

Management of perinatal cervical spine injury using custom-fabricated external orthoses: design considerations, narrative literature review, and experience from the Hospital for Sick Children. Illustrative cases

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BACKGROUND Cervical spine injuries in neonates are rare and no guidelines are available to inform management. The most common etiology of neonatal cervical injury is birth-related trauma. Management strategies that are routine in older children and adults are not feasible due to the unique anatomy of neonates.

OBSERVATIONS Here, the authors present 3 cases of neonatal cervical spinal injury due to confirmed or suspected birth trauma, 2 of whom presented immediately after birth, while the other was diagnosed at 7 weeks of age. One child presented with neurological deficits due to spinal cord injury, while another had an underlying predisposition to bony injury, infantile malignant osteopetrosis. The children were treated with a custom-designed and manufactured full-body external orthoses with good clinical and radiographic outcomes. A narrative literature review further supplements this case series and highlights risk factors and the spectrum of birth-related spinal injuries reported to date.

LESSONS The current report highlights the importance of recognizing the rare occurrence of cervical spinal injury in newborns and provides pragmatic recommendations for management of these injuries. Custom orthoses provide an alternate option for neonates who cannot be fitted in halo vests and who would outgrow traditional casts.

<https://thejns.org/doi/abs/10.3171/CASE22455>

KEYWORDS cervical spine injury; orthoses; neonate

Neonatal spine injury is rare, with an estimated incidence of 1 case per 29,000.¹ Furthermore, injury to the spinal cord was identified in 10% of perinatal neonatal deaths or stillbirths at autopsy.² Birth-related spinal cord injury (SCI) is thought to occur secondary to excessive extraction, rotation, or hyperextension of the neck during delivery; as such, shoulder dystocia, breech position, and forceps or vacuum assistance have emerged as risk factors for neonatal SCI. The clinical manifestation of SCI in this population can be significant, with a ranging spectrum of sensorimotor deficits and sometimes apnea, necessitating ventilation.¹ Neonates are at higher risk of upper cervical spine injuries because of underdeveloped muscles and ligaments, relative craniocervical size mismatch, and incomplete mineralization of the vertebrae.³ Based on existing

literature, the prognosis of birth-related SCI in neonates is poor, with a high mortality rate and long-term neurological morbidity among surviving patients.^{1,4,5}

SCI in the pediatric population can be classified based on the radiographic appearance: fracture, fracture with subluxation, subluxation alone, and SCI without radiographic abnormality.⁶ Treatment is centered around providing appropriate immobilization, reduction, and stabilization in order to achieve spinal stability while mitigating permanent neurological deficits and long-term sequelae, including joint contractures, fractures, and scoliosis.^{7,8} Current treatment modalities include surgical stabilization and external immobilization systems.⁹ Surgery is particularly challenging in newborns due to their unique anatomy, the potential impact on growth, and difficulty achieving adequate

ABBREVIATIONS CT = computed tomography; MRI = magnetic resonance imaging; OTS = off-the-shelf; SCI = spinal cord injury.

INCLUDE WHEN CITING Published March 8, 2023; DOI: 10.3171/CASE22455.

SUBMITTED November 12, 2022; **ACCEPTED** December 15, 2022.

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Preventability Of Perinatal Injury

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Mocas Tillotson, Patricia Padulo
Villarreal**



Preventability Of Perinatal Injury:

Preventability of Perinatal Injury Karlis Adamsons, Howard A. Fox, 1975 *Costs and Benefits of Electronic Fetal Monitoring* Henry David Banta, 1979 **PREVENTABILITY OF PERINATAL INJURY- PROCEEDINGS OF A SYMPOSIUM MOUNT SINAI SCHOOL OF MEDICINE- NATIONAL FOUNDATION MARCH OF DIMES.** , *Healthy People : the Surgeon General's Report on Health Promotion and Disease Prevention : Background Papers* Institute of Medicine (U.S.), 1979 *Health Services Reports* United States. Health Services and Mental Health Administration, 1973

Fetal and Neonatal Neurology and Neurosurgery Malcolm I. Levene, Frank A. Chervenak, 2009-01-01 The definitive reference work on the developing brain from conception through the first year of life this book provides specialists involved in the management of the fetus and the neonate with the latest information on the developmental neurology and pathology of the developing central nervous system *Neonatal Neural Rescue* A. David Edwards, Denis V. Azzopardi, Alistair J. Gunn, 2013-04-04 Worldwide more than one million babies die annually from perinatal asphyxia and its associated complications such as neonatal encephalopathy one of the major causes of cerebral palsy and cognitive deficiencies in children aside from prematurity Cooling the head or the entire body minimizes neuronal death enabling the neonatal brain to be rescued thus greatly improving developmental outcomes Hypothermic neural rescue therapy has revolutionized the treatment of this condition and is a major recent achievement in neonatal medicine This landmark book provides a brief scientific underpinning of hypothermic neural rescue therapy and lays out the evidence base for good practice Internationally recognized authorities give practical advice drawn from personal experience on how to deliver hypothermia in the neonatal intensive care unit A valuable addition to any neonatal unit this is essential reading for neonatologists neonatal nurses and paediatric neurologists *Current Catalog* National Library of Medicine (U.S.), First multi year cumulation covers six years 1965 70 **Cumulated Index Medicus** , 1976 *Current Bibliography of Epidemiology* , 1972 *Suicidal behavior and depression among perinatal women: Research, Prevention, Intervention and Treatment* Yari Gvion, Sami Hamdan , Vita Poštuvan, 2024-10-01 Suicide is a multifaceted phenomenon with numerous contributing and facilitating factors and variables Despite motherhood serving as a potential protective factor against suicidal tendencies a notable prevalence of suicidality persists among pregnant and postpartum women making suicide a leading cause of death among women with postpartum depression PDD Furthermore numerous women experience emotional challenges during pregnancy which often persist into the postpartum phase thus making them also susceptible to depression and suicidality This Research Topic is dedicated to studies exploring various approaches to suicidal behavior depression as well as of non suicidal self injury NSSI among pregnant and postpartum women The purpose of this Research Topic is to elucidate comprehensive analyses of extant knowledge and empirical data about models theories and specific dimensions and variables that may help us increase the understanding of suicidal phenomena among perinatal women pregnant and postpartum The specific goal is to identify

characteristics that may be used to develop prevention and intervention methods among this at risk population **Better Health for Our Children: Background papers** United States. Select Panel for the Promotion of Child Health,1981

Bibliography of Medical Reviews ,1976 Preventability of Perinatal Injury Karlis Adamsons,1975 **Monthly Bibliography of Medical Reviews** ,1976 Perinatal Nursing Glenda Fregia Butnarescu,Delight Mocas Tillotson,Patricia Padulo Villarreal,1978 The Epidemiology and Prevention of Childhood Injuries Hamid Soori,Martha Orendu Oche Attah,2025-05-20 The Epidemiology and Prevention of Childhood Injuries An Overview takes a comprehensive approach to understanding and addressing childhood injuries Integrating global research and practice the book aims to significantly advance injury prevention among children With detailed chapters on epidemiological measures risk factors and prevention strategies it offers a thorough review of childhood injury contexts The book covers injuries related to transport home school play sports workplace violence and disasters It discusses first aid essentials accountability and collaboration concluding with methodologies data collection techniques and outcome assessments This resource is invaluable for researchers pediatricians public health experts and policymakers seeking to protect children Offers a reliable up to date resource for understanding and addressing epidemiology risk factors prevention strategies and interventions of childhood injuries Discusses how different social identities can intersect and contribute to disparities in injury rates and outcomes Explores how social determinants of health such as race ethnicity socioeconomic status and access to healthcare contribute to disparities in injury rates and outcomes Equips readers with actionable insights multidisciplinary approaches and technological innovations that can be applied in various settings to create safer environments for children **Essential Neonatal**

Medicine Sunil Sinha,Lawrence Miall,Luke Jardine,2017-06-23 Providing a comprehensive yet concise guide for trainee doctors neonatal nurses and midwives Essential Neonatal Medicine continues to be an indispensable resource that combines the depth and breadth of a textbook with the efficiency of a revision guide Extensively updated and full colour throughout this edition includes new chapters on neonatal transport and palliative care as well as further content on pathophysiology and embryology quality improvement and risk management infection control and non invasive ventilation With an improved artwork programme and a new glossary of terms Essential Neonatal Medicine is ideal for all trainee health professionals new to neonatology or looking for a comprehensive aid to support them **Child, Adolescent and Family Refugee Mental**

Health Suzan J. Song,Peter Ventevogel,2020-06-15 More than half of the 25.9 million refugees in the world are under the age of 18 and the mental health of these children and adolescents constitutes a growing global public health priority Refugee children and their families are at increased risk to develop mental health problems but they often face major challenges in accessing adequate treatment and mental health professionals frequently feel ill equipped to assist this group Refugees are faced with a plethora of issues including the ambiguous loss of loved ones psychological trauma related to past experiences of violence and atrocities the complexities of daily life as a refugee and the challenges to adapt to new systems of care and

support Refugees life circumstances all too often undermine their agency as they face discrimination stigma and social isolation or exclusion Refugees are frequently disconnected from the usual family and community supports that they once had which creates additional mental distress As parents struggle with these changes their children often find it even more difficult to adapt and connect with them This all leads to increased prevalence of mental health conditions among refugees Humanitarian policies recommend family centered interventions that are multi sectoral multi disciplinary and focus on optimizing resource utilization Over the last decade a considerable body of research has emerged around socio ecological models of mental health family and community approaches and resilience and strengths based theories but these insights are insufficiently incorporated in the practice of mental health care for refugee children Clinicians often struggle to grasp the common unique stressors that families face and are not familiar with working with families as units for intervention Using culturally and contextually informed assessment methods and family oriented management approaches not only help individual children or adolescents but also their families This book aims to provide an overview of the latest theoretical insights from research on sociocultural aspects of mental health and connect these with clinical insights from practical mental health care provision Using strengths based resiliency oriented and family centered approaches can enrich clinical practice in refugee mental health but clinicians need to translate the emerging evidence into concrete steps and interventions This requires additional skills for the assessment and management of mental health conditions in refugee children and families The chapters in this book are written by a diverse group of authors using global multi disciplinary approaches The chapters provide examples from various contexts including refugees who are displaced to neighboring countries refugees on the move and refugees and asylum seekers in resettlement settings This book is therefore a unique resource for clinicians researchers and policy makers working on mental health issues of refugee children and adolescents around the world

Cerebrovascular Bibliography ,1976

Decoding **Preventability Of Perinatal Injury**: Revealing the Captivating Potential of Verbal Expression

In a time characterized by interconnectedness and an insatiable thirst for knowledge, the captivating potential of verbal expression has emerged as a formidable force. Its power to evoke sentiments, stimulate introspection, and incite profound transformations is genuinely awe-inspiring. Within the pages of "**Preventability Of Perinatal Injury**," a mesmerizing literary creation penned by a celebrated wordsmith, readers set about an enlightening odyssey, unraveling the intricate significance of language and its enduring effect on our lives. In this appraisal, we shall explore the book's central themes, evaluate its distinctive writing style, and gauge its pervasive influence on the hearts and minds of its readership.

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