Pediatric Outcomes Data Collection Instrument (PODCI) Scores in Ambulatory Children With Spina Bifida After Surgical Correction of Lower-Extremity Deformities

Burak Abay, MD[1], Alp Ozel[2], Ibrahim Alatas, MD[3]

[1] Orthopedics and Traumatology Dept. Demiroglu Bilim University, Istanbul, Türkiye

[2] Physiotherapy and Rehabilitation Dept Abant Izzet Baysal University, Bolu, Türkiye

[3] Neurosurgery Dept. Beykent University, Istanbul, Türkiye

Abstract

Introduction

Lower-extremity deformities are common in spina bifida and are associated with impaired function and reduced health-related quality of life (HRQoL). We evaluated whether surgical correction of clinically significant lower-extremity deformities is associated with improved patient-reported outcomes.

Methods

We retrospectively reviewed 121 children with spina bifida who underwent surgery for lower-extremity deformity between 2013–2024. Deformity type was categorized as foot/ankle (equinus /equinovarus/calcaneus/planovalgus/vertical talus), knee (flexion contracture /patellar instability), and hip (subluxation /dislocation/ contracture). Ambulatory status and neurological level were recorded with GMFCS. HRQoL and function were assessed using PODCI domains (Transfers / Basic Mobility, Sports/ Physical Function, Comfort / Pain, Happiness, Global). Preoperative and minimum 12-month postoperative PODCI scores were compared; multivariable models adjusted for age, sex, neurological level, ambulatory status, and procedure category. Complications and recurrence and reoperation were documented.

Results

Mean age was 4.4 ± 2.7 years. Surgeries included 78% foot/ankle, 47% knee, and 34% hip procedures. PODCI improved significantly postoperatively in Transfers (Δ=25.3±9.2 p=0.04), Sports (Δ=2.4±1.2, p=0.35), Comfort/Pain (Δ=4.5±2.4, p=0.23), and Global (Δ=12.4±2.2, p=0.01). Recurrence occurred in 72% and reoperation in 47%.

Conclusion

In children with spina bifida, surgical correction of lower extremity deformities is associated with clinically meaningful gains in patient-reported function and HRQoL, although recurrence remains a key challenge requiring structured follow-up and rehabilitation.

Recent Publications

1. Numanoglu Akbas A, Cankaya O, Seyhan Bıyık K, et al. Reliability and construct validity of the Turkish adaptation of the Assessment of Life Habits for children and adolescents with cerebral palsy. Marmara Med J. 2021;34(2):101-111. doi:10.5472/marumj.943118
2. Yun, H., Choi, E.K., Kim, H.W. *et al.* Foot deformity and quality of life among independently ambulating children with spina bifida in South Korea. *BMC Pediatr* 23, 281 (2023). https://doi.org/10.1186/s12887-023-04100-3
3. Parkin, P.C., Kirpalani, H.M., Rosenbaum, P.L. *et al.* Development of a health-related quality of life instrument for use in children with spina bifida. *Qual Life Res* 6, 123–132 (1997). https://doi.org/10.1023/A:1026486016212
4. Scott, K. S., Barbosa, G. O., Pan, J., & Heathcock, J. C. (2021). Using the PODCI to measure motor function and parent expectations in children with cerebral palsy. *Physical therapy*, *101*(12), pzab215.
5. Amakoutou, K., & Liu, R. W. (2021). Current use of patient-reported outcomes in pediatric limb deformity surgery. *Journal of Pediatric Orthopaedics B*, *30*(4), 399-404.



Burak Abay, MD, is an orthopaedic surgeon based in Istanbul, Türkiye. His clinical and academic interests include pediatric orthopaedics, lower-extremity deformity correction, and outcomes research in neuromuscular conditions.

Email: abayburak@gmail.com