

Femoral Vessel Calcification Is an Independent Risk Factor for Postoperative Complications Following Surgical Treatment of Hip Fractures

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Purpose: Vascular calcification is a known independent risk factor for cardiovascular disease and mortality. The association between femoral vessel calcification seen on preoperative hip radiographs and outcomes after hip fracture has not been well studied in the literature. Therefore, this study investigated the relationship between femoral vascular calcification and early postoperative complications in hip fracture patients.

Methods: Patients with acute hip fractures who underwent surgical treatment at a single institution were retrospectively reviewed from 2014-2015. 30-day postoperative complications and all-cause mortality data were recorded at a minimum of 1-year follow-up. Femoral artery calcification was blindly scored on preoperative hip radiographs on a scale consisting of: no calcific deposits (0), small scattered calcifications (1), calcifications <50% arterial wall (2), and calcifications >50% arterial wall or “lead pipe” calcifications or presence of vascular stent (3) by 2 reviewers. Multivariate linear and logistic regression models adjusting for potential preoperative risk factors were created. Alpha was set to 0.05 a priori.

Results: A total of 148 patients were reviewed. 43, 21, 27, and 27 patients had calcification scores of 0 to 3, respectively. Intraclass correlation coefficient for vascular calcification scores was 0.938. Preoperative calcification scale was independently associated with any postoperative complication ($P = 0.041$, odds ratio [OR] 6.456 [95% confidence interval (CI) 1.08-38.60]). There was no difference in all-cause mortality between the groups. Other independent risk factors associated with any postoperative complications were gender ($P = 0.018$), body mass index ($P = 0.05$), intertrochanteric fracture ($P = 0.015$), and admission service ($P = 0.046$), as well as preoperative diagnoses of hypertension ($P = 0.036$), cerebrovascular accident/transient ischemic attack/bleed ($P = 0.032$), cancer ($P = 0.034$), and psychological disorder ($P = 0.049$).

Conclusion: Hip fracture patients with femoral vascular calcification may be at increased risk for postoperative complications. Additional research is required to study the clinical implications. With the data from this study, there is a potential for a new reference system of classifying and risk-stratifying hip fractures based on preoperative hip radiographs.