Coccygeoplasty for Refractory Coccydynia Secondary to an Osteoporotic Insufficiency Fracture: A Case Report

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INTRODUCTION

- Coccydynia is characterized by pain localized to the coccyx, typically exacerbated by sitting and transitional movements.
- Osteoporotic coccygeal insufficiency fractures are an uncommon, though likely underrecognized cause of refractory coccydynia.
- Although vertebroplasty and sacroplasty are well-established treatments for osteoporotic insufficiency fractures, coccygeoplasty remains rarely described in the literature.
- We present a case of fluoroscopy-guided multilevel coccygeoplasty for the treatment of refractory pain secondary to a coccygeal osteoporotic insufficiency fracture.

METHODS

- This report describes a single de-identified patient treated at our institution.
- As per institutional guidelines for case reports, Institutional Review Board submission review was waived.
- Written informed consent was obtained from the patient for the publication/presentation of this case report and the accompanying images.

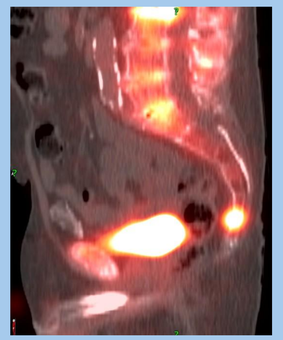


Figure 1: SPECT-CT demonstrating focal increased radiotracer uptake, corresponding to coccygeal lesion.

CASE REPORT

- 82-year-old male with a history of osteoporosis, diabetes and remote lung cancer presented with debilitating low back pain following successful T11 kyphoplasty for an osteoporotic compression fracture.
- He characterized his pain as a constant 10/10 pain localized to his low back and buttocks without radicular symptoms.
- It had remained refractory to conservative management including activity modifications, physical therapy, aquatic therapy, oral analgesics and ongoing alendronate therapy.
- Physical exam focal tenderness over his spine inferior to the L5 level without any neurological deficits.
- Imaging:
  - CT scan raised suspicion for a sacral fracture.
  - MRI could not be performed because of the patient's penile prosthesis.
  - SPECT-CT subsequently revealed focal radiotracer uptake, corresponding to a coccygeal lesion, supporting the diagnosis of an active osseous pain generator in that region. **(Figure 1)**
- The patient then underwent fluoroscopy-guided multilevel coccygeoplasty using a long-axis approach.
  - A 13-gauge introducer was advanced through a single midline trajectory, allowing sequential augmentation of the Co1-Co3 segments with polymethylmethacrylate under fluoroscopic guidance.
  - Final imaging confirmed satisfactory cement filling without extravasation. **(Figure 2)**
  - The patient tolerated the procedure without complications.
- At his two-week and 3-month follow-ups, he reported 80-90% improvement in his coccygeal pain with substantial improvement in sitting tolerance, ambulation, sleep and overall function.

DISCUSSION

- This case highlights osteoporotic coccygeal insufficiency fracture as an uncommon structural cause of refractory coccydynia and demonstrates the utility of SPECT-CT when MRI is contraindicated.
- Fluoroscopy-guided coccygeoplasty adapts well-established vertebral augmentation principles to provide minimally invasive structural stabilization and may represent a good option for carefully selected patients before coccygectomy is considered.
- Further studies are needed to define indications, optimize technique and evaluate long-term outcomes.

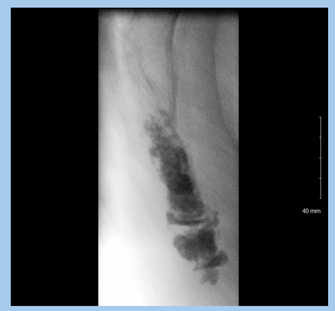


Figure 2: Final images with confirmed satisfactory polymethylmethacrylate filling without extravasation..

REFERENCES

1. Lirette LS, Chaiban G, Tolba R, Eissa H. Coccydynia: an overview of the anatomy, etiology, and treatment of coccyx pain. Ochsner J. 2014;14(1):84-87.
2. Maigne JY, Doursounian L, Chatellier G. Causes and mechanisms of common coccydynia: role of body mass index and coccygeal trauma. Spine (Phila Pa 1976). 2000;25(23):3072-3079. doi:10.1097/00007632-200012010-00015
3. Manfre L, Gil I, Baptista T, et al. Coccygeoplasty: preliminary experience with this new alternative treatment of refractory coccydynia in patients with coccyx hypermobility. J Neurointerv Surg. 2023;15(1):82-85. doi:10.1136/neurintsurg-2021-018149
4. Migne JY, Tamalet B. Standardized radiologic protocol for the study of common coccygodynia and characteristics of the lesions observed in the sitting position. Clinical elements differentiating luxation, hypermobility, and normal mobility. Spine (Phila Pa 1976). 1996;21(22):2588-2593. doi:10.1097/00007632-199611150-00008
5. Hirsch BP, Sossamon J, Khan MA, et al. Applications of SPECT/CT in the Evaluation of Spinal Pathology: A Review. Int J Spine Surg. 2024;18(1):9-23. Published 2024 Mar 4. doi:10.14444/8552