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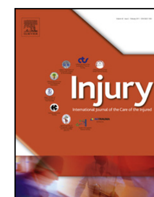

Complications and patient-injury after ankle fracture surgery. –A closed claim analysis with data from the Patient Compensation Association in Denmark

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ABSTRACT

Background: The Patient Compensation Association (PCA) receives claims for financial compensation from patients who believe they have sustained damage from their treatment in the Danish health care system. In this study, we have analysed closed claims in which patients suffered injuries due to the surgical treatment of their ankle fracture. We identified causalities contributing to these injuries and malpractices, as well as the economic consequences of these damages.
Methods: Fifty-one approved closed claims from the PCA database from the years 2004–2009 were analysed in a retrospective systematic review. All patients were adults with an iatrogenic injury, and received compensation. A root cause analysis was performed to identify whether the patient suffered the damage preoperatively, during surgery or postoperatively, and to determine the level of education of the injurious doctor. Economic compensation, co-morbidities and end-result complications were registered.
Results: In 9 of the cases the injuries happened preoperatively, but the majority of the injuries, namely 34 occurred during surgery. In 21 of the cases the damage happened postoperatively. Thirty percentages of the patients were mistreated in *more* than one phase. Level of competence was medical specialists in 2/3 and junior doctors in 1/3 of the cases. In the preoperative phase both groups were equally responsible for the inflicted damage. In the perioperative- and postoperative group, medical specialists inflicted the majority of damages. General recommendations regarding ORIF were not followed in 21/49 of the perioperative damages. The pronation fracture was the most common. The patients received a total average compensation of 17.561 USD each.
Conclusion: Managing the complex ankle fracture, requires considerable experience. This study indicates that extra attention should be paid to the most technically demanding fractures as the pronation-external-rotation-, diabetic- and fragility fractures. Surgeons should follow the recommendations for ORIF. Emphasis should also focus on adequate postoperative plans. This study finds a high readmission-burden, re-operation rate and great expenses in form of compensation.
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Introduction

The incidence of ankle fractures is 107-187/100.000 per year and increasing [1], and constitutes a 9% proportion of all fractures, affecting men and women almost equally. The incidence is higher among younger men and elderly women [2]. According to the annual rapport from the Danish fracture Database (DFDB), the number of primary malleolar operations in 2016 was 6427. There was an 88% degree of completeness for data entry of the operated fractures (all fracture types in the DFDB). This amounting to more than 7300 ankle fractures a year [3].

Ankle fractures are traditionally classified according to Lauge-Hansen, Weber- and AO classification, but in Scandinavia Lauge-Hansen is preferred.

According to the Lauge-Hansen malleolar fractures will divide into around 77% supination fractures(SU/SE), 20% pronation fractures (PE/PU), and around 1% will not be classifiable (1–17%) in regard to this classification [4].

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A Scandinavian study found that 45% of all ankle fractures were treated operatively [2].

The operation rate varies considerably between 11% for the isolated lateral fracture and up to 94% for the bilateral- and trimalleolar fractures [5,1].

Complication rate depends largely on the type of patient. A register study including 57.183 patients showed a short-term complication rate of pulmonary embolism (0.34%), mortality (1.07%), wound infection (1.44%), amputation (0.%) and re-operations (0.82%) [6]. Approximately 1% received an anklear-trodesis or joint replacement within 5 years. Diabetics, the elderly and vascular insufficient had significantly higher complication rates [6]. Several other studies also describe a significantly higher complication rate especially in the elderly and diabetics [7,8]. In several studies there is a surprisingly high number of inadequate ORIFs (open reduction internal fixation) (10–52%) and thus reoperations [9–11]. A high reoperation-rate of 18% for the pronation-fracture was found in a study from a university Hospital in Denmark [9]. Hence the high number of claims to The PCA in Denmark is not surprising.

The Patient Compensation Association (PCA) receives claims for financial compensation from patients who believe they have sustained damage from their treatment in the healthcare system in Denmark.

The purpose of this study was to perform a closed claim analysis of 51 cases of ankle fractures from the Danish PCA to examine and identify iatrogenic causes during hospitalization and operative treatment, which led to approved claim.

Method

The PCA acts on a no-blame basis, thus only accessing the degree of damage without taking any legal action. Patients are able to file claims free of charge with the sole purpose of claiming financial compensation [12]. Injuries caused by both public and private hospitals are covered by the PCA, but it is estimated, that less than 10% of the actual number of patients liable for a claim in fact file their claim [13], whereas in the United States of America only 2% of the patients sustaining an injury in relation to treatment actually file a complaint [14]. However, the number of claims has increased with 11% from 2013 to 2014. In 2014 the PCA in Denmark received 10.333 claims regarding injuries in relation to treatment, acknowledged 2.953 claims, and assigned 112.373.814 USD in compensation. The total Danish population counts 5.724.500 people [15].

Since 1996, the PCA registered incoming complaints after diagnosis, the treatment applied and the occurring complications in a database, from which the desired patient categories can be identified.

Sub-specialized medical experts and –surgeons decide the cases in the PCA. It can be professors or senior consultants of great national prominence, often with expertise within trauma or foot/ankle.

In general, financial compensation in the PCA may be granted in one of the following situations:

1. An experienced specialist would have acted differently, whereby the injury could have been avoided.
2. Defects in or failure of technical equipment were a major factor in the incident that caused the injury.
3. The injury could have been avoided by using alternative treatments, Techniques or methods, if these are considered to be equally safe and potentially offer the same benefits.
4. The injury is rare, serious and more extensive than the patient should be expected to endure

When deciding the size of compensation, the degree of permanent injury, pain and suffering, reduced income, reduced ability to work and the severity of the injury is taken into consideration. Furthermore, the patients' co-morbidities and functional level has an impact on the size of the compensation.

The injury-degree is classified according to Lex Maria [16]:

Lex Maria 0: No damage
Lex Maria 1: Insignificant damage
Lex Maria 2A: Slight damage
Lex Maria 2B: Medium damage
Lex Maria 3: Serious damage
Lex Maria 4: Death/severe disability [16].

If the patient is unhappy with the decision of the PCA or the financial compensation, they have the possibility to appeal the case. If they lose this appeal-case, they would also would lose the financial compensation first granted.

A patient can also make a complaint to the Danish Patient Safety Authority (DPSA). Around 30% file complaints to both institutions. DPSA, however, do not give financial compensations of any kind.

This study is a retrospective systematic review of approved closed claims, which were filed in the time period from 01.01.2004 to 12.31.2009 in the PCA database. Each case file was thoroughly examined and all available radiographs were analysed in regards to fracture classification. We performed a systematic closed claim analysis, identifying causes for the filed claims. All operations were carried out in public hospitals.

The PCA patient registry for WHO classification of diseases was searched for malleolar fractures diagnosis DS82.5, DS82.6, DS82.7, DS82.8. Ninety-six cases were identified, where the patient suffered an injury due to the operative treatment of their ankle fracture. Children and adolescents were excluded (below 18 years of age). Forty-five additional cases were excluded; the reasons for exclusion are listed in Table 1.

A systematic closed claim analysis was performed in the remaining 51 cases of closed claims, to identify whether the patient suffered the damage preoperatively, during surgery or postoperatively. All documents of each file were reviewed systematically – including medical records and legal documents, and information concerning gender, age, fracture classification, time from the accident to surgery, comorbidities, smoking, and alcohol consumption, educational level of the surgeon, the main injury, and the injurious phase, X-rays, complications, reoperations

Table 1
Reported surgical delay, and reasons for exclusion.

Surgical delay	Number	Percentage
- 0 days	17	33%
- 1 day	11	22%
- 2 days	5	10%
- 3–7 days	9	18%
- 8–14 days	2	4%
-> 15 days–6 weeks	2	4%
-> 6 weeks	2	4%
- unknown	3	6%
Total	51	100%

Excluded cases	Numbers	Percentage
No damage	15	33%
Miscoding	11	24%
Non-surgical treatment	8	18%
Missing files/data	2	4%
Unclosed cases	3	7%
Case rejected/other severe diseases	2	4%
External fixation	1	2%
Other not classified elsewhere	3	7%
Total	45	100%

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