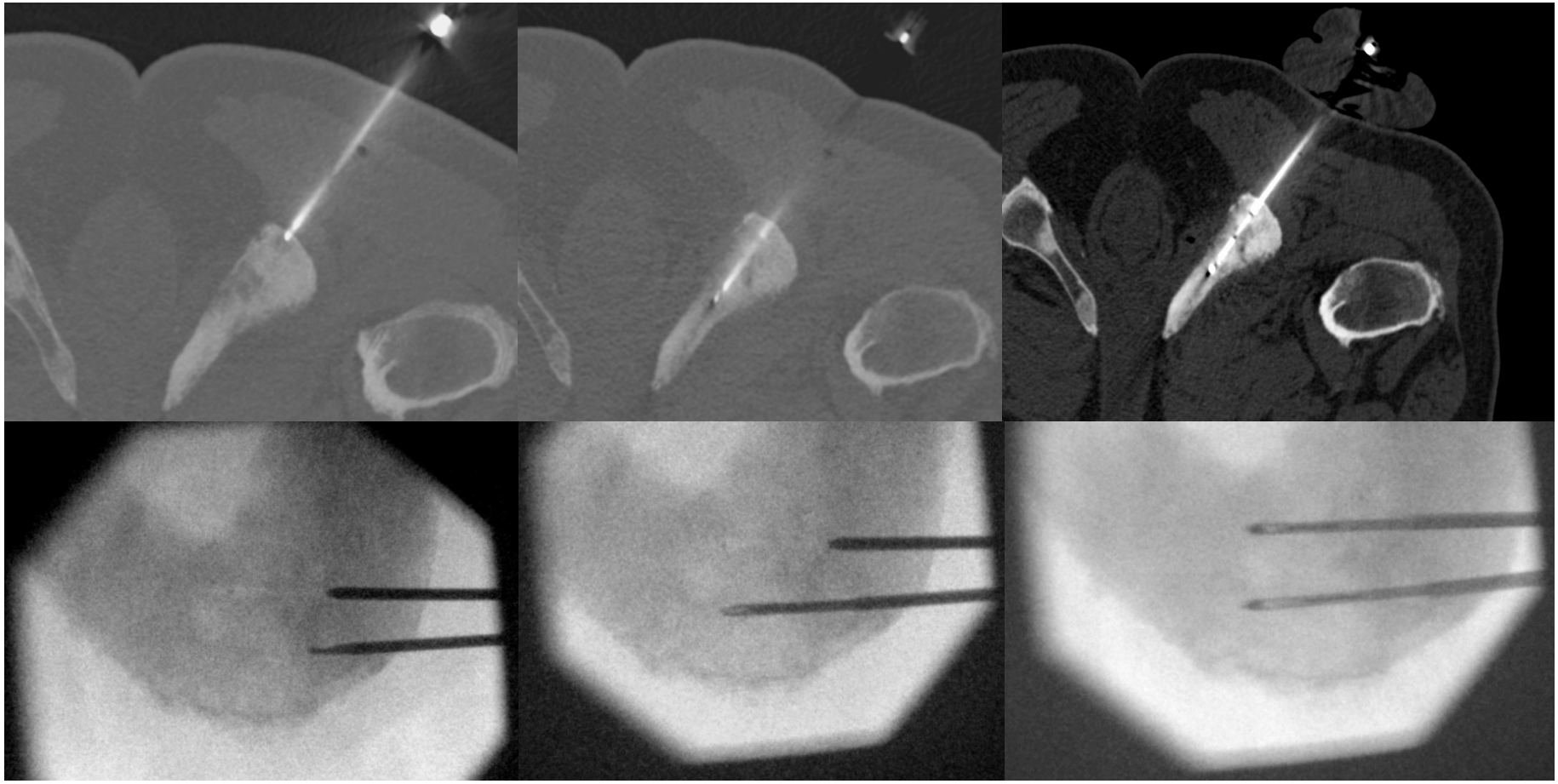


bone trocar with manual drill



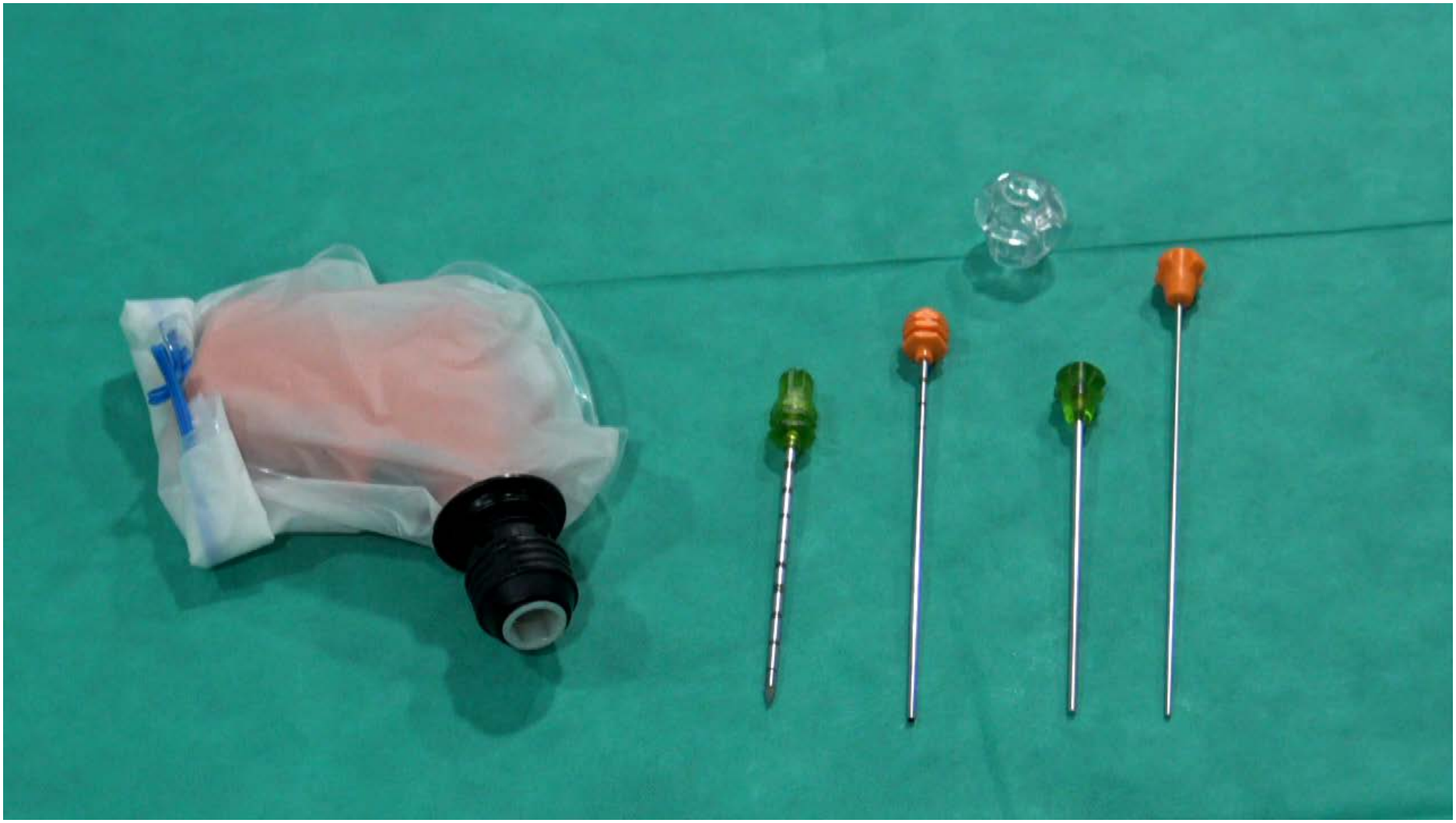
- access through an osteoblastic bone
- damage to your hands!

bone trocar with manual drill

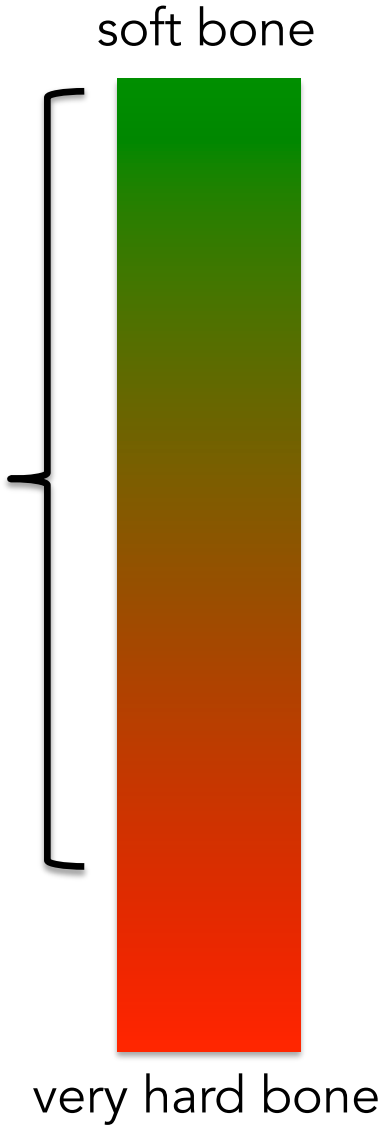


electric drill

electric drill



electric drill



- no need to hammer
- limited for a long pathway in the sclerotic bone

electric drill

Cardiovasc Intervent Radiol. 2016 Oct;39(10):1499-505. doi: 10.1007/s00270-016-1366-6. Epub 2016 May 26.

Percutaneous Biopsy and Radiofrequency Ablation of Osteoid Osteoma with Excess Reactive New Bone Formation and Cortical Thickening Using a Battery-Powered Drill for Access: A Technical Note.

Filippiadis D[1], Gkizas C[2], Kostantos C[2], Mazioti A[2], Reppas L[2], Brountzos E[2], Kelekis N[2], Kelekis A[2].

⊕ Author information

Abstract

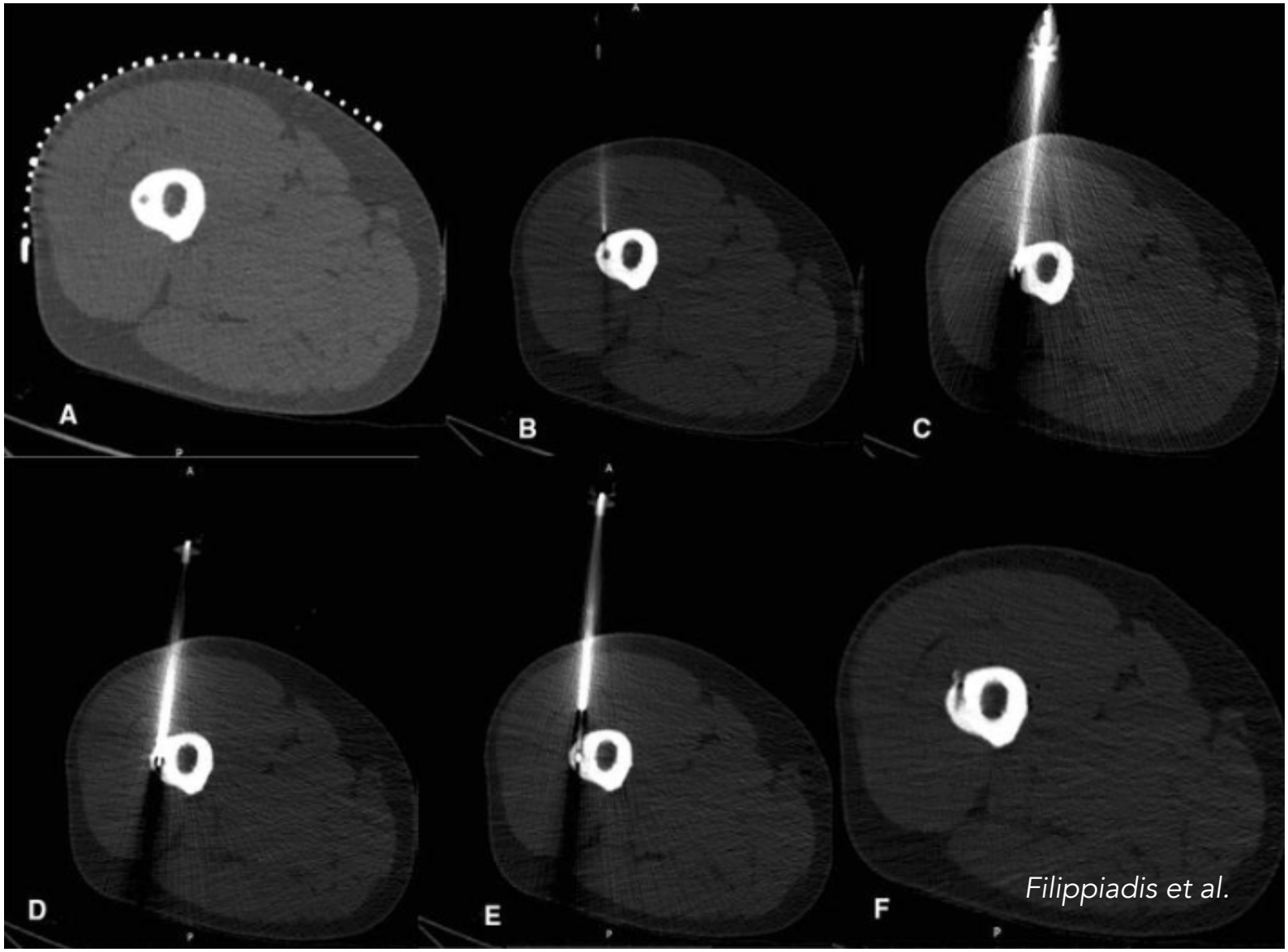
PURPOSE: To report our experience with the use of a battery-powered drill in biopsy and radiofrequency ablation of osteoid osteoma with excess reactive new bone formation. The battery-powered drill enables obtaining the sample while drilling.

MATERIALS AND METHODS: During the last 18 months, 14 patients suffering from painful osteoid osteoma with excess reactive new bone formation underwent CT-guided biopsy and radiofrequency ablation. In order to assess and sample the nidus of the osteoid osteoma, a battery-powered drill was used. Biopsy was performed in all cases. Then, coaxially, a radiofrequency electrode was inserted and ablation was performed with osteoid osteoma protocol. Procedure time (i.e., drilling including local anesthesia), amount of scans, technical and clinical success, and the results of biopsy are reported.

RESULTS: Access to the nidus through the excess reactive new bone formation was feasible in all cases. Median procedure time was 50.5 min. Histologic verification of osteoid osteoma was performed in all cases. Radiofrequency electrode was coaxially inserted within the nidus and ablation was successfully performed in all lesions. Median amount CT scans, performed to control correct positioning of the drill and precise electrode placement within the nidus was 11. There were no complications or material failure reported in our study.

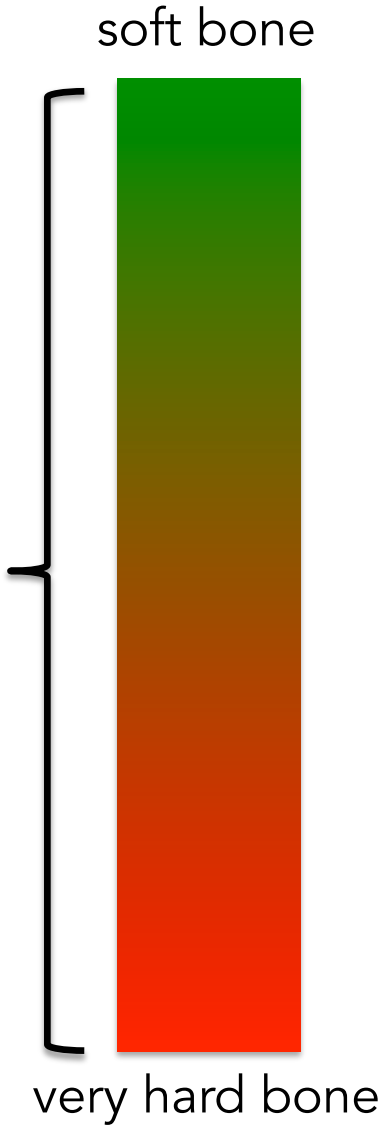
CONCLUSIONS: The use of battery-powered drill facilitates access to the osteoid osteoma nidus in cases where excess reactive new bone formation is present. Biopsy needle can be used for channel creation during the access offering at the same time the possibility to extract bone samples.

electric drill



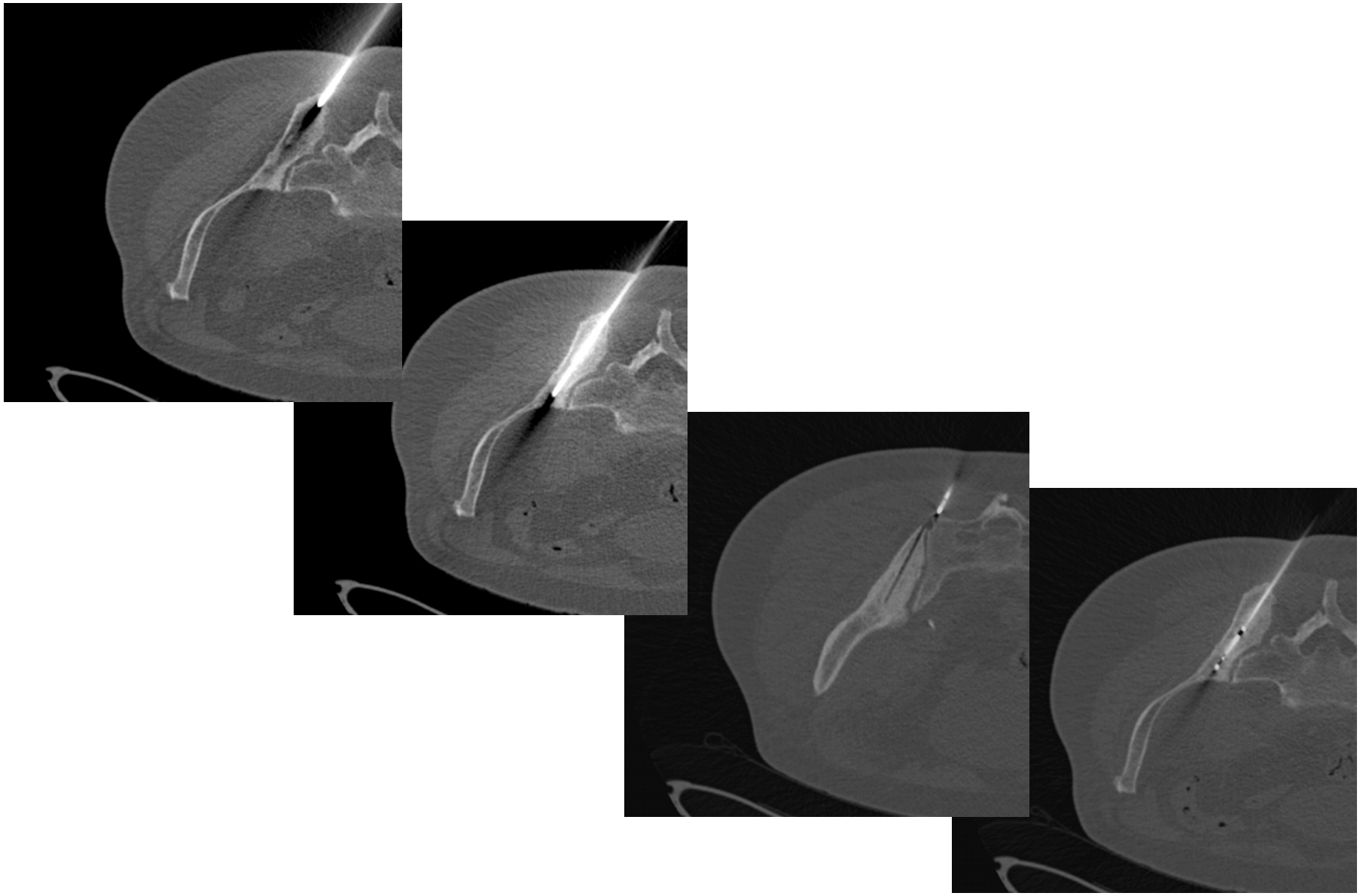
electric drill

electric drill



- almost no limitation

electric drill

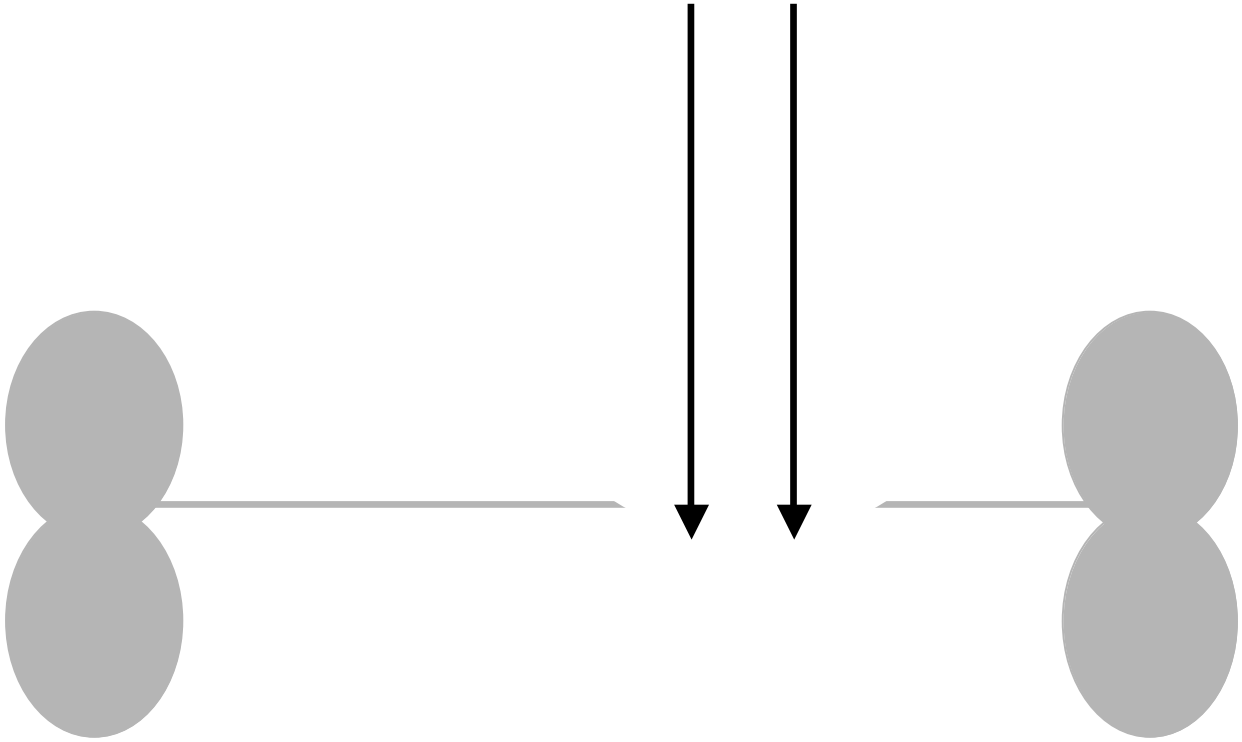


several trocars... you have to adapt to the situation!

several trocars... you have to adapt to the situation!

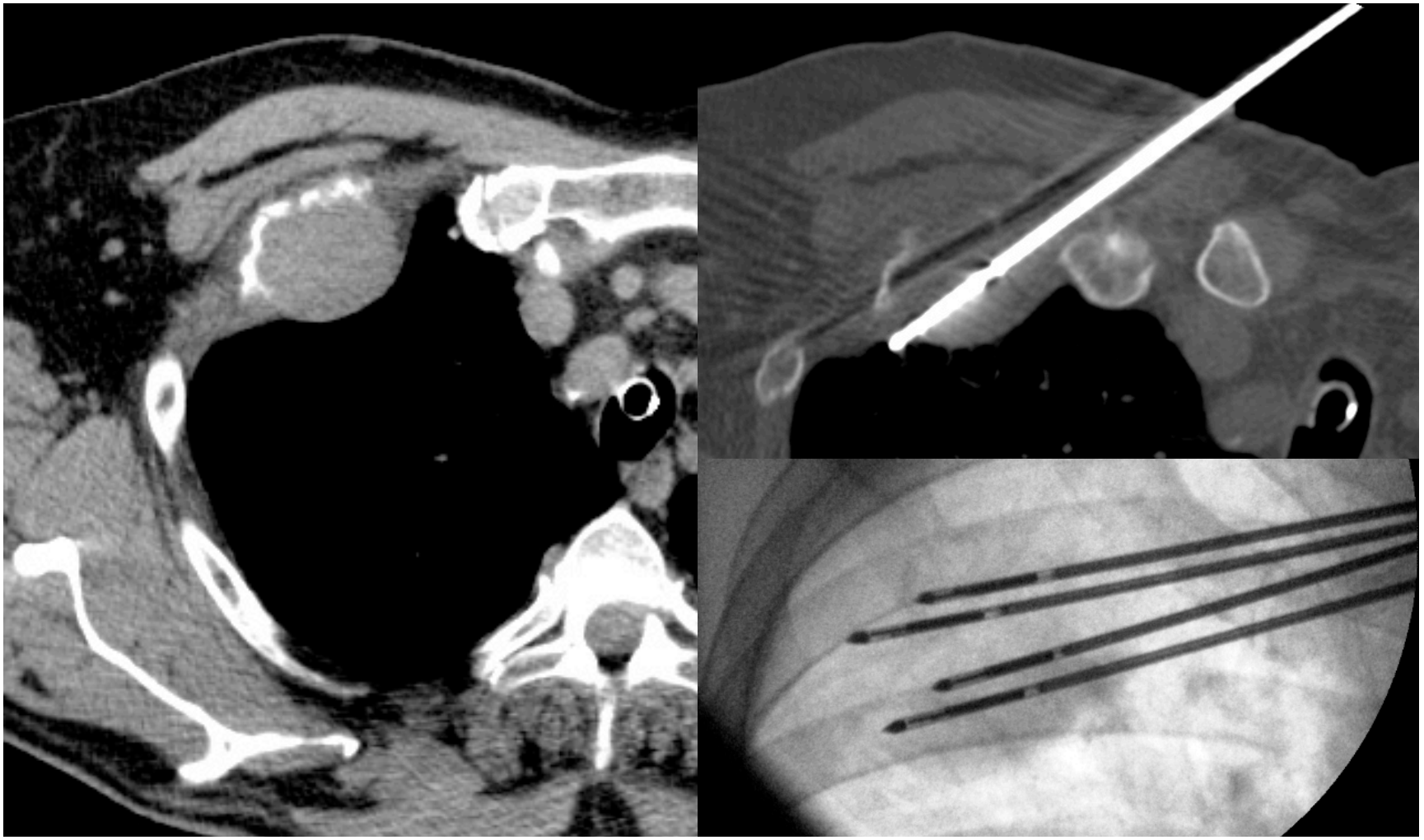
several trocars... you have to adapt to the situation!

1. complete cortical disruption



no need for a bone trocar

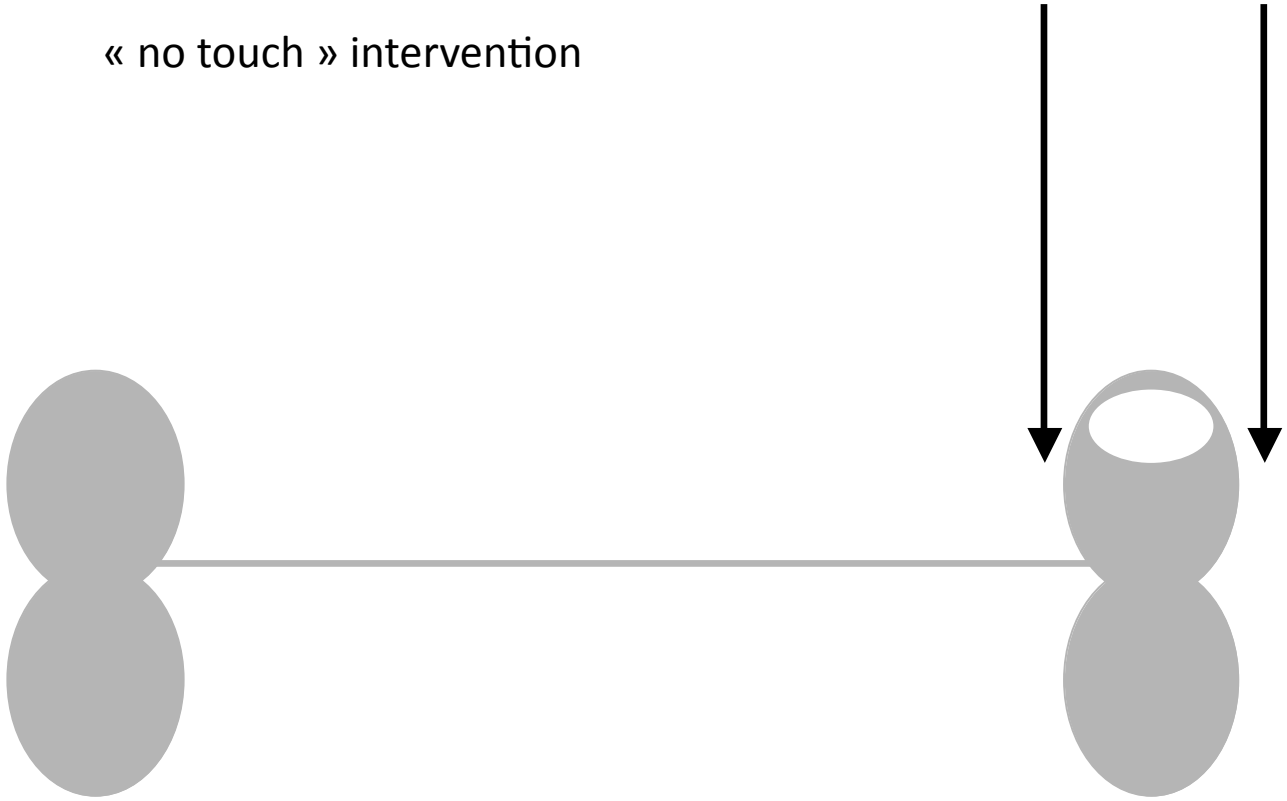
1. complete cortical disruption

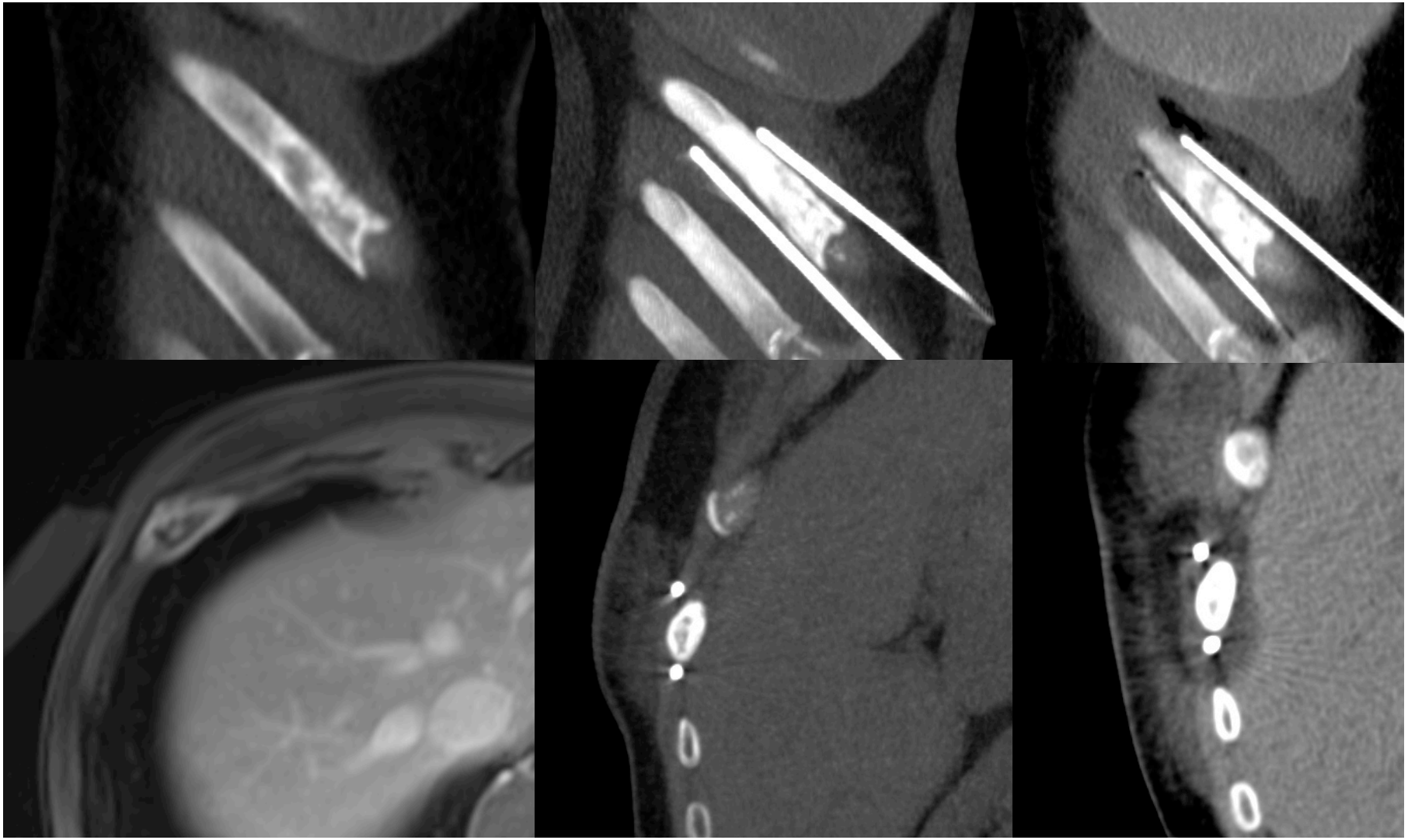


2. thin intact cortex

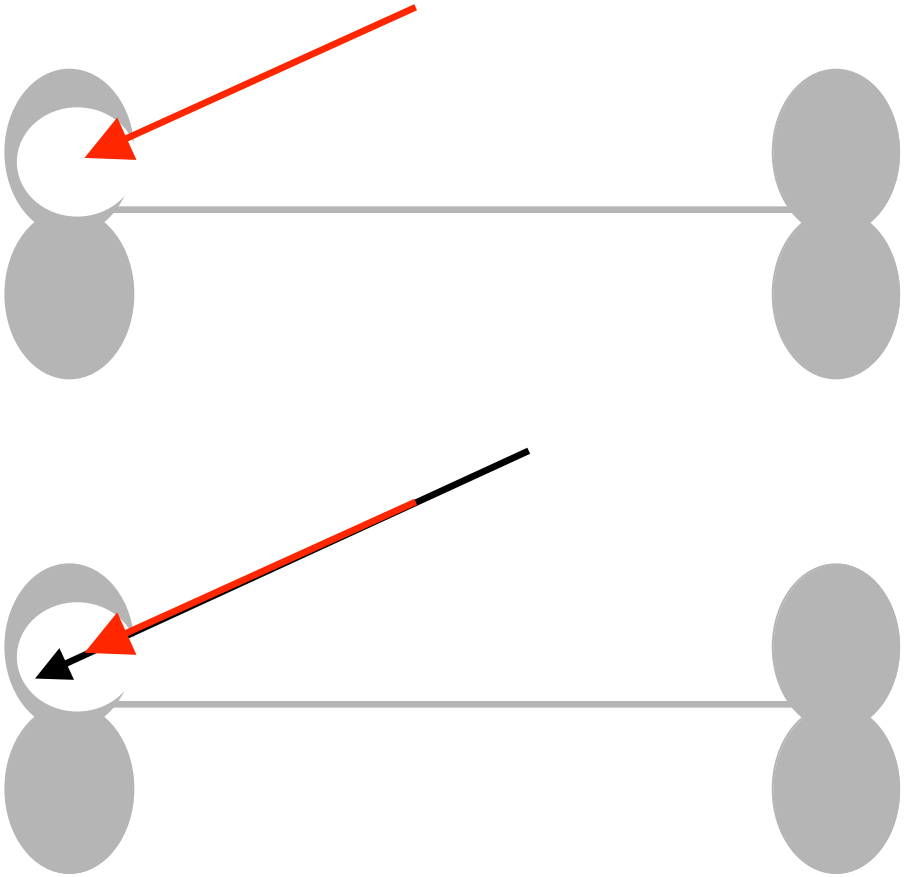
2. thin intact cortex – superficial lesion

« no touch » intervention

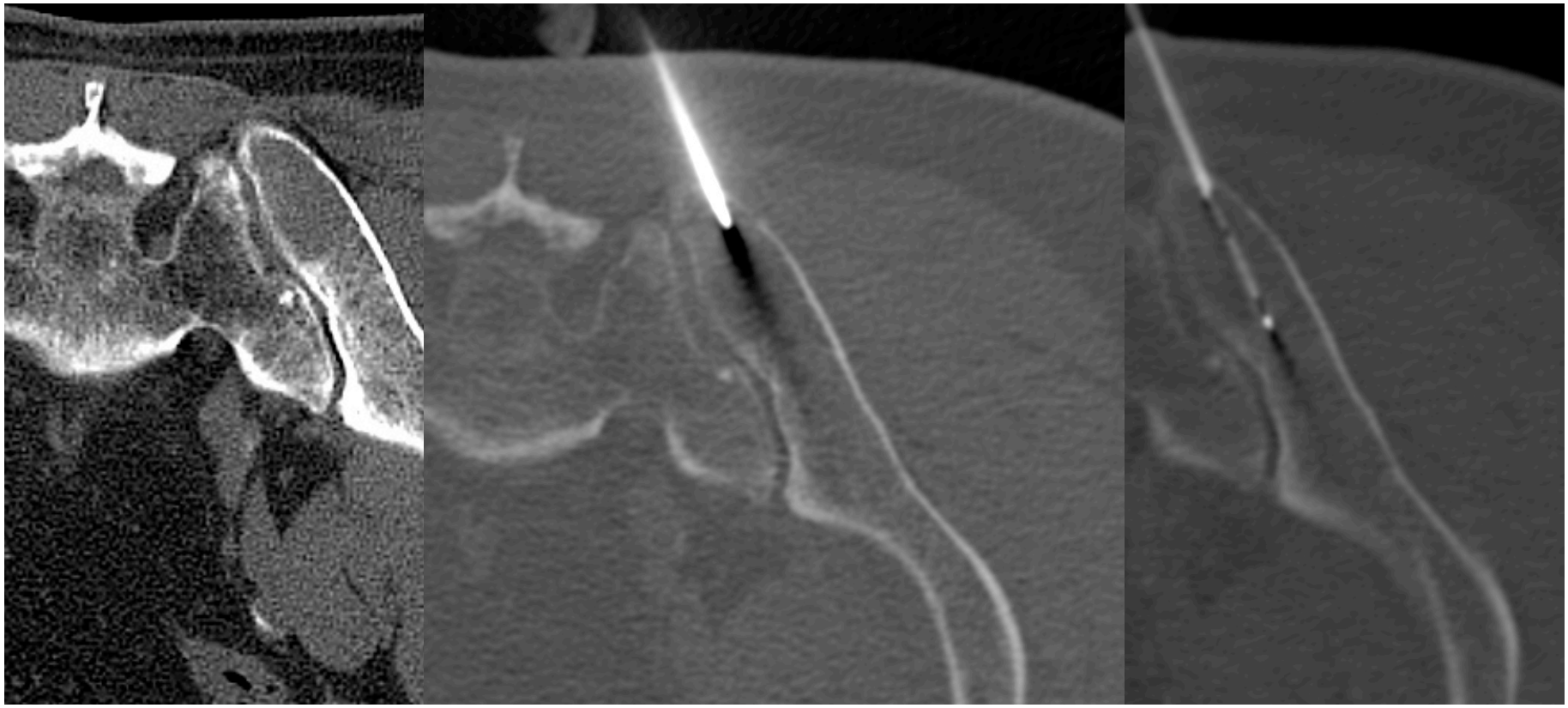


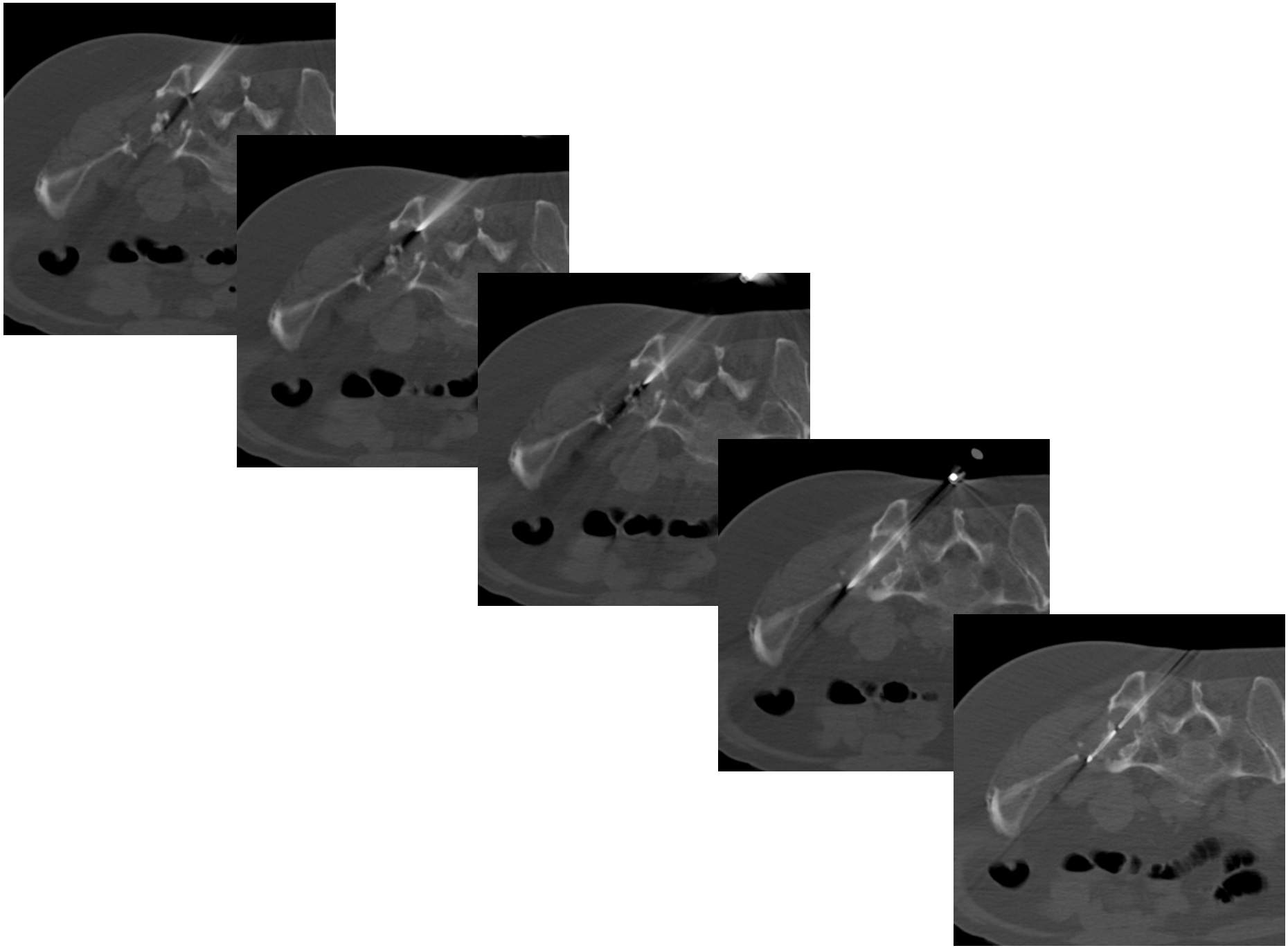


2. thin intact cortex – lytic lesion

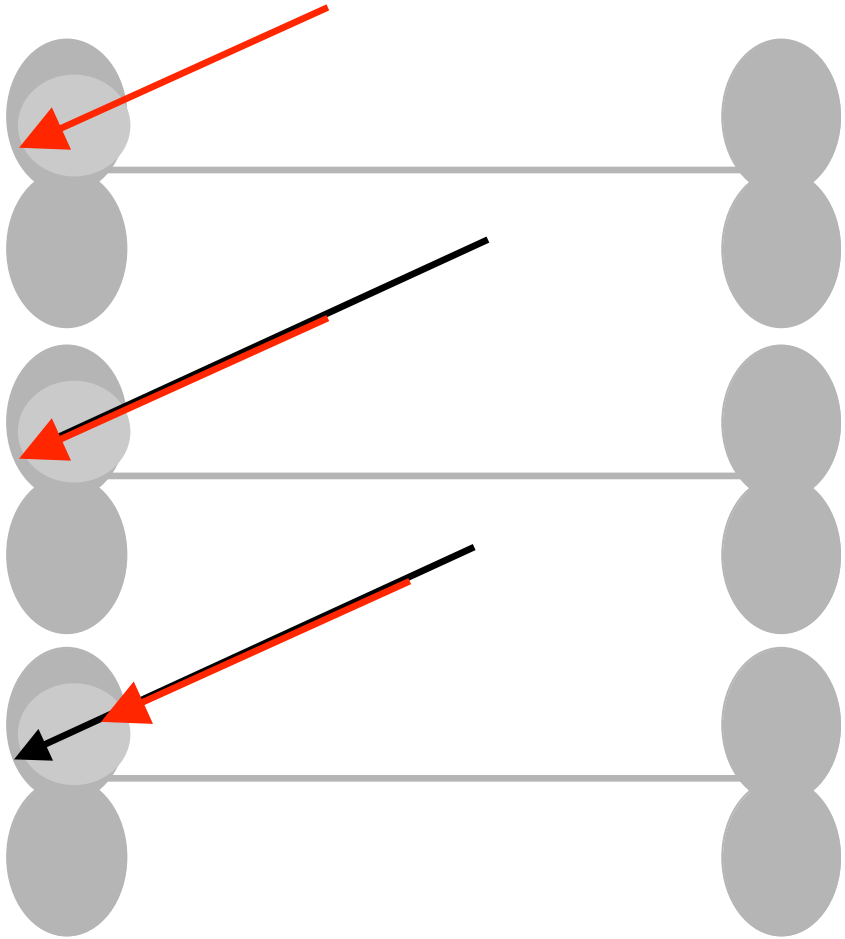


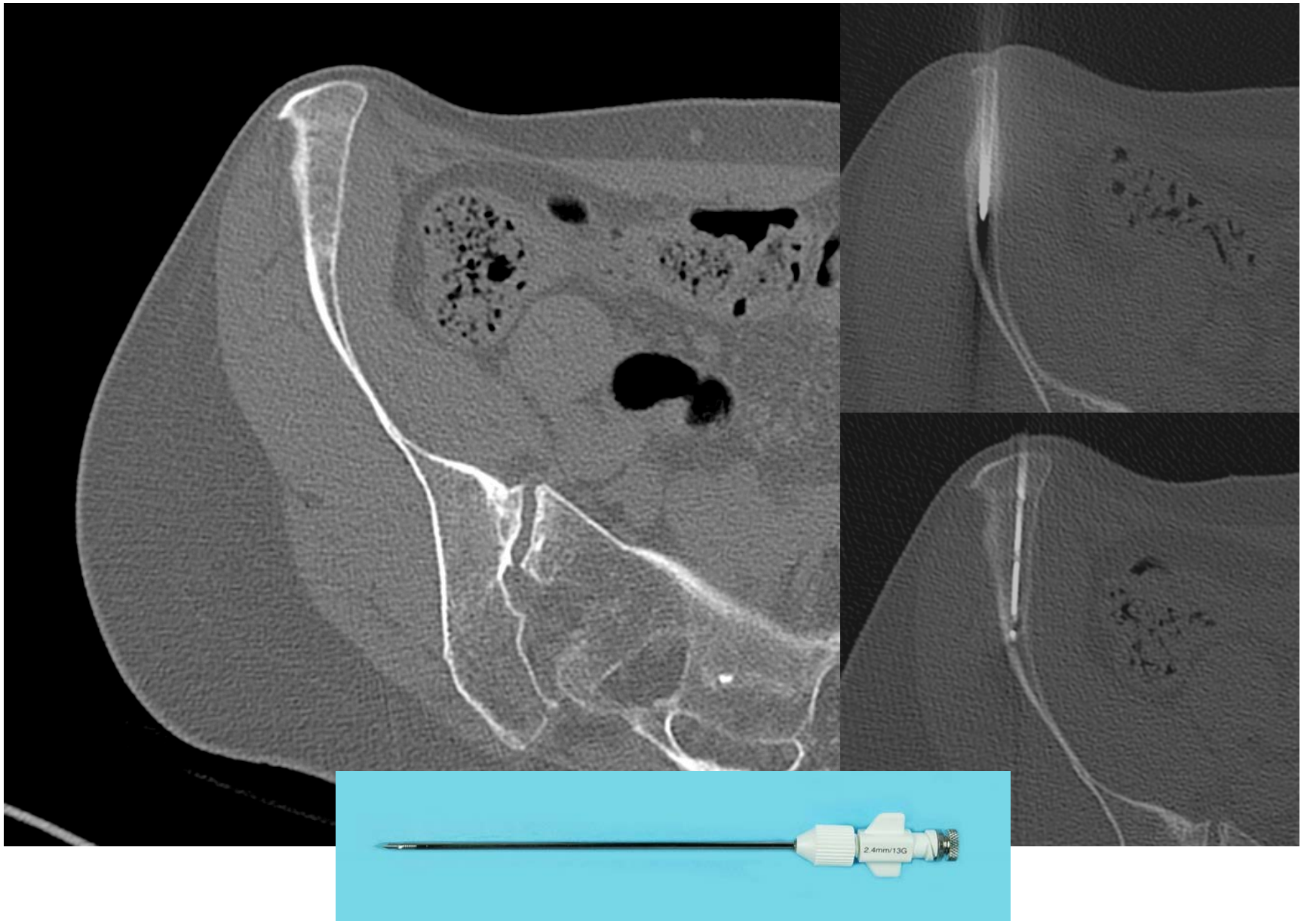
bone biopsy trocar or vertebroplasty needle





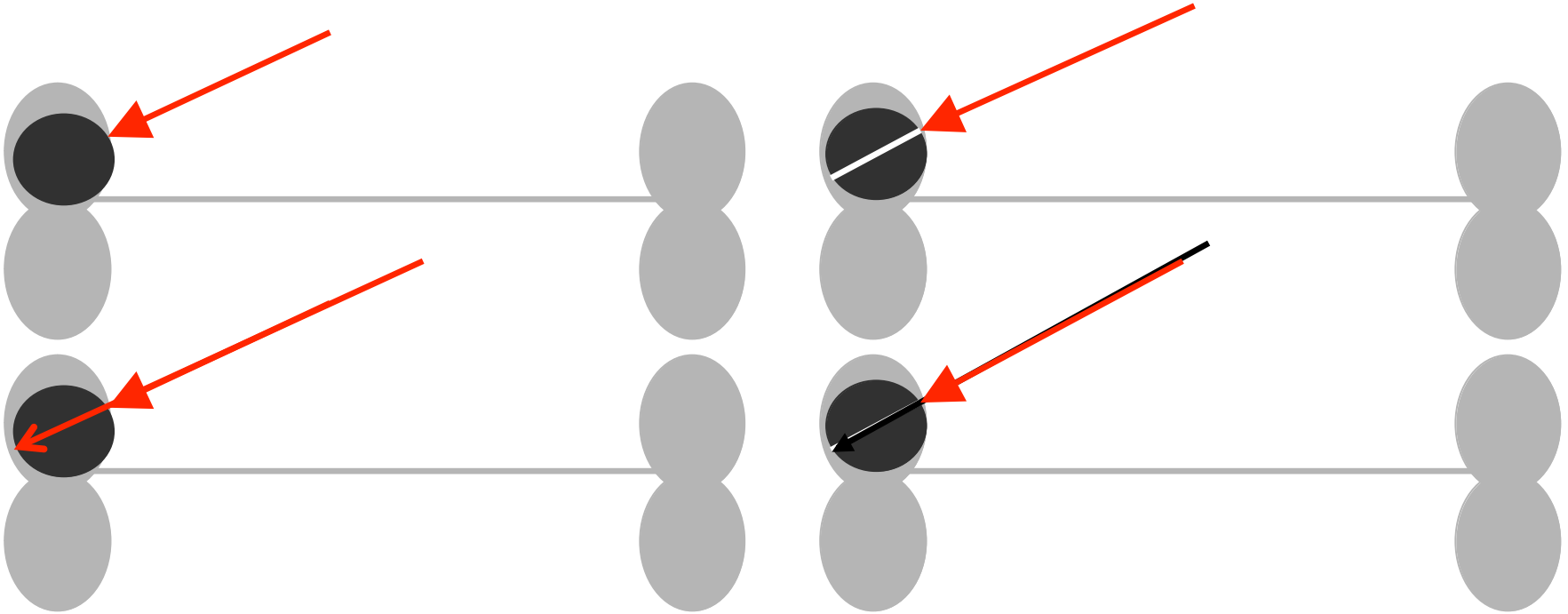
2. thin intact cortex – non lytic non blastic lesion




2.4mm/13G

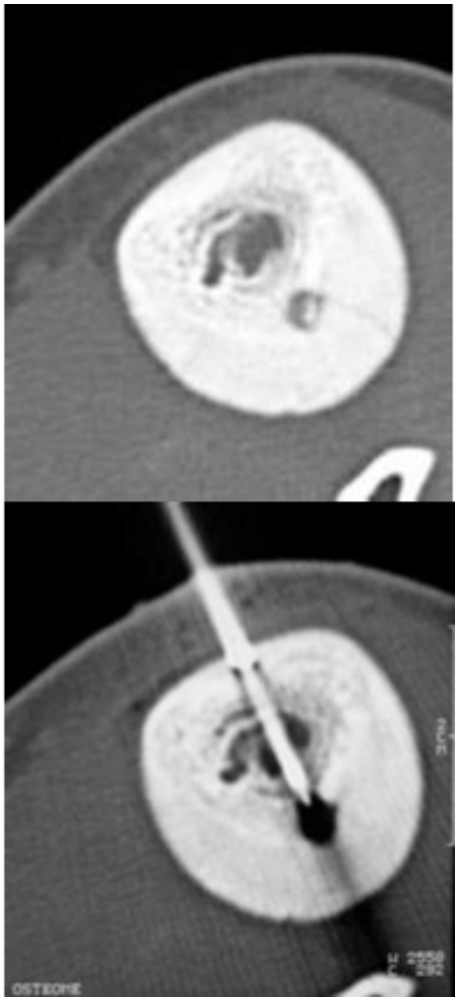

SOMATOM

2. thin intact cortex – osteoblastic lesion

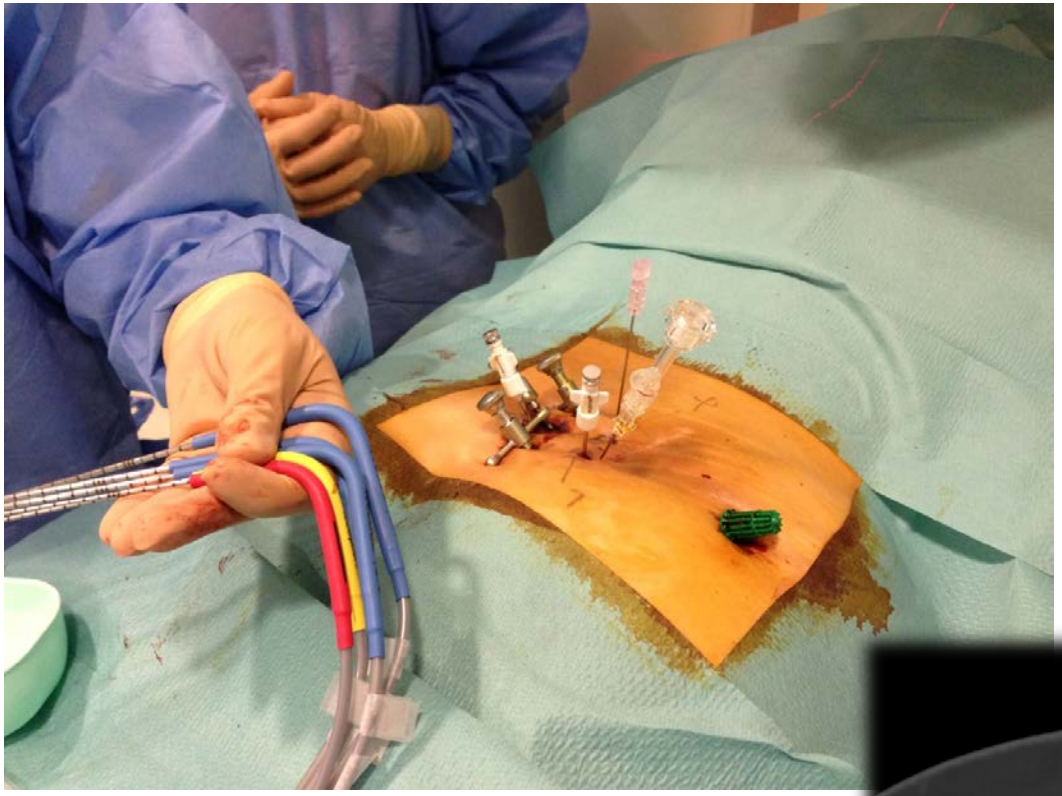


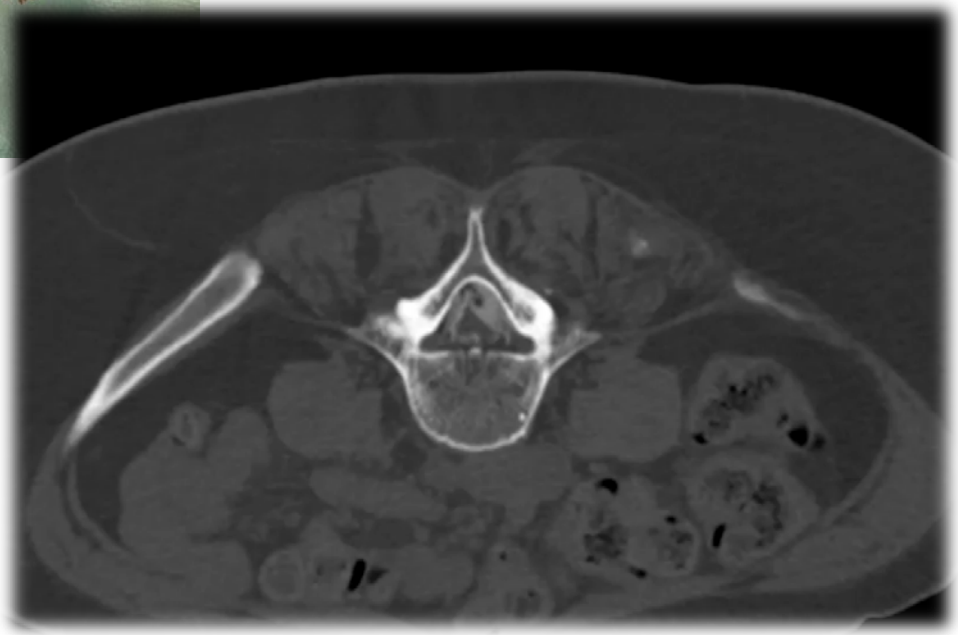
manual or electric drill

3. thick intact cortex



manual or electric drill





CONCLUSION

- bone biopsy & vertebroplasty trocar = adapted for low to moderate resistant bone
- drilling (manual or electric) required for sclerotic lesion &/or thick cortex
- choice should be made based on the previsible resistance of the bone & on the length of the pathway through the bone