Development of Compartment Syndrome Negatively Impacts Length of Stay and Cost Following Tibia Fracture

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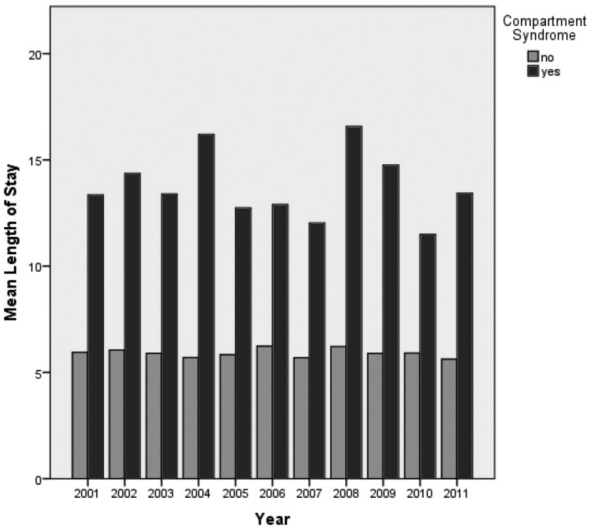
Purpose: This study was undertaken to evaluate the impact of lower extremity compartment syndrome on length of stay and total hospital charges among patients who have sustained an ipsilateral tibial shaft fracture.

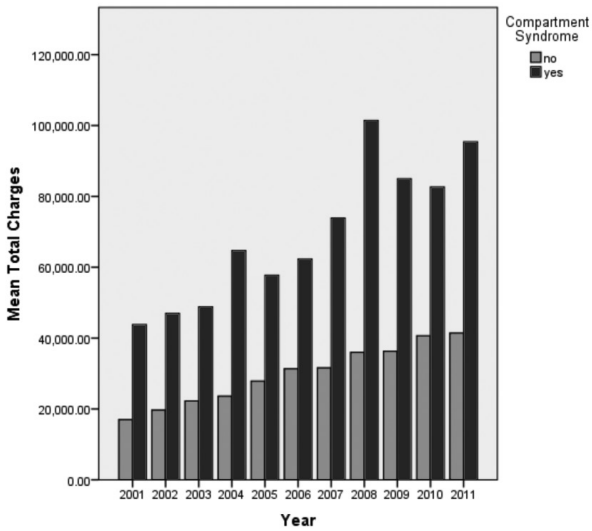
Methods: The SPARCS (Statewide Planning and Research Cooperative System) database, established by New York State in 1979, was queried by principal diagnosis for inpatients primarily treated for a tibia and/or fibula fracture between the years 2001-2011 (n = 47,380). In order to eliminate confounding factors, patients were further screened by Clinical Classification Software Procedure Categories to ensure only those being treated principally for fracture were included in the study, leaving a sample size of n = 38,479. To further eliminate confounding variables, a Charlson Comorbidity Score was calculated for all patients. Any patient with a score greater than zero was eliminated to ensure length of stay and charges were not impacted by treatment for ailments unrelated to tibia/fibula fracture. The final sample size was n = 33,629. All charges were adjusted for inflation to the year 2013 using the CPI Inflation Calculator from the Bureau of Labor Statistics. Descriptive statistics were computed and differences among groups were compared using the Student *t*-test with statistical significance set at $P < 0.05$.

Results: A total of 33,629 patients with tibial shaft fracture were included in the study. Compartment syndrome developed in 692 of these cases, yielding an incidence of 2.1%. Of patients who developed compartment syndrome, 565 were male (81.6%) and 182 cases occurred in the setting of an open fracture (26.3%). There were 32,937 patients who did not develop a compartment syndrome. For this group, the mean length of stay was 6 days (mode = 3) and the mean hospital charges were $34,000. Patients with compartment syndrome remained in-house for an average of 14 days with average charges totaling $79,000. These differences were highly significant for both length of stay and hospital charges ($P < 0.001$).

Conclusion: Besides the obvious physical detriment experienced by patients with compartment syndrome, there is also a significant economic impact to the health-care system. Compartment syndrome more than doubles length of stay and total hospital charges in the setting of a tibial shaft fracture. These findings highlight the need for a standardized care algorithm aimed towards efficiently and adequately treating acute compartment syndrome. Such an algorithm would optimize cost of care and presumably decrease length of stay.

See pages 99 - 147 for financial disclosure information.





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