Long-Term Outcomes following Tibial Plafond Fractures

Joshua Eisenberg, Johnny Ray Malicoat, Natalie Ann Glass, J Lawrence Marsh[1], Matthew Hogue[2]
[1]Dept Of Orthopaedics, [2]UIHC

INTRODUCTION: Tibial plafond fractures are high energy injuries involving the ankle joint. Short and intermediate outcomes have been reported however there has been no report on how these ankles do beyond 10 years in terms of ankle function, pain, and general function. The purpose of this study was to shed light on the overall status of these ankles beyond 10 years and identify factors that may predict favorable and unfavorable outcomes.

METHODS: At a single institution the medical record was queried for patients who underwent operative fixation of a tibial plafond fracture between the years 1994-2008. Medical records were reviewed for injury characteristics and fixation techniques. Patients were identified and asked to complete surveys including the UCLA function score, AOFAS ankle score, SF-36, and a questionnaire regarding satisfaction, stability of symptoms, brace wear, etc. Descriptive statistics were performed and a Kaplan-Meier survivorship curve for definitive surgery following tibial plafond fracture was constructed.

RESULTS:

Between the years 1994-2008 there were 243 patients who underwent operative fixation of a tibial plafond fracture (AO/OTA 43B/43C) at a single institution. Four subjects were active prisoners and excluded from the study. Follow up was obtained for 150 (62%) patients (157 ankles). Out of these patients 38 (25%) underwent a definitive procedure including ankle arthrodesis (n=27), arthroplasty (n=3), or below knee amputation (n=8) with median time to surgery of 2.6 years (range: 0.1-17.8) from initial injury. There were 53 patients who died at a median of 14.0 years (range: 0.1-24.8) following initial injury.

Patient-reported outcomes were obtained on 51 patients who did not undergo a definitive procedure with a median follow up of 18.2 years (range:14.0-27.0). Patients reported a median time to maximum improvement of 2.0 years (range: 1.0-24.0). In total, 65% of patients reported better ankle function and pain currently, compared to one year postoperatively. Most patients reported having a similar level of ankle function and pain levels between 5 years and current follow up (73%, 5 yr; 70.2% 10yr; 70.7% 15yr; 83%, 20yr; 83% 25yr).

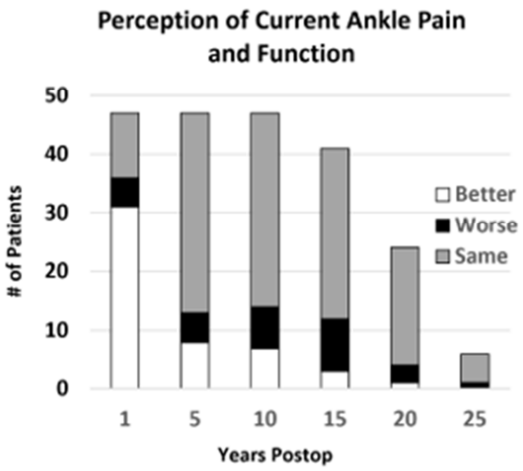
Of the patients who maintained their native ankle, most did not require supportive devices such as orthotic inserts (19%) or ankle braces (8.6%). However nearly half (48.3%) reported walking with a limp and 36.2% noted that their ankle pain/function to some extent affected activities of daily living. Most were not taking any analgesic medications, while some used Acetaminophen (24%) or NSAIDs (19%). One patient reported using tramadol for pain control while two patients use occasional opioids.

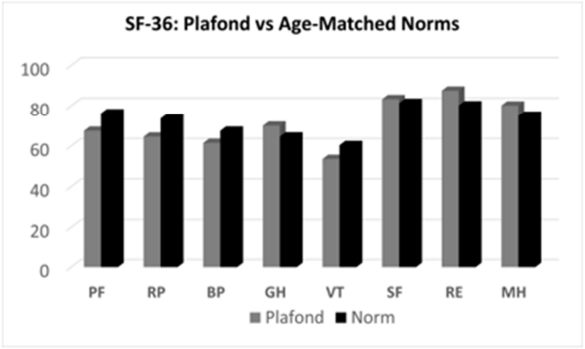
Statistical analysis was used to identify risk factors for need of a definitive procedure. Ankles with an AO/OTA classification of 43B were at less risk for definitive procedure HR=0.530, however this was not statistically significant (p=0.144). Any open fracture was at increased risk for definitive procedure HR=2.022, (p=0.0404).

Patient-reported outcome measures were obtained on patients with native ankles. The Median UCLA activity score was 4.0 for all patients (Regular participation in mild activities, such as walking, limited house work, and limited shopping). Charleston Comorbidity Index less than 2 was predictive of higher UCLA activity (median 6.0, Regular participation in moderate activities, such as swimming, unlimited housework, and shopping, p=0.0493). Median AOFAS subjective score was 35, with no significant difference between male/female or CCI. There was no significant differences between SF-36 scores and age matched norms.

DISCUSSION AND CONCLUSION:

This is the first study to our knowledge to report long-term outcomes beyond ten years postop following tibial plafond injuries with a median follow up of 18.2 years after injury and operative fixation. Our study demonstrates that despite the initial severity of these injuries, only a quarter of the patients required a definitive procedure. Patients that preserved their native ankle maintained a similar level of pain and function after 5 years postop. While there was no significant difference among SF-36 scores and age matched norms, nearly half reported ambulating with a limp and a third noted their ankle to some extent affected activities of daily living.


Perception of Current Ankle Pain and Function
# of Patients
50
40
30
20
10
0
1
5
10
15
20
25
Years Postop
Better
Worse
Same


SF-36: Plafond vs Age-Matched Norms
100
80
60
40
20
0
PF
RP
BP
GH
VT
SF
RE
MH
Plafond
Norm