

Radiofrequency Ablation in the Treatment of Osteoid Osteoma: Results and Complications

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Purpose: Osteoid osteoma is a self-limited benign bone lesion whose symptomatology often leads patients and parents to seek intervention. Traditional surgical en bloc excision has the potential for high morbidity and prolonged hospital stays. Outpatient percutaneous radiofrequency ablation (RFA) has been shown to be equally effective in prior studies. This study evaluates the efficacy of RFA at a single tertiary care pediatric hospital and discusses the complications that have been encountered.

Methods: IRB approval was provided for this retrospective case series. The paper and electronic medical records of 21 cases of RFA in 21 children between 2004-2010 were reviewed for demographic data, lesion site, access point and technique for ablation, clinical outcome, and complications.

Results: The average age was 11.4 years (range 2.5-28.6). The most common site was the proximal femur (10/21, 47.6%), followed by tibial shaft (3/21, 14.3%). Of the 8 proximal femoral lesions with available intra-procedural imaging, an anterolateral or direct lateral cortical breach was utilized 7 times. Average RFA treatment lasted 7.5 min at 90.7 degrees Celsius (average 4-16 min at 85-100 degrees Celsius). Clinical follow up was available for 17/21 patients (81%) at an average of 17.0 months (range 0.5-86.1 months). No persistence or recurrence of pre-procedural pain was noted. Two patients (9.5%) had a complication: a second degree burn of skin and muscle requiring local wound care, and a late subtrochanteric fracture through a lateral ablation drill hole at 9 weeks post-procedure, requiring open reduction and internal fixation. Both issues resolved after treatment without further complication.

Conclusion: RFA is a safe and effective alternative to en bloc resection of the osteoid osteoma nidus. When access of the proximal femur through the lateral cortex is required, the risk of late post-procedural fracture must be considered and discussed with the family. Multiple lateral drill holes and lateral drill holes in the subtrochanteric femur should be avoided.

Significance: In addition to early weight bearing and activity restrictions, adherence to the biomechanical principles of lateral screw placement from the trauma literature may provide an effective guideline for limiting this risk.