Dysraphysms / tethered cord

FP10.

Cutting filum terminale is very important in SCM cases to achieve total release

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Split cord malformations (SCM) are rare congenital anomalies of the vertebra and spinal cord. Tethered cord Syndrome (TCS) is a clinical condition of various origins that arise from tension on the spinal cord. Radographic findings may include and/or associated split cord malformations., lipomyelomeningocele, myelomeningocele, dermal sinus tractus and others. However, the spinal cord even be tethered by a filum terminale with normal apperarnce and normal level conus medullaris in magnetic resonance imaging (MRI)studies .
We have reviewed 33 SCM cases between July 2005 and December 2013 and operated by as an adding procedure of filum terminale sectioning.
We found that filum terminale with a normal radiological appearance contained less dense collagen fibers, wide and numerous capilleries and hyaline formation while normal filum terminale (obtained from normal cadavers) is a mixture of collagen and elastic fibers and blood vessels. Furthermore no positive elastic fiber staining were noticed in fila terminalia with (so called) normal appearance.
Consequently, we suggest that filum terminale should be additionally cut in all SCM cases as a part of untethering procedure for SCM surgical intervention.

FP11.

Intraoperative neurophysiological monitoring (IONM) in tethered cord surgery in a single centre Hospital Queen Elizabeth Sabah, Malaysia: a prospective cohort pilot study

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Introduction: The use of intraoperative neurophysiological monitoring (IONM) may contribute to the safety in tethered cord surgery. We present a series of 15 patients with a wide variety of morphology of spinal dysraphism. The usage of IONM & its potential contribution to the safety of the procedure are investigated.
Objective: To determine if IONM is helpful in identifying which patients will have worsening symptoms after surgery. It was also to observe the motor response thresholds before and after de-tethering. Early identification of the motor response via neurophysiological monitoring in comparison to clinical motor scoring with qualitative prediction of SSEP (somatosensory evoked potential) and MEP (motor evoked potential).
Material and methods: This was a prospective cohort study involving patients with tethered cord associated with lipomyelomeningocele of age 6 months to 12 years old. Free running EMG of selected lower limb muscles .Two needle electrodes were placed on the head subcutaneously at the anatomical location C3 and C4.The anesthetic technique used was TIVA (total intravenous anesthesia) with remifentanil.
Results: Motor improvement occurred in three patients (14.3%) and improvement in bladder function in two patients (28.6%). No postoperative neurological worsening occurred. Intraoperative MEP and SSEP done was inconsistent. MEP of five patients showed descriptively that there improvement in amplitude of the waveform and reduced in latency of conduction , however , there was no statistical significant correlation with SSEP changes and clinical outcome, the motor (p value >0.95) and bladder function improvement (p value– 0.500).
Conclusion: There was no clinical deterioration post surgical untethering, there could be a role of IONM instigating safer surgery. However we could not find any correlation in our study between nerve conduction study , MEP, SSEP with MRI radiological findings in motor and bladder recovery amongst tethered cord children . We found that IONM helps to prevent worsening of signs and symptoms during surgery and post operatively but no concrete prognostication can be based on IONM pre, intra and postoperatively as spinal cord recovery is unpredictable.

FP12.

Neurosurgical management of Chiari malformation type 2: the Tokyo experience

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Introduction: Despite recent advancement of fetal repair of myelomeningocele (MMC), postnatal repair of MMC stays standard treatment. Chiari malformation type 2 (CM2) still remains main life threatening factor. The authors studied surgical outcome of CM2 with special emphasis on usefulness of the upper cervical decompression (UCD).
Methods: Fifty-nine children with MMC had initial postnatal MMC repair at NCCHD between October 2002 and April 2014. Among them, thirteen had surgery for CM2 and the outcome of surgery was analyzed. Surgical procedure of choice was the UCD which consists of the open-door style osteoplastic laminotomy below the C2 to the caudal end of the tonsils with the C1 lamina interposed between opened C2 lamina, and duroplasty by peeling off the outer membrane (Isu method).
Results: All had initial MMC repair within 48 hours after the birth. Eleven had fetal diagnosis of MMC and were delivered at 36 weeks' gestation by C/S. Rostral end of MMC or caudal end of herniated tonsils failed to predict the need of CM2 surgery. Age at CM2 surgery ranged from 22 days to 26 months old (median: 2 months). All had functioning VP shunt at the time of UCD. Eleven had preoperative respiratory support and 4 became free from the oxygen support after surgery. Two had progressive or holo-codal syringomyelia which was improved after UCD and subsequent syringo-subarachnoid shunt. All are alive but 5 remained severely disable with a respirator or home oxygen therapy whole day. No surgery related complications had been experienced.
Conclusion: The UCD for symptomatic CM2 is the useful surgical procedure for choice. Instead of foramen magnum decompression, the UCD is safe and its life-saving role seems satisfactory. However, limitation in the respiratory functional outcome does exist in the postnatal treatment of CM2. Despite ongoing debate in fetal repair of MMC, its preventive role in development of CM2 would be enhanced more.

FP13.

Predictors of postoperative infection after neurosurgical repair of open myelomeningocele.

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Introduction: The purpose of this study was to review the postoperative infection rate after surgical repair of open myelomeningocele(MMC), and determine factors that can predict infection after the surgery.
Method: Retrospective database review was conducted for the period of January 2006 to February 2014 on 79 consecutive cases that underwent repair of MMC at the Pediatric Neurosurgery Department, National Neurosciences Institute, King Fahad Medical City. Another three cases