

Increased litigation burden among tibia, pelvis, and spine fractures

An analysis of 756 fracture-related malpractice cases

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Abstract

Objectives: To analyze a series of claims from a large national malpractice insurer associated with fracture care to understand what parameters are associated with claims, defense costs, and paid indemnity.

Design: Review of claims in fracture care settings from a national database; case series.

Setting: Database draws from insured pool of 400,000 medical malpractice cases from 400 healthcare entities across the country, representing 165,000 physicians; both academic and private.

Patients/Participants: Fracture care patients bringing legal suit.

Main Outcome Measurements: Cost of legal proceedings and indemnity, ICD-9 codes, and contributing causes toward claims.

Results: A total of 756 fracture claims were asserted between 2005 and 2014 regarding fracture care within the database; 70% were brought for inaccurate, missed, or delayed diagnosis, while 22% addressed medical treatment and 8% were for surgical management. Orthopaedics was the primary service in 22%. Total cost (expenses and indemnity) to orthopaedic providers totaled \$13.1MM (million). The most common claim against orthopaedics was for fractures of the tibia and fibula (11.4%). Impact factor (IF) analysis (as described by Matsen) of indemnity in these cases reveals 3 fracture regions of highest indemnity burden: fractures of the tibia and fibula (IF: 1.86, 11.4%), pelvis (IF: 1.77, 6.6%), and spine (IF 1.33, 6.6%). Analysis of contributing factors identifies the category of clinical judgement as the most common category (62%). Other common factors include patient noncompliance (31%), communication (28%), technical skill (17%), clinical systems (11%), and documentation (10%). The single most common specific cause of a claim in orthopaedic fracture care was misinterpretation of diagnostic imaging (25%).

Conclusion: This study is the first of its kind to identify fractures of the tibia and fibula as high risk for litigation against orthopaedic providers and provides general counseling of legal pitfalls in fracture care. Finally, we are able to identify the act of patient assessment as a key issue in over half of all fracture-related claims against orthopaedic providers. Providers in general and specialty settings can use this information to help guide their treatment and care ownership decisions in the care of patients with fractures.

Level of Evidence: Economic - Level III.

Keywords: fracture care, litigation, pelvis, spine, tibia

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1. Introduction

Despite great interest and concern regarding medical malpractice, there remains little data to define the cost of litigation in orthopaedic trauma care. Providers in the community have few resources to help stratify fractures with regards to litigation risk. Meanwhile, orthopaedic surgeons are the fourth most likely medical specialty to be sued, where 88% of 45-year-old orthopaedic surgeons and 99% of 65-year-old orthopaedic surgeons sustain at least 1 medical malpractice suit in their careers.^[1]

Few studies in the existing literature have looked specifically at orthopaedic malpractice cases. In 2013, Matsen et al^[2] reviewed 464 consecutive closed orthopaedic claims sustained by elective practices. Their work provided analysis based on anatomical location, patient care received, allegation type, and result. This established the concept of IF, which allows claim types to be assessed for how the cost associated with that type of

claim compares to an “expected cost” based on the frequency of claims. Other prior studies in the orthopaedic literature looked at malpractice risk in pediatric populations,^[3] specific fracture types,^[4,5] as well as particular surgical procedures.^[6] Some of these studies have identified specific underlying or contributing causes to litigation that include diagnostic errors, issues with care, technical errors, and the development of complications.^[5]

Unlike other orthopaedic specialties, orthopaedic trauma does not have the luxury of patient selection, preoperative workup, or patient optimization.^[7] Existing literature suggests many orthopaedic traumatologists are concerned about litigation and thus practice defensive medicine.^[8,9] To our knowledge, there has not been a study offering information regarding specific fracture types that result in a greater proportion of paid indemnity (defined as “compensation for loss”). Therefore, the primary goal of this study is to analyze a series of claims from a large national malpractice insurer regarding patient care episodes for fracture care to understand what parameters within fracture care are associated with claims, defense costs and paid indemnity. We sought to understand specifically what types of fractures, organized by general anatomical location, are associated with legal claims and legal costs. Second, we further investigated the contributing causes in each of these fracture cases based on information provided in the national claims database.

2. Methods

2.1. Data collection

A request was made to retrieve data for all fracture claims asserted between 2005 and 2014 from the Controlled Risk Insurance Company (CRICO) Strategies’ national Comparative Benchmarking System (CBS). CRICO is a medical malpractice insurer for multiple private and academic medical groups and its CBS database offers close to 400,000 medical malpractice cases from 400 healthcare entities across the country, representing 165,000 physicians.^[10]

The CRICO database captures the associated ICD-9 codes, clinical setting of the event, contributing factors related to each malpractice case, and reports costs of the claims to the defendant and indemnity paid to the claimant. ICD-9 codes were used in order to group claims based on location of fracture for analysis. The database also contains the analysis of causal events leading to each claim, which were separated into categories and tabulated counts.

2.2. Cost analysis

Financial information related to incurred expenses and indemnity payment were collected for each fracture type. The sum of both indemnity and expenses was used to calculate total incurred cost to the defendant. An IF for different fracture types was calculated using the method described by Matsen et al to determine which fractures incur proportionally more cost than others.^[2] The IF for each claim type is described as the ratio of the percent of total payment dollars divided by the percent of the total number of fracture claims. For a given fracture type, an IF equal to 1 indicates that incurred costs and the percent of total fractures are proportional. An IF greater than 1 indicates that incurred costs exceed the average across all claims, while an IF less than 1 indicates a cost less than average.

2.3. Data analysis

Data analysis was performed using Microsoft Excel 2011. No statistical tests were performed.

3. Results

A total of 756 fracture claims were asserted between 2005 and 2014 regarding fracture care within the previously described database. Orthopaedics was named in 22% of the 756 claims (n=166 claims, Table 1) acquiring a total cost (expenses and indemnity) of \$57.90MM. This is the second most frequent service identified, behind Radiology (25.7%), but more common than Emergency Medicine (21.4%), General Medicine (16.4%), and all other services (14.6%). Fractures of the lower limb represent the largest proportion (45%) of all fracture claims and suits filed. Upper limb claims were the second largest proportion (25%), followed by fractures of the spine (13%), fractures of the skull and face (9%), fractures of the pelvis (5%), and fractures of ribs (3%). Of the 756 claims, 70% were brought for inaccurate, missed, or delayed diagnosis, while 22% were regarding medical treatment and 8% were regarding issues in surgical management.

The subset of 166 claims specific to Orthopaedics resulted in total indemnity of \$7.05MM and total combined cost (Indemnity + Expenses) of \$13.05MM. The breakdown of claims by anatomic location is presented in Table 2. The most common claim against orthopaedics was for fractures of the tibia and fibula (11.4%), followed by fractures of the distal forearm and fractures of the ankle (10.8% each). IF analysis of indemnity in these cases reveals that the three fracture regions of highest economic burden are fractures of the tibia and fibula (Indemnity IF: 1.86, 11.4% of claims), followed by fractures of the pelvis (Indemnity IF: 1.77, 6.6% of claims) and fractures of the spine (Indemnity IF 1.33, 6.6% of claims). Figure 1 demonstrates that these 3 fracture categories are also the highest impact categories when total costs are analyzed.

Analysis of the contributing factors leading to claims was performed and is presented in Table 3. Some cases have more than 1 contributing factor. Clinical judgement was the most common category (62% of cases), followed by patient noncompliance (31%), communication (28%), technical skill (17%), clinical systems (11%), and documentation (10%). Table 4 lists the specific factors considered part of clinical judgement, demonstrating that patient assessment (52%) is the most common specific factor resulting in a claim against an orthopaedist. A selection of specific recurring complaints are included in Table 4, demonstrating that the single most common cause of a claim in orthopaedic fracture care was misinterpretation of diagnostic imaging (25%).

Table 1
Claims for fracture care by service.

Service identified	Case # (n=756)	Case %	Cost (indemnity and expenses)	% Cost
Radiology	194	25.7	\$17,235,512	29.8
Orthopaedics	166	22.0	\$13,052,288	22.5
Emergency	162	21.4	\$7,656,765	13.2
Medicine	124	16.6	\$11,718,106	20.2
Other	110	14.6	\$8,235,498	14.2

Table 2
Claims against orthopaedic providers by anatomic location.

Fracture type	Case #	Case %	Expenses	Indemnity	Total cost (indemnity and expenses)	IF: cost	IF: indemnity
Tibia and Fibula	19	11.4	\$817,587	\$1,502,148	\$2,319,735	1.55	1.86
Pelvis	11	6.6	\$363,828	\$825,000	\$1,188,828	1.37	1.77
Spine	11	6.6	\$630,566	\$619,999	\$1,250,565	1.45	1.33
Proximal Forearm	10	6.0	\$437,334	\$555,000	\$992,334	1.26	1.31
Humerus	13	7.8	\$486,164	\$720,000	\$1,206,164	1.18	1.30
Foot	15	9.0	\$657,284	\$694,500	\$1,351,784	1.15	1.09
Femoral Shaft	11	6.6	\$172,343	\$390,000	\$562,343	0.65	0.83
Distal Femur	8	4.8	\$145,162	\$275,000	\$420,162	0.67	0.81
Distal Forearm	18	10.8	\$479,914	\$517,001	\$996,915	0.70	0.68
Ankle	18	10.8	\$690,849	\$500,000	\$1,190,849	0.84	0.65
Hip	12	7.2	\$492,865	\$237,500	\$730,365	0.77	0.47
Hand	12	7.2	\$316,280	\$217,500	\$533,780	0.57	0.43
Clavicle	3	1.8	\$248,927	\$0	\$248,927	1.06	0
Patella	2	1.2	\$53,392	\$0	\$53,392	0.34	0
Nonspecified	1	0.6	\$6,144	\$0	\$6,144	0.08	0
TOTAL	166	100	\$5,998,640	\$7,053,648	\$13,052,288		

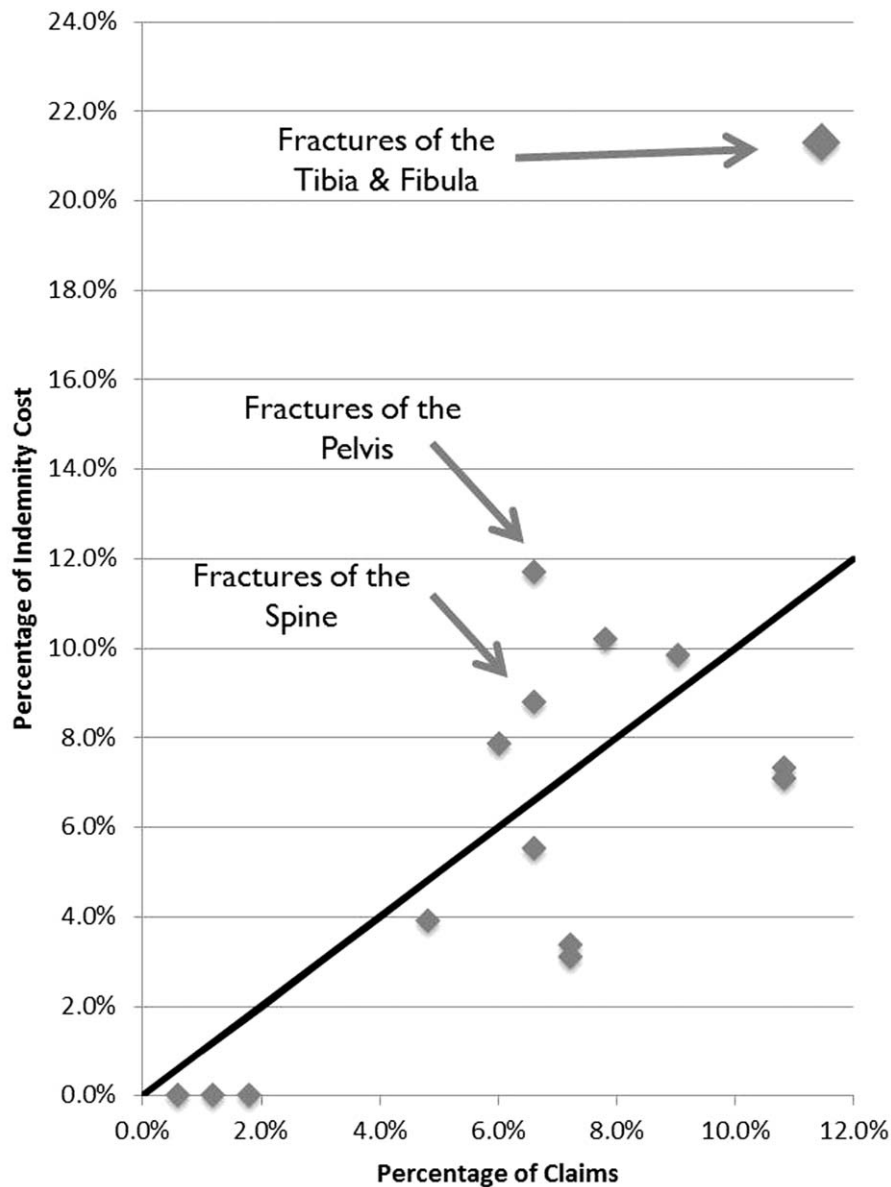


Figure 1. IF calculated for indemnity costs. Points above the black line (IF=1) indicate fracture groups with IFs greater than 1, in which claims demonstrate indemnity disproportionately high compared to claim frequency.

Table 3
Category of claims against orthopaedic providers (multiple factors may be listed for each claim).

Contributing factor	Times listed	% of Cases listed (n = 166)
Clinical judgment	103	62
Communication	46	28
Technical skill	29	17
Clinical systems	18	11
Documentation	17	10
Administrative	11	7
No clear factors identified	8	5
Other	14	8

4. Discussion

The most important finding in this study is that, based on data from a representative national database, fractures of the tibia and fibula are the most likely fracture episode to lead to disproportionately greater legal costs (IF=1.55, total cost \$2.3MM). Fractures of the tibia and fibula, pelvis, and spine exceeded all other fracture categories via IF analysis, establishing these fracture categories as “at risk” diagnoses. An important secondary finding of this analysis is that “patient assessment” is the most common contributing cause of a claim against an orthopaedic surgeon. Specifically, “misinterpretation of diagnostic imaging” was the single most common cause of a claim in orthopaedic fracture care. These are important contributions to the literature and provide cautionary messages to providers in specialty and generalist settings alike.

Fracture fixation has been reported as the one of the most common orthopaedic surgical procedures leading to malpractice allegations.^[11] The analysis of fracture claims data in this study attempts to compare the characteristics of claims to the fracture type and fracture management. The ultimate goal of this analysis is to identify specific targets to improve patient safety and reduce litigation events.

There are other salient details contained within this analysis. This work demonstrates that of all malpractice suits revolving around the care of the patient with a fracture, orthopaedic providers are targeted in only a minority of cases (22%). The most attributable causes of litigation were “Clinical judgment error,” “Communication errors,” and “Technical skill errors,” involved in 62%, 28%, and 17%, respectively. Finally, 31% of claims were brought as a result of “behavior issues” which was of particular

Table 4
Specific causes of failures in clinical judgment leading to claims against orthopaedics (denominator is all cases against orthopaedics).

Contributing factor	Times listed	% of cases listed (n = 166)
Patient assessment	87	52
Misinterpretation of diagnostic study	42	25
Failure/delay in ordering test	39	23
Narrow focus—failure to establish differential diagnosis	20	12
Failure to respond to repeated patient concerns	15	9
Therapy choice	33	20
Failure/delay in obtaining consult	6	4
Failure to ensure patient safety	4	2
Other	4	2

interest. These claims were associated with patient noncompliance, which is a sober reminder to providers that patient noncompliance may still result in claims against providers.

The main finding of this investigation relates to the differential IFs by fracture type. Though tibia fractures are considered routine injuries that may be treated by the general orthopaedist, our data demonstrates that these fractures account for a greater percentage of indemnity paid when accounting for their prevalence among malpractice cases. This study is the first that demonstrates variation in litigation by particular fracture type.

Similarly to the present study, another study evaluated 464 consecutive elective and nonelective orthopaedic claims from a single malpractice insurer, nearly 18% of all identified orthopaedic cases involved fractures.^[2] Of these, the main reported errors were related to fracture management errors (38%), failure to protect surrounding structures (16%), and failure to prevent or treat infections (13%). These findings in the pool of all orthopaedic claims are similar to the present data for fracture specific care.

Medical malpractice litigation remains a concern for orthopaedic traumatologists. However, the current literature suggests that litigation is less than in nontrauma specialties. Matsen et al^[2] demonstrated that orthopaedic cases associated with trauma had a median payment of \$80,000 as compared to \$124,995 for degenerative conditions, grossly similar to the findings of this study. This is consistent with the general surgery literature where the acute trauma services have fewest events and lawsuits per patient days compared to other hospital services.^[12] Orthopaedic traumatologists do practice defensive medicine. A 2013 survey demonstrated that among orthopaedic traumatologists 22% of all tests ordered were for defensive reasons and defensive hospital admissions averaged 9% each month.^[9] Upon further analysis, the estimated costs of these added expenditures were calculated to be approximately \$94,000 per respondent per year.

There are limitations to this study. Although the database used offers close to 400,000 medical malpractice cases from 400 healthcare entities, this sample may not be nationally representative. There are limits to the conclusions that can be drawn from the database; we do not know the prevalence of all fracture types during the study time period seen by the providers included in the data set. This precludes the determination of absolute risk of litigation. Additionally, the database is collected from cases and does not contain patient chart information such as clinical documentation or radiographs; we are not able to provide deeper analysis regarding specific fracture subtypes. Furthermore, the lack of sufficient granularity precludes clarity regarding why tibia fractures outpace other fractures; this should be pursued in future work with a data source that allows for connection between specific fracture codes and legal burden.

The strengths of this study include the use of a national claims database to analyze factors, including diagnosis and provider behavior, contributing to claims in fracture care episodes. Specifically, this study is the first to identify fractures of the tibia and fibula as high risk for litigation against orthopaedic providers. Finally, we are able to identify the act of patient assessment as a key issue in over half of all claims against orthopaedics in fracture care. Providers in general and specialty settings can use this information to help guide their treatment and care ownership decisions in the care of patients with fractures.

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