

CONCLUSION: Our study reveals some of the basic neuronal coding mechanisms that are disrupted in ASD. In particular, they demonstrate that, at the cellular level, autistic mice lack the neuronal-equivalent of an “empathic” response compared to wild-type. This neuronal response may provide a foundational mechanism for egocentric behavioral often found in ASD and suggests a basic model for testing neurobiologically plausible treatments for individuals with autism.

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Analysis of 3298 Consecutive Neurosurgical Cases Demonstrates that Overlapping Surgery has no Adverse Effect on Patient Outcome

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INTRODUCTION: Overlapping surgery is commonly practiced. However, a dearth of evidence exists to support or refute the safety of overlapping surgery. We endeavored to determine whether overlapping surgery is associated worsened morbidity and mortality in a large series of complex, neurosurgical cases.

METHODS: A retrospective cohort study was completed for all patients who underwent neurosurgical procedures at Emory University Hospital between January 1, 2014 and December 31, 2015. Logistic regression models were executed to compare outcomes for overlapping and nonoverlapping surgery. Investigators were blinded to study cohorts during data collection and analysis. Patients were operated on for pathologies across the spectrum of neurosurgical disorders in 3298 included cases. The primary outcome measures were 90-day postoperative mortality and morbidity.

RESULTS: Of 3298 operations, 1518 (46%) were nonoverlapping while 1780 (54%) were overlapping. The mean age was similar across study groups. The majority of the cohort was female (54% vs. 46%). Patients who underwent overlapping surgery were more likely to be female (56% vs 44%, $P = 0.002$). The distribution of American Association of Anesthesiologists Score was similar between overlapping and nonoverlapping surgery cohorts. Median (IQR) surgical times, in-room and skin-to-skin, were significantly longer for overlapping surgery (203[153.8] vs 173[148.3]; $P < 0.001$ and 125[130] vs 98[120]; $P = 0.002$) than nonoverlapping surgery. Overlapping surgery was more frequently elective (91.3% vs 84.3%; $P < 0.001$). Regression analysis failed to demonstrate a correlation between overlapping surgery and complications such as mortality, any or severe morbidity or unplanned readmission. Measures of baseline severity of illness, such as ASA>3 and emergent surgery, or complexity of surgery, such as the presence of a co-surgeon associated with mortality, overall and severe morbidity, unfavorable discharge location and functional status, both at discharge and follow-up (Odr>1, CI>1 for all).

CONCLUSION: These data indicated that overlapping surgery can be safely performed if appropriate safety precautions and patient selection are followed.

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The Utility of Posterior Vertebral Column Subtraction Osteotomies for Tethered Cord Syndrome

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INTRODUCTION: Detethering of the spinal cord has historically been the treatment of choice for TCS in the setting of spinal dysraphisms. Recurrent TCS occurs 5–80% of patients. Risk of neurological injury, CSF leak, and wound breakdown increase with subsequent procedures. Kokubun et al. described using PVCSCO without microsurgical detethering to relieve stretch strain on the spinal cord; however, there is a paucity of literature on its success. Here we describe our experience with PVCSCO for TCS.

METHODS: A prospectively collected database patients with TCS who underwent PVCSCO or were being monitored for potential surgery was analyzed. A team of two neurosurgeons evaluated each patient for potential benefit from spinal shortening osteotomies. Preoperative evaluation included MRI and upright radiographs to assess for location and type of tethering and presence of deformity. Single stage posterior PVCSCO were conducted at a neutral level rostral to the tethering site, shortening by 10–15mm. When present PVCSCOs were concurrently utilized to correct deformities.

RESULTS: 6 patients were assessed. 4 patients had failed previous microsurgical detethering at least once. 4 patients underwent PVCSCO due to worsening of symptoms: 2 with history of myelomeningocele repair and 2 with arachnoid adhesions after spinal subdural hematoma. All 4 had resolution of weakness, numbness, and radicular pain of legs. Incontinence improved in the patient with arachnoid adhesions. There was no worsening of neurological function. 1 patient with spinal cord herniation and scoliosis, had improved radiculopathy from detethering.

CONCLUSION: In this series all patients who underwent PVCSCO for TCS experiences improvement in motor, sensory, and pain symptoms. Indirect relief of in-line strain and stretch on the spinal cord is possible through PVCSCO by shortening the spinal column, without high risk of recurrence of symptoms or neurological injury as there is no direct manipulation of neural elements. PVCSCO can be utilized for both congenital and acquired TCS.

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Histopathology of Necrotic Spinal Cord Tissue Exudate Collected During Surgical Implantation of a Biodegradable Scaffold Following Acute Spinal Cord Injury: Pre-clinical and Clinical Findings

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INTRODUCTION: Acute implantation of biodegradable scaffolds following spinal cord injury (SCI) has been shown pre-clinically to reduce chronic cavitation, increase white matter sparing, and increase the deposition of neuropermissive remodeled tissue. The surgical procedure of scaffold implantation allows for the gentle removal of acutely necrotic tissue resulting in a cavity in which the scaffold is placed. Here we report for the first time on the histopathological findings in both animal and human tissue specimens.

METHODS: Pre-clinically, experimental spinal cord contusion injuries were performed as previously reported in pigs. Clinically, the ongoing INSPIRE study (NCT02138110) is currently enrolling baseline T2-T12/L1 subjects with neurologically complete (AIS A) SCI within 96 hours of injury. The surgical procedure for implantation consists of durotomy and sometimes myelotomy. Commonly, damaged spinal cord tissue under pressure spontaneously extrudes after piodotomy in pure