

## Introduction

- The purpose of this study was to determine the national incidence of neonatal brachial plexus palsy (NBPP) and assess whether previously described risk factors have become less associated with NBPP by comparing 1997-2003 and 2006-2012.
- We hypothesized that the improvements in perinatal awareness and obstetric delivery prevention, known risk factors for NBPP, would be less predictive in the later time cohort

## Methods

- Datasets from the 1997, 2000, 2003, 2006, 2009, and 2012 Kids' Inpatient Database (KID) were utilized.
- Risk factor that were predictive of developing NBPP on univariate analysis were analyzed in a multivariate logistic regression model for years 1997-2012.

## Methods Cont.

- A subanalysis comparing the odds ratios (ORs) of developing NBPP for a particular risk factor in 1997-2003 (Group 1) versus 2006-2012 (Group 2) was performed.

## Results

- The nationwide incidence of NBPP was 0.14%, from 1997-2012 and progressively decreased by 0.01% every 3 years (P=0.03).
- Shoulder dystocia, large gestational weight (>4,500g), and gestational diabetes had the highest odds ratio of developing NBPP (Table 1)
- Multiple birth mates had a 49% greater protective effect on developing NBPP in the later time period (P=0.001).

## Discussion

- There appears to be no difference in the rate of NBPP between the 1930s and the early 2000s.
- The incidence of NBPP may have decreased over the past decade.
- This may be explained by increased awareness of NBPP risk factors, however, there are not yet national standards for identifying pregnancies at risk for NBPP.

## Clinical Significance

- The national incidence of NBPP is decreasing.
- This is likely due to improved awareness during perinatal care and prevention efforts during obstetric delivery.
- Management of neonatal diabetes, shoulder dystocia, and large babies improves over time.
- Management of gestational diabetes, breech delivery, and assisted vaginal delivery (forceps, vacuum) did not demonstrate similar improvement.

Risk Factor	Univariate OR	P-value	Multivariate OR	P-value
Breech Delivery	5.4	<0.0001	5.2	<0.0001
Shoulder Dystocia	11.9	<0.0001	51.7	<0.0001
Large Baby (>4.5kg)	24.7	<0.0001	13.7	<0.0001
Heavy for Dates	8.3	<0.0001	5.5	<0.0001
Multiple Birth Mates	0.4	<0.0001	0.4	<0.0001
Forceps Delivery	9.8	<0.0001	4.5	<0.0001
Vacuum-Assisted Delivery	7.8	<0.0001	3.0	<0.0001
Gestational Diabetes	14.1	<0.0001	7.1	<0.0001
Neonatal Diabetes	8.6	<0.0001	4.7	<0.0001

Table 1. Analysis of the risk factors for Neonatal Brachial Plexus Palsy for years 1997-2012. OR = odds ratio

Risk Factor	Multivariate OR 1997-2003	Multivariate OR 2006-2012	Interaction Term (% increase or decrease)	P-Value of Interaction Term
Breech Delivery	5.5	4.6	0.84 (-16%)	P=0.621
Shoulder Dystocia	56.4	49.2	0.87 (-13%)	P<0.0001
Large Baby (>4.5kg)	14.0	11.0	0.78 (-22%)	P<0.0001
Heavy for Dates	5.9	5.1	0.86 (-14%)	P<0.0001
Multiple Birth Mates	0.6	0.3	0.51 (-49%)	P=0.001
Forceps Delivery	4.1	4.7	1.15 (+15%)	P=0.378
Vacuum-Assisted Delivery	3.1	2.7	0.85 (-15%)	P=0.097
Gestational Diabetes	7.2	7.4	1.03 (+3%)	P=0.592
Neonatal Diabetes	6.1	1.7	0.27 (-73%)	P=0.011

Table 2. Subanalysis comparing the odds ratio (OR) of developing NBPP for a particular risk factor in 1997-2003 versus 2006-2012. The interaction term assesses if the risk factor was more or less predictive of developing NBPP based on the time period.