

Aseptic Loosening of Total Ankle Replacement Implant Caused by Metal Hypersensitivity

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INTRODUCTION:

Implant failure is one of the worst complications faced by orthopaedic surgeons, with metal hypersensitivity (MH) being a possible, potentially overlooked cause.

Previous studies noted rising incidence of MH within the general population (10-15% prevalence^{1,2}), with higher incidence in women (17%) than men (3%) being allergic to nickel, and total 1-2% to cobalt, chromium.¹

REPORT:

Patient (26 year old, female) first presented with fracture dislocation of left ankle, treated surgically eight months post-operation complicated with secondary osteoarthritis. Left ankle was in equinus, painful upon movement. Radiographically noted osteoarthritic changes. Patient refused left ankle arthrodesis, hence proceeded with left total ankle replacement (TAR). Post-operatively initially well with full range of movement (ROM), fully weight bearing.

Unfortunately 5 months post-TAR patient presented with a sinus over anterior ankle preceded by swelling. Clinically joint not inflamed, ROM full. Radiographically noted loosening of implant. Inflammatory, infective markers not markedly raised, however noted eosinophil count increased.

Joint arthrotomy washout and removal of implant performed. Intraoperatively no presence of pus/slough/biofilm, tibial component loose.

Intraoperative samples sent showed no organisms cultured, histopathology examination showed acute on chronic inflammatory changes.

Upon further history, patient avoided silver/metallic jewellery which caused skin rash. Skin patch test (European Baseline Series S-1000) tested positive for Nickel II Sulfate Hexahydrate 5.0%.

Currently awaiting patient decision for revision surgery, options include conversion to arthrodesis / revision arthroplasty.³



Figure 1: Post Left TAR (Day 1)

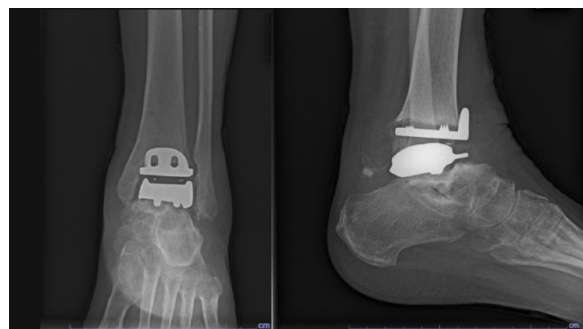


Figure 2: Post Left TAR (5 months)

CONCLUSION:

Surgeons should remain vigilant about MH which is increasingly prevalent. Patients undergoing arthroplasty should be screened preoperatively if suspicious of MH.

REFERENCES:

1. Thyssen JP, Menné T. Metal allergy--a review on exposures, penetration, genetics, prevalence, and clinical implications. *Chem Res Toxicol.* 2010 Feb 15;23(2):309-18.
2. Bao W, He Y, Fan Y, Liao Y. Metal allergy in total-joint arthroplasty: Case report and literature review. *Medicine (Baltimore).* 2018 Sep;97(38):e12475.
3. Barg A, Wimmer MD, Wiewiorski M, Wirtz DC, Pagenstert GI, Valderrabano V. Total ankle replacement. *Dtsch Arztebl Int.* 2015 Mar 13;112(11):177-84