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The cost of adverse events from knee surgery in the United Kingdom: An in-depth review of the National Health Service Litigation Authority database

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ABSTRACT

Background: There has been a significant rise in the number and value of claims against the National Health Service (NHS), with limited studies on litigation in orthopaedic surgery and none in knee surgery alone. We aimed to examine claims against the NHS involving all aspects of knee surgery with respect to costs and trends.
Clinical relevance: To raise awareness of the reasons for litigation in knee surgery, thus potentially improve patient care and reduce future claims.
Methods: We analysed the NHS litigation authority (NHSLA) database for all orthopaedic surgery claims reported to the NHSLA between 2005 and 2010, with calculation of litigation success rates and odds ratios for those relating to knee surgery.
Results: There were 515 cases identified from the 4609 orthopaedic cases in the NHSLA database (11.2%): 298 (58%) involving total knee replacements (TKRs), 11 (2%) involving unicondylar knee replacements, and 90 cases (30%) remaining open. The total pay out for closed cases was £10.45 million and amputation following TKR resulted in the highest single pay out. Litigation success rates for claimants were highest for retained drains (100%), incorrect prosthesis/prosthesis size (78%), renal failure (75%), poor outcome requiring further surgery (74%) and malalignment (71%). There were also 60 cases of delayed diagnosis which resulted in pay outs totalling £2.90 million. Based on these data, projected future pay out costs for the open TKR cases were estimated to be £2.71 million.
Conclusion: Litigation success rates for TKR were highest following technical errors such as malalignment compared to events less under the surgeon's control, such as infection. The number of claims involving incorrect prosthesis/size continues to be of concern. Despite the increased availability of imaging modalities, missed diagnosis also resulted in substantial pay outs.

1. Introduction

Litigation continues to be a major issue in healthcare worldwide. The number and value of claims against the National Health Service (NHS) have been significantly increasing over the last 30 years (NHSLA) (Fig. 1).

The National Health Service Litigation Authority (NHSLA) was established in the United Kingdom to indemnify and manage both clinical and non-clinical claims against the NHS. The NHSLA database contains information on all claims (including potential claims) notified to the NHSLA by member bodies.

In 2013/14, the NHSLA made payments totalling £1192 million in respect of all of its schemes. These figures relate only to expenditures incurred by the NHSLA itself [1]. The NHSLA notes that approximately 35% of cases were dropped by claimants and 47% settled out of court. Only just over two percent involved courtroom litigation, with 15% remain outstanding [2].

There are only a limited number of published studies on litigation in orthopaedic surgery. Both Khan et al. [3] and Atrey et al. [4] gave a general overview of orthopaedic costs. Khan et al. reviewed 2117 cases arising between 1995 and 2001. They concluded that the commonest causes of claims were post-operative complications, wrongful diagnosis, inadequate consent and incorrect-site surgery. Atrey et al. examined 2312 cases arising between 2000 and 2006 and suggested that many of the successful claims had a preventable cause. Other studies include Raine [5], who reviewed 195 cases involving children and found that delayed diagnosis of severe sepsis was the

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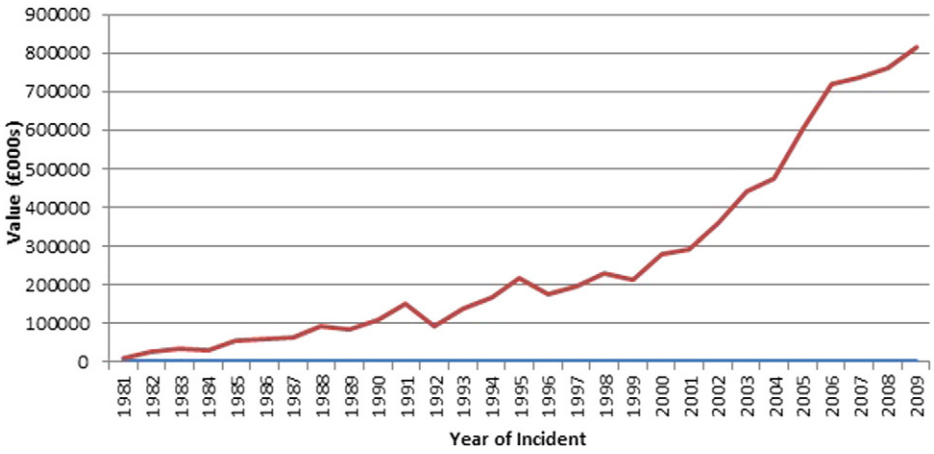

Fig. 1. The total value of pay outs from all litigation cases against the NHS between 1981 and 2009 (NHSLA).

commonest cause of successful litigation, often leading to death and considerable cost to the NHS. Quraishi et al. [6] reviewed data on spinal litigation finding that it continues to be a significant cost to the NHS, partly because of the massive legal fees required to resolve these complex cases. Finally, Khan and Giddins [7] analysed claims involving hand and wrist surgery and found that the majority of claims were for routine carpal tunnel and wrist fracture surgery, with none for complex cases.

When considering hip and knee surgery, there are only two previous studies in the literature. Bhutta et al. [8] reviewed hip and knee arthroplasty litigation over a five year period. They found that successful claims result from inadequate consent and deviation from policies or routine practice, which should be addressed while maintaining high technical expertise. More recently, McWilliams et al. [9] reviewed litigation after hip and knee arthroplasty in the NHS and found that the commonest reasons for litigation were neurological deficit and infection respectively. Albeit with increasing operation numbers, the number of claims has not increased. Rather than all knee surgery, they only examined knee arthroplasty, for which claims for infection have decreased but those for technical errors and dissatisfaction are increasing. To our knowledge, there are no studies examining litigation for all knee surgery (elective and trauma) cases.

We aimed to examine the NHSLA database for all cases involving adverse events occurring from surgery to the knee. Specifically, we sought to determine the costs of these events, analyse trends and project future costs.

2. Material and methods

2.1. Database

Data was requested from the NHSLA under the Freedom of Information Act (2000). A database of all orthopaedic surgery claims in England and Wales reported to the NHSLA between 1st April 2005 and 31st March 2010, with incidents ranging from 1996 to 2009, was obtained. The database included both closed (settled and/or completed) and open (outstanding) claims up to 31st December 2010. This amounted to 4609 cases in total.

For each claim, there were details of the incident and notification dates, a brief description of the incident, cause, injury, specialty and location of the incident. The total amount paid out, including separate figures for damages and claimant and defence costs, was also provided for each closed claim. Exclusion criteria included all cases unrelated to knee surgery and lack of detail on the type of surgery and/or the nature of the incident.

2.2. Analysis

The database was searched for all cases involving surgery to the knee with initial categorisation according to whether they were elective or trauma. Further analysis was based on the type of surgery undertaken and the nature of the claim or incident (according to the description). The litigation success rate was calculated based on the number of closed cases where damages were paid out, divided by the total number of closed cases. The projected future cost for that type of incident was calculated as the litigation success rate multiplied by the number of open cases for that incident. In order to provide a context for the chances of successful litigation, odds ratios were calculated based on the litigation success rate of the event against the litigation success rate for infection (as a *denominator base*). This is because infection remains one of the most significant adverse events that can occur in TKRs and other orthopaedic operations, and for primary TKR has been quoted at 0.86% [10].

2.3. Statistical analysis

Statistical analysis was performed using SPSS 20.0 (SPSS Inc., Chicago, Illinois, USA) for Windows. Unless otherwise stated, categorical variables are expressed as frequency (percent), and continuous variables are expressed as median (range). All costs are in Great British Pounds (GBP, £).

3. Results

We identified 515 cases involving knee surgery, out of a total of 4609 orthopaedic cases reported to the NHSLA (11.2%). Fifty-two cases were excluded from the study because of limited detail on the type of surgery and/or nature of the incident.

3.1. Total knee replacement

A total of 298 cases (58%) related to TKRs were recorded in the database (208 cases closed (Table 1). The total pay out was £10.45 million (Fig. 2).

3.1.1. Nerve damage

There were 20 cases of nerve damage (15 cases closed) of which 12 cases involved a foot drop. The remaining eight cases had unspecified 'nerve damage or pain from nerve damage' as the cause for litigation. There were nine pay outs and the median was £69,272.

3.1.2. Incorrect prosthesis or equipment

There were 42 cases of incorrect TKR prosthesis or equipment listed (31 cases closed). Of these, 19 involved an oversized component (17 femoral, two polyethylene inserts and one tibial) and two cases involved incorrect implant side (a right sided femoral prosthesis implanted into a left knee): one was detected intra-operatively and revised at the same sitting, during which a periprosthetic femoral condyle fracture occurred. Two cases were based on the incorrect implant type being ordered and available, and this did not become