

## **Radiofrequency Ablation of Atypical Cartilaginous Tumors in the long bones; proof of principle in 44 patients.**

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### Introduction

Atypical cartilaginous tumours are usually treated by curettage with adjuvants. The purpose of this study was to show that radiofrequency ablation (RFA) was an effective alternative treatment. RFA is minimal invasive, relatively cheap and associated with less morbidity.

### Methods

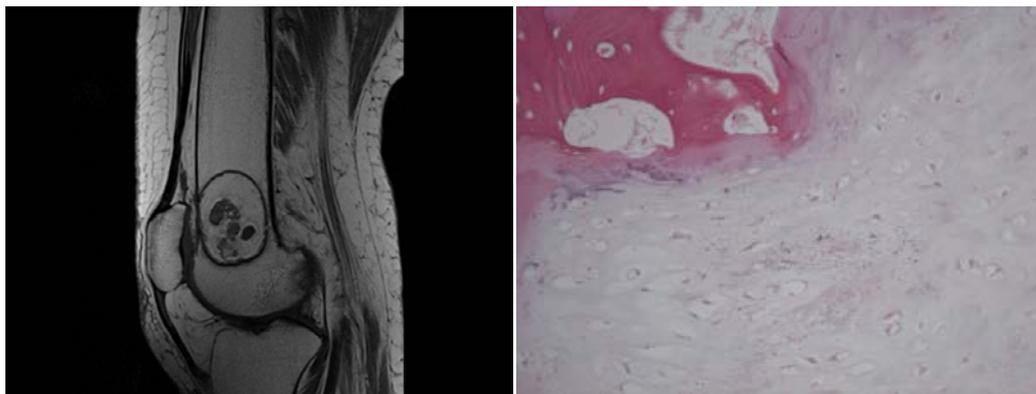
We enrolled 44 patients (10 male, 34 female, mean age 54 years (33 to 72) in a proof-of- principle study. After inclusion, biopsy and radiofrequency ablation were performed, followed three months later by MRI and subsequent curettage and adjuvant phenolisation. The primary endpoint was the proportional necrosis in the retrieved material. Secondary endpoints were correlation with the findings on gadolinium enhanced MRI, functional outcome and complications.

### Results

Our results show that 95% to 100% necrosis was obtained in 36 of the 44 patients. MRI had a 79% sensitivity and 80% specificity for detecting residual tumour after curettage. The mean functional outcome (MSTS) score six weeks after radiofrequency ablation was 27.1 (23 to 30) compared with 18.1 (12 to 25) after curettage ( $p < 0.001$ ). No complications occurred after ablation, while after curettage two of 44 patients patients developed a pathological fracture and one an infection.

### Conclusion

We have shown that radiofrequency ablation is capable of completely eradicating cartilaginous tumour cells in selective cases. MRI has a 79% sensitivity for detecting any residual tumour. Radiofrequency ablation is relatively cheap, causes less morbidity and can be performed on an outpatient basis allowing a rapid return to normal activities. Current research is aimed at improved planning and monitoring to enhance effectivity.



Figures showing the ablation zone (halo) after successful RFA of a cartilage tumor in the distal femur; and the histological proof of complete necrosis of the tumor.