ORIGINAL ARTICLE

Does autologous bone grafting provide better outcomes than tricalcium phosphate synthetic grafting in tibial plateau fractures with articular depression?

Onur Süer,[1] Mecit Ferhatoğlu,[1] Recep Selçuk Eyceyurt,[1] Melikşah Uzakgider,[1] Mesut Tahta,[2] Cemil Kayalı[2]

[1]Department of Orthopedics and Traumatology, İzmir City Hospital, İzmir-*Türkiye*

[2]Department of Orthopedics and Traumatology, University of Health Sciences, Izmir City Hospital, İzmir-*Türkiye*

ABSTRACT

BACKGROUND: This study aimed to compare the radiological and functional outcomes of autologous iliac bone grafting and tricalcium phosphate synthetic grafting in the treatment of tibial plateau fractures (TPFs) with articular depression.

METHODS: In this retrospective comparative study, 94 patients who underwent surgical treatment for Schatzker type II–III tibial plateau fractures with metaphyseal depression between January 2015 and June 2022 were evaluated. Patients were divided into two groups according to the graft material used: autologous iliac bone graft (n=42) and tricalcium phosphate (TCP) synthetic graft (n=52). Radiological evaluation included measurement of articular depression (mm) and the modified Rasmussen Radiological Score (RRS) preoperatively, postoperatively, and at final follow-up (≥36 months). Functional outcomes were assessed using the Lysholm Knee Score and the modified Rasmussen Functional Score (RFS). The minimum follow-up duration was 36 months.

RESULTS: Both groups achieved satisfactory initial correction of articular depression. At final follow-up, depression was smaller in the autograft group (2.10 [0.00–2.60] mm) than in the TCP group (2.50 [1.68–3.75] mm; U=771.5, p=0.014), indicating better maintenance of reduction. RRS values were comparable between groups preoperatively and immediately postoperatively, but were higher in the autograft group at final follow-up (16 [16–18] vs. 16 [14–16]; U=1453.5, p=0.002). Consistent with this finding, a greater proportion of excellent RRS outcomes was observed in the autograft group (40.5% vs. 21.2%; $\chi^2(1)=4.15$, p=0.042). Functional outcomes were similar between groups (RFS: 27 [26–28] vs. 26 [26–28]; U=1285, p=0.136; Lysholm: 86 [81–90] vs. 86 [81–90]; U=1271.5, p=0.159). Donor-site morbidity occurred in 4.7% of patients in the autograft group, whereas no graft-related complications were observed in the TCP group.

CONCLUSION: In Schatzker type II–III TPFs with articular depression, autologous iliac crest bone grafting demonstrated better radiological maintenance of reduction and higher final RRS compared to TCP grafting, although mid-term functional scores were similar. These level III data suggest that autograft remains a reliable option for structural support in metaphyseal defects; however, prospective randomized comparative studies are needed to confirm any potential advantage over tricalcium phosphate grafts.

Keywords: Autograft; functional outcome; reduction loss; tibial plateau fracture; tricalcium phosphate synthetic graft.

INTRODUCTION

Tibial plateau fractures account for approximately 1% of all fractures and represent one of the most challenging periarticular injuries because they involve the weight-bearing surface of the knee joint.[1] Among these injuries, Schatzker type II and III fractures, characterized by articular depression, are particularly prone to instability, post-traumatic malalignment,

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Address for correspondence: Onur Süer

Department of Orthopedics and Traumatology, Izmir City Hospital, İzmir, Türkiye

E-mail: onursuer3434@gmail.com

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and early-onset osteoarthritis if anatomical reduction is not achieved and maintained.[2,3] Therefore, restoration of the articular surface and provision of stable metaphyseal support are fundamental goals of surgical treatment.

Following reduction of the depressed fragment, a residual metaphyseal void often requires bone grafting to prevent secondary subsidence.[4] Autologous iliac crest bone graft (AIBG) has traditionally been considered the gold standard because of its osteogenic, osteoinductive, and osteoconductive properties.[5,6] However, its use may be limited by donor-site morbidity, prolonged operative time, and postoperative pain.[7,8]

In recent years, calcium phosphate-based synthetic bone substitutes—particularly β-tricalcium phosphate (β-TCP)—have gained popularity as void fillers because of their biocompatibility, compressive strength, and resorbable properties.[9,10] Several studies have reported satisfactory outcomes with β-TCP in the treatment of tibial plateau fractures, suggesting radiological support comparable to that of autograft.[10,11] However, evidence remains inconclusive regarding its long-term ability to maintain reduction under physiological loading and whether it provides equivalent functional recovery.

Given the ongoing debate regarding the advantages of autograft versus synthetic substitutes in depressed tibial plateau fractures, additional comparative clinical evidence is needed. Therefore, the present study aimed to compare the radiological and functional outcomes of autologous iliac bone grafting and tricalcium phosphate synthetic grafting in patients with tibial plateau fractures associated with metaphyseal depression.

MATERIALS AND METHODS

Study Design and Patient Characteristics

This retrospective comparative study included patients who underwent surgical treatment for tibial plateau fractures with joint depression at our institution between January 2015 and June 2022. The study protocol was approved by the Medical Research Ethics Committee of University of Health Sciences, İzmir Bozyaka Training and Research Hospital (Date: 14.06.2023, Decision no: 2023/81), and written informed consent was obtained from all participants.

Because of the retrospective design, patients were not randomized to treatment groups. A total of 94 patients were divided into two groups according to the graft material used to fill the metaphyseal defect: the autologous iliac bone graft group (autograft group, n=42) and the tricalcium phosphate synthetic graft group (TCP group, n=52). The choice of graft material was based on the treating surgeon's preference and graft availability at the time of surgery; no institutional guidelines directed more complex fractures toward a specific graft type.

The inclusion criteria were: (1) Schatzker type II or III tibial plateau fracture with ≥5 mm articular depression confirmed by preoperative computed tomography (CT); (2) age between 18 and 65 years; and (3) a minimum follow-up duration of 36 months. The exclusion criteria included open fractures, pathological fractures, concomitant ligamentous reconstruction, previous ipsilateral knee surgery, active infection, and insufficient radiological follow-up.

Patient demographics and injury characteristics, including age, sex, mechanism of injury, and follow-up duration, were recorded and compared between groups. Baseline demographic and injury characteristics were comparable between the two groups (Table 1).

Radiological and Functional Evaluation

Radiological assessment was performed using anteroposterior and lateral radiographs, with CT scans obtained when necessary. Depression correction was calculated as the difference between preoperative and immediate postoperative depression height. The modified Rasmussen Radiological Score (RRS) was evaluated in all patients preoperatively, postoperatively, and at the final follow-up.[13,14] Outcomes were categorized as excellent (18), good (12–17), fair (6–11), or poor (<6), based on articular depression, varus–valgus alignment, and condylar widening. Radiographic parameters were independently assessed by three orthopedic surgeons, who were blinded to all clinical data.

Functional outcomes were assessed at the final clinical follow-up using the Lysholm Knee Score and the modified Rasmussen Functional Score (RFS). According to the modified Rasmussen Functional Score, clinical assessment includes pain, walking capacity, extension lag, range of motion, and stability. Each patient receives a total score ranging from 0 to 30, which is classified as poor (<10), fair (10–19), good (20–26), or excellent (27-30).[12,13]

Complications—including nonunion, delayed union, reoperation, and superficial or deep infection—were recorded and compared between the groups.

Surgical Technique

All procedures were performed by senior orthopedic trauma surgeons from a single surgical team using a standardized anterolateral approach. After exposure of the lateral plateau, the depressed articular fragment was elevated using a cortical window or bone tamp under fluoroscopic guidance. The resulting metaphyseal void was filled with either autologous cancellous bone graft or tricalcium phosphate synthetic graft according to the surgeon's usual practice and graft availability; graft selection was not guided by a formal protocol based on fracture severity or the magnitude of depression.

In the autograft group, cancellous bone was harvested from the anterior iliac crest through a separate 3–4 cm incision. The graft was morselized and tightly packed into the defect to provide structural support. Standard plate fixation was then performed using a proximal tibial lateral locking plate (Fig. 1).

In the TCP group, the defect was filled with tricalcium phos-

Table 1. Demographic and clinical characteristics of the two groups

	Autograft group	TCP group	p-value
n	42	52	
Age (years), median (Q1–Q3)	47.5 (34–57)	48 (39–58)	U=960.5 p=0.319*
Sex, n (%)			
Female	12 (28.5)	22 (42.3)	χ^2=1.90
Male	30 (77.5)	30 (57.7)	p=0.168#
Mechanism of injury, n (%)			
Traffic accident	10 (23.8)	14 (27)	χ^2=0.118
Fall	32 (76.2)	38 (73)	p=0.731#
Fracture classification			χ^2=0.118
Schatzker type II	34 (80.1)	41 (78.8)	p=0.800#
Schatzker type III	8 (19.9)	11 (21.2)	U=1309.5
Follow-up time [months], median (Q1–Q3)	79.5 (64.5–87.7)	70.0 (65.5–78.2)	p=0.099*

Normality was assessed using the Shapiro–Wilk test, and homogeneity of variances was evaluated using Levene's test. *The Mann–Whitney U test was used to compare age and follow-up duration between the groups. #Pearson's chi-square test was used to compare sex, mechanism of injury, and fracture classification between the groups. TCP: Tricalcium phosphate.

Figure 1. Radiological images of a Schatzker type II tibial plateau fracture treated with a proximal tibial lateral locking plate in the autograft group: **(a)** preoperative anteroposterior (AP) radiograph, **(b)** preoperative lateral radiograph, **(c)** preoperative coronal computed tomography (CT) image, **(d)** preoperative sagittal CT image, **(e)** early postoperative AP radiograph, **(f)** early postoperative lateral radiograph, **(g)** four-year follow-up AP radiograph, and **(h)** four-year follow-up lateral radiograph.

Figure 2. Radiological images of a Schatzker type II tibial plateau fracture treated with a proximal tibial lateral locking plate in the tricalcium phosphate synthetic graft group: **(a)** preoperative anteroposterior (AP) radiograph, **(b)** preoperative lateral radiograph, **(c)** preoperative coronal computed tomography (CT) image, **(d)** preoperative sagittal CT image, **(e)** early postoperative AP radiograph, **(f)** early postoperative lateral radiograph, **(g)** four-year follow-up AP radiograph, and (h) four-year follow-up lateral radiograph.

phate synthetic graft according to the manufacturer's instructions. Fixation was achieved using the same plating technique as in the autograft group (Fig. 2).

Postoperative Rehabilitation Protocol

All patients were immobilized in a hinged knee brace for the first two weeks. Passive range-of-motion exercises were initiated on postoperative day one. Non–weight-bearing was maintained for the first six weeks, followed by gradual progression to partial weight-bearing until 12 weeks. Full weight-bearing was permitted thereafter based on radiographic evidence of healing.

Statistical Analysis

Categorical variables were reported as frequencies and percentages and compared using Pearson's chi-square test or Fisher's exact test. Continuous variables were expressed as mean ± standard deviation (SD) for normally distributed data or as median with interquartile range (Q1–Q3) for non-normally distributed data. Normality was assessed using the Shapiro–Wilk test, and homogeneity of variance was evaluated using Levene's test. Between-group comparisons were performed using the independent samples t-test for parametric data and the Mann–Whitney U test for nonparametric data.

To partially address the lack of randomization, baseline demographic and injury characteristics were first compared between the groups and were confirmed not to differ significantly (Table 1). Interobserver reliability was assessed using the intraclass correlation coefficient (ICC) based on a two-way mixed-effects, absolute-agreement model. A p-value <0.05 was considered statistically significant. Statistical analyses were performed using IBM SPSS Statistics version 26.0 (IBM Corp., Armonk, NY, USA). No a priori power analysis was conducted because the sample size was determined by the number of eligible cases available during the study period.

RESULTS

Demographic and Clinical Characteristics

A total of 94 patients were included in the analysis (autograft group, n=42; TCP group, n=52). There were no significant differences between the groups in baseline characteristics: age, median (interquartile range [IQR]) 47.5 (34–57) vs. 48 (39–58) years (p=0.319); male sex, 71.5% vs. 57.7% (p=0.168); fall-related injuries, 76.2% vs. 73.0% (p=0.731); and Schatz-

Table 2. Radiological parameters of the two groups

	Autograft group	TCP group	p-value
n	42	52	
Preoperative depression (mm), median (Q1–Q3)	8.05 (6.83–9.35)	8.25 (6.70–9.70)	U=1128.5 p=0.784*
Last follow-up depression (mm), median (Q1–Q3)	2.1 (0.0–2.6)	2.5 (1.68–3.75)	U=771.5 p=0.014*
Preoperative Rasmussen Radiological Score, median (Q1–Q3)	10 (10–12)	12 (10–12)	U=0.990
Excellent, n (%)	0 (0)	0 (0)	p=0.398*
Good, n (%)	20 (48)	26 (50)	χ^2=0.053
Fair, n (%)	21 (50)	24 (46)	p=0.818#
Poor, n (%)	1 (2)	2 (4)	
Postoperative Rasmussen Radiological Score, median (Q1–Q3)	18 (16–18)	18 (16–18)	U=1221
Excellent, n (%)	30 (72)	35 (67)	p=0.237*
Good, n (%)	12 (28)	17 (33)	χ^2=0.192
Fair, n (%)	0 (0)	0 (0)	p=0.661#
Poor, n (%)	0 (0)	0 (0)	
Last follow-up Rasmussen Radiological Score, median (Q1–Q3)	16 (16–18)	16 (14–16)	U=1453.5
Excellent, n (%)	17 (40.5)	11 (21)	p=0.0021*
Good, n (%)	25 (59.5)	41 (79)	χ^2=4.15
Fair, n (%)	0 (0)	0 (0)	p=0.042#
Poor, n (%)	0 (0)	0 (0)	

*The Mann–Whitney U test was used to compare articular depression (preoperative and final follow-up) and modified Rasmussen Radiological Scores (preoperative, postoperative, and final follow-up) between the groups. #Group differences in the modified Rasmussen Radiological Score categories were assessed using Pearson's chi-square test. TCP: Tricalcium phosphate.

ker type II fractures, 80.1% vs. 78.8% (p=0.800). The median follow-up duration was also comparable between the groups: 79.5 (64.5–87.7) vs. 70.0 (65.5–78.2) months (p=0.099) (Table 1).

Radiological Outcomes

Interobserver agreement for radiological measurements was excellent, with ICC values ranging from 0.955 to 0.972. Both groups achieved satisfactory initial correction of articular depression. Preoperative articular depression was comparable between the groups (autograft: 8.05 [6.83–9.35] mm vs. TCP: 8.25 [6.70–9.70] mm; U=1128.5, p=0.784). At final follow-up, depression was smaller in the autograft group (2.10 [0.00–2.60] mm) than in the TCP group (2.50 [1.68–3.75] mm; U=771.5, p=0.014), indicating better maintenance of reduction. Preoperative and immediate postoperative modified Rasmussen Radiological Scores did not differ between groups (preoperative: 10 [10–12] vs. 12 [10–12], U=0.990, p=0.398; postoperative: 18 [16–18] vs. 18 [16–18], U=1221, p=0.237). However, at the final follow-up, the autograft group demonstrated higher radiological scores than the TCP group (16 [16–18] vs. 16 [14–16]; U=1453.5, p=0.002). Similarly, RRS category distributions were comparable between groups preoperatively (good: 47.6% vs. 50.0%; χ^2=0.053, p=0.818) and postoperatively (excellent: 71.4% vs. 67.3%; χ^2=0.192, p=0.661). At the final follow-up, however, the autograft group demonstrated a higher proportion of excellent outcomes compared to the TCP group (40.5% vs. 21.2%; χ^2=4.15, p=0.042) (Table 2).

Functional Outcomes

At final follow-up, functional outcomes were comparable between the groups. The modified Rasmussen Functional Score was 27 (IQR 26–28) in the autograft group and 26 (26–28) in the TCP group (U=1285, p=0.136). The Lysholm Knee Score was 86 (81–90) in both groups (U=1271.5, p=0.159). Similarly, categorical RFS distributions did not differ significantly between the groups: excellent outcomes were observed in 31 of 42 patients (73.8%) and good outcomes in 11 of 42 patients (26.2%) in the autograft group, compared with excellent outcomes in 30 of 52 patients (57.7%) and good outcomes in 22 of 52 patients (42.3%) in the TCP group (χ^2(1)=2.64, p=0.104). No patients were classified as fair or poor (Table 3).

Superficial surgical-site infection occurred in two patients

Table 3. Functional outcomes at final follow-up

	Autograft group	TCP group	p-value
n	42	52	
Rasmussen Functional Score, median (Q1–Q3)	27 (26–28)	26 (26–28)	U=1285
			p=0.136**
Excellent, n (%)	31 (74)	30 (58)	
Good, n (%)	11 (26)	22 (42)	χ^2=2.64
Fair, n (%)	0 (0)	0 (0)	p=0.168#
Poor, n (%)	0 (0)	0 (0)	
Lysholm Knee Score, median (Q1–Q3)	86 (81–90)	86 (81–90)	U=1271.5
			p=0.159*

*The Mann–Whitney U test was used to compare functional scores between groups. #Pearson's chi-square test was used to compare modified Rasmussen Functional Score categories between the groups. TCP: Tricalcium phosphate.

(4.7%) in the autograft group and three patients (5.7%) in the TCP group (p=1.000); all cases were successfully treated with oral antibiotics and routine wound care. No deep infections were observed in either group. Donor-site morbidity occurred in two patients (4.7%) in the autograft group, whereas no graft-related complications were recorded in the TCP group. No cases of nonunion were identified in the entire series.

DISCUSSION

In this retrospective comparative study of 94 patients with Schatzker type II–III tibial plateau fractures with articular depression, autologous iliac crest bone grafting (AICBG) demonstrated superior radiological maintenance of reduction (reflected by smaller residual depression and higher final RRS) compared with tricalcium phosphate. However, functional outcomes, including RFS and Lysholm scores, were comparable between the groups at mid-term follow-up. These findings suggest that, in this clinical setting, autograft may provide more durable metaphyseal support than β-TCP without conferring a measurable functional advantage.

High-level evidence from randomized trials and meta-analyses indicates that several modern bone substitutes can provide structural support comparable to that of autograft in tibial plateau fractures. Russell et al.[14] randomized 120 unstable fractures (Schatzker types I–VI) to treatment with autogenous iliac crest graft or endothermic calcium-phosphate cement and reported significantly lower rates of ≥2 mm articular subsidence at 3 and 12 months in the cement group, with similar clinical outcomes and complication rates between the groups. A recent systematic review and meta-analysis including seven randomized controlled trials likewise found no overall differences in joint depression or secondary collapse, while bone substitutes offered procedural advantages such as reduced blood loss and shorter operative time.[15] Similarly, Cooper et al.[4] pooled data from six randomized trials and reported non-significant trends toward better maintenance of reduction with synthetic grafts, along with significantly lower mean blood loss (≈90 mL) and shorter operative time (≈16 minutes) compared with autograft. In the CERTiFy (CERAMENT™ Bone Void Filler in Tibial Plateau Fractures) multicenter randomized controlled trial, a biphasic hydroxyapatite/calcium-sulfate cement was found to be noninferior to autograft with respect to the 26-week 12-Item Short Form Survey physical component summary and visual analog scale pain scores, with no significant differences in fracture healing, defect remodeling, or articular subsidence.[16] Taken together, these findings suggest that certain calcium phosphate-based and other synthetic constructs can match, or in some cases slightly outperform, autograft in selected fracture patterns, particularly in the short term.

In contrast, in our cohort with longer follow-up, a clear between-group difference in radiological outcomes emerged at final evaluation in favor of autograft, despite similar functional scores. This apparent discrepancy may partly be explained by differences in fracture patterns, graft formulations, and duration of follow-up. For example, Russell et al.[14] included higher-energy patterns (Schatzker types IV–VI) and used a calcium phosphate cement rather than pure β-TCP, while most randomized trials included in the meta-analysis evaluated heterogeneous substitutes such as bioactive glass, titanium granules, and various calcium phosphate cements, with follow-up typically limited to one to two years.[14] In contrast, the median follow-up in our study was approximately six years with β-TCP, which may better capture the later phases of graft resorption and load transfer under physiological conditions.

Longer-term observational studies support the notion that substitute-specific resorption behavior and durability influence metaphyseal support. Hanke et al. reported that, 9–12 years after surgery, a brushite/β-TCP composite had largely

resorbed homogeneously, whereas a hydroxyapatite-containing product remained radiographically visible; however, both constructs maintained reduction, and loss of reduction >2 mm was uncommon.[17] These observations are broadly consistent with our finding that TCP provided satisfactory early reduction but was associated with slightly greater residual depression at mid-term follow-up compared to autograft, suggesting that both the mechanical properties and resorption kinetics of individual products are clinically relevant.

Results comparing biologic grafts also show variability. In a comparative series, autograft and allograft yielded similar Rasmussen radiological scores and clinical outcome categories after tibial plateau fixation, with no significant differences between groups.[3] Systematic and narrative reviews likewise noted that, although autograft remains the "gold standard," its limitations, including limited volume and donor-site morbidity, often motivate the use of allografts or synthetic substitutes when biological properties or quantity are constrained.[4]

Our finding of superior radiological outcomes but not superior mid-term functional outcomes parallels the mixed correlation between clinical–functional and radiological Rasmussen scores reported in a 2023 cohort.[13] In that study, score categories differed in 66% of cases, and the authors emphasized the limited concordance between these dimensions in tibial plateau fractures. Accordingly, modest residual depression may not necessarily translate into clinically meaningful limitations when alignment is restored and rehabilitation is standardized.

Beyond graft selection, smoking and high body mass index (BMI) have been associated with greater postoperative articular depression and poorer clinical outcomes. A recent retrospective study of Schatzker type II–III fractures reported similar short-term clinical and radiographic outcomes between autograft and tricalcium phosphate, but significantly greater articular depression in smokers and in patients with BMI >30 kg/m². Lower Lysholm scores were also observed among patients who developed depression. The authors attributed these findings to impaired biology associated with smoking and increased mechanical loading associated with obesity.[11] These observations support our interpretation that patient-related risk factors may influence metaphyseal support over time, regardless of the graft material used.

This study has several limitations. First, its retrospective design and nonrandomized allocation of graft type introduce a risk of selection bias and residual confounding. Although baseline demographic and injury characteristics were comparable between groups, unmeasured variables such as body mass index, smoking status, and bone quality may have influenced both graft selection and outcomes. Second, we did not perform CT-based three-dimensional measurements or include additional patient-reported outcome measures beyond the Lysholm score, which might have provided a more comprehensive evaluation of articular reduction and functional status. Therefore, the present findings should be interpreted as level III evidence and regarded as hypothesis-generating; confirmation in prospective randomized studies is warranted.

When durable metaphyseal support is the primary goal in depressed Schatzker type II–III fractures, our findings support autologous iliac crest bone grafting as a preferred option for maintaining radiographic reduction, while acknowledging its small risk of donor-site morbidity. Tricalcium phosphate remains a reasonable alternative when avoidance of iliac crest harvesting is desirable, with the understanding that long-term subsidence may be slightly greater, even if mid-term functional outcomes are comparable, in line with previous randomized and observational studies.[12,17] Future product-specific trials comparing contemporary tricalcium phosphate formulations (varying in porosity, granule size, and adjunctive augmentation) with autograft are needed. Such studies should incorporate CT-based articular measurements, validated patient-reported outcome measures, and appropriate adjustment for factors such as smoking and body mass index. Additionally, they should build on the methodological rigor of prior randomized controlled trials that have evaluated both radiographic and patient-reported endpoints.

CONCLUSION

In patients with Schatzker type II–III tibial plateau fractures with articular depression, autologous iliac crest bone grafting appeared to provide more durable radiological maintenance of reduction, reflected by higher final Rasmussen Radiological Scores, whereas mid-term functional outcomes were comparable between groups. These findings suggest that autologous iliac crest bone grafting remains a reliable option for structural support in metaphyseal defects. However, the results should be interpreted as hypothesis-generating, and prospective randomized comparative studies are needed to confirm any potential advantage over tricalcium phosphate.

Ethics Committee Approval: This study was approved by the Medical Research Ethics Committee of University of Health Sciences, İzmir Bozyaka Training and Research Hospital (Date: 14.06.2023, Decision No: 2023/81).

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ORİJİNAL ÇALIŞMA - *ÖZ*

Eklem yüzeyinde çökmesi olan tibia plato kırıklarında otolog kemik greftlemesi, trikalsiyum fosfat sentetik greften daha üstün mü?

AMAÇ: Bu çalışma, eklem yüzeyinde çökmesi olan tibia plato kırıklarının (TPK) tedavisinde otolog iliak kemik grefti ile trikalsiyum fosfat (TCP) sentetik greft kullanımının radyolojik ve fonksiyonel sonuçlarını karşılaştırmayı amaçladı.

GEREÇ VE YÖNTEM: Retrospektif karşılaştırmalı bu çalışmada, Ocak 2015-Haziran 2022 tarihleri arasında metafizer çökmeli Schatzker tip 2–3 tibia plato kırığı nedeniyle cerrahi tedavi uygulanmış 94 hasta analiz edildi. Hastalar kullanılan greft materyaline göre iki gruba ayrıldı: otolog iliak kemik grefti (n=42) ve trikalsiyum fosfat (TCP) sentetik greft (n=52). Radyolojik değerlendirmede eklem yüzeyindeki çökme (mm) ve modifiye Rasmussen Radyolojik Skoru (RRS) preoperatif, postoperatif ve nihai kontrolde (≥36 ay) ölçüldü. Fonksiyonel sonuçlar Lysholm diz skoru ve modifiye Rasmussen Fonksiyonel Skoru (RFS) ile değerlendirildi. Minimum takip süresi 36 ay idi.

BULGULAR: Her iki grupta da başlangıçta eklem yüzeyi çökmesinin düzeltilmesi tatmin ediciydi. Nihai kontrolde rezidüel çökme, TCP grubuna kıyasla otogreft grubunda daha küçüktü (2.10 [0.00–2.60] mm vs 2,50 [1,68–3,75] mm; U=771,5, p=0,014); bu durum redüksiyonun daha kalıcı biçimde korunmasıyla uyumluydu. RRS preoperatif ve erken postoperatif dönemde benzer iken, nihai kontrolde otogreft grubunda daha yüksekti (16 [16–18] vs 16 [14–16]; U=1453.5, p=0.002). Kategori dağılımları da uyumluydu: nihai kontrolde mükemmel RRS oranı otogreft grubunda daha fazlaydı (%40.5 vs %21,2; $\chi^2(1)=4.15$, p=0.042). Fonksiyonel sonuçlar gruplar arasında karşılaştırılabilirdi (RFS 27 [26–28] vs 26 [26–28]; U=1285, p=0.136; Lysholm 86 [81–90] vs 86 [81–90]; U=1271.5, p=0.159). Donör saha morbiditesi otogreft grubunda hastaların %4.7'sinde görüldü; TCP grubunda greftle ilişkili komplikasyon izlenmedi.

SONUÇ: Eklem yüzeyinde çökmesi olan Schatzker tip 2–3 TPK olgularında otolog iliak krista kemik grefti kullanımı, TCP'ye kıyasla redüksiyonun radyolojik olarak daha iyi korunması ve daha yüksek nihai RRS ile ilişkili bulunurken, orta dönem fonksiyonel skorlar benzerdir. Bu Düzey III veriler, otogreftin metafizer defektlerde yapısal destek için güvenilir bir seçenek olmaya devam ettiğini düşündürmektedir; ancak TCP'ye göre olası üstünlüğünü doğrulamak için prospektif randomize karşılaştırmalı çalışmalara ihtiyaç vardır.

Anahtar sözcükler: Fonksiyonel sonuç; otogreft; redüksiyon kaybı; tibia plato kırığı; trikalsiyum fosfat sentetik greft.

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