

What Percent of Pediatric Femur Fractures Result from Nonaccidental Trauma?

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Purpose: Fractures are the second most common clinical manifestation of child abuse, with the femur being the most common location for nonaccidental trauma (NAT)-related fractures. The reported proportion of pediatric femur fractures that result from NAT varies drastically in the literature, ranging from 21% to 60%. The purpose of this study is to further assess what ratio of pediatric femur fractures are the result of NAT, and to examine the effect of patient age range on NAT prevalence.

Methods: This was a retrospective review of patients 0 to 36 months old diagnosed with a femur fracture between January 1, 2004 and April 9, 2019 at our institution. Patients with incomplete medical records were excluded. Incomplete medical records were defined as an absence of all femur fracture-related documentation. NAT was defined as a positive workup, meaning NAT was identified via social services, skeletal survey, or ophthalmological examination.

Results: 299 patients were identified; 22 patients were excluded due to incomplete medical records, 37 patients had no mention of an NAT workup entirely, 43 patients did not undergo NAT workup due to lack of suspicion, and 197 patients underwent an NAT workup. 32 of 197 patient femur fractures (16.2%) were determined to be the result of NAT. Of the 32 patients with NAT, 12 were female and 20 were male. The average age at presentation was 0.7 years. Additional injuries were present in 13 patients (40.6%). A significant difference in NAT rates was found between the 0 to 12-month age group and both older age groups; $\chi^2 (2, N = 277) = 35.1026, P < 0.00001$.

Conclusion: Over one-fourth (28.9%) of patients seen for femur fractures were not screened for NAT as recommended by the American Academy of Orthopaedic Surgeons guidelines and evidence report. Of the patients who were screened, 16.2% of patient femur fractures (32 of 197) were determined to be the result of NAT.

Race and Ethnicity	No NAT Work Up (n=80)		NAT Work Up (n=197)		Total NAT Patients (n=277)
White Non-Hispanic or Latino/a/x	10	(38.5%)	16	(61.5%)	26
White Hispanic or Latino/a/x	4	(40.0%)	6	(60.0%)	10
Black or African American Non-Hispanic or Latino/a/x	9	(28.1%)	23	(71.9%)	32
Black or African American Hispanic or Latino/a/x	1	(50.0%)	1	(50.0%)	2
Asian Non-Hispanic or Latino/a/x	2	(15.4%)	11	(84.6%)	13
Asian Hispanic or Latino/a/x	0	(0.0%)	1	(100.0%)	1
Hispanic or Latino/a/x	41	(25.5%)	120	(74.5%)	161
Unknown	13	(40.6%)	19	(59.4%)	32

The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice.