

Traumatic Knee Dislocations in the Obese and Morbidly Obese From 2000 to 2010: Increased Incidence and Rate of Vascular Intervention

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Purpose: Over the last 10 years, case reports have described low velocity knee dislocations in obese patients. Few studies have attempted to evaluate the association between obesity and knee dislocation. The purpose of this study was to use a large national epidemiologic database to analyze the association of both obesity and morbid obesity with closed knee dislocation and rate of vascular intervention.

Methods: The Nationwide Inpatient Sample (NIS) database was utilized to access U.S. inpatient data from 2000 to 2010. Only patients with noncongenital closed knee dislocations were included. Examined variables included patient age, sex, U.S. geographical region, overweight/obese or morbidly obese status, hospital length of stay (LOS), presence of vascular intervention (ie, peripheral shunt/bypass or other vascular procedure), and total inpatient hospitalization charge. Total annual case numbers and regional data were estimated by the Healthcare Cost and Utilization Project (HCUP) online query system. Overall annual dislocation incidence rates were calculated based on yearly U.S. Census estimates.

Results: Over an 11-year period from 2000-2010, a total of 12,188 knee dislocations were identified, including 1169 in overweight/obese patients (9.6%). The annual incidence of knee dislocations reported in patients diagnosed as overweight/obese and morbidly obese both increased over the 11-year time period ($P < 0.05$ and $P < 0.01$, respectively) (Fig. 1). The percentage in patients diagnosed as morbidly obese increased from 1.9% in 2003 to 10.9% in 2009. Overall annual incidence also increased during the study period ($P < 0.05$). 58% of dislocations occurred in males. 24% of dislocations were reported in patients 45-64 years of age, while 51% were reported in the 18-44 age group ($P < 0.001$). Of the four major U.S. geographical regions, 42% of dislocations occurred in the Southern region, nearly twice as many as in the Midwest, the next highest region ($P < 0.001$). Average hospital LOS for the morbidly obese group (10.27 days) was greater than the overall average (7.78 days) ($P < 0.05$). The average hospital cost was higher for both the overweight/obese (\$67,200) and morbidly obese (\$76,900) compared with the overall average (\$58,400), although this difference was not significant ($P > 0.05$). The overall rate of vascular intervention was 1.31%. However, 13.5% of overweight/obese patients ($P < 0.05$) and 10.3% of morbidly obese patients ($P < 0.01$) required a vascular intervention over the 11-year study period. Of morbidly obese patients, an average of 15.7% had vascular interventions reported over the last 3 years of the study (2008-2010) compared with 8.3% during the first 8 years (2000-2007) ($P < 0.05$).

Conclusion: This study represents the largest number of closed knee dislocations presented to date. This study is the first to demonstrate significant increases in knee dislocation rates for both overweight/obese and morbidly obese patients. Annual overall incidence has also

increased significantly over time. Additionally, the majority of cases occurred in the Southern region of the United States. Most importantly, vascular repairs were found to be far more common in both overweight/obese and morbidly obese patient groups compared to the overall population. Orthopaedic trauma and other surgeons should be on high alert when managing closed knee dislocations in obese and morbidly obese patients as a significant number may require prompt vascular intervention.

Knee Dislocations in Overweight/Obese & Morbidly Obese

