mortality and recurrence rates between groups, despite their opposite trends.

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Lumbar Interbody Fusion Status does not Correlate with Patient Reported Outcomes: Data Analysis from a Prospective Multi-center Study of Circumferential Lumbar Arthrodesis

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INTRODUCTION: Circumferential lumbar arthrodesis leads to high fusion rates for degenerative lumbar spine. Interspinous posterior fixation pedicle screw fixation as an adjunct to interbody graft led to similar fusion rates and patient reported scores in prospective randomized multi-center study. Although commonly used as surrogates of each other it remains unclear whether the fusion scores correlate with patient reported outcomes.

METHODS: Data was collected as part of a prospective multi-center (11 investigators) study of 101 patients receiving single-level anterolateral lumbar interbody fusion with supplemental interspinous process fixation (ISPF) or pedicle screw fixation (PSF) for the treatment of degenerative disc disease and/or spondylolisthesis. Subjects were randomized 2:1, ISPF to PSF, for posterior fixation. Patients were followed up to 24 months post-op. Patient reported outcome indices (ODI, SF-36) were collected at each follow-up time point. Lumbar x-ray radiographs were taken at 12 and 24 months. Interbody fusion was scored by an independent radiologist using the Brantigan-Stefee Fraser (BSF) criteria (BSF-1: pseudarthrosis; BSF-2: radiographic locked pseudarthrosis; BSF-3: radiographic fusion). A logistic regression model was used to determine whether a relationship existed between quality of fusion (BSF-3 vs. BSF-1&2) and clinical index improvement at 12 and 24 months. Interbody fusion was scored by an independent radiologist using the Brantigan-Stefee Fraser (BSF) criteria (BSF-1: pseudarthrosis; BSF-2: radiographic locked pseudarthrosis; BSF-3: radiographic fusion). A logistic regression model was used to determine whether a relationship existed between quality of fusion (BSF-3 vs. BSF-1&2) and clinical index improvement at 12 and 24 months.

RESULTS: Change in ODI score at 12 and 24 months was not significant associated with BSF score (P = 0.78 and P = 0.64, respectively). At 12 months, BSF-3 patients had on average 1.4 greater reduction in ODI compared to BSF-1&2 (95% CI: -8.61, 11.41). Changes in SF-36 score were not significantly associated with BSF score (P = 0.63 and P = 0.18, respectively). For SF-36 Mental, BSF-3 patients had a 2.21 greater increase compared to BSF-1&2 (95% CI: -6.7, 11.13). Instead = P0.18, respectively). Six-month mortality was unchanged between the two groups (4% vs 4%, P = 1). Additionally, patients with peak platelet counts that were greater than 200% of admission baseline had lower GOS at 6 months when compared to those that remained below 200% of baseline (3.4 vs 4.1, p = .03).

CONCLUSION: The development of post-traumatic thrombocytosis, while associated with lower mortality in the overall trauma population, may be associated with worse outcomes and longer hospital stays in patients with severe traumatic brain injuries. Relative reactive thrombocytosis greater than 200% of baseline may be more predictive of poor outcome than strictly defined laboratory cutoffs.

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Thrombocytosis as a Predictor of Outcome in Severe TBI

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INTRODUCTION: Post-traumatic development of thrombocytosis is felt to be secondary to a reactive process associated with cytokine release during the global inflammatory state and has been demonstrated in a general trauma population to be associated with decreased mortality. This has not been investigated in patients with severe traumatic brain injuries.

METHODS: This study included 120 consecutive patients with severe TBI (GCS<8) presenting to our institution between 6/2010 and 9/2012. Clinical data was retrospectively collected; clinical outcomes were part of a prospective registry. Exclusion criteria included non-survival to hospital discharge and lack of follow up data. Thrombocytosis was defined as peak platelet count greater than 600 × 103/mm3. Primary outcome was Glasgow Outcome Score at 6 months. Secondary outcome was mortality at 6 months.

RESULTS: Forty-four patients were available for analysis after applying exclusion criteria. All patients demonstrated an increase in platelet counts when compared to admission levels. Twenty-one (47%) patients developed thrombocytosis during their hospital stay with an average platelet count of 752 × 103/mm3 and an average time to peak of 17 days. Patients who developed thrombocytosis had a trend towards decreased GOS at 6 months (3.3 vs 3.8, p = .08) and towards longer hospital stays (37.5 vs 21.5, p = .08). Six-month mortality was unchanged between the two groups (4% vs 4%, P = 1). Additionally, patients with peak platelet counts that were greater than 200% of admission baseline had lower GOS at 6 months when compared to those that remained below 200% of baseline (3.4 vs 4.1, p = .03).

CONCLUSION: Thrombocytosis greater than 200% of baseline may be more predictive of poor outcome than strictly defined laboratory cutoffs.

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Characterization of Synchronization Between Globus Pallidus Neurons and Motor Cortex in Parkinson’s Disease

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INTRODUCTION: Excessive oscillatory neuronal synchronization throughout the basal ganglia thalamocortical motor loop is a hallmark of the Parkinsonian state. This may manifest as spike-spike correlations, coherence between field potentials, or spike-field interactions within or between structures in the circuit. Globus pallidus occupies a central role in basal ganglia processing, but neither internal (GPi) nor external (GPe) globus pallidus is monosynaptically connected to motor cortex. Understanding patterns of M1-pallidal synchronization will provide insight into the possible different roles of GPe and GPi stimulation, compared to STN stimulation, in ameliorating the excessive neuronal synchronization in PD.

METHODS: Using subdural electrodes and high resolution electrocorticography (ECoG) contacts temporarily placed over motor cortex during DBS implantation and microelectrode recordings, we evaluate the strength and topography of synchronization between pallidal neurons and cortical ECoG potentials in 16 PD patients.

RESULTS: Recording from 59 GPe and 42 GPi cells with cortical ECoG field potentials demonstrated that 17% of GPe and 12% of GPi neurons showed significant interactions associated with cortical recording sites approximately 25 mm from midline. For those pairs with significant interactions, peak of the spike-triggered average potentials occurred within 100ms prior to spike time. GPe neurons showed