UHealth Jackson
Rehabilitation Care
CHRISTINE E. LYNN REHABILITATION CENTER
FOR THE MIAMI PROJECT TO CURE PARALYSIS



"Lincoln Log" Vertebrae in Sickle Cell Disease: Facet-Mediated Axial Pain and Radiofrequency Ablation Management

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INTRODUCTION

Sickle cell disease (SCD) causes recurrent microvascular infarction of the central vertebral endplates, producing characteristic H-shaped ("Lincoln log") vertebrae.[1–3]

Although this deformity is a well-recognized radiographic marker of SCD, its clinical consequences — particularly whether the resulting anterior-column remodeling predisposes to facet-mediated axial pain — are essentially undescribed.

Existing SCD back-pain literature centers on acute vaso-occlusive crises and vertebral compression fractures, leaving facetogenic pain, its interventional management, and SCD-specific procedural risks unexplored.

CLINICAL FINDINGS

Domain	Finding
Patient	38-year-old man, homozygous SCD
SCD complications	Recurrent vaso-occlusive crises; avascular necrosis requiring bilateral hip arthroplasty
Complaint	Longstanding, facet-pattern axial low back pain
Prior therapy	**Pain persisted despite chronic opioid therapy**
Pain pattern	Axial, non-radicular; provoked by extension and lateral bending
Neurologic exam	Negative straight-leg raise; intact neurological examination
Imaging — present	**Multilevel H-shaped vertebrae; exaggerated lumbar lordosis**
Imaging — absent	No disc herniation, canal stenosis, or discitis

CLINICAL COURSE

1. **Presentation.** Longstanding facet-pattern axial low back pain despite chronic opioid therapy.
2. **Diagnostic blocks.** Concordant diagnostic medial branch blocks.
3. **RFA — Session 1.** Bilateral L3 and L4 medial branches and L5 dorsal ramus (L4–L5, L5–S1): resolution of axial pain, directly attributable to the RFA.
4. **Transient VOC.** The post-procedural course was separately complicated by a transient vaso-occlusive crisis, which resolved.
5. **~2 months later.** Similar pain at a level higher than the treated facets; tenderness consistent with L2–L3 and L3–L4 segment pain.
6. **RFA — Session 2.** After a diagnostic medial branch block, RFA of the L1, L2, and L3 medial branches: relief comparable to the lower levels.

IMAGING (FIGURE 1)



Figure 1. *Multilevel H-shaped vertebrae on sagittal MRI.*

INTERVENTIONS — RADIOFREQUENCY ABLATION

	Session 1	Session 2 (~2 months later)
Presentation	Longstanding facet-pattern axial low back pain	Similar pain at a level higher than the treated facets; tenderness consistent with L2–L3 and L3–L4 segment pain
Diagnostic block	Concordant diagnostic medial branch blocks	Diagnostic medial branch block
Nerves ablated	Bilateral L3 and L4 medial branches and L5 dorsal ramus	L1, L2, and L3 medial branches
Facet joints	L4–L5 and L5–S1	L2–L3 and L3–L4
Outcome	**Resolution of axial pain, directly attributable to the RFA**	**Pain relief comparable to that at the lower levels**

DISCUSSION — THREE LESSONS

1. **Mechanism.** Lincoln log deformity from central endplate infarction shifts axial load onto the posterior elements, offering a mechanistic rationale for facet-mediated pain in SCD and fitting this patient's evolving, multilevel pattern.
2. **Diagnosis.** Interventional decisions must rely on level-specific diagnostic blocks, since imaging is easily misread as degenerative, osteoporotic, or Scheuermann-type change.[4]
3. **Safety.** Spine interventions risk peri-procedural vaso-occlusive crisis and pain flare, warranting deliberate planning and hematologic coordination for future cases.

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