

“Diagnosis & Management of Hypersensativity in the Painful TKA”

By Laura McPherson, BA², Edward J. McPherson, M.D.^{1,2} and Timothy McTighe, Dr. H.S. (hc)³

Introduction:

The painful total knee arthroplasty (TKA) is often a diagnostic challenge. The etiology of pain can fall into several main categories:

- 1) Infection,
- 2) Kinematic conflict (gap imbalance),
- 3) Fixation failure,
- 4) Osteolysis phenomenon,
- 5) Extra-articular and
- 6) Hypersensitivity (i.e., metal allergy).

Hypersensitivity reaction in TKA is rare and difficult to diagnose. This study reviews a series of eight patients with documented hypersensitivity reaction.

Material:

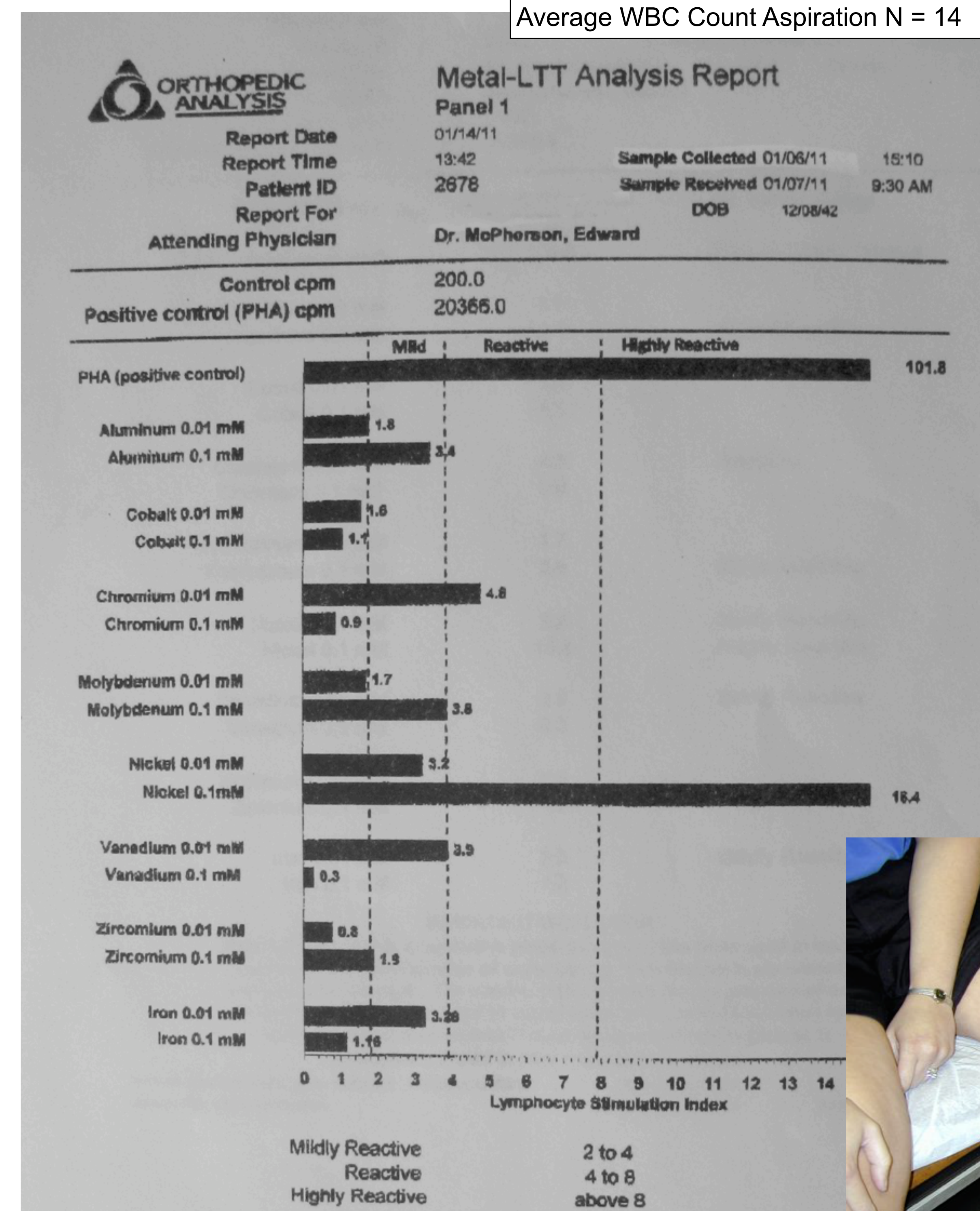
In this study we evaluated 174 painful TKAs. Eight patients were identified as having a painful TKA as a result of hypersensitivity reaction. This was confirmed by a lymphocytic T-cell proliferation test (LPT), and excluding other causes of pain.

Symptoms:

Patients with hypersensitivity reaction all had common features:

- 1) they all generally had good functional knee range,
- 2) all presented with a painful ache that was noticed in the perioperative period and continued 24/7,
- 3) all patients had a recurrent effusion, and
- 4) all patients showed a significant response to LPT.

Hypersensitivity TKA Report Summary of LTT test N=15		
Elements	Number	%
Al	N = 7	47%
Co	N = 3	20%
Cr	N = 3	20%
Mo	N = 7	47%
Ni	N = 15	100%
Van	N=5	33%
Zi	N = 6	40%
Iron	N = 7	47%
CRP Measurements N = 15	Normal	100%
WSR Measurements N = 14	Normal	92%
Negative Aspirations Cultures N = 15	Normal	100%
Average WBC Count Aspiration N = 14	251	0 - 1100



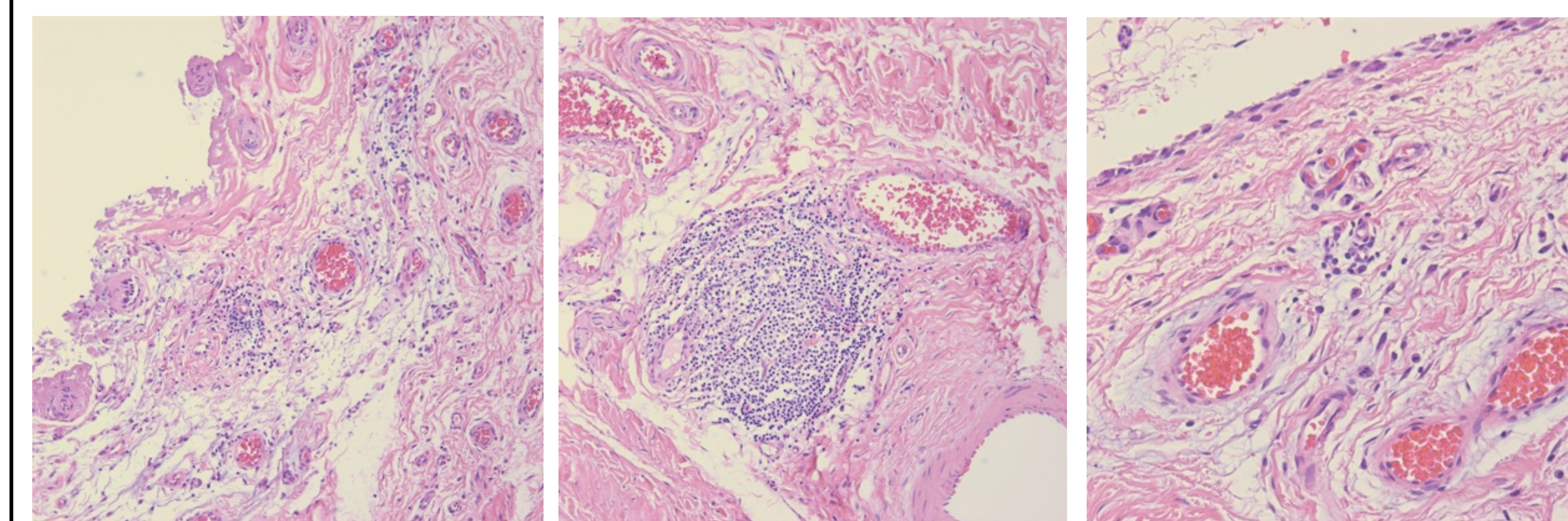
Patient was allergic to femoral component.

Intraoperative photo of hypersensitivity reaction.

In this case, patient was sensitive to nickel, cobalt, molybdeymun, and chrome.

These were all elements contained within the femoral component, but not the tibial component.

Note: The intense "synovial burn" around the femoral component. The reaction does not involve the tibial component as it was made of a titanium alloy.



Histology photomicrograph of synovial tissue next to reactive metal implant. Accumulated lymphocytes around the arterial structures along with local areas of lymphocytic aggregation. Also note venus congestion which gives the hyperemic appearance of the synovium.

Results:

- Eight patients have been treated with revision TKA using Custom Titanium Alloy Femoral Component
- Four are awaiting revision surgery
- Two have declined surgery at present
- One patient is being treated with immune modulation with weekly methotrexate

Summary:

The diagnosis of hypersensitivity reaction (i.e., metal allergy) in TKA appears to be a distinct entity. Patients present with a syndrome of recurrent effusion and 24/7 pain. The LPT is a helpful tool in making a formal diagnosis. Revision TKA to commercially pure Ti implants improves function and pain. Suppressive immune modulation with methotrexate does help in patients who wish to postpone revision surgery.



Ceramic



Titanium Nitrate Coating



OXINIUM™ Oxidized Zirconium

A variety of material and coatings are available for patients with hypersensitivity issues. Although some material and devices are not available in the U.S.



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¹ Board Member & TSP™ Study Group Member

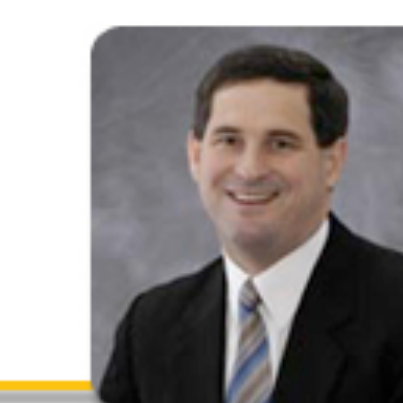
³ Executive Director & CEO

Director California Division

www.jisrf.org



L.A. Orthopedic Institute



² 1400 S. Grand Avenue, Suite 609
Los Angeles, CA. 90015.