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Treatment of Tibial Plateau Fractures Schatzker Type V and VI With Ilizarov External Circular Frame

Vaso Kecojević, MD, orthopaedic surgeon, Serbia
Kristian Dudaš, MD, orthopaedic surgeon, Serbia
Snežana Kecojević, MD, specialist in rehabilitation and physical therapy, Serbia

Faculty Disclosure Information

- Nothing to disclose

BACKGROUND

One of the most critical weight-bearing surface of the human body

Complex fracture Schatzker V and VI caused by high energy

Standard dual plating 23-87.5% soft tisue complications *

Apropriate treatment for stabile fixation

*1. Young MJ, Barrack RL (1994) Complications of internal fixation of tibial plateau fractures. Orthop Review 23:149–154

2. Schatzker J (1996) Fractures of the tibial plateau. In: Schatzker J, Tile M (eds) The rationale of operative fracture care, 2nd edn.SpringerVerlag, Berlin, pp 419–438

ANATOMY

- High mobility versus stability
- Physiological valgus
- Load transfer medial to intercondylar eminence
- Front articular part of lateral condyle most expose in extension

ETIOLOGY AND EPIDEMIOLOGY

- Forced valgus and axial load
- 80 % traffic accidents (25% pedestrians)
- Direct trauma, or fall from the high, industrial accidents or sports injuries
- Low energy – osteoporotic bone , tipicaly plateau depression
- High energy – often in traffic accidents, most common are V or Y types-split fractures

Indications for Ilizarov external fixation

- Schatzker V and VI tibial plateau fractures
- Significant metaphyseal comminution with or without diaphyseal extension
- Severe metaphyseal and subchondral comminution with very small periarticular fragment unsuitable for internal fixation
- Compartment syndrome
- Open fractures
- Severe soft tissue injury

Contraindications

- Infection and soft tissue complications

McLaurin TM (2005) Hybrid ring external fixation in the treatment of complex tibial plateau fractures. Tech Knee Surg

4:226–236

El Barbary H., Abdel Ghani H., Misbah H., Salem K. Complex tibial plateau fractures treated with Ilizarov external fixator with or without minimal internal fixation. SICOT) Int Orthop. 2005;29:182–185.

GOALS

- Stable fixation and soft tissue preserving
- Joint articular congruency and alignment,
- Solving MDD (metaphyseo-diaphysel dissociation),
- Early mobility

Ramos T., Ekholm C., Eriksson B.I., Karlsson J., Nistor L. The Ilizarov external fixator—auseful alternative for the treatment of proximal tibial fractures. A prospective observational study of 30 consecutive patients. BMC Musculoskelet Disord. 2013;14(January):11

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WHY ILIZAROV CIRCULAR FRAME

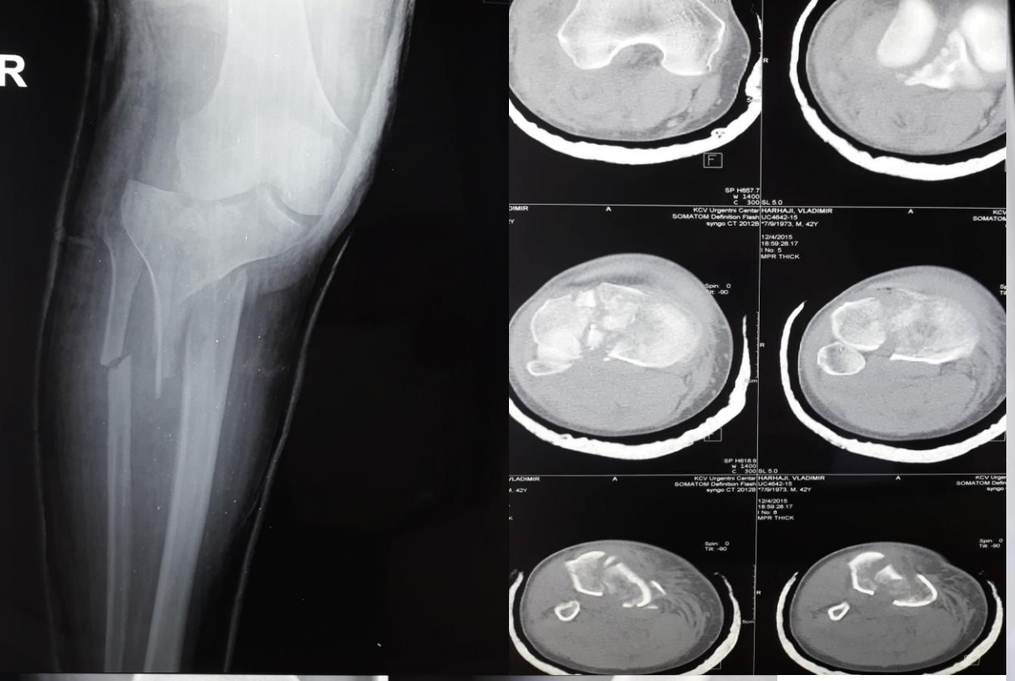
- **High rates of severe soft tissue complications, fixation failure, malunion, nonunion, joint stifness, posttraumatic osteoarthritis, infection and reoperation in the ORIF with dual plates.**

- **External frame fixation is an effective and safe method with a low wound complications rate and early functional return.**

Ujjwal KD, Dipak KJ, Prasanta KP (2018) Results of ring (Ilizarov) fixator in high energy Schatzker type VI fractures of proximal tibia. J Clin Orthop Trauma. 2018 Apr-Jun; 9(2): 186–191.

Veri JP, Blachut P, O'Brien P, Pirani S (2000) High grade tibial plateau fractures a matched cohort study comparing internal fixation and ring fixator methods. J Orthop Trauma 14:153

El-Gafary K., El-adly W., Farouk O., Khaled M., Abdelaziz M.M.(2013) Management of high-energy tibial plateau fractures by Ilizarov external fixator. Eur Orthop Traumatol. 4:1.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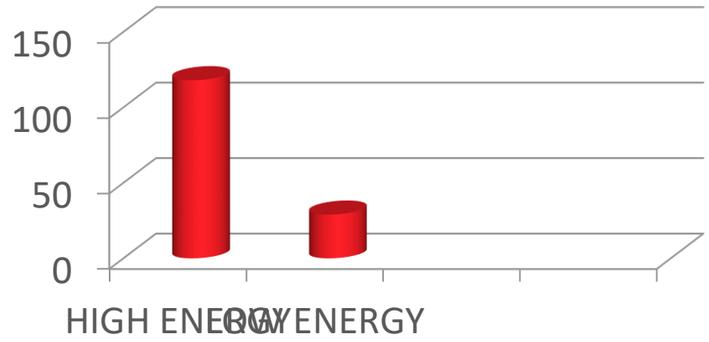
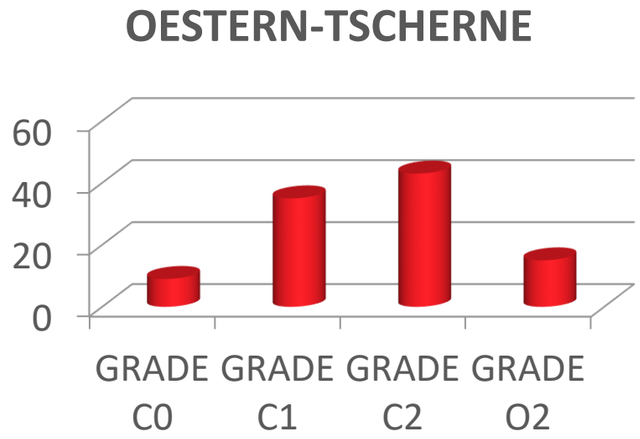
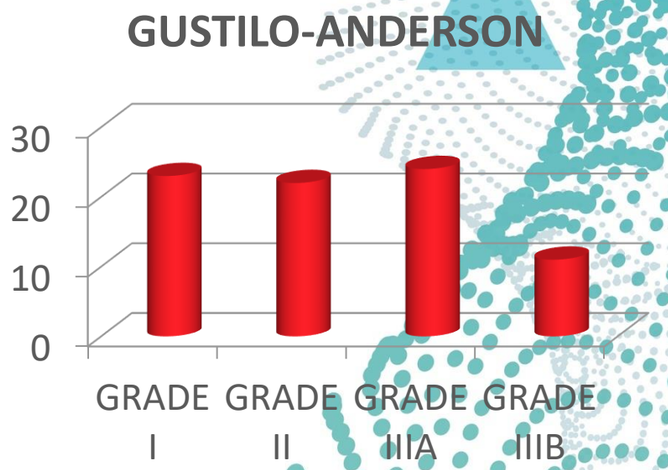
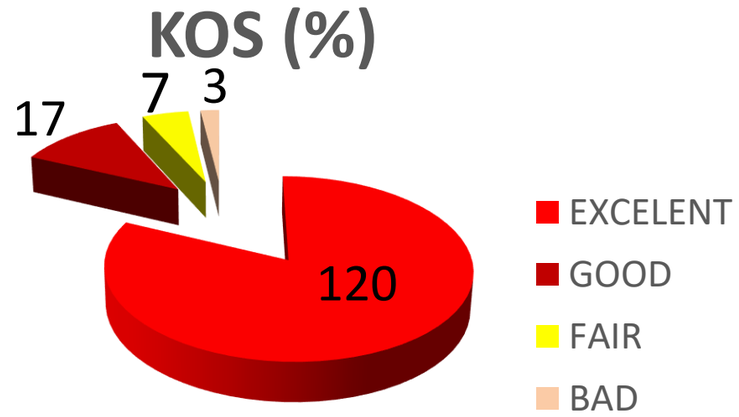
RESULTS 2003.-2023.: 147 Shatzker V and VI







POSTOPERATIVE



ROM

- Average flexion 135° (115° -150°)
- Average extension -3° (-10° – 5°)
- Surgery time average 95 minutes (80-130)
- Weight bearing after 3,5 weeks (3-5)
- Frame removal average 18 weeks (15-26)
- Follow up from 6 months-20 years

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COMPLICATIONS

- Transitory paresis of peroneal nerve – 4 patients
- DVT – 3 patients
- Pin site infection, transitory – 59
- Allograft absorbtion and condyle colapsing – 1
- Septic arthritis – 1
- Amputation- 1

CONCLUSION

- Ilizarov external circular frame is a good method for the treatment of comminuted tibial plateau fractures. It allows early joint movement and reduces the risk of serious complications.
- Provide stability, restore anatomy, no need for soft tisssue disection
- Safe method, low complications rate

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