

## Improved outcomes in patients with positive metal sensitivity following revision total knee arthroplasty

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### Abstract

**Background:** Metal sensitivity as a cause for painful joint replacement has become increasingly prevalent; however, there is a lack of reported clinical outcome data from total knee arthroplasty patients with metal allergies. The purpose of this study was to determine whether patients presenting with a painful total knee arthroplasty with a positive metal sensitivity have improved outcomes following revision to a hypoallergenic implant.

**Methods:** A retrospective review was conducted for patients that underwent a revision total knee arthroplasty after metal sensitivity testing over a 3-year period from January 1, 2015, to December 31, 2017. Based on the results of sensitivity testing, patients underwent revision total knee arthroplasty to a hypoallergenic component or a standard component. Following revision, patients returned to the clinic at an interval of 6 weeks, 5 months, and 12 months for functional, pain, and satisfaction assessment. Outcomes were compared within and between sensitivity groups.

**Results:** Of the included patients, 78.3% (39/46) were positive for metal sensitivity. The most common metal sensitivity was to nickel (79.5%, 32/39). Both non-reactive and reactive patients significantly improved in range of motion after revision arthroplasty. The reactive group saw a 37.8% decrease in pain at 6 weeks post-revision ( $p < 0.001$ ) Whereas, the non-reactive group only saw a moderate, non-significant improvement in pain reduction at 6 weeks post-revision (27.0%;  $p = 0.29$ ). Frequency of pain experienced did not vary significantly between groups. Maximum metal lymphocyte transformation test (LTT) sensitivity score did not correlate with pain level at the time of revision ( $R^2 = 0.02$ ,  $p = 0.38$ ) or percent improvement after revision ( $R^2 = 0.001$ ,  $p = 0.81$ ). Overall, all patients reported being very satisfied after revision total knee arthroplasty; there was no difference between positive and negative sensitivity groups ( $W = 62$ ,  $p = 0.89$ ).

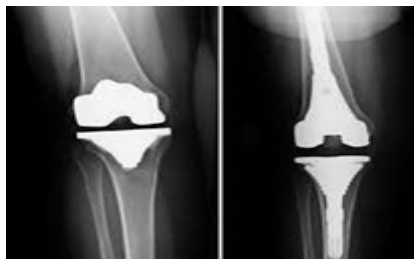
**Conclusions:** Patients presenting with a painful knee arthroplasty and positive metal LTT have improved pain scores, walking function, and range of motion following revision to a hypoallergenic component. This study also provides a treatment algorithm for patients presenting with a painful knee replacement, in order to provide effective and timely diagnosis and management.

### Biography

Dr. Brazier graduated from the Michigan State University College of Osteopathic Medicine in 2018. Brett Brazier is a primary care provider established in Fort Sam Houston, Texas and his medical specialization is student in an organized health care education/training program.

### Publication

1. Improved outcomes in patients with positive metal sensitivity following revision total knee Arthroplasty.
2. A Useful Tip for Removal of a Well-fixed Trabecular Metal Tibial Cone
3. Treatment of Periprosthetic Patella Fractures Using a Lag Screw and Neutralization Plate Construct: A Novel Surgical Technique
4. Heterotopic Ossification of the Brachial Plexus After Reverse Total Shoulder Arthroplasty
5. The Transtrochanteric Approach to the Total Femur Replacement: A Novel Technique



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