Prevalence and Clinical Impact of Radiographic Sclerotic Lines Adjacent to Cementless Tibial Stems in Revision Total Knee Arthroplasty: A Long-term Follow-up Study

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INTRODUCTION: Intramedullary stem extensions are typically added to the femoral and tibial components during revision total knee arthroplasty (TKA) to augment fixation of the components and improve survivorship. A commonly used option includes hybrid fixation with cement at the interface between the component and the host bone combined with cementless diaphyseal fitting stems. Radiographic sclerotic lines may appear with these constructs over time, and it is unclear if this finding has implications relative to implant survivorship. While radiolucent lines adjacent to cemented implants, particularly the tibial baseplate and keel, have been extensively studied, the significance of sclerotic lines adjacent to cementless tibial stems is less well understood. The purpose of this study was to quantify the prevalence of sclerotic lines at the bone-implant interface and assess the impact of progressive sclerotic lines on revision for aseptic loosening

METHODS: A retrospective chart review of a consecutive series of patients who underwent <u>revision TKA at a single</u> <u>tertiary care institution between January 2001 and December 2009 was performed.[WJ1]</u> Data was collected regarding patient demographics, stem size, types of implants, and complications. Radiological reports and x-rays were searched for sclerotic lines, and their location around the tibial stem, and a correlation between the presence of such lines and survivorship was determined.

Need to be specific here, did it include all revisions, what was the inclusion criteria

RESULTS: One hundred and fifty-three patients with at least 15 years of follow-up were identified. The mean follow-up was 16.5 ± 4.12 years (range 15-23). Survivorship free of failure due to aseptic loosening was 98.8% (95% Cl 96.4 - 100) at 15 years, with 3 patients requiring re-revision surgery. Twelve (7.8%) patients were found to have sclerotic lines surrounding the tibial stem, all under 2 mm in width. Two (1%) patients with sclerotic lines required re-revision surgery, one patient due to infection and one due to aseptic loosening.

DISCUSSION AND CONCLUSION: Radiographic sclerotic lines around revision TKA stems – measuring less than 2mm wide, nonprogressive, and located at the lateral-distal aspect of the stem – were identified in fewer than 8% of cases and did not correlate with re-revision surgery.