



Vertebral augmentation and the elderly - a benign solution? National evidence of the impact of age and comorbidities on complications, discharge disposition and mortality.

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Introduction

Lumbar spine fractures secondary to trauma are common. We analyzed population demographics, treatment patterns, outcomes and complications for patients undergoing two types of vertebral augmentation: kyphoplasty and vertebroplasty.

Methods

Searching the Nationwide Inpatient Sample database using ICD-9-CM codes, we identified adults treated 2004-2009 with primary diagnosis of lumbar fracture who underwent kyphoplasty or vertebroplasty. Demographics and hospital characteristics were documented and analyzed. Mortality, hospitalization length, safety indicators and complications were calculated as outcomes. Logistic regression correlated demographic risk factors with outcomes.

Results

Of 51,891 surgical patients identified, 12,839 (24.7%) were kyphoplasty and 39,052 (75.3%) were vertebroplasty. Complication rates: kyphoplasty (19.9%) vs. vertebroplasty (14.3%) ($p < 0.05$). Hospitalization days: kyphoplasty (5.9) vs. vertebroplasty (4.4) ($p < 0.05$). Kyphoplasty had more non-routine discharges. Mortality was slightly higher with kyphoplasty (0.6%) than vertebroplasty (0.3%) ($p < 0.001$). Median charges were higher for vertebroplasty (\$31,974) than for kyphoplasty (\$24,983). Over time, cement augmentation procedures increased in frequency.

Conclusions

Despite cement augmentation for lumbar fracture being considered a relatively benign procedure, our study found that age and medical comorbidities are significant and independent risk factors for poor outcomes, regardless of intervention type. Compared to vertebroplasty, kyphoplasty was associated with longer hospitalizations, higher rates of complications and more non-routine discharges while vertebroplasty had higher costs.

Consistently increasing trends in mortality and non-routine discharge were observed with older age. Age had a significant increment in odds of mortality (OR 2.2, 95% CI:1.6-2.9). Factors correlating with higher non-routine discharges: older age (OR 1.5, 95% CI:1.5-1.7), females (OR 1.2, 95% CI:1.1-1.3), increased comorbidities (OR 1.3, 95% CI:1.2-3.5). Factors associated with increased risk of complication: older age (OR 1.1, 95% CI:1.0-1.1), white (OR 1.2, 95% CI:1.0-1.5), increased comorbidities (OR 1.7, 95% CI:1.6-1.7), and kyphoplasty (OR 1.2, 95% CI:1.0-1.4).

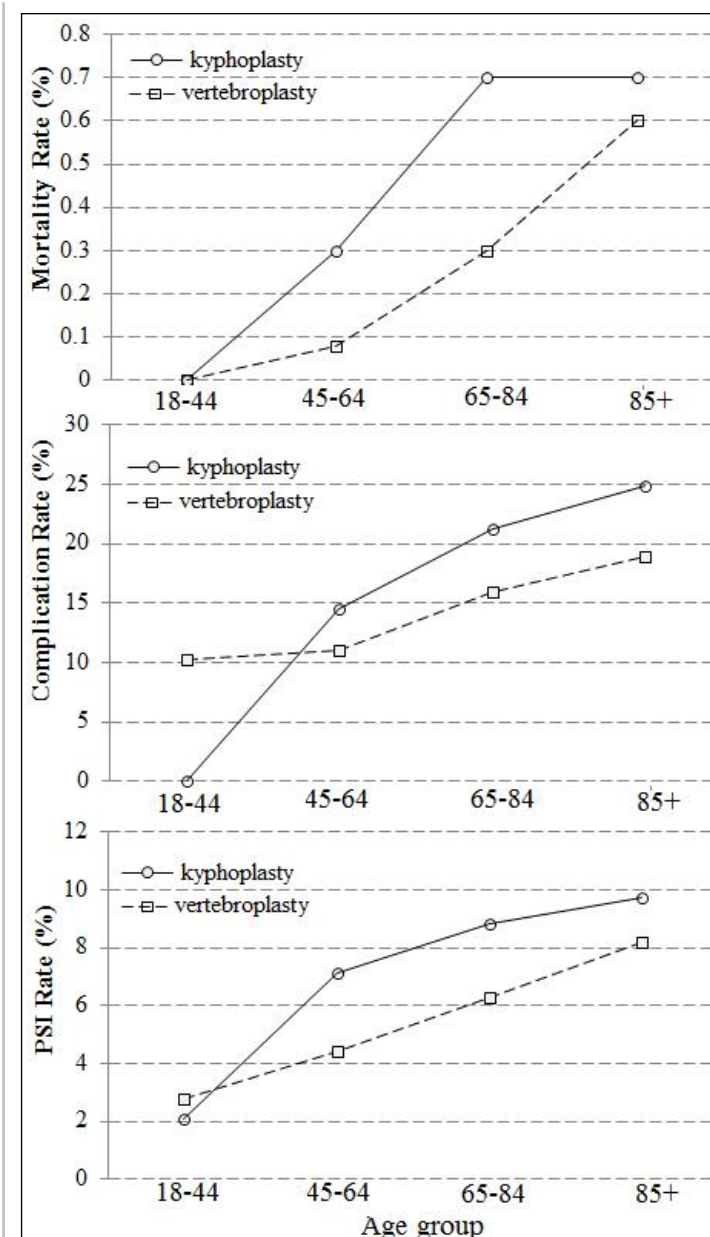


Figure 1. Mortality, complication and patient safety indicator rates according to age.