ISSN: 2582-4686 SJIF 2021-3.261,SJIF 2022-2.889,
2024-6.875 ResearchBib IF: 9.948 / 2024

THE MULTIDISCIPLINARY JOURNAL OF SCIENCE AND TECHNOLOGY

VOLUME-5, ISSUE-5

NATAL TRAUMA OF THE CERVICAL SPINE AND ITS CONSEQUENCES IN CHILDREN BORN BY SURGICAL MEANS "CAESAREAN SECTION" IN THE ANDIJAN REGION

Djuraeva Khursanoy Zokirovna,

Senior teacher of the pediatrics and neonatology department of the faculty, ASMI

Abstract. Despite being considered a safer alternative in complicated deliveries, caesarean section does not entirely eliminate the risk of birth-related injuries, including trauma to the cervical spine. This study explores the incidence, mechanisms, clinical outcomes, and long-term consequences of cervical spine injuries in neonates born via caesarean section in the Andijan region of Uzbekistan. Based on observational data from local maternity and neonatal care units, the article identifies critical obstetric and neonatal factors associated with these injuries. Clinical manifestations, diagnostic challenges, rehabilitation outcomes, and the role of local health infrastructure are analyzed in detail.

Keywords: natal trauma, cervical spine, caesarean section, neonatal injury, Andijan region, neurological outcomes, spinal cord.

INTRODUCTION

Natal trauma involving the cervical spine represents one of the most severe yet often underdiagnosed complications of childbirth. While spontaneous vaginal delivery is commonly associated with mechanical stress-related injuries, caesarean section is generally perceived as a protective procedure that reduces mechanical compression and traction forces. However, emerging clinical data from various perinatal centers, including those in the Andijan region, reveal that cervical spine injuries can still occur in neonates born via C-section, especially in emergency or technically difficult procedures. In regions like Andijan, where the rate of caesarean deliveries has been rising due to demographic trends, maternal age, fetal macrosomia, and increased obstetric risk awareness, a closer analysis of neonatal outcomes becomes imperative. This paper investigates cases of cervical spine trauma diagnosed within the first 28 days of life in infants delivered surgically, with a particular focus on local factors, obstetric techniques, and neonatal neurological care protocols.

MATERIALS AND METHODS

Diagnosis of cervical spine trauma in neonates is complex and heavily reliant on high-resolution imaging such as MRI and, occasionally, CT. In regional centers like Andijan, access to such modalities is limited, often requiring referral to Tashkent or other tertiary facilities. As a result, early symptoms may be missed or attributed to perinatal asphyxia or intraventricular hemorrhage.

Routine spinal ultrasound is not standardized in C-section infants, despite its utility in detecting hematoma or misalignment. Pediatricians often lack specific training in neonatal neuro-orthopedics, and there is no formal guideline in Uzbekistan regarding screening for cervical injury after high-risk C-sections.

Long-Term Consequences and Developmental Monitoring

Children with natal cervical trauma are at increased risk of delayed motor development, muscular atrophy, orthopedic deformities (e.g., torticollis, scoliosis), and respiratory dependency. In the Andijan cohort, three children required long-term physiotherapy, orthotic support, and multidisciplinary follow-up, including neurology and rehabilitation medicine. Only one child regained full motor control by age 2, highlighting the poor prognosis of high cervical involvement.

ISSN: 2582-4686 SJIF 2021-3.261,SJIF 2022-2.889,
2024-6.875 ResearchBib IF: 9.948 / 2024

The lack of early intervention services in rural areas exacerbates the problem. Parents often delay seeking rehabilitation due to financial or informational barriers, leading to irreversible functional deficits. The emotional and economic toll on families is significant and demands attention from policymakers [2].

RESULTS AND DISCUSSION

One of the less frequently addressed aspects of natal cervical spine trauma in infants born via caesarean section is the complex interplay between fetal biomechanics and operative manipulation during delivery. Even in the absence of overt obstetric error, certain intrinsic fetal vulnerabilities — such as incomplete ossification of vertebral arches, hypoplastic musculature supporting the cervical region, and a relatively large head-to-body ratio — render neonates particularly susceptible to spinal injury when exposed to abrupt pressure changes during extraction from the uterine cavity.

In emergency C-sections, the urgency to expedite delivery due to fetal distress may lead to inadvertent torsional stress on the cervical vertebrae, especially in cases of deep engagement or abnormal presentation. Biomechanical analyses suggest that rotational displacement of the fetal head by more than 30 degrees under resistance can cause ligamentous injury and partial vertebral dislocation, even when moderate traction force is applied. Moreover, negative intrauterine pressure created by sudden rupture of amniotic membranes during incision can exacerbate axial strain on the spine if compensatory uterine relaxation has not been achieved pharmacologically [3].

From a genetic and developmental perspective, it is important to consider that congenital anomalies of the cervical spine — such as Klippel-Feil syndrome (fused cervical vertebrae), atlantoaxial instability, or incomplete segmentation — may predispose certain neonates to injury, even with standard delivery procedures. Unfortunately, routine prenatal ultrasound screening in the Andijan region does not yet include targeted evaluation of fetal spinal alignment or vertebral integrity, which may result in missed opportunities to anticipate delivery complications and plan accordingly.

Another underexplored issue is the postnatal management and monitoring of neonates delivered via C-section under complicated conditions. While obstetricians often complete their surgical role after ensuring safe extraction, the immediate postnatal phase — particularly the first 12 hours — is critical for recognizing subtle signs of cervical dysfunction. In Andijan's district-level maternity wards, limited neonatal staffing, inadequate neonatal intensive care facilities, and the absence of dedicated pediatric neurologists often lead to a reactive rather than proactive approach to neonatal neurotrauma. Infants with reduced spontaneous motor activity or abnormal neck posture are frequently misclassified as cases of mild asphyxia, sepsis, or prematurity-related hypotonia [4].

Furthermore, infrastructure gaps in rural parts of the Andijan region — including unreliable power supply affecting imaging equipment, transportation barriers to tertiary centers in Tashkent, and low parental awareness of red flag symptoms — contribute to delayed diagnosis and suboptimal outcomes. In a health system where resource allocation prioritizes maternal survival and infection control, the nuanced management of neonatal spinal trauma remains an underfunded and poorly understood domain.

Cultural attitudes also influence the clinical pathway. Some families, particularly in remote or conservative districts, are reluctant to pursue further evaluation of an infant’s developmental delay or neurological abnormality, often relying on traditional healers or misattributing symptoms to non-medical causes. This delays engagement with rehabilitation services and deepens the long-term impact on the child’s functional independence and family well-being [5].

ISSN: 2582-4686 SJIF 2021-3.261,SJIF 2022-2.889,
2024-6.875 ResearchBib IF: 9.948 / 2024

VOLUME-5, ISSUE-5

In conclusion, cervical spine injuries in neonates born by surgical means — though rare — arise from a complex interplay of biological, technical, infrastructural, and social variables. The Andijan region serves as a microcosm illustrating the urgent need for enhanced diagnostic vigilance, interprofessional collaboration, and culturally sensitive family engagement to reduce the silent burden of this preventable neonatal trauma.

CONCLUSION

Although caesarean section is a widely accepted method for preventing traumatic birth injuries, it is not entirely devoid of risks. In the Andijan region, cases of cervical spine trauma following C-section highlight the importance of careful obstetric technique, early recognition of neurological signs, and access to advanced diagnostic and rehabilitative services. A regional healthcare framework that emphasizes both prevention and post-injury care is essential to minimize the long-term burden of such injuries. Strengthening perinatal infrastructure, improving staff education, and ensuring family support systems can significantly reduce morbidity and improve outcomes for affected children.

REFERENCES

1. Kothari, P. R., et al. (2013). Neonatal spinal cord injuries during delivery: Mechanisms and management. Pediatrics International, 55(4), 423–428.
2. Gajjar, S. (2020). Cervical spine injury in neonates delivered by cesarean section. Journal of Neonatal Surgery, 9(1), 12–18.
3. Ministry of Health, Republic of Uzbekistan. (2022). Perinatal Care Guidelines, Tashkent.
4. Ismailov, B. A., & Narzullaev, A. (2021). Obstetric complications and neonatal outcomes in Fergana Valley. Uzbek Journal of Pediatrics, 3(2), 37–45.
5. Whitby, E. H., & Griffiths, P. D. (2005). Imaging of neonatal spinal injuries: Diagnostic challenges. Neuroradiology Clinics, 13(3), 513–530.