

Research Article

Tibial Plafond Fractures and the Impact of Social Media Support Groups on Patient Perceptions

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Background

Tibial plafond fractures are severe injuries that often result in a prolonged treatment and recovery process, as well as poor outcomes and high complication rates. Given this, an online support group exists for patients to gain support and advice from a community of patients with the same injury. Similar groups exist for other chronic medical conditions and traumatic injuries; such groups have been studied to determine the impact on the affected patients. There have been no prior studies specifically investigating the effect of these support groups on patients with tibial plafond fractures.

Purpose

The aim of this study is to determine subjectively the impact of a social media support group on patients who sustained a tibial plafond fracture.

Methods

An anonymous 16-question survey was distributed via an online pilon support group between July 2023 and August 2023.

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Results

Overall, 151 survey responses were collected and included, which resulted in an overall response rate of 7.1% among all members of the support group and 82.9% response rate among the active members. 73.9% of the respondents were female, while 24.8% identified as male and 1.3% identified as other. The majority of respondents were between the ages of 41 and 60 years old. On average patients were 2.95 (2.60) years from their original injury. The majority were treated with a two-stage procedure (61.6%), followed by primary open reduction internal fixation (29.8%), and definitive external-fixation (4.0%). On average respondents underwent 2.83 (1.85) total surgeries. 58.5% of respondents reported that the severity of their injury was not properly explained at the time of injury, and 78.1% reported that membership in the support group changes their perception of their injury prognosis. In terms of return to activity, respondents reported returning to an average of 64% of their pre-injury activity level related to work and 50.8% related to hobbies and recreational activities.

Conclusion

Tibial plafond fractures are severe injuries that often have poor functional outcomes and can drastically decreased patients' quality of life post-injury. The online support group changed their perception of their injury, provided a means of seeing patients further along in recovery and for some respondents aided in making medical decisions. Overall, the majority of respondents would recommend the group to other patients with tibial plafond fracture, suggesting the support group had a positive impact on respondents.

Level of Evidence

Level III

INTRODUCTION

Tibial plafond fractures, intra-articular fractures of the distal tibia commonly referred to as pilon fractures, are severe injuries that are often challenging to treat and manage (Bonato et al. 2017; Mair et al. 2021). These fractures often result from high energy trauma or less commonly a lower energy fall in the older population (Mauffrey et al. 2011; McFerran et al. 1992). Regardless of mechanism, there are three key elements of the injury that must be considered during management: intra-articular comminution, metaphyseal shortening or bone loss and significant soft tissue damage, which is often circumferential due to the propagation of the inciting energy (Korkmaz et al. 2013; Kottmeier et al. 2018). Given this trio of components associated with tibial plafond fractures, achieving favorable outcomes is challenging. Prior literature reports that approximately 50% of patients with a tibial plafond fracture have a complication (Bonato et al. 2017; Korkmaz et al. 2013; Mair et al. 2021; McFerran et al. 1992). There currently is no consensus on standard treatment, as each fracture and patient present with a unique set of factors that ultimately play a vital role in treatment method selected (Calori et al. 2010). The most common treatment methods are: two-stage procedure with external fixation followed by open reduction internal fixation, primary open reduction external fixation, and definitive treatment in an external fixator (Bonato et al. 2017; Calori et al. 2010; Korkmaz et al. 2013). Regardless of treatment method, the recovery process is often long, requiring numerous operations and prolonged periods of non-weightbearing. Even after the initial treatment and recovery phase patients often experience long-term effects of these injuries, such as persistent pain, post-trau-

matic arthritis, and decreased functional status (Calori et al. 2010; McFerran et al. 1992; Pollak et al. 2003).

Given the severity of the injury, duration of recovery and long-term sequela, there is a Facebook support group for patients who sustained a tibial plafond fracture. This support group provides a platform for patients to share their experiences, ask questions, and be part of a community with people who are going through similar experiences. This type of support group is not unique to this injury. There are support groups for a variety of medical conditions with known long-term effects of patients' lives, such as diabetes, breast cancer, and anterior cruciate ligament tears. These support groups have been studied to determine the impact on patients (Coulson and Buchanan 2022; Day, n.d.; McCaughan et al. 2017; Ramkumar et al. 2017). To our knowledge, no study to date has investigated the impact of social media support groups on patients with tibial plafond fractures. Therefore, the aim of this study is to determine subjectively the impact of social media support groups on patients who sustained a tibial plafond fracture.

METHODS

In this survey-based study, a 16-question anonymous survey was distributed via a Facebook (Menlo Park, CA) pilon support group. Given the anonymous nature of the survey and lack of identifiable personal health information this study was deemed exempt from institutional review board (IRB) approval.

The survey was developed and distributed using Qualtrics XM (Provo, UT). The 16 questions focused on patient demographics, details of the injury, management of the injury, perception of the injury and the impact of the

Table 1. 16 total questions included in the anonymous survey distributed in the tibial plafond support group

Number		Question
1		What is your age?
2		What is your gender identity?
3		How far out are you from your original injury?
4		How was your injury initially treated?
5		How many surgeries have you had total?
6		How were you referred to the Pilon Fracture Support Group?
7		Do you feel that the significance of your injury was adequately explained to you before surgery?
8	a	Compared to your activity level prior to injury, what amount have you been able to return to your preinjury activity level with regards to work?
	b	Compared to your activity level prior to injury, what amount have you been able to return to your preinjury activity level with regards to hobbies (sports, exercise, gardening, walking, etc)?
9		Has being a part of the Facebook group altered your perception of your injury prognosis?
10		Have you made any medical decisions based off of information you received in the group?
11		If you answered yes to Question 10, what medical decision was that?
12		Have you found seeing others further along in their recovery to be encouraging or discouraging?
13		Have you ever posted in the Facebook group?
14		If you answered yes, which options below best describes the contents of your Facebook group post?
15		How likely are you to recommend this Facebook group to someone with a similar injury?

online support group ([Table 1](#)). The survey was posted in a Facebook support group, titled “Pilon Fractures Suck!”, which is specifically focused on tibial plafond fractures. Membership to this group is tightly regulated by the group administrators to maintain membership that only includes members who have sustained a tibial plafond fracture. The group had a total of 2100 members, of those approximately 182 were active members. An active member was defined as a member who interacted with a post or posted in the group within the preceding 30 days. The survey was live between July 2023 and August 2023. All members of the group were eligible to respond to the survey. A reminder was sent to all members one week prior to the survey ending. The survey was anonymous, and there was no incentive or benefits offered in exchange for participation.

All data was collected using the Qualtrics platform. Data was reviewed and recorded in a standardized fashion. Responses with three or more incomplete answers were excluded. Descriptive statistics were performed using Microsoft Excel (Redmond, WA).

RESULTS

Overall, 155 members responded to the 16-question anonymous survey. After exclusion due to incomplete surveys, 151 responses were included. Of the total members in the support group, there was a 7.2% response rate; however, among the active members this corresponded to a 83.0% response rate. The majority of respondents identified as female (74.2%), while 23.2% identified as male and 1.3% identified as other ([Table 2](#)). The age distribution of the respondents is shown in [Table 2](#). Most respondents were between 41 and 60 years old.

In terms of injury characteristics, respondents were an average of 2.95 (2.60) years from their original injury, with a range from 1.5 months to 15 years. The most common treatment method (61.6%) was a two-stage procedure, including initial external-fixation followed by open reduction internal fixation. A smaller percent (29.8%) of patients underwent primary open reduction and internal fixation. In 4.0% of patients the injury was treated definitively in an external fixator. None of the respondents were treated non-operatively. The breakdown of treatment method and associated patient age is shown in [Table 3](#).

For the majority of respondents, the support group had an impact on some aspect of their injury and recovery ([Table 4](#)). The survey indicated that 39.1% of patients felt the severity of their injury was adequately explained at the time of injury. For 78.1% of the respondents, membership in the support group changed their perception of their injury prognosis. The majority (74.2%) of respondents found the support group via Facebook. Other methods of referral to support group included physician referral (2.0%), internet search (20.5%) and friend or family member referral (3.3%). Although for nearly 80% of patients the support group altered their perception of the injury, only approximately 35% of respondents made medical decisions based on information in the support group. Of those respondents that used the support group to aid in making medical decisions, the most common decisions were related to surgery (42.3%) and subsequent surgery (36.5%). The support group offered respondents the opportunity to see others further along in their recovery process, which for most respondents was both encouraging and discouraging. Very few respondents found seeing others further along was only discouraging (2.0%). This is similar to most respondent's likelihood

Table 2. Demographic data on the 151 respondents.

Demographics		Number of Respondents (Percentage)
Gender	Female	112 (74.2%)
	Male	35 (23.2%)
	Other	2 (1.3%)
	Prefer Not to Answer	2 (1.3%)
Age (years)	<20	0 (0%)
	21-40	40 (26.5%)
	41-60	81 (53.6%)
	61-80	17 (11.3%)
	>81	0 (0%)
	No Response	13 (8.6%)

Table 3. Treatment method, associated number of total surgeries related to the initial tibial plafond fracture, and associated age stratification for each treatment method.

Treatment Method	Number of Respondents (Percentage)*	Total Number of Surgeries	Age	Number of Respondents (Percentage)
Two-Stage (External Fixator followed by open reduction internal fixation)	93 (61.6%)	3.37 (1.86)	21-40	22 (23.7%)
			41-60	51 (54.8%)
			61-80	10 (10.8%)
			No Response	10 (10.8%)
Primary Open Reduction Internal Fixation	45 (29.8%)	1.96 (1.64)	21-40	14 (31.8%)
			41-60	23 (52.3%)
			61-80	5 (11.4%)
			No Response	3 (6.8%)
Definitive External Fixation	6 (4.0%)	1.83 (0.37)	21-40	4 (60%)
			41-60	1 (20%)
			61-80	1 (20%)
Non-Operative	0 (0%)		---	

*Total number of patients is greater than 151 and percentage totals to greater than 100% because one patient was treated with both open reduction internal fixation and a definitive external fixator.

to recommend the support to group other patients with a pilon fracture, as approximately 64% of respondents would be extremely likely to recommend the group. A smaller portion of respondents, 19.9%, reported they would be extremely unlikely to recommend the support group.

Patient treatment methods were also obtained. The average number of surgeries was 2.83 (1.85) surgeries. When stratified by treatment method, the two-stage procedure demonstrated the greatest average number of surgeries, 3.37 (1.86). Primary open reduction and internal fixation resulted in an average of 1.96 (1.64) surgeries, while definitive external fixation resulted in an average of 1.83 (0.37) surgeries per patient. In terms of subjective patient reported outcomes, patients reported only returning to a fraction of their pre-injury activity level ([Table 5](#)). For work related activities, respondents only returned to an average of 65% of their pre-injury activity level. For recreational ac-

tivities and hobbies, respondents only returned to an average of 51% of their pre-injury activity level.

Of all the respondents, 88% of them had previously posted in the support group. The main content of their posts were related to post-operative rehabilitation (77.4%). Other topics included: recommendation on physicians (13.5%), future operations (33.8%), complications (33.1%) and pain management (33.8%). Only 12% of respondents had never previously posted in the Facebook group.

DISCUSSION

The respondents to this survey were primarily female and most commonly were between the ages of 41 and 60. This is in contrast to what has been previously found, where males are more commonly affected by tibial plafond frac-

Table 4. Patient perceptions of their tibial plafond fracture and the impact of the tibial plafond support group

Question	Answer	Number of Respondents (Percentage)		
How were you referred to the support group?	Facebook	112 (74.2%)		
	Internet (besides Facebook)	31 (20.5%)		
	Friend or Family Member	5 (3.3%)		
	Referred by a Physician	3 (2.0%)		
Has your perception of your injury prognosis changed as a result of the support group?*	Yes	118 (78.1%)		
	No	28 (18.5%)		
Do you feel the significance of your injury was adequately explained to you prior to surgery?*	Yes	59 (39.1%)		
	No	88 (58.3%)		
Have you made medical decisions based on the support group?	Yes	52 (34.4%)	Pre-operative	1 (1.9%)
			Surgery	22 (42.3%)
			Subsequent Surgery	19 (36.5%)
			Post-Operative Rehab	3 (5.8%)
			Wound Management	7 (13.5%)
			Activity	0 (0%)
	No	99 (65.6%)		
Have you found seeing patient's further along to be encouraging or discouraging?*	Encouraging	58 (38.4%)		
	Both	84 (55.6%)		
	Discouraging	3 (2.0%)		
Have you ever posted in the support group?	Yes	133 (88.1%)	Physician Recommendation	18 (13.5%)
			Further Operations	45 (33.8%)
			Post-operative rehab	103 (77.4%)
			Complication management	44 (33.1%)
			Pain management	45 (33.8%)
	No	18 (11.9%)		
How likely are you to recommend this support group?	Extremely Unlikely	30 (19.9%)		
	Somewhat Unlikely	5 (3.3%)		
	Neither Likely nor Unlikely	2 (1.3%)		
	Somewhat Likely	17 (11.3%)		
	Extremely Likely	96 (63.6%)		

*If percentages do not total to 100% for a given question, the remaining percent is accounted for by lack of response to that specific question.

tures, usually with an average age of mid-forties (Korkmaz et al. 2013; Mair et al. 2021; Mauffrey et al. 2011; Murawski et al. 2023; Pollak et al. 2003). Prior literature has reported

approximately 75% of tibial plafond fractures occur in male patients, while approximately 25% occur in female patients (Korkmaz et al. 2013; Pollak et al. 2003). This is the oppo-

Table 5. Patient reported outcomes following tibial plafond fracture, including total number of surgeries and ability to return to pre-injury activity level for both work and hobbies

Outcome	Average (std)
Total Number of Surgeries	2.83 (1.85)
Compared to prior to injury, what amount have you been able to return to work?	64.6% (32.6%)
Compared to prior to injury, what amount have you been able to return to activities/hobbies?	50.8% (27.9%)

site of the demographics of the respondents of this study. This is likely a result of the nature of the survey study and the associated response bias that makes female patients more likely than male patients to be active in the support group and therefore able to see and participate in the survey. In terms of age, the average age seen in previous studies aligned with our reported average age of approximately 45 years old (Korkmaz et al. 2013; Mair et al. 2021; Maufrey et al. 2011).

Overall, there is no agreed upon gold standard treatment for tibial plafond fractures; therefore, several treatment methods are employed based upon patient and fracture specific factors (Calori et al. 2010; McFerran et al. 1992). The majority of respondents in this study underwent a two-staged treatment with initial external fixator placement and subsequent open reduction internal fixation. This is consistent with literature reporting that two-stage management is the most common.^{2,3,4,10} Similarly, this study found that approximately one-third of patients underwent primary open reduction internal fixation, which is also consistent with the findings of prior publications (Calori et al. 2010). The average numbers of surgeries for the respondents in this study was 2.83 (1.85). There is not a well reported average number of surgeries required per patient in the current literature, which is likely due to the numerous treatment methods used to treat tibial plafond fractures.

For patient outcomes, the ability to return to a pre-injury level of activity both for work and hobbies was low. Respondents reported that they were able to return to 64.6% (32.6%) of their pre-injury activity level at work and 50.8% (27.9%) of their pre-injury level in activities and hobbies. It has been well documented that return to pre-injury activity after a tibial plafond fracture is poor. Prior literature reports between 32% and 57% of patients were able to return to work at 12 months post-injury (Bonato et al. 2017; Mair et al. 2021; Pollak et al. 2003). Additionally, the complication rate following management of tibial plafond fractures is estimated to be above 50% (Korkmaz et al. 2013; McFerran et al. 1992; Murawski et al. 2023; Pollak et al. 2003). Our study demonstrated consistent findings, which solidifies the severe nature of these injuries and the devastating and long-lasting consequences, including pain, swelling, decreased range of motion, post-traumatic arthritis and overall decreased quality of life (Korkmaz et al. 2013; Mair et al. 2021; Murawski et al. 2023; Pollak et al. 2003).

Overall, respondents to the survey indicated that the online support group was valuable, as approximately 64% were extremely likely to recommend the group to other patients with pilon fractures. Additionally, very few (2.0%) respondents found it solely discouraging to see patients

further along in recovery. Instead, the majority of respondents found it both discouraging and encouraging, suggesting the support group provided a more realistic perspective on what to expect. In particular, 78.1% of respondents reported that the support group altered their perception of their injury. Although there are no prior studies specifically analyzing the effect of support groups on tibial plafond fractures, the positive impact of support groups for life changing conditions, such as breast cancer, HIV/AIDS, anterior cruciate ligament tears, and Long COVID has been well documented (Ali et al. 2020; Calori et al. 2010; Day, n.d.; McCaughan et al. 2017; Ramkumar et al. 2017). Tibial plafond fractures, given the injury severity, complication rates and long-term prognosis, can represent the same psychosocial challenges as the conditions these other support groups have been created for. The support group provides advice, education and support throughout the recovery and rehabilitation process.

Within the support group, the respondents reported posting about a variety of topics that cover all different phases of the recovery process. Respondents of this study posted post-operative rehabilitation (77.4%), recommendation on physicians (13.5%), future operations (33.8%), complications (33.1%) and pain management (33.8%). These topics may aid others in making decisions about their own treatment or recovery. 34.4% of respondents reported making a decision based on information from the support group. Studies on other support groups have demonstrated similar findings. This is important, especially to physicians, to understand that patients are obtaining and utilizing information from these support groups frequently, not just from the physician themselves or from other only patient focused orthopedic resources.

In addition to this support group aiding patients, the responses from this survey can also aid physicians in understanding how to better educate and prepare patients for treatment and recovery at the time of injury (McLawnhorn et al. 2016). For physicians, the severity of an injury may become commonplace, which may result in their inability to communicate to a patient the true severity and future consequences. Based upon the fact that approximately 60% of respondents reported that the severity of their injury was not appropriately discussed at the time of injury, there still remains room for improvement in patient and physician communication regarding tibial plafond fractures. While this is based on subjective data only and no details regarding the specifics of what the patients was told at the time of injury were available, a generalized consensus that improved patient education is needed can be drawn. Given this there may also be other areas of improvement from

the physician perspective that can be highlighted from the use of these online support groups. Several previous studies have reported social media as an avenue for physicians to gain insight into patient perceptions.

This study, given the survey based designed, has several inherent limitations, including response bias, lack of objective outcome data and limited generalizability. In terms of response bias, patients with an extremely positive or extremely negative experience are more likely to respond. Additionally, in support groups in particular, patients with positive experiences are more likely to post and be active members of the group. Patients who found the group less helpful are more likely to have left or to be less active and therefore likely did not respond to the survey. Other limitations include a small sample size and demographics that do not match the typical demographics of patients with tibial plafond fractures. All data from the survey was subjective, and there were no objective patient outcomes recorded as part of the survey. Given this no definitive quantitative conclusions that can be drawn from this study. Future studies investigating objective, quantitative outcome such as emergency room visits, pain medication requirements and additional objective data on return to prior level of function would be beneficial. Lastly, this survey has a limited generalizability due to sample bias. The impact of the support group cannot be extrapolated to all patients with pilon fractures; however, similar studies can be performed on other platforms to compare what was found in this current study.

CONCLUSION

Tibial plafond fractures are severe injuries that often have poor functional outcomes and can drastically decreased patients' quality of life post-injury. This study aimed to subjectively investigate how a social media support group impacted patients with tibial plafond fractures and found that overall based on respondent results the support group ultimately changed their perception of their injury. The support group also provided a means of seeing patient's further along in recovery and a means to obtain information that some respondents used to make medical decisions. The results also highlight an ongoing need to improve patient physician communication to improve patient education on the severity of the injury at the time of injury. This study provides a subjective means of evaluating the impact of a social media support group on patients with tibial plafond fractures. Future studies should investigate objectively the impact of these support groups on patients and outcomes, as well as the insights that can be drawn from a physician perspective to improve overall patient care.

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