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Determinants of Clinical Severity and Early Outcomes in Traumatic Joint Hemorrhage of the Lower Extremities

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Introduction. Traumatic joint hemorrhage is a common consequence of acute injuries to the lower extremities and represents a significant clinical challenge in orthopedic practice. The accumulation of blood within the joint cavity initiates a cascade of mechanical, inflammatory, and neurovascular changes that adversely affect joint function and recovery. When joint trauma is accompanied by intra-articular fractures, these processes may become more pronounced, leading to a complicated clinical course.

Despite the availability of modern diagnostic tools and standardized treatment protocols, early outcomes following traumatic hemarthrosis remain variable. In routine clinical practice, attention is often focused on fracture stabilization, whereas the severity of joint hemorrhage and its contribution to pain, functional disability, and complications is frequently underestimated. Identifying clinical determinants associated with severe hemarthrosis is therefore crucial for improving early management strategies and patient prognosis.

This study aimed to evaluate the clinical severity and early outcomes of traumatic hemarthrosis in patients with lower limb joint injuries, with special emphasis on the impact of intra-articular fractures.

Materials and Methods. A clinical observational study was conducted in patients admitted with acute traumatic hemarthrosis of the knee and ankle joints. The study population was divided into two groups: patients with confirmed intra-articular fractures and patients with joint injuries without bone involvement. All patients underwent standardized clinical, radiological, and functional assessment.

The severity of hemarthrosis was evaluated by measuring joint swelling, pain intensity using the visual analogue scale, and functional impairment based on validated scoring systems. Therapeutic interventions, including joint aspiration, arthroscopy, fracture reduction, and osteosynthesis, were documented. The duration of hospitalization and the occurrence of early post-traumatic complications were recorded for all patients.

Comparative analysis between groups was performed to identify factors associated with increased clinical severity and treatment burden.

Results. Patients with intra-articular fractures exhibited significantly more severe manifestations of traumatic hemarthrosis. The volume of intra-articular bleeding was substantially greater,

leading to rapid joint distension and pronounced limitation of motion. Pain intensity scores were markedly higher in this group, reflecting combined mechanical damage and inflammatory activation.

Functional assessment demonstrated a considerable reduction in joint performance among patients with fractures compared to those with isolated soft tissue injuries. As a result, therapeutic joint aspiration was required more frequently and often had to be repeated due to persistent bleeding.

Surgical interventions were predominantly performed in the fracture group, including arthroscopic procedures and stabilization of bone fragments. These patients also experienced a significantly longer hospital stay and a higher incidence of early complications such as recurrent hemarthrosis and reactive synovitis. In contrast, patients without fractures generally had a more favorable and uncomplicated clinical course.

Discussion. The results indicate that intra-articular fractures are a major determinant of clinical severity in traumatic joint hemorrhage. Extensive bleeding, intense pain, and functional impairment create a clinical scenario that demands more aggressive and resource-intensive management. The increased need for surgical procedures and prolonged hospitalization highlights the burden imposed by fracture-associated hemarthrosis.

From a clinical perspective, the severity of hemarthrosis should be considered an important prognostic indicator rather than a secondary finding. Early stratification of patients based on hemarthrosis severity may facilitate timely intervention, reduce the risk of complications, and improve early functional outcomes.

Conclusion. Traumatic hemarthrosis of the lower extremity joints demonstrates significantly greater clinical severity and worse early outcomes in the presence of intra-articular fractures. These patients experience increased pain, greater functional limitation, higher rates of invasive treatment, prolonged hospitalization, and more frequent early complications. Incorporating the assessment of hemarthrosis severity into clinical decision-making may enhance individualized treatment planning and optimize recovery.