

Medical Malpractice Litigation Following Arthroscopic Surgery

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Purpose: Our study aims to analyze a variety of factors involving malpractice lawsuits following arthroscopy, focusing on reasons for lawsuit and establishing predictors for the outcome of the lawsuit. **Methods:** Two legal databases, Verdict-Search and Westlaw, were queried for arthroscopic cases in adult patients. For all included cases, clinical and demographic data were recorded. The effects of plaintiff demographics, joint involved, lawsuit allegation, case ruling, and size of indemnity payments were assessed. **Results:** Of the 240 included cases, 62 (26%) resulted in plaintiff verdict, 160 (67%) resulted in defense verdict, and 18 (8%) were settled without trial. Plaintiff demographics (age and sex) had no effect on the case ruling. There was no statistical difference between indemnity awards for plaintiff verdicts (\$1,013,494) and settled cases (\$848,331; $P = .13$). Patient death was noted in 20 cases (8.3%); a significantly higher proportion of these cases were settled versus went to trial ($P = .0022$), including 19 patients (95%) who had knee arthroscopy and 16 deaths (80%) resulting from a pulmonary embolus. Plaintiff verdict or settlement were seen significantly more frequently for vascular complications and wrong-sided surgery. Alternatively, defense verdicts followed lawsuits alleging surgeon technical error. Wrong-sided surgery, retained instruments, deep venous thrombosis, and postoperative infections were seen at a significantly higher proportion after knee arthroscopy than after arthroscopy of other joints. Similarly, neurological injury was significantly associated with elbow and hip arthroscopy, while allegations of technical error by the surgeon and block-related complications were associated with shoulder arthroscopy. **Conclusions:** Plaintiff verdict or settlement were seen for vascular complications and wrong-sided surgery, while defense verdicts followed lawsuits alleging surgeon technical error and block-related complications. We also identified types of allegations that were associated with arthroscopy of different joints. All but one case of patient death (20 cases) were noted to involve knee arthroscopy, and an overwhelming majority resulted due to a pulmonary embolism. This information helps the arthroscopic surgeon better counsel patients and employ strategies to mitigate preventable complications. **Level of Evidence:** Level IV, case series.

Arthroscopic surgery is being performed at an increasing rate as demonstrated by Garrett et al.¹, who analyzed case logs of orthopaedic surgeons applying for board certification in the United States and

found a 30% increase in arthroscopic surgeries performed by young surgeons between 1999 and 2003. More recently, Gil et al. examined arthroscopic case volume submitted by residents across the United States. Over a 7-year period, they demonstrated significant increases in the number of arthroscopic cases logged by residents.²

Despite being considered a relatively low-risk procedure, complications after arthroscopic surgery can occur including infection, medical complications, technical errors leading to further surgery, and lack of improvement of the symptoms.^{3,4} Ultimately, these complications may lead to malpractice litigation, which imposes financial and emotional stress on all involved parties.^{5,6}

Orthopaedic surgeons have been noted to experience malpractice litigation at near twice the rate of an average physician.⁷ As a result, there is a growing interest in malpractice litigation as it is related to

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orthopaedic procedures.^{1,8-13} Previous malpractice investigations have focused on spinal epidural abscesses,¹¹ cauda equina syndrome,¹⁴ hip and knee arthroplasty,^{9,10,15} acute compartment syndrome,⁸ and durotomy during spine surgery.¹⁶ The characteristics of parties involved in litigation following arthroscopic procedures have yet to be evaluated.

Our study aims to analyze a variety of factors involving malpractice lawsuits following arthroscopy, focusing on reasons for a lawsuit and establishing predictors for the outcome of the lawsuit. We assume the null hypothesis that there will be no difference in the award amount in cases that are settled and those that have a plaintiff verdict. Additionally, we hypothesize that the outcome of the lawsuit may correlate with some of the allegations made by the plaintiff and that particular joints will be more prone to certain complications leading to the malpractice claims.

Methods

Data Source

The VerdictSearch (ALM Media Properties, New York, NY) and Westlaw (Thomson Reuters Corporation, New York, NY) legal databases were queried for arthroscopic surgery-related cases between January 1988 and September 2017. These 2 databases represent a broad sampling of legal cases from all 50 states of the United States. However, the criteria used by the databases to include cases are not available publicly. The VerdictSearch database was queried for “arthroscopic” or “arthroscopy” and subcategorized by the “medical malpractice” filter. The Westlaw database was queried for the term “arthroscopic” or “arthroscopy”. Results were filtered to the “jury verdicts and settlements” subcategory for all federal and state cases.

Inclusion criteria included all malpractice cases related directly to arthroscopic surgery with plaintiffs older than 18 years. Exclusion criteria included non-orthopaedic surgery, lack of surgical intervention, and arthroscopy not directly related to the cause of the lawsuit. Cases that met the inclusion criteria were then analyzed, and variables were extracted. These included the plaintiff’s age and gender, the defendant’s specialty, the state in which the case was filed, the joint involved, the case outcome (categorized as settled, plaintiff verdict, or defendant verdict), the indemnity payment (amount the plaintiff was awarded during a settled case or a case with a plaintiff verdict), the reason for the lawsuit (technical error, block-related [neuraxial and regional], musculoskeletal complaint [chronic pain, stiffness, unsatisfactory result, etc.], neurologic compromise, infectious [surgical site or septic arthritis], diagnosis-related, vascular complication, cardiopulmonary complication, deep venous thrombosis [DVT], retained/broken equipment [needles, broken parts of

instruments, etc.], unsterile equipment, or wrong-sided surgery), and whether the lawsuit was a result of patient death.

Statistical Analysis

Statistical analysis was conducted using R 3.4.3 (R Foundation, Vienna, Austria) and SAS 9.4 (SAS Institute, Cary, NC). Descriptive statistics were generated. A power analysis (R package *pwr*) indicated that, at our sample sizes, we would be capable of detecting small-to-moderate differences in proportions (effect sizes 0.18-0.22, varying with table degrees of freedom) and large differences in indemnity payment amounts (effect sizes 0.76-1.06, varying with size of the specific subgroup).¹⁷ Select variables were recoded to facilitate bivariate and multivariate analyses. Bivariate analyses of the association between case characteristics and outcome were performed using Fisher’s exact test. Multivariate analyses for case outcome were performed using logistic regression (binomial for analyses of settlement vs went to trial and multinomial for analyses of defendant vs settlement or plaintiff). Differences in indemnity payment amounts by various case characteristics were conducted using Wilcoxon-Mann-Whitney tests, given nonnormality of indemnity payment distributions. Tests for proportions of joint involved by complication were compared using 2×2 tables with joint of interest versus other joints by complication of interest versus other complications, with statistical significance assessed with Fisher’s exact test. This analysis allowed us to identify complications that developed at a significantly higher proportion following arthroscopy of certain joints. Tests for proportions of case outcome (indemnity payment made vs defendant’s verdict) by complication used Fisher’s exact test. Statistical significance was defined as $P < .05$.

Results

Case Characteristics and Outcome

A total of 539 cases were identified in the 2 included databases. From those, 240 cases met the inclusion criteria and were analyzed (Fig 1). Among the included cases, 131 (54.8%) involved male plaintiffs, while 108 (45.2%) involved female plaintiffs; the average age was 42.1 years (standard deviation [SD], 14.9). Of the 240 cases, 62 cases (26%) resulted in the plaintiff verdict, 160 cases (67%) resulted in the defense verdict, and 18 cases (8%) were settled out of court and did not go to trial.

The majority of defendants were orthopaedic surgeons (81.7%), followed by anesthesiologists (7.5%) and surgery centers (7.3%; Fig 2). Most lawsuits were filed in California (24.2%), followed by New York (15.8%), Texas (11.3%), Florida (6.7%), and Pennsylvania (5.8%; Fig 3). The population map of the United

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