ARTICLES OF INTEREST – May 2019

Sutureless closure: a versatile treatment for the diverse presentations of gastroschisis

This report is a retrospective study of patients who had gastroschisis closure by sutureless closure or by primary fascial repair at a single institution over seven years. 17 patients had sutureless closure and 28 had primary fascial repair. Sutureless closure uses the curled umbilical cord as a biologic dressing; the technique is described and illustrated. There were no differences in silo placement or the number of days in the silo. The sutureless group had fewer intubated patients and fewer patients under general anesthesia. Time to full feeds and hospital length of stay was similar. The authors conclude that sutureless closure is an effective method for gastroschisis repair.

Tidal volume transmission during non-synchronized nasal intermittent positive pressure ventilation via RAM® cannula

The authors used respiratory inductance plethysmography to measure tidal volume in 14 1-2kg neonates supported with non-synchronized non-invasive positive pressure ventilation using the RAM cannula. Mean NIPPV settings were PIP 22, PEEP 8, delta P 14, and iTime 0.4. With these settings, they found similar tidal volume when the patients’ breaths coincided with IMV breaths and when the patients’ breaths occurred between IMV breaths. However, the authors report that IMV breaths delivered without patient synchrony produced significantly smaller tidal volume.

Pre-symptomatic targeted treatment of patent ductus arteriosus in preterm newborns: A systematic review and meta-analysis

This review and meta-analysis included 7 randomized controlled trials (466 newborns) that compared the use of indomethacin or ibuprofen to placebo for treatment of pre-symptomatic PDA in preterm infants (<32 weeks gestational age and <1500g). The authors found that targeted medical treatment did not significantly reduce mortality rates (RR 0.85, 95% CI 0.50 to 1.43; ARR -2.38%, 95% CI -8.04% to 3.29%; I2 0% 6 studies; 442 newborns), but it did significantly reduce the overall incidence of developing symptomatic PDA (RR 0.39, 95% CI 0.21 to 0.73; ARR -34.3%, 95% CI -50.8% to -17.8%; I2 0%; 3 studies; 97 newborns) compared to placebo.
Outcomes of extremely preterm infants with birth weight less than 400 g

This retrospective multicenter cohort study analyzed extremely preterm infants born between January 2008 and December 2016 within the National Institute of Child Health and Human Development Neonatal Research Network. Infants with a BW less than 400 g and a GA of 22 to 26 weeks were included. Active treatment was defined as the provision of any potentially lifesaving intervention after birth. Survival was analyzed for the entire cohort; neurodevelopmental impairment (NDI) was examined for those born between January 2008 and December 2015 (birth years with outcomes available for analysis). Infants born with a BW less than 400 g are at high risk of mortality and significant morbidity. Although 21% of infants survived to 18 to 26 months’ CA with active treatment, NDI was common among survivors.

Clamping the umbilical cord in premature deliveries (cupid): neuromonitoring in the immediate newborn period in a randomized, controlled trial of preterm infants born at <32 weeks of gestation

In order to compare cerebral activity and oxygenation in preterm infants, forty-five preterm infants born at <32 weeks of gestation were randomized to immediate cord clamping, umbilical cord milking (cord stripped 3 times), or delayed cord clamping for 60 seconds with bedside resuscitation. All infants underwent electroencephalogram (EEG) and cerebral near infrared spectroscopy for the first 72 hours after birth. Neonatal primary outcome measures were quantitative measures of the EEG (17 features) and near infrared spectroscopy over 1-hour time frames at 6 and 12 hours of life. There were no differences in cerebral EEG activity and cerebral oxygenation values between cord management strategies at 6 and 12 hours.

Experimental necrotizing enterocolitis induces neuroinflammation in the neonatal brain

In this study, authors studied changes that take place to brain cell populations in specific regions of the brain in a neonatal mouse model of NEC. They showed that NEC is associated with severe changes in brain morphology, a pro-inflammatory response in the brain that alters cell homeostasis and density of brain cell populations in specific cerebral regions. They also showed its severity to be directly associated with the severity of NEC.

Prophylactic postnatal corticosteroids: early hydrocortisone
Baud O1 & Watterberg KL. Semin Fetal Neonatal Med.

The authors concluded that based on 4 randomized clinical trials enrolling almost 1000 extremely preterm infants, prophylaxis of early adrenal insufficiency with lose dose hydrocortisone significantly decreased BPD and mortality, as well as medical treatment for a PDA. There was an increase in late onset sepsis which had no adverse effect on mortality or neurodevelopmental outcomes, thus making a strong case for its use.

Nasal high-flow therapy for newborn infants in special care nurseries

This is an Australian multicenter randomized non inferiority trial in newborn infants ≤24hrs of life and ≥31 weeks gestation and ≥1200g with respiratory distress comparing bubble CPAP (6-8cm water) and nasal high flow therapy (6- 8 L/min). The primary outcome was treatment failure within 72hrs after randomization. The study included 754 infants with a mean GA of 36.9weeks. High flow nasal therapy was not shown to be non-inferior to CPAP with a higher treatment failure compared to CPAP group.
Necrotizing enterocolitis, gut microbiota, and brain development: role of the brain-gut axis
Niemarkt HJ, Meij TD, Ganzewinkel C, et al. *Neonatology*

This is a review article discussing the role of gut microbiota in brain development and functioning, and in NEC, as well as gut motility and inflammation. The authors discuss possible mechanisms by which brain development is affected by gut microbiota including neurotransmitter release by gut microbiota, the role of short chain fatty acids in protecting the blood brain barrier, as well as by mediating the immune system by altering cytokine profiles due to altered TLR responses. They further discuss the role of gut microbiota and NEC, as well as the role in neurodevelopment. The authors conclude that microbiota have a direct link to brain functioning and development in preterm infants in addition to NEC.

Comparative effectiveness of drugs used to constrict the patent ductus arteriosus: a secondary analysis of the PDA-TOLERATE trial (NCT01958320)

In this secondary analysis of the multi-center PDA-TOLERATE trial (NCT01958320) the authors evaluated the effectiveness of drugs used to constrict the PDA in newborns <28 weeks. Drug treatments were assigned by center. Indomethacin produced the greatest constriction (compared with spontaneous constriction during conservative management): RR (95% CI) = 3.21 (2.05-5.01), followed by ibuprofen = 2.03 (1.05-3.91), and acetaminophen = 1.33 (0.55-3.24). Acetaminophen induced constriction in 27% alone and 60% when Indomethacin was added on. The authors concluded that Indomethacin was more effective than acetaminophen for this purpose.

Pediatrics

Breastfeeding in infancy and lipid profile in adolescence
Sleep-related infant suffocation deaths attributable to soft bedding, overlay, and wedging
Home oxygen and 2-year outcomes of preterm infants with bronchopulmonary dysplasia
A novel icterometer for hyperbilirubinemia screening in low-resource settings
Socioeconomic disadvantage in infancy and academic and self-regulation outcomes
Mediators of improved adherence to infant safe sleep using a mobile health intervention
Platelet transfusion for PDA closure in preterm infants: a randomized controlled trial
Gestational age, birth weight, and outcomes six years after the Norwood procedure
Maternal immigrant status and readiness to transition to home from the NICU
Communication: the use of oxygen at discharge: Is it safe? Is it effective?
Pediatrics perspectives: preventable preterm birth: a patient safety problem
Review: cost-effectiveness of palivizumab for respiratory syncytial virus: a systematic review
Ethics rounds: infant with trisomy 18 and hypoplastic left heart syndrome
Quality reports: reduction in unintended extubations in a level IV neonatal intensive care unit
Journal of Pediatrics
Neonatal intensive care unit medical directors in academic institutions: who are they?
Quantification of serum matrix metallopeptide 7 levels may assist in the diagnosis and predict the outcome for patients with biliary atresia
Prospective study of physical activity of preterm born children from age 5 to 14 years
Thoracic aortic intima-media thickness in preschool children born small for gestational age
Cardiac autonomic function in adults born preterm
Cardiovascular risk factors in offspring of preeclamptic pregnancies—systematic review and meta-analysis
Association of language skills with other developmental domains in extremely, very, and moderately preterm children: epipage 2 cohort study
Clamping the umbilical cord in premature deliveries (cupid): neuromonitoring in the immediate newborn period in a randomized, controlled trial of preterm infants born at <32 weeks of gestation
Acute vasoreactivity testing during cardiac catheterization of neonates with bronchopulmonary dysplasia-associated pulmonary hypertension
Furosemide exposure and prevention of bronchopulmonary dysplasia in premature infants
Hospital variation in child protection reports of substance exposed infants
Respiratory medications in infants <29 weeks during the first year post discharge: the prematurity and respiratory outcomes program (prop) consortium
Discordance in antenatal corticosteroid use and resuscitation following extremely preterm birth
Surfactant administration in preterm infants: drug development opportunities
Breastfeeding persistence at 6 months: trends and disparities from 2008 to 2015
Central line-associated blood stream infections and non–central line-associated blood stream infections surveillance in Canadian tertiary care neonatal intensive care units
Assessment of brain injury and brain volumes after post hemorrhagic ventricular dilatation: a nested sub study of the randomized controlled ELVIS trial
Higher gestational choline levels in maternal infection are protective for infant brain development
Risk factors for complications in children with staphylococcus aureus bacteremia
Prenatal maternal psychological distress and offspring risk for recurrent respiratory infections
Variation in transcutaneous bilirubin nomograms across population groups
Near-infrared spectroscopy in the diagnostic evaluation of mitochondrial disorders: a neonatal intensive care unit case series
Caterpillar sign in an infant with hypertrophic pyloric stenosis

**Pediatric Research**
The definition of a hemodynamically significant ductus arteriosus (PDF)
https://www.nature.com/articles/s41390-019-0342-7
The preterm heart: a unique cardiomyopathy? (PDF)
https://www.nature.com/articles/s41390-019-0301-3
Pulmonary hypertension secondary to congenital diaphragmatic hernia: factors and pathways involved in pulmonary vascular remodeling
Pre-Vent: the prematurity-related ventilatory control study
Cerebral oxygenation in preterm infants receiving transfusion
Ventricular remodeling in preterm infants: computational cardiac magnetic resonance atlas shows significant early remodeling of the left ventricle
The relationship between MMP9 and ADRA2A gene polymorphisms and mothers–newborns’ nutritional status: an exploratory path model (STROBE compliant article)
The effect of unilateral stroke on autonomic function in the term newborn
Flow cytometry for near-patient testing in premature neonates reveals variation in platelet function: a novel approach to guide platelet transfusion
https://www.nature.com/articles/s41390-019-0316-9

**Journal of Perinatology**
Comparative effectiveness of drugs used to constrict the patent ductus arteriosus: a secondary analysis of the PDA-TOLERATE trial (NCT01958320)
Fetal heart rate, heart rate variability, and heart rate/movement coupling in the Safe Passage Study
The Relationship between blood pressure parameters and left ventricular output in neonates
Cardiac mechanics in infants with Down syndrome in the early neonatal period
Who’s counting? Assessing the effects of a simulation-based training intervention on the accuracy of neonatal heart rate auscultation
Adrenal insufficiency in neonates undergoing cardiopulmonary bypass and postoperative hypothalamic-pituitary-adrenal function after prophylactic glucocorticoids
Left ventricular cardiac output is a reliable predictor of extracorporeal life support in neonates with congenital diaphragmatic hernia
Comparison of early postnatal prediction models for survival in congenital diaphragmatic hernia
In-hospital outcomes of neonates with hypoxic-ischemic encephalopathy receiving extracorporeal membrane oxygenation

Sutureless closure: a versatile treatment for the diverse presentations of gastroschisis

Association of chorioamnionitis and its duration with neonatal morbidity and mortality

Hospital-acquired viral respiratory infections in neonates hospitalized since birth in a tertiary neonatal intensive care unit

Diagnosis of congenital/perinatal infections by neonatologists: a national survey

Trends in the incidence, mortality, and cost of neonatal herpes simplex virus hospitalizations in the United States from 2003 to 2014

Differential effects of the retinopathy of prematurity exam on the physiology of premature infants

Outcomes of preterm infants conceived with in vitro fertilization

Tidal volume transmission during non-synchronized nasal intermittent positive pressure ventilation via RAM® cannula

Use of very low tidal volumes during high-frequency ventilation reduces ventilator lung injury

Association between maternal serious mental illness and adverse birth outcomes

Neonatal postgraduate training program for physician assistants: meeting a need in neonatal care

Is early caffeine therapy safe and effective for ventilated preterm infants?

Should we target higher or lower oxygen saturation targets in the preterm infant?

Neonatology

Integrating parents in neonatal and pediatric research

Type of re-hospitalization and association with neonatal morbidities in infants of very low birth weight

Group B Streptococcus colonization in late pregnancy and invasive infection in neonates in China: a population-based 3-year study

Long-term neurodevelopmental and functional outcomes of infants born very preterm and/or with a very low birth weight (PDF)

A prospective study evaluating the effects of SSRI exposure on cardiac size and function in newborns

Patient, family, and center-based factors associated with attrition in neonatal clinical research: a prospective study
A systematic ultrasound evaluation of the diameter of deep veins in the newborn: results and implications for clinical practice

Professionals’ practices and views regarding neonatal postmortem: can we improve consent rates by improving training?

Routine use of topical coconut oil in extremely preterm infants

The effect of morbidity and sex on postnatal growth of very preterm infants: a multicenter cohort study

Neuromodulatory effect of nlrp3 and asc in neonatal hypoxic ischemic encephalopathy

Very preterm infants with technological dependence at home: impact on resource use and family

Lack of evidence for time or dose relationship between antenatal magnesium sulfate and intestinal injury in extremely preterm neonates

Sharing Progress In Neonatology (SPIN): a critical appraisal of our current knowledge (PDF)

Bronchopulmonary dysplasia: 50 years after the original description

The changing landscape in supporting preterm infants at birth (PDF)

Immuno-nutrition for preterm infants

What is new about transfusions for preterm infants? An update

Novel surfactant administration techniques: will they change outcome?

Necrotizing enterocolitis, gut microbiota, and brain development: role of the brain-gut axis

European consensus guidelines on the management of respiratory distress syndrome – 2019 update (PDF)

American Journal of Perinatology

Association of antenatal depression with clinical subtypes of preterm birth

Opioid detoxification in pregnancy: systematic review and meta-analysis of perinatal outcomes

Prenatal prediction of difficult intubation in periviable neonates using standard fetal biometric parameters

The role of umbilical cord blood concentration of IGF-i, IGF-ii, leptin, adiponectin, ghrelin, resistin, and visfatin in fetal growth

PaO2/FiO2 ratio as predictor of mortality in neonates with meconium aspiration syndrome

Association between gestational weight gain adequacy and adverse maternal and neonatal outcomes

Risk of ischemic placental disease in relation to family history of preeclampsia
The association between maternal height, body mass index, and perinatal outcomes
A mystery of patent ductus arteriosus and serum osmolality in preterm infants
https://www.ncbi.nlm.nih.gov/pubmed/30292174
Are women with a history of low PAPP-A at risk for adverse perinatal outcomes in a subsequent pregnancy?

**Journal of Neonatal-Perinatal Medicine**
Pre-symptomatic targeted treatment of patent ductus arteriosus in preterm newborns: A systematic review and meta-analysis
Enteral feeding in duct-dependent congenital heart disease
Evaluation of vancomycin target trough attainment with published dosing regimens in the neonatal intensive care unit population
Prophylactic regimens with fluconazole for candidiasis in neonates under 1.500g: A retrospective chart review of two cohort
Association between clinical chorioamnionitis and histological funisitis at term
The severity and associated comorbidities of retinopathy of prematurity among micro-premature infants with birth weights less than 750 grams
Outcomes of upper extremity versus lower extremity placed peripherally inserted central catheters in a medical-surgical neonatal intensive care unit
Features of serial cranial ultrasound detected neuropathology in very preterm infants
The association between AB blood group and neonatal disease
Neonatologists less frequently discuss long term complications: A simulation-based study of prenatal consults beyond the threshold of viability
Impact of red blood cell transfusions on intestinal barrier function in preterm infants
Central diabetes insipidus: A rare complication of IVH in a very low birth weight preterm infant
Natural drugs, not so natural effects: Neonatal abstinence syndrome secondary to ‘kratom’
Regional analgesia in neonates undergoing thoracoabdominal surgeries: A pilot study

**Maternal Health, Neonatology and Perinatology**
Evidence-based design for neonatal units: a systematic review (PDF)
Neoreviews
Educational perspectives: toward more effective neonatal resuscitation: assessing and improving clinical skills
https://neoreviews.aappublications.org/content/20/5/e248
The neonatal microbiome and metagenomics: what do we know and what is the future?
https://neoreviews.aappublications.org/content/20/5/e258
Genetic approaches to bronchopulmonary dysplasia
https://neoreviews.aappublications.org/content/20/5/e272
Navigating newborn screening in the NICU: a user’s guide
https://neoreviews.aappublications.org/content/20/5/e280
Case 1: dome-shaped papules and nodules in monozygotic twins
https://neoreviews.aappublications.org/content/20/5/e292
Case 2: seizures, apnea, lethargy, and persistent hiccups in a full-term newborn
https://neoreviews.aappublications.org/content/20/5/e295
Case 3: bradycardia in a vigorous newborn
https://neoreviews.aappublications.org/content/20/5/e298
Visual diagnosis: an extremely preterm neonate with gray plaques on the back
https://neoreviews.aappublications.org/content/20/5/e302
Strip of the month: pregnancy complicated by type 2 diabetes mellitus
https://neoreviews.aappublications.org/content/20/5/e306

JAMA Pediatrics
Considerations to guide treatment decisions for infants born weighing less than 400 g
Racial segregation and inequality of care in neonatal intensive care units is unacceptable
Association of infant temperament with subsequent obesity in young children of mothers with gestational diabetes mellitus
Outcomes of extremely preterm infants with birth weight less than 400 g
Racial segregation and inequality in the neonatal intensive care unit for very low-birth-weight and very preterm infants
Cost-effectiveness of antenatal corticosteroid therapy vs no therapy in women at risk of late preterm delivery: a secondary analysis of a randomized clinical trial
Self-reported quality of life at middle school age in survivors of very preterm birth: results from the caffeine for apnea of prematurity trial
Comparing folic acid dosage strengths to prevent reduction in fetal size among pregnant women who smoked cigarettes: a randomized clinical trial

BMC Pediatrics
Prenatal alcohol exposure and infant gross motor development: a prospective cohort study (PDF)
Prospective observational study of early respiratory management in preterm neonates less than 35 weeks of gestation (PDF)
Impact of a standardized protocol for the Management of Prolonged Neonatal Jaundice in a regional setting: an interventional quasi-experimental study (PDF)
Evaluation of two SpO2 alarm strategies during automated FiO2 control in the NICU: a randomized crossover study (PDF)
MAMI: a birth cohort focused on maternal-infant microbiota during early life (PDF)

**Pediatric Critical Care Medicine**
Therapeutic hypothermia after perinatal asphyxia in infants with severe, ductal-dependent congenital heart disease

**New England Journal of Medicine**
Nasal high-flow therapy for newborn infants in special care nurseries
Question-mark appearance of the colon

**Lancet**
Maternal and perinatal mortality and complications associated with caesarean section in low-income and middle-income countries: a systematic review and meta-analysis
Dog licks baby. Baby gets Pasteurella multocida meningitis

**JAMA**
Sky-high mortality rates from cesarean delivery in Africa
Association of gestational weight gain with adverse maternal and infant outcomes

**BMJ**
Preterm birth and risk of chronic kidney disease from childhood into mid-adulthood: national cohort study (PDF)
Association between Apgar scores of 7 to 9 and neonatal mortality and morbidity: population based cohort study of term infants in Sweden (PDF)
A neonate with bilious emesis (PDF)
An estimated one in seven babies is born with a low birthweight (PDF)

**Pediatric Infectious Disease Journal**
Epidemiology of meningitis in Canadian neonatal intensive care units.
Maternal perinatal HIV infection is associated with increased infectious morbidity in HIV-exposed uninfected infants

Predictors of perinatal HIV transmission among women without prior antiretroviral therapy in a resource-limited setting

Group b streptococci declining incidence in infants in Germany

Is polymerase chain reaction in neonatal dried blood spots reliable for the diagnosis of congenital cytomegalovirus infection?

Minimum duration of antibiotic treatment based on blood culture in rule out neonatal sepsis

**Pediatric Neurology**

Vacuum extraction in preterm deliveries and long-term neurological outcome of the offspring

Arrest of fetal brain development in ALG 11-congenital disorder of glycosylation

Cerebral hemodynamics during neonatal cerebrospinal fluid removal

Functional connectivity in term neonates with hypoxic-ischemic encephalopathy undergoing therapeutic hypothermia

**Obstetrics and Gynecology**

Maternal and neonatal morbidity associated with early term delivery of large-for-gestational-age but nonmacrosomic neonates

ACOG committee opinion no. 778 summary: newborn screening and the role of the obstetrician-gynecologist

**American Journal of Obstetrics & Gynecology**

Delayed clamping vs milking of umbilical cord in preterm infants: a randomized controlled trial

Prediction of small for gestational age neonates: screening by maternal factors, fetal biometry, and biomarkers at 35–37 weeks’ gestation

Subsequent pregnancy outcomes after open maternal-fetal surgery for myelomeningocele

M281, an anti-FcRn antibody, inhibits IgG transfer in a human ex vivo placental perfusion model

**BASIC SCIENCE SELECTIONS**

Strain-dependent effects on lung structure, matrix remodeling and Stat3/Smad2 signaling in C57BL/6N and C57BL/6j mice after neonatal hyperoxia
https://www.ncbi.nlm.nih.gov/pubmed/31067073
Delayed cord clamping is associated with improved dynamic cerebral autoregulation and decreased incidence of intraventricular hemorrhage in preterm infants
Vesoulis ZA, Liao SM & Mathur AM. *J Appl Physiol (1985).*

Identification of betamethasone regulated target genes and cell pathways in fetal rat lung mesenchymal fibroblasts

Gut and immune effects of bioactive milk factors in preterm pigs exposed to prenatal inflammation

Antioxidative effects of caffeine in a hyperoxia-based rat model of bronchopulmonary dysplasia

Beneficial effects of remifentanil against excitotoxic brain damage in newborn mice

The protective influence of chondroitin sulfate, a component of human milk, on intestinal bacterial invasion and translocation

Experimental necrotizing enterocolitis induces neuroinflammation in the neonatal brain
https://www.ncbi.nlm.nih.gov/pubmed/31077225

Epigenome-wide DNA methylation in placentas from preterm infants: association with maternal socioeconomic status

Endothelial Sash1 is required for lung maturation through nitric oxide signaling

Long noncoding RNAs interact with mRNAs: a new perspective on the mechanism of premature brain injury

**ADDITIONAL JOURNAL SELECTIONS**

Correlation between cardiorespiratory events and gastro-esophageal reflux in preterm and term infants: Analysis of predisposing factors
Neural feedback is insufficient in preterm infants during neurally adjusted ventilatory assist

Oropharyngeal administration of mother's milk prior to gavage feeding in preterm infants: a pilot randomized control trial

Enhanced protein diet for preterm infants: a prospective, randomized, double-blind, controlled trial

Prophylactic postnatal corticosteroids: early hydrocortisone
Baud O1 & Watterberg KL. *Semin Fetal Neonatal Med.*

Long-term ventilation for children with chronic lung disease of infancy
Baker CD. *Curr Opin Pediatr.*

Iron metabolism and brain development in premature infants

Role of oxidative stress in neonatal respiratory distress syndrome