

## Type IV, Salter Harris Fracture - Adolescent Male Soccer Player

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### ABSTRACT

**CASE HISTORY:** An amateur, 14-year-old soccer player celebrated his goal by attempting a backflip. He ended up landing abnormally on his left foot. He complained about pain and swelling in the lateral aspect of the left ankle. **PHYSICAL EXAM:** The athlete was admitted to Children's Hospital. The diagnosis based on the first X-Ray was Type II, Salter Harris fracture. The patient was treated conservatively. A short, leg cast was placed and *per os* analgesics were given. He was hospitalized for two days. Before getting discharged, a second X-Ray showed a well-aligned fracture. Two days later, the patient was still in pain. He decided to visit a private orthopedic doctor who made the plaster rounded and placed the foot in tip-toe gait. Two days after that, the athlete decided to visit a different private doctor since the pain was not subsiding. That doctor suspected that the fracture may continue into the posterior malleolus with the fracture line going through the growth plate inside the joint of the ankle. Therefore, he ordered a MRI and spiral CT for the left ankle. **DIFFERENTIAL DIAGNOSES:** Salter Harris II, Salter Harris III, Salter Harris IV, Salter Harris V, or additional fractures. **TESTS & RESULTS:** A) Radiological evaluation: a) Posterior and anterior view: Fracture passes through most of the growth plate and up through the metaphysis. Orthopedic Classification: Salter Harris Type II and b) Lateral view: Fracture passes along the growth plate and down through the epiphysis. Orthopedic Classification: Salter Harris Type III. B) CT SCAN: The fracture line goes through the metaphysis, growth plate and down through the epiphysis. Orthopedic Classification: Salter Harris Type IV. **FINAL DIAGNOSIS:** Fracture across the metaphysis, physis and epiphysis: Salter Harris Type IV. **DISCUSSION:** Type IV Salter Harris fracture involves all three elements of the bone and is an intra-articular fracture. Chronic disability is a potential outcome as these fractures can cause premature focal fusion. Therefore, these injuries can result in growth retardation, altered joint mechanics, and functional impairment. Urgent orthopedic evaluation and surgical restoration are crucial, especially in children and adolescents. **OUTCOME OF THE CASE:** Due to delayed treatment, doctors had the following surgical options: 1. Close reduction and osteosynthesis with k-wires; 2. Open reduction and internal fixation with cannulated screws; and 3. Ankle joint arthroscopy in case of non-satisfactory alignment of the fracture. The final treatment decision included closed reduction with one k-wire and circular cast. **RETURN TO ACTIVITY AND FURTHER FOLLOW-UP:** Post operation X-Rays showed success. A month later and after additional X-Rays, the circular cast and the k-wire were removed. The athlete gradually proceeded to muscle-strengthening exercises and reached full active ROM.