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Cerebral palsy research news

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Interventions and Management

1. Iatrogenic Brachial Plexus Lower Trunk Posterior Division Injury During C7 Harvest for Contralateral Transfer in a Child With Hemiplegic Cerebral Palsy

Francisco Soldado, Diego Gonzalez-Morgado, Juliana Rojas-Neira

Microsurgery . 2025 Jan;45(1):e70005. doi: 10.1002/micr.70005.

No abstract available
PMID: 39628106

2. Age-related differences in behavioral outcomes of bimanual functional motor tasks in children and adolescents with cerebral palsy: a scoping review

Hubert D Gascon, Sahian Alicia Maldonado Numata, Sandrine Emond, Samuel Nemanich, Maxime T Robert

Review Disabil Rehabil . 2024 Dec 5:1-13. doi: 10.1080/09638288.2024.2435528. Online ahead of print.

Aim: The objective of this review is to determine age-related differences in behavioral outcomes of bimanual motor tasks in children and adolescents with cerebral palsy (CP).
Method: This review followed the 6-stage Joanna Briggs Institute methodology. The Embase, EBSCO CINAHL, and PubMed databases were searched on May 2024. We included studies that employed instrumented measures to assess bimanual tasks in individuals with CP aged between 3 and 19 years.
Results: Twenty-eight studies were included after full-text screening. This review reported on 544 individuals with CP. Bimanual tasks were grouped in seven categories and their varying complexities were listed and analyzed. There are numerous methods for assessing bimanual performance. The listed methods have shown that the gap between children with CP and healthy peers widens as task complexity increases. The data suggest that age-related outcomes result from a complex interaction between atypical development, the severity of deficits, and the context-dependent nature of the protocols.
Conclusion: The lack of standardized reporting on age-related results limits our understanding of bimanual developmental functions in CP. Standardizing these measures will enhance our understanding of bimanual function and better define the principles guiding therapeutic interventions, ultimately improving outcomes for individuals with CP.
Plain language summary
In studies with children and adolescents with cerebral palsy, seven categories of instrumented bimanual tasks were identified.Rehabilitation professionals should prioritize precise, adaptable tools to track subtle patient progress.Providing children and adolescents with cerebral palsy with tasks of different complexities could assist them in accomplishing activities of daily living.Rehabilitation interventions should be tailored to each patient’s developmental level and clinical profile.
PMID: 39636710

3. Estimating Ground Reaction Forces from Gait Kinematics in Cerebral Palsy: A Convolutional Neural Network Approach

Mustafa Erkam Ozates, Firooz Salami, Sebastian Immanuel Wolf, Yunus Ziya Arslan

Ann Biomed Eng . 2024 Nov 30. doi: 10.1007/s10439-024-03658-y. Online ahead of print.

Purpose: While gait analysis is essential for assessing neuromotor disorders like cerebral palsy (CP), capturing accurate ground reaction force (GRF) measurements during natural walking presents challenges, particularly due to variations in gait patterns. Previous studies have explored GRF prediction using machine learning, but specific focus on patients with CP is lacking. This research aims to address this gap by predicting GRF using joint angles derived from marker data during gait in patients with CP, thereby suggesting a protocol for gait analysis without the need for force plates.
Methods: The study employed an extensive dataset comprising both typically developed (TD) subjects (n = 132) and patients with CP (n = 622), captured using motion capture systems and force plates. Kinematic data included lower limb angles in three planes of motion, while GRF data encompassed three axes. A one-dimensional convolutional neural network model was designed to extract features from kinematic time series, followed by densely connected layers for GRF prediction. Evaluation metrics included normalized root mean squared error (nRMSE) and Pearson correlation coefficient (PCC).
Results: GRFs of patients with CP were predicted with nRMSE values consistently below 20.13% and PCC scores surpassing 0.84. In the TD group, all GRFs were predicted with higher accuracy, showing nRMSE values lower than 12.65% and PCC scores exceeding 0.94.
Conclusion: The predictions considerably captured the patterns observed in the experimentally obtained GRFs. Despite limitations, including the absence of upper extremity kinematics data and the need for continuous model evolution, the study demonstrates the potential of machine learning in predicting GRFs in patients with CP, albeit with current prediction errors constraining immediate clinical applicability.
PMID: 39616286

4. Development of clinical considerations for ankle-foot orthosis prescription and monitoring in young children with cerebral palsy: a Delphi study

Pegah Firouzeh, Christopher Morris, Lyn K Sonnenberg, Patricia Manns, Lesley Pritchard

Disabil Rehabil. 2024 Dec 4:1-13. doi: 10.1080/09638288.2024.2435516. Online ahead of print.

Purpose: To seek agreement on evidence-based, family-centered, clinical considerations for Ankle Foot Orthosis (AFO) prescription and monitoring for young, ambulatory children with cerebral palsy.
Materials and methods: An online Delphi survey focusing on parent, clinician, and researcher perspectives on specific processes and outcomes concerning AFO prescription and monitoring practices was conducted over two rounds. Participants rated each survey item as critical, important but not critical, or less important. Items were included in Round 2 if >70% of participants in all three groups scored critical and <15% scored less important. A subgroup of survey respondents participated in a meeting to ratify the survey results.
Results: Twenty-two pediatric clinicians, seven researchers, and ten parents of young children with cerebral palsy participated in Round 1. Two clinicians and two parents dropped out in the second round. A total of 36 clinical considerations were deemed to be critically important for inclusion across contributor groups.
Conclusions: The proposed clinical considerations for AFO prescription and monitoring that embeds the perspectives of families is a valuable contribution to clinical practice. They can be used by clinicians as a guide when prescribing and introducing AFOs to families of young, ambulatory children with cerebral palsy.
Plain language summary
This study proposes a set of clinical considerations to support clinicians with decision-making related to Ankle Foot Orthosis (AFO) prescription and monitoring for young, ambulatory children with cerebral palsy.This study highlights the importance of involving families and considering child function, family circumstances, and routines in decisions regarding their children’s AFO prescription and use.The resulting clinical considerations emphasize the importance of collaboration between clinicians and families to optimize AFO use.
PMID: 39629912

5. Visual, perceptual functions, and functional vision in children with unilateral cerebral palsy compared to children with neurotypical development

No authors listed

Dev Med Child Neurol. 2024 Dec 4. doi: 10.1111/dmcn.16203. Online ahead of print.

No abstract available
PMID: 39630932

6. Proportion of good oral hygiene and mean value oral hygiene index among children with cerebral palsy in Africa and Asia: a systematic review and meta-analysis

Ermias Sisay Chanie, Kalkidan Sisay Chanie, Natnael Moges, Denekew Tenaw Anley, Zufan Alamrie Asmare, Melkamu Aderajew Zemene, Natnael Atnafu Gebeyehu, Misganaw Asmamaw Mengstie, Mohammed Abdu Seid, Endeshaw Chekol Abebe, Molalegn Mesele Gesese, Yenealem Solomon Kebede, Berihun Bantie, Sefineh Fenta Feleke, Tadesse Asmamaw Dejenie, Natnael Amare Tesfa, Anteneh Mengist Dessie, Habtamu Shimels Hailemeskel, Tsiyereda Sisay Chanie, Sewunet Sisay Chanie

Meta-Analysis BMC Oral Health . 2024 Dec 5;24(1):1480. doi: 10.1186/s12903-024-05264-9.

Background: Children with cerebral palsy face various challenges, including oral hygiene, which is crucial for their overall well-being and quality of life. However, limited research investigates oral hygiene among children with cerebral palsy. This systematic review and meta-analysis aim to assess the proportion of good oral hygiene and mean value oral hygiene index among children with cerebral palsy in Africa and Asia.
Methods: This review included full articles conducted among children with cerebral palsy in Africa and Asia, assessing the proportion of oral hygiene and/or the mean oral hygiene index. PubMed, Scopus, Embase, Hinari, citation searching, and grey literature were retrieved to identify eligible articles through Preferred Reporting Items for Systematic Review and Meta-Analysis guidelines. The registration number in Prospero is CRD42024540182. Data were extracted by standardized JBI data extraction format for personal hygiene and the mean value of oral hygiene index. Then exported to STATA 14 for further analysis. I2 and Egger's tests were employed to estimate the heterogeneity and publication bias respectively. Subgroup analysis based on country, study design, year of publication, and the sample size was also examined.
Results: The random-effects model analysis revealed that the pooled proportion of good oral hygiene among children with cerebral palsy in Asia and Africa was 21.8% (95% CI: 14.2-29.4). Additionally, the analysis showed that the pooled mean value of the oral hygiene index among children with cerebral palsy in Asia and Africa was 1.9 (95% CI: 0.8-2.9). The study conducted separate analyses on the proportion of good oral hygiene in Africa and Asia, showing that the estimated proportion was 33.3% (95% CI: 15.1-51.4) for Africa and 11.7% (95% CI: 7.6-15.9) for Asia. Additionally, the study categorized the proportion of good oral hygiene based on the study design, revealing that 22.9% (95% CI: 10.4-35.4) for case-control studies and 21.5% (95% CI: 12.6-30.4) for cross-sectional studies. Furthermore, the analysis considered the difference in publication year, the proportions of good oral hygiene were found to be 23.2% (95% CI: 10.1-36.3) for publications before ≤ 2015 and 20.3% (95% CI: 11.4-29.3) for publications after > 2015. Lastly, the study examined the proportion of good oral hygiene based on sample size, 28.3% (95% CI: 11.0-45.6) for sample sizes ≤ 70 and 15.8% (95% CI: 9.3-22.2) for sample sizes > 70.
Conclusions: This review suggested that the proportion of good oral hygiene among children with cerebral palsy appears insufficient in Asia and Africa. With just one-fifth exhibiting good oral hygiene, it is advisable to strengthen interventions and support programs in both regions to enhance oral hygiene in this vulnerable population. Further research better to focus on identifying potential factors and conducting qualitative investigations to comprehend the perspectives of children and caregivers on oral hygiene within these regions.
PMID: 39639294

7. Clinical Actionability of Genetic Findings in Cerebral Palsy: A Systematic Review and Meta-Analysis

Sara A Lewis, Maya Chopra, Julie S Cohen, Jennifer M Bain, Bhooma Aravamuthan, Jason B Carmel, Michael C Fahey, Reeval Segel, Richard F Wintle, Michael Zech, Halie May, Nahla Haque, Darcy Fehlings, Siddharth Srivastava, Michael C Kruer

JAMA Pediatr . 2024 Dec 2:e245059. doi: 10.1001/jamapediatrics.2024.5059. Online ahead of print.

Importance: Single gene variants can cause cerebral palsy (CP) phenotypes, yet the impact of genetic diagnosis on CP clinical management has not been systematically evaluated.
Objective: To evaluate how frequently genetic testing results would prompt changes in care for individuals with CP and the clinical utility of precision medicine therapies.
Data sources: Published pathogenic or likely pathogenic variants in OMIM genes identified with exome sequencing in clinical (n = 1345) or research (n = 496) cohorts of CP were analyzed. A systematic literature review for evidence of effective therapies for specific genetic etiologies was performed.
Study selection: Nonstandard interventions that led to a detectable improvement in a defined outcome in individuals with variants in the gene of interest were included.
Data extraction and synthesis: Literature was evaluated using PRISMA guidelines. A diverse, expert working group was established, scoring rubrics adapted, and scoring consensus built with a modified Delphi approach.
Main outcomes and measures: Overall clinical utility was calculated from metrics assessing outcome severity if left untreated, safety and practicality of the intervention, and anticipated intervention efficacy on a scale from 0 to 3.
Results: Of 1841 patients with CP who underwent exome sequencing, 502 (27%) had pathogenic or likely pathogenic variants related to their phenotype. A total of 243 different genes were identified. In 1841 patients with identified genetic etiologies of CP, 140 (8%) had a genetic etiology classified as actionable, defined as prompting a change in clinical management. Also identified were 58 of 243 genes with pathogenic or likely pathogenic variants with actionable treatment options: 16 targeting the primary disease mechanism, 16 with specific prevention strategies, and 26 with specific symptom management. The level of evidence was also graded according to ClinGen criteria; 45 of 101 interventions (44.6%) had evidence class D or below. The potential interventions have clinical utility with 98 of 101 outcomes (97%) being moderate-high severity if left untreated and 63 of 101 interventions (62%) predicted to be of moderate-high efficacy. Most interventions (72 of 101 [71%]) were considered moderate-high safety and practicality.
Conclusions and relevance: The findings indicate that actionable genetic findings occurred in 8% of individuals referred for genetic testing with CP. Evaluation of potential efficacy, outcome severity, and intervention safety and practicality indicates moderate-high clinical utility of these genetic findings. Genetic sequencing can identify precision medicine interventions that provide clinical benefit to individuals with CP. The relatively limited evidence base underscores the need for additional research.
PMID: 39621323

8. Characteristics, intrapartum cardiotocography patterns, and postnatal brain imaging findings for cerebral palsy subtypes

Shoichi Magawa, Masahiro Nakao, Yukiko Nanba, Hideaki Suzuki, Mitsutoshi Iwashita, Akira Oka, Tomoaki Ikeda

Am J Obstet Gynecol . 2024 Dec 4:S0002-9378(24)01174-8. doi: 10.1016/j.ajog.2024.11.024. Online ahead of print.

No abstract available
PMID: 39643073

9. Correction: Home-based therapy and its determinants for children with cerebral palsy, exploration of parents' and physiotherapists' perspective, a qualitative study, Ethiopia

Zelalem Dessalegn Demeke, Yohannes Awoke Assefa, Yohannes Abich, Mulugeta Bayisa Chala

Published Erratum PLoS One . 2024 Dec 2;19(12):e0315114. doi: 10.1371/journal.pone.0315114. eCollection 2024.

Abstract
[This corrects the article DOI: 10.1371/journal.pone.0282328.].
Erratum for
Home-based therapy and its determinants for children with cerebral palsy, exploration of parents' and physiotherapists' perspective, a qualitative study, Ethiopia.
PMID: 39621743

10. The quality of life of primary caretakers of children with cerebral palsy

Alpana Kondekar, Qudsiya Ansari, Hrishikesh Ghatol

J Family Med Prim Care . 2024 Oct;13(10):4457-4461. doi: 10.4103/jfmpc.jfmpc_223_24. Epub 2024 Oct 18.

Background: Cerebral palsy (CP) is a heterogeneous group of disorder affecting the development of movement and posture, which is permanent nonprogressive. Previous studies in different regions have shown links between caregivers' mental health and children's well-being. However, the lack of such detailed research for the caretakers of children with CP and correlation of quality of life affected the type and severity of the condition; this necessitates the development of a new study to assess caregivers' quality of life.
Aim: Quality of life among caregivers of disabled children is an important concern in healthcare. We aim to evaluate the quality of life among caregivers of children with CP and to assess the factors affecting the caregivers' quality of life, namely, age, gender, type, and gross motor function in children with CP.
Methodology: This was a cross-sectional observational study, conducted over a period of 6 months. It included the caregivers of children with CP at a tertiary care hospital of Mumbai. Data were collected using the WHO BREF questionnaire. The children were divided into two groups (2 to 7 years and 7 to 12 years). The qualities of life of the caretakers of these two groups were compared in four domains, namely, physical, psychological, social, and environmental.
Results: The study included 50 participants. Mothers (80%) and fathers (10%) were the primary caregivers. Caretakers of the children with cerebral palsy showed significant affected quality of life as calculated from WHO QOL BREF score in both age groups (2-7 and 7-12 years) and in all domains. Overall, the most affected domain in our study was of psychological health and the least affected domain was of the environmental domain.
Conclusion: This study provides a snapshot of the impact of having a child with cerebral palsy on the lives of the caregivers Most of the caregivers in the study were mothers, and quality of life was affected in all domains mainly in psychological and physical domains. The study showed that there is a need for interventions in caregivers which can have an indirect impact on the children with CP.
PMID: 39629383

11. 'Who Listens to the Listener, Who Cares for the Carer?' A Cross-Sectional Study of Social Connectedness and Sleep Experiences of Young Siblings of Neurodivergent People

G Pavlopoulou, E Sim, S Peter, M Gardani, V Beevers, C Kassa, V Sideropoulos

Child Care Health Dev . 2025 Jan;51(1):e70014. doi: 10.1111/cch.70014.

Background: A growing body of research postlockdown has established that loneliness and sleep problems are prominent in the life of all people and in particular in neurodivergent people and their parents/carers. The present study explores the experience of loneliness and sleep in siblings of neurodivergent young people.
Methods: Thirty-eight (n = 38) young siblings (Mage = 16.41, 68.4% female) completed an online survey on sleep, loneliness and daytime functioning, answering a set of qualitative questions.
Results: Thematic analysis revealed that their sleep was affected by personal anxieties and neurodivergent siblings' parasomnias. Definition of loneliness included perceived lack of understanding and empathy in wider society, assuming a lonesome responsibility, growing up faster than peers and an emptiness within and without. Siblings provided brief contributions on how schools and the wider society can help them. Limitations include small sample size and an uneven representation of gender and disability groups in the sample. Recommendations for school and societal support are also discussed.
Conclusion: This preliminary exploration helped define their caring responsibilities, social connectedness and sleep needs. Our findings call for a holistic and personalised approach to healthcare, including social and psychological support, for the whole family including neurodivergent and neurotypical siblings.
PMID: 39629898

12. Utility of Cranial Ultrasound to Investigate Brain Injury in Hypoxic-Ischemic Encephalopathy

Aine Fox, Rocco Cuzzilla, Ailbhe Tarrant, Adam Reynolds, Michael Geary, Miriam Martinez-Biarge, Breda Hayes

Pediatr Neurol . 2024 Nov 6:163:15-20. doi: 10.1016/j.pediatrneurol.2024.10.019. Online ahead of print.

Background: With increasing availability of brain magnetic resonance imaging (MRI) in high-income countries, cranial ultrasound (cUS) is used less frequently to evaluate infants with hypoxic-ischemic encephalopathy (HIE). This study aimed to correlate findings of brain injury on early postnatal cUS with brain injury on neonatal brain MRI performed as part of routine clinical care for near-term and term infants with moderate to severe HIE.
Methods: This was a retrospective cohort study comparing early postnatal cUS and later neonatal brain MRI using scoring systems with prognostic validity to assess brain injury in near-term/term infants with moderate or severe HIE. Infants were born between 2010 and 2021 and were treated at a single tertiary neonatal intensive care unit.
Results: A total of 94 infants were included in this study. cUS was performed in the first five days after birth and brain MRI at a median of 6.7 days (interquartile range 5.4, 7.9). Findings of white matter injury on cUS <24 hours and gray matter injury on cUS >48 hours correlated with similar nature and severity of brain injury on brain MRI. Subgroup analyses of cUS performed <24 and >48 hours and contemporaneous brain MRI performed on days 3 to 5 provided stronger evidence for correlations of brain injury between neuroimaging modalities.
Conclusion: This study provides evidence for the correlation of findings of brain injury between cUS and brain MRI. Early postnatal cUS can provide information on potential findings on brain MRI and may help inform outcome of newborns in low-middle income countries and situations where MRI is not clinically possible.
PMID: 39642683

13. The Effect of Selective Dorsal Rhizotomy on Scoliosis in Children With Cerebral Palsy: A Long-term Follow-up Study

Stacey D Miller, Emma Lewis, Jonathan Lau, Maria Juricic, Vuong Nguyen, Paul Steinbok, Firoz Miyanji, Kishore Mulpuri

J Pediatr Orthop. 2024 Dec 5. doi: 10.1097/BPO.0000000000002878. Online ahead of print.

Background: Selective dorsal rhizotomy (SDR) is commonly used to reduce spasticity in children with cerebral palsy (CP). Children with CP have an increased risk of spinal deformities that increase with age and Gross Motor Function Classification System (GMFCS) level. Few studies have considered the risk of spinal deformity post-SDR by GMFCS level. The purpose of this review was to evaluate the incidence and severity of spinal deformities in children with CP, overall and by GMFCS level, a minimum of 5 years after SDR.
Methods: In this retrospective review, participants included all those who had an SDR before January 1, 2013, at a Canadian pediatric hospital. Participants had to have a spine radiograph preoperatively and a minimum 5 years post-SDR. Age, GMFCS level, level of laminectomy, percentage of rootlets cut, and orthopaedic surgical history were collected. Scoliosis was evaluated using coronal curve and was measured pre-SDR and a minimum 5 years post-SDR or until spine surgery. When available, sagittal plane radiographs were reviewed.
Results: A total of 107 participants (61 male, 46 female), at GMFCS levels I to V (2,25,22,45, and 13, respectively) were included. The mean age at SDR was 4.8 years (SD 1.5), with a mean follow-up of 12.7 years (SD 4.9). Post-SDR, 57 (53%) participants had scoliosis, with the major curve averaging 46 degrees (SD 34.9). Scoliosis measuring >10 degrees was found in 8 (32%) participants at level II, 4 (18%) at level III, 33 (73%) at level IV and 12 (92%) at level V. No participants at GMFCS levels I to III, and 35% and 67% of those at levels IV and V, respectively, had a curve magnitude >40 degrees. Of those who had lateral imaging, 38% had excessive kyphosis, 21% hyperlordosis, and 16% spondylolisthesis.
Conclusions: The rate of scoliosis is consistent with the natural history of children with CP without surgical intervention as reported in the literature when compared by GMFCS level and curve severity.
PMID: 39636007

14. Multimodal surgical strategy for mixed refractory hypertonia in a patient with cerebral palsy: C1-2 puncture and pectoral pocket for baclofen pump implantation following lumbosacral ventral-dorsal rhizotomy. Illustrative case

Shreya Mukherjee, Sunny Abdelmageed, Maryam N Shahin, Jeffrey S Raskin

J Neurosurg Case Lessons . 2024 Dec 2;8(23):CASE24427. doi: 10.3171/CASE24427. Print 2024 Dec 2.

Background: Intrathecal baclofen pump (ITBP) therapy has been successfully used to treat hypertonia in children with cerebral palsy (CP) since its Food and Drug Administration approval in 1984. CP affects multiple organ systems, leading to the accumulation of medical access and implantable devices, increasing the medical complexity of these children. The authors present the case of a patient with extreme surgical complexity and review the medical decision-making and surgical details.
Observations: A 16-year-old male with a history of quadriplegic mixed hypertonia secondary to CP presented for ITBP replacement in the setting of pump end of service (EOS). The patient had short bowel syndrome (SBS) and severe scoliosis with a nonhealing costopelvic wound adjacent to the EOS pump. Intrathecal baclofen wean failed due to limited bioavailability from the SBS. The authors performed catheter placement to the skull base via a right C1-2 puncture and pectoral pump pocket creation. Treatment was well tolerated, with no procedural complications.
Lessons: Surgical complexity prompts creative problem-solving. It is critical to consider the nuances of each patient's history and body habitus to promote ITBP longevity. The authors present the case of a patient with CP who underwent catheter access via C1-2 puncture and pectoral pocket creation. In this case, surgery was effective, with an uncomplicated postoperative course. Surgeons should not hesitate to consider alternative implantation strategies in similar circumstances. https://thejns.org/doi/10.3171/CASE24427.
PMID: 39622025

15. Plant-derived cannabinoids for treatment of spasticity in children and adolescents with severe cerebral palsy: Double-blind, placebo-controlled trial

Milica Stefanović, Damjan Osredkar, Zvonka Rener-Primec, Jakob Peterlin, Tomislav Laptoš, David Neubauer

Eur J Paediatr Neurol . 2024 Nov 26:54:18-24. doi: 10.1016/j.ejpn.2024.11.007. Online ahead of print.

Background: To assess the efficacy, safety, and tolerability of full-spectrum cannabis oil (FSCO) (CBD:THC ratio of 10:1) for the treatment of spasticity in individuals with spastic cerebral palsy (CP) grades IV and V.
Method: A pilot trial to assess the feasibility of FSCO in seven CP patients was followed by a prospective double-blind, placebo-controlled parallel trial, with 53 participants aged 5-25 years, randomised in a 1:1 ratio. The double-blind phase lasted six weeks, followed by the open-label phase of six weeks' duration. The primary endpoint was a change in spasticity measured by the modified Ashworth Scale. Secondary outcomes were changes in motor function (Gross Motor Function Measure 88 scale), quality of life, safety, and tolerability.
Results: There was no significant difference in spasticity, motor function, and quality of life parameters between patients receiving FSCO or placebo. Patients in the FSCO group were significantly drowsier compared to the placebo group. Adverse events were mild to moderate; there were no life-threatening events.
Interpretation: This trial suggests FSCO treatment in children with CP is generally well tolerated and safe. It might have benefits on quality of life. No significant change in spasticity was demonstrated with FSCO treatment compared to the placebo.
PMID: 39626543

16.Mode of delivery and outcomes among inborn extremely preterm singletons: A cohort study

Colm P Travers, Dhuly Chowdhury, Abhik Das, Namasivayam Ambalavanan, Myriam Peralta-Carcelen, Nancy Newman, Shirley Cosby, Myra Wyckoff, Alan Tita, Waldemar A Carlo; Eunice Kennedy Shriver National Institute of Child Health and Human Development Neonatal Research Network

Acta Obstet Gynecol Scand . 2024 Dec 1. doi: 10.1111/aogs.15028. Online ahead of print.

Introduction: Cesarean delivery is the most common mode of delivery among extremely preterm infants but there are insufficient data regarding the best mode of delivery among extremely preterm singletons. The objective of this study was to compare the rate of death or severe neurodevelopmental impairment among extremely preterm singletons by actual mode of delivery.
Material and methods: Observational study using prospectively collected data from 25 US medical centers. We included postnatally-treated singletons with birth weight 401-1000 g, gestational age 22 + 0/7-26 + 6/7 weeks, without a major birth defect, born 2006-2016. Death or severe neurodevelopmental impairment (Bayley Scales of Infant Development-3rd edition

cognitive composite score<70, cerebral palsy (Gross Motor Function Classification Scale >3), bilateral blindness, or bilateral hearing loss) at 18-26 month follow-up were compared by mode of delivery (cesarean, vaginal including vertex or breech) using propensity score analysis to adjust for baseline characteristics.

Results: There was no difference in death or severe neurodevelopmental impairment between cesarean and vaginal (vertex or breech) births (42.4% cesarean vs. 47.2% vaginal; adjusted odds ratio (aOR), 95% confidence intervals (CI); 1.03, 0.91-1.17). Both cesarean delivery (26.8% cesarean vs. 51.5% breech vaginal; aOR: 0.71; 95% CI: 0.55-0.92) and vertex vaginal delivery (28.5% vertex vaginal vs. 51.5% breech vaginal; aOR: 0.59; 95% CI: 0.45-0.76) were associated with lower mortality compared with breech vaginal delivery.

Conclusions: Among postnatally-treated extremely preterm singletons, there was no difference in death or severe neurodevelopmental impairment between cesarean or vaginal delivery. Both vertex vaginal and cesarean delivery were associated with lower mortality compared with breech vaginal delivery.

PMID: 39618158