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Five-Year Baseline Prevalence of Metabolic and Bone Diseases in the Total Hip Arthroplasty Patient Population

Rationale: The rates of metabolic bone disease (MBD) increase with age and represent a threat to successful outcomes in total hip arthroplasty (THA). The etiologies of MBD are poorly documented around THA patients. We sought to detail the most common etiologies across demographic subgroups.

Methods: The NY Statewide Planning and Research Cooperative System (SPARCS) was asked to identify all patients who underwent THA between 2009 and 2013. Patients were compared by age in years (<45; 45-64; and >64), sex, and race. Univariate analysis was used to compare demographic variables, in tandem with post-hoc analysis using the Bonferroni correction.

Results: Of 58,161 patients identified (n=56,288 with MBD), the most prevalent MBDs were: osteoporosis (OP) 9.1%, vitamin D deficiency (VDD) 2.3%, and hyperparathyroidism (HPT) 0.3%. A disproportionate number of MBD patients undergoing TKA were females (74.5% vs 25.5%) and Blacks (16.1% vs 7.6 %) relative to patients without MBD (both, $p < 0.001$). MBD patients had a higher mean Deyo Index at the time of TKA (0.83 vs 0.57, $p < 0.001$), mean total surgical charges (\$55,285 vs \$48,390, $p < 0.001$) and mean length of stay (LOS) (4.68 vs 3.97 days, $p < 0.001$). The >65 year age cohort had the highest incidence of OP and VDD, and the lowest incidence of SCD, SCT (all, $p < 0.001$).

Discussion: Our study provides relevant data on MBD etiologies across various demographic subgroups of patients who underwent THA. OP is the most common etiology of MBD, across all subgroups. Specifically, these rates are higher in the female subgroup, and represent a higher proportion of Black patients in the <45-year subgroup undergoing THA. The higher rates of SCD and SCT in the younger subgroup (<45 years) were expected given the lower average life expectancy of patients with SC and SCT. This data may also underline the trend in rising rates of VDD within the Northern hemisphere. Our study underscores the need for preoperative screening for MBD and relevant treatment.