When to Nail? A Dilemma in Patients With Femur Shaft Fractures With Established Fat Embolism Syndrome

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Purpose: Fat embolism syndrome (FES) poses a significant challenge in the management of polytrauma patients. While various theories and diagnostic criteria exist, the optimal management strategy with regards to time of fixation and mode of fixation remains elusive, particularly when FES manifests before orthopaedic intervention.

Methods: This retrospective cohort study examined 24 patients with femur fractures and diagnosed FES at a Level I trauma center. Data on demographics, injury details, interventions, time between diagnosis of FES and final fixation, length of ICU stay, and outcomes were analyzed.

Results: Fixation using unreamed nail was undertaken once key surgical eligibility indicators normalized, including oxygen levels on room air and oxygen, Glasgow Coma Scale (GCS), blood gas picture, hemoglobin, and lactate levels. Mean time to final fixation after diagnosis of FES was 11.17 days. The average postoperative ICU stay was 3.25 ± 1.75 days. No mortality was noted in the postoperative period and up to 12 months in our cohort. We achieved a union rate >90% without need of further intervention and no residual complications of FES or postoperative mortality.

Conclusion: FES is an unavoidable complication in femur fractures. Once suspected, such a patient should be managed in an ICU setting and deemed fit for fixation as soon ashemoglobin, oxygen levels at room air, lactate levels, and GCS are stable. In our study this happened around the 11th day when we undertook nailing for the femur fractures. Also, postoperatively all our patients were kept in ICU for monitoring. Hence, using our protocol, we found unreamed nail to be a safe option in patients with established FES with femur fractures.