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Original Contribution

OUR EXPERIENCE IN KNEE ENDOPROSTHESIS AFTER FRACTURES OF LATERAL TIBIAL PLATEAU

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ABSTRACT
Under adverse and badly treated fractures of the lateral tibial plateau there are often come across complications like those: lowering and widening of tibial plateau, limb axis and biomechanical disturbance. As a result different load secondary osteoarthritis of the knee is appearing. That lead pain and limitation of knee motions and from there – quality of life decreasing. In cases like this the only possible outcome is a monocondylar or total knee arthroplasty.

Key words: fractures of the lateral tibial plateau, monocondylar arthroplasty, total knee arthroplasty /TKA/, rehabilitation, quality of life, knee society score /KSS/

INTRODUCTION

The total replacement of knee has been practiced for more than 50 years. Only 30 years ago the specialists began to understand the biomechanics of knee joint. For that reason the first full replacements of knee are not that successful, as the artificial hip of Sir John Charnly. In 1860 Fergusson reported implementation of arthroplasty of knee in case of arthritis. (1) Verneuil is considered to be the first who executed interposition arthroplasty using joint capsule. For the first time artificial implants are used in the 1940's. Initially only hip condyles are being replaced (2). In the next ten years experiments are done to replace separately the tibial articular surface. Combined replacement of tibial and hip articular surface appears in the 1950's using the principle of simple hinge. These implants undergo failure because of the complex movements of knee – as a result of these replacements many septic and aseptic complications have appeared. In 1971 Gunston makes important discovery – the knee doesn't move on one axis. His multicenter replacement of knee also undergoes failure because of the inadequate fixation of prosthesis to bone. In the next several years different models of implants are used – Geomedic (1973, clinic of Mayo), TKP Install (3). For a 15 year period of research the best results are in 1993 – 94% level of success, reported by Ranawat (4) and associates. Nowadays different implants are being used for a total or unicondylar replacement of knee joint. The arguments, whether joint relations need to be preserved or not, continue till nowadays. The long research shows there are not significant differences.

MATERIALS AND METHODS

Etiology: We followed up total or unicondylar replacement of knee joint cases after fractures of the lateral tibial plateau.

Indications: 1. Pain – leading to dysfunction of the joint and deteriorates quality of living; 2. Correction of significant deformation of joint which reduces a lot the scope of movements – important indication but rarely determinant factor; 3. All the conservative methods did not

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accomplish success. Contraindications: 1. Preceding coronary cerebrovascular incidents; 2. Decompensated chronic diseases – chronic obstructive pulmonary disease, diabetes, chronic renal failure, etc.; 3. Active thrombophlebitis; 4. Active infectious process; 5. Local skin lesions; 6. Dysfunction of protractor mechanism of joint; 7. Non-cooperative patients: mental diseases, dementia; 8. Patient with excess expectations. The key importance of the intervention consists in: 1. Correction of the angle deformation; 2. Correction of the flexion deformation; 3. Recovery of the ligamentary balance of joint; 4. Recovery of the biomechanical axes of limb.

For the period between January'2007 and October'2010 were performed 14 knee arthroplasties after adverse and badly treated fractures of lateral tibial plateau. Five of them were men and 9 – women. The average age of the observed patients was 61 years /22 – 76/. Four of them were implanted with monocondylar prosthesis and 10 with total prosthesis. In all of the cases we pursue preoperative planning. We performed preoperative arthroscopy in order to precise the degree of violation of the cartilaginous coverage both of the observed /lateral/ and medial compartment. The patients were operated under spinal or endotracheal anesthesia under LIA-protection. Tourniquet was done only at the moment of cementing of the prosthesis. We used front medial approach for TKA and lateral parapatelar approach for monocondylar prosthesis. We didn't use a uniform rehabilitation protocol after knee arthroplasty! The work with the patient depended of circumstances, but we presumed on an active, early, aggressive rehabilitation using Salter's principle for PPM and myofascial influence of the pain.

RESULTS

1.Follow up period – 6 to 34 months;
2.Preoperative and early postoperative complications – 2 cases with superficial infections;
3.Duration of rehabilitation – 3 weeks to 2 months / average period – 38 days/;
4. Late postoperative complications – one case with aseptic loosening;
5. Evaluation of the functional results - according to unified knee society scores (KSS) – see **table 1** and **table 2**.

Our results according to KSS scale (5) vary from 24 to 58 points preoperative and reach 68 – 100 till the 9th month after the intervention. The range of motions was functional in almost all cases.

Table 1. *KSS criteria*

Subjective	Pain (sleep, work, sports)	0 – 50p
Objective – scope of movement, correction of the angulation, stability of joint)	Presence of flexion contracture (0 degrees to < 20 degrees)	2 – 15p
	Achieved possible flexion (0 degrees to 121-125 degrees)	1 – 25p
	Stability: - antero - posterior (<5 mm to 10 mm)	10 – 0p
	Stability: - mediolateral (< 5 degrees to 15 degrees)	15 – 0p
	Varus valgus correction (0 degrees to 15 degrees)	0 – 20p

Table 2. *Evaluation*

From 80 to 100 points	excellent
From 70 to 79 points	good
From 60 to 69 points	satisfactory
< 60 points	bad

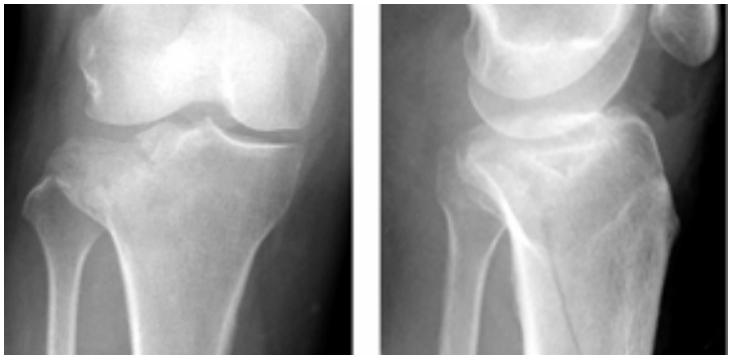

Fig. 1. A 50 year-old man who was in a motorcycle accident. Plain radiograph shows a fracture of the lateral tibial plateau with depression.

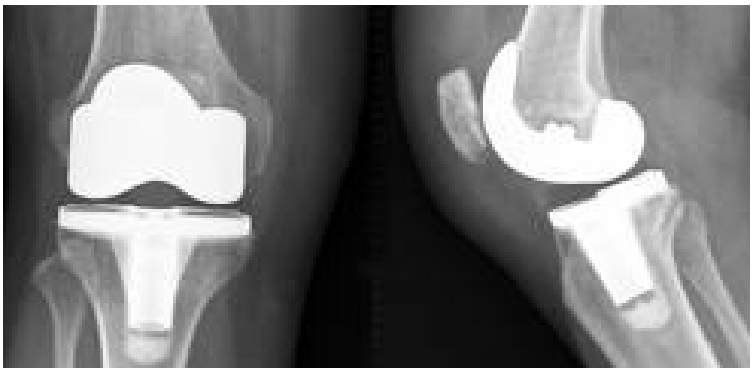

Fig. 2. The same patient after TKA performed 18 mounts lately.

DISCUSSION

It is obvious that for patients with badly treated fractures of the lateral tibial plateau and developed degenerative joint disease with deformed knee and limb axis disturbance as a result, it is necessary to perform arthroplasty of joint like this in order to provide better function, painless motion and better quality of living. The goal of the arthroplasty after badly treated fractures of the lateral tibial plateau is to provide better durability of the prosthesis; if possible the procedure should be a single one. The patient should not have excess expectations. Making a decision for arthroplasty should be performing after precision of criteria like age and condition of every single patient. Performing an early and adequate qualitative and durable rehabilitation and myofascial influence of the pain leads better postoperative results.

CONCLUSIONS

As a conclusion we can say that arthroplasty after badly treated fractures of the lateral tibial plateau in their terminal outcome haven't analogy. It provides mobility near to functional range of motion, leads to absence of pain and normalizes the geometry and the bio-mechanics of the knee.

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