

TREATMENT OF THE TIBIAL PLATEAU FRACTURES

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Keywords: tibial plateau fractures

Abstract: Appropriate assessment and treatment of tibia plateau fractures are critical for obtaining improved functional outcomes and reduced risk of complications. Purpose: Evaluating tibial plateau fracture treatment in two distinct periods: 2009-2011 vs. 2012-2015. Material and methods: 210 patients with tibial plateau fractures, treated between 1.01.2009 and 31.12.2015 were evaluated. Treatment methods and hospitalisation days were evaluated. Results and discussions: The majority of fractures (62%) were treated surgically. Plate and screw fixation is the method of choice (56%). The number of hospitalisations days was reduced by half in the last 4 years in comparison to 2009. Conclusion: The last four years revealed a strong trend in using modern treatment protocols with better results and less complications

INTRODUCTION

Appropriate assessment and treatment of tibia plateau fractures are critical for improved functional outcomes and reduced risk of complications.(1,2) Apart from the fracture, soft tissues (skin, muscle, nerves, blood vessels, ligaments) may be injured at the time of the trauma, therefore the appropriate treatment is aimed at both, fracture and soft tissues injuries.(3,4)

The management of these fractures requires special attention during the reduction and fixation. Posttraumatic arthritis, malalignment and infection are complications that can compromise the results of these fractures.(4,5)

PURPOSE

The purpose of this paper is to evaluate the tibial plateau fracture treatment in the Clinic of Orthopaedics and Trauma of the County Hospital Sibiu. Techniques of treatment (surgical or orthopaedic), applied to patients with tibial plateau fracture were evaluated, number of hospitalisation days were recorded. A comparative analysis of the treatment of tibial plateau fracture in two distinct periods: 2009-2011 and 2012-2015 was performed.

MATERIALS AND METHODS

We conducted a retrospective study over two distinct intervals: 1.01.2009 - 31.12.2011 and 1.01.2012 –31.12.2015. A total of 210 tibial plateau fracture patients were treated. We analyzed the following documents: inpatient observation sheets, operation protocols, patient discharge data from the Statistical Office of the Hospital. This study included patients of both sexes, aged between 18 and 100 years, suffering fractures of the tibial plateau of any kind (AO and Schatzker Classification). This study did not include patients with open fractures. Several variables were assessed: treatment method, number of hospitalisation days.

RESULTS AND DISCUSSIONS

Treatment of tibial plateau fractures is complex, orthopaedic (cast immobilisation) or surgical (osteosynthesis with plate and screws. with screws and washers, pins, with

locked intramedullary nail or with external fixators). For an effective treatment we considered the type of fracture, age, general condition of the patient, associated diseases, if the fracture is part of a polytrauma, and also the surgeons preference and the facilities of the department. Fracture treatment in tibial plateau may differ from patient to patient, all these details having a role in the final outcome.

Out of the 210 cases of tibial plateau fractures, 80 cases (38%) were treated conservatively and 130 cases (62%) were treated surgically.

Figure no. 1. Type of treatment 2009-2011

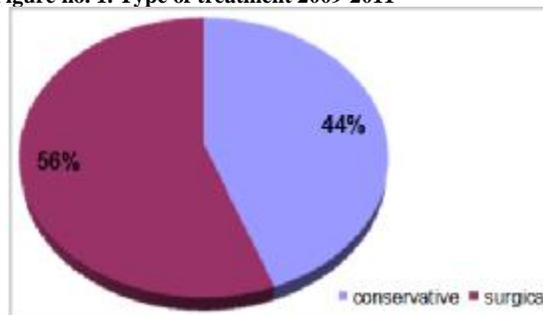
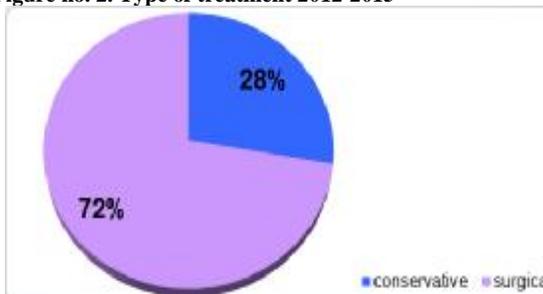


Figure no. 2. Type of treatment 2012-2015



The operating indications were made using Schatzker and AO classification.(6) Fractures with displacement

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Article received on 27.01.2017 and accepted for publication on 27.02.2017
ACTA MEDICA TRANSILVANICA March 2017;22(1):70-71

CLINICAL ASPECTS

(clogging or separation) have absolute indication for surgery, orthopaedic treatment is not enough. These fractures usually require reconstruction of menisci and ligaments if necessary.(7,8) Type of fixation varies depending on the type of fracture and surgeon preference. As it can be seen, 130 cases required surgery. Osteosynthesis with plates and screws was the most common method (39% + 17% = 56%) having the advantage of providing a stable construct, allowing early mobilization and faster functional recovery. Fixation with screws (plus washers or pins) was used in 32% of cases - mostly in fractures with little or no displacement movement.

Table no. 1. Type of fixation

Fixation type	Number	%
plates and screws	50	39%
plates and screws and wires	22	17%
screws and washers	25	19%
screws and wires	17	13%
intramedullary nail	11	8%
external fixation	5	4%

Intramedullary nail fixation is rarely used and represents only 8% of cases. This method is used in cases of fractures of the tibial plateau and the tibial diaphysis. External fixation is rarely used - only in cases of open fractures or "floating knee".

To assess the evolution of our orthopaedics service in time, we made a comparative analysis of tibial plateau fracture treatment comprising the years 2009-2011 and 2012-2015.

Between 2009 and 2011, 106 cases were treated. Of these, 47 were treated conservatively, while the remaining 59 were treated surgically. In the period 2012-2015, 104 patients with tibial plateau fracture were treated. Of these, 33 were treated non-operative and the remaining 71 were treated surgically. The number of tibial plateau fractures in these two periods is nearly equal and that permits a comparison between the two periods.

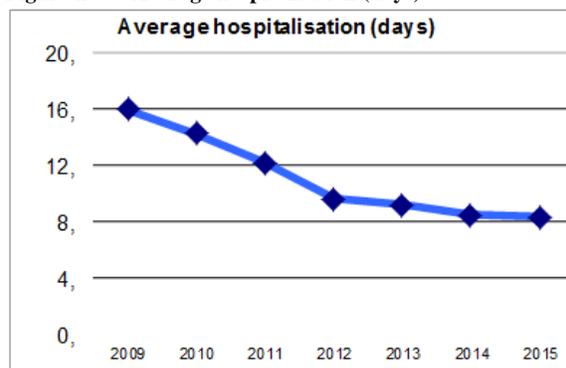
A decrease of orthopaedic treatment as treatment of choice was noted: - while between 2009 and 2011, 45% of the fractures were treated conservatively, in 2012-2015 the percentage decreased to 32% of cases. This is explained by a different treatment approach, in which modern and current trends represent the actual standard of treatment. The same trend is underlined by the observation that modern fixation techniques with plates and screws were applied to a greater number of cases in 2012-2015.

The average hospitalisation was influenced by several factors such as patient age, health outcomes, disease related complications. Thus, with the advent of the factors listed above, hospitalisation days were extended above the average. 47% of patients had under 10 days of hospital stay.

The majority of these patients had a favourable evolution, they were young and with a good health status. On the other hand, we observed a fairly large number of patients who required hospitalisation between 10 and 20 days (43%). The remaining patients (10%) were hospitalised more than 20 days. This group is represented by those who suffered polytrauma and therefore have required a complex, multidisciplinary treatment. We noticed a great improvement of the hospitalisation days number in the last four years. Now, we can see that this number tends to be constant under 10 days. We can see that in 2009 the average number of hospitalisation days

was 16. After this year, there was a progressive decrease to 9.6 days in 2012 and then to 8.3 days in 2015. The average number of hospitalisation days during the 7 years of the study was reduced by 50%. This is very good, both for the patient and for the hospital. Better numbers can be obtained, but only if the administrative policy of the hospital management will improve.

Figure no. 3. Average hospitalisation (days)



CONCLUSIONS

Recent years revealed an increased tendency towards an implementation of international protocols and modern approaches in the treatment of tibial plateau fractures. There was an evident decrease of the conservative treatment correlated with an increased tendency of the surgical treatment. This is much more efficient and gives better end results. This trend was associated with improved management. This was best proved by a decrease to half, of the number of hospitalisation days.

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