

Barriers to Care in Obstetric Brachial Plexus Palsy: Assessing the Impact of Area of Deprivation Index and Urban-Rural Locale on Patient Recovery

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Background

- Obstetric brachial plexus palsy (OBPP) results from excess traction on the nerves during birth, occurring in up to 5 in 1000 live births
- Comprehensive treatment of children with OBPP requires consistent care with a multidisciplinary clinic
- When evaluating infants for OBPP, potential barriers to care must be considered to promote successful follow-up.

Purpose

This study aims to assess the role of socioeconomic status (SES) on clinical and surgical outcomes for OBPP patients.

SES Metrics:

Area of Deprivation Index (ADI), Social Vulnerability Index (SVI), geographic locale (urban/rural), race

Methods

- Inclusion:
 - Infants with OBPP who presented to the Children's Hospital of Pittsburgh between 2010-2023
- Outcomes:
 - Surgical intervention
 - Active Movement Scale (AMS) scores

Results

General Demographic Characteristics

- Total number of patients: 293
- Female: 152 (51.9%)
- Non-white: 61 (20.8%)
- Average ADI: 70.5 (SD 21.7)
- Average SVI: 0.41 (SD 0.24)
- Rural geography: 33 (11.3%)

Table 1. Demographic and surgical details based on geographic locale

	Urban	Rural	P-value
Total number	259	33	
Birth weight	3821.8 (SD 615.8)	4041.4 (SD 627.1)	0.07
Surgery	68 (26.3%)	15 (45.5%)	0.02*
Age at surgery (years)	1.0 (SD 1.6)	0.7 (0.27)	0.43
Initial AMS score	73.5 (SD 24.9)	62.9 (SD 26.8)	0.08
Most recent AMS score	95.0 (SD 16.9)	92.2 (SD 18.5)	0.42

Table 2. Demographic and surgical details based on race

	White	Non-white	P-value
Total number	259	33	
Birth weight	3853.3 (SD 640.2)	3815.64 (532.1)	0.69
Surgery	57 (27.4%)	20 (32.8%)	0.41
Age at surgery (years)	0.9 (0.6)	1.3 (3.0)	0.35
Initial AMS score	75.3 (SD 21.2)	67.4 (SD 29.8)	0.10
Most recent AMS score	97.2 (SD 13.6)	88.2 (SD 20.6)	<0.001*

Results cont.

Table 3. Logistic regression model of surgical intervention based on socioeconomic factors and AMS scores

	Odds Ratio	95% CI	P-value
Rural geography	1.75	0.44- 6.9	0.42
Non-white race	1.18	0.29- 4.7	0.82
ADI	1.00	0.98- 1.04	0.66
SVI	0.77	0.04-13.7	0.86
Initial AMS score	0.92	0.89- 0.96	<0.001*

Conclusion

- While socioeconomic factors may impact OBPP management and outcomes, initial severity upper extremity movement is more associated with likelihood of surgical intervention.
- Nevertheless, our findings highlight the importance of regular follow-up and the reevaluation of resources available for those experiencing obstacles to care.