PETER BREHM
Die Präzision in Titan
für den Menschen

Executive Summary

Publication	**Pseudotumors and high grade ALVAL around total knee replacements identified at aseptic revision surgery: findings of a large-scale histologic review.** Kurmis AP, Herman A, McIntyre A, Masri BA, Garbuz DS. J Arthroplasty 2019 May 17. pii: S0883-5403(19)30508-X. doi: 10.1016/j.arth.2019.05.025. [Epub ahead of print] https://www.ncbi.nlm.nih.gov/pubmed/31178384 (PMC free full text)
Study	Retrospective cohort study (Level of Evidence 3)
Implant	Not be specified
Patients	Total cohort of 321 patients (55% male, 45% female) with a mean age of 70 years (range, 35-89) at the time of revision TKA. Of these, 134 patients (49% male, 51% female) with a mean age of 69.3 years (range, 41-87) were available for PROMs.
Follow-up	Patients included in the study had undergone a knee revision between January 2005 and February 2015.
Method	Data were collected from a high-volume, lower limb arthroplasty unit, within a referral center. All non-infective (aseptic) unilateral revision TKA procedures were performed under direct supervision of one of three experienced orthopedic surgeons. Only patients aged 18 years or older at the time of revision with a complete pathology report of the intraoperative specimen collected at the time of revision surgery were included in the study. The histological results and patient-reported functional outcome were analysed. Patient records with available pathology reports were examined and classified into 1 of 4 groups: - ALVAL grade 1: dendritic synovitis, - ALVAL grade 2: synovitis with metal, polyethylene or cement debris or lymphocytes present, - ALVAL grade 3: metallosis and/or lymphocyte infiltration, - ALVAL grade 4: high-grade lymphocyte-dominated lesions or pseudotumor. ALVAL grade 1 and 2 were considered “low-grade”, ALVAL grade 3 and 4 “high-grade”. Evaluation of patient-reported clinical outcomes was performed according to the evaluation tools of the hospital electronic medical record system using Hip and Knee Satisfaction Scale, WOMAC, SF 12, UCLA Activity Score and Charnley Comorbidity Classification. The data collected were subject to statistical analysis. All data were analysed on an intention-to-treat basis.
Results	In total, the majority of patients were revised due to aseptic loosening (36.1%), polyethylene and/or bearing wear (13.7%) or instability (13.4%). The PROMs group was mainly revised due to aseptic loosening (34%), polyethylene and/or bearing wear (17%) or osteolysis (12%).

	The mean preoperative OKS ranged from 33.2 for ALVAL low-grade 1 to 9.1 for ALVAL high-grade 4, respectively. The mean preoperative WOMAC ranged from 49.9 for ALVAL low-grade 1 to 63.1 for ALVAL high-grade grade 4, respectively. **The findings demonstrate a strong correlation between ALVAL grade and patient-reported functional knee performance.** A total of 5 cases with ALVAL grade 4 (1.6%) and 18 cases with ALVAL grade 3 (5.6%) were found, representing together an **unexpectedly high prevalence of histologically confirmed high-grade ALVAL formation (metallosis, pseudotumor) of 7.2% around *in situ* primary TKA cases, observed at the time of revision surgery.**
Key Points	There is little available evidence concerning the true rate of ARMD in TKA. **The overall prevalence of high-grade ALVAL (7.2%) including pseudotumors (1.6%) found in this study was much higher than expected and has not been previously reported in literature.** **The findings give new insights into the previously underappreciated significance of adverse metal debris-related tissue reactions around total knee replacements. They may also provide a new explanation for the 15 to 20 % of TKA patients with unexplained pain and discomfort who are dissatisfied with their knee prosthesis.** **The results have potential management implications for patients with under-performing TKA and in differential diagnosis of such knees.** Which patients get ALVAL/ARMD from their metal knee prosthesis? This relevant issue still remain unsolved.
Abbreviations	ARMD – adverse reaction to metal debris, ALVAL – aseptic lymphocyte-dominated vasculitis-associated lesion aseptisch Lymphozyten- dominierte Vaskulitis und assoziierte Läsionen, PROMs – patient reported outcome measures, TKA – total knee arthroplasty, WOMAC – Western Ontario and McMaster Universities Osteoarthritis Index, OKS – Oxford Knee Score, UCLA – University of California at Los Angeles Activity Score, SF 12 – Short Form (12) Health Survey