Femoral Neck Fractures at an Urban, Pediatric Level I Trauma Center Are Primarily Low-Energy Fractures Associated With Poor Bone Health

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Purpose: Femoral neck fractures (FNF) are rare in children, representing less than 1% of pediatric fractures and are generally attributed to high-energy mechanisms. We investigated pediatric FNFs at our institution over a 17-year period to better understand epidemiology and mechanisms of injury.

Methods: With Institutional Review Board approval, we performed a data query using ICD and CPT codes to identify patients with femur fractures from 2007 to 2024. Demographic and clinical data were collected through chart review.

Results: We identified 1598 femur fractures, 105 (6.6%) of which were FNF, excluding slipped capital femoral epiphysis. Of the patients with FNFs, 18 (17.1%) had endocrine disorders, 14 (13.3%) had autism, 22 (21%) had metabolic bone disease, and 2 (1.9%) had muscular dystrophy. By mechanism, 54 (51.4%) patients had ground level falls, 3 (2.9%) were in motor vehicle crashes, 1 (1%) was a pedestrian versus auto, 4 (3.8%) fell from playground equipment, 8 (7.6%) fell from furniture, 5 (4.8%) fell from a height greater than 8 feet, and the remaining 30 (28.5%) were classified as “other.” There was one patient with a concurrent femoral shaft fracture, one with a distal femur fracture, and one in whom a deep venous thrombosis (DVT) developed. Most patients (98 patients, 93%) were treated surgically.

Conclusion: Contrary to previous assumptions that pediatric FNFs are due to high-energy mechanisms, most FNFs within our cohort were due to low-energy mechanisms compounded by coexisting metabolic and endocrine disorders and autism, which are associated with a restricted diet leading to micronutrient deficiencies. Therefore, a higher index of suspicion, education, and Vitamin D and calcium supplementation may decrease the incidence of FNF among these populations. Furthermore, despite 93% of patients having surgery, a DVT developed in only one patient. At our institution, no patients receive postoperative DVT chemoprophylaxis; thus, the very low incidence of DVT among our cohort supports that chemoprophylaxis is likely unnecessary in pediatric patients with FNF.