

EFFECTIVENESS OF THE AOS PRACTICE GUIDELINES FOR NON-ACCIDENTAL TRAUMA (NAT) WORKUP IN PATIENTS UNDER 36 MONTHS OF AGE WITH A FEMUR FRACTURE WITH AN AGE-SPECIFIC NAT WORKUP.

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Background: Non-accidental trauma (NAT) is the second most common cause of death in children. The AOS Clinical Practice Guidelines recommends NAT workup in children under 36 months who present with a femur fracture based on studies demonstrating a 13% incidence of NAT in this young population. However, neither concomitant factors that increase risk nor a specific workup protocol have been described in the literature. The purpose of this study is to identify concomitant risk factors and determine the effectiveness of an age-specific screening protocol to identify NAT in children under 36 months with a femur fracture.

Materials/Methods: We performed an IRB-approved, retrospective review of 475 patients under 36 months who presented to a single pediatric institution with a diaphyseal femur fracture from 2012-2018. Patients with workup at outside hospital and fractures due to Motor Vehicle Accidents, Osteogenesis Imperfecta, or birth were excluded. Data included outcome of NAT workups, demographics (ethnicity, gender, socioeconomic status, number of previous EC visits/other fractures, mechanism of injury, timing of presentation from injury), and social work evaluations. Patients were divided into age groups 0-6 months, 6-12 months, 1-2 years, and 2-3 years per our institution's age-specific NAT protocols.

Results: 417 patients were included. 315 (75.5%) had a complete work-up per the protocol. 77/315 (24.4%) had a positive NAT workup resulting in removal from the caregiver. 38/61 (62.3%) patients age 0-6 months with complete workups were positive for NAT and were profoundly more likely to have a positive workup (OR 9.39) compared to other age groups. Patients age 1-2 years had the highest rate of incomplete workup (55.17%). More boys presented with femur fractures (66.8%), but girls were more likely to have a positive workup (OR 2.38). Time from injury to presentation of greater than 5 days or unknown number of days was found to be significant for NAT ($p < 0.0001$; OR 7.43). No significant difference in rate of NAT was found for mechanism of injury, ethnicity, or number of previous EC visits/other fractures.

Conclusions: To our knowledge, this is the largest study reporting rates of NAT in children younger than 36 months with femur fractures. An age-specific NAT screening protocol resulted in higher rates of positive NAT workups in patients compared to historical literature rates (24.4% vs 13%).