

Table V. Neonatal morbidity associated to spontaneous vaginal and assisted vaginal deliveries by instrument used:

Demissie, et al Neonatal morbidity by mode of delivery in New Jersey, 1989-93.

Neonatal morbidity	Unassisted (n=327 373)	Forceps (n=26 491)	Vacuum (n=19 120)
Cephalohematoma*	5457 (166.7)	1681 (634.6)	2135 (1116.6)
Facial nerve injury	78 (2.4)	98 (37.0)	10 (5.2)
Intracranial hemorrhage	122 (3.7)	45 (17.0)	31 (16.2)
Adjusted odds ratio (95% CI)†	0.29 (0.20 to 0.41)	1.00	0.96 (0.62 to 1.52)
Mechanical ventilation	768 (23.5)	83 (31.3)	77 (40.3)
Adjusted odds ratio (95%CI)	0.84 (0.66 to 1.06)	1.00	1.27 (0.92 to 1.74)
Retinal hemorrhage	597 (18.2)	51 (19.3)	30 (15.7)
Adjusted odds ratio (95% CI)	0.87 (0.65 to 1.18)	1.00	0.78 (0.50 to 1.24)

* Number of cases per 10 000 deliveries

† Adjusted for birth weight, gestational age, deep transverse arrest, persistent OP position, long labor, fetal distress, cord prolapse, placental abruption, and intrapartum bleeding.

Gardella , et al Incidence of neonatal morbidity and risk associated with assisted vaginal deliveries by vacuum, forceps, or vacuum and forceps compared with spontaneous vaginal deliveries, Washington state, 1996

	Incidence among spontaneous vaginal deliveries (N = 11,223)*	Assisted vaginal deliveries			
		Vacuum (N = 3741)		Forceps (N = 3741)	
		Incidence*	RR	Incidence*	RR
Intracranial hemorrhage†	0.9	1.9	2.4 (0.9-6.2)	1.1	1.3 (0.4-4.1)
Facial nerve injury‡	0.2	0.3	0.8 (0.1-9.0)	2.9	9.3 (3.1-27.4)
Brachial plexus injury†	1.5	3.7	2.3 (1.1-4.5)	5.3	2.8 (1.4-5.6)
Scalp injury					
Nulliparas	39.1	120.0	3.1 (2.6-3.7)	80.1	2.0 (1.7-2.5)
Multiparas	13.6	85.0	6.3 (4.8-8.3)§	43.6	3.2 (2.2-4.6)¶
Seizures†	0.2	0.8	4.4 (0.6-34.5)	0.5	2.9 (0.6-33.5)
Five-minute Apgar score	8.3	17.0	1.8 (1.3-2.5)	11.0	1.1 (0.8-1.6)

*The incidence is expressed as the number of cases per 1000 infants.

RR represents relative risk compared with the spontaneous vaginal delivery group. Numbers in parentheses are 95% confidence intervals.

†Adjusted for birth weight and parity.

‡Adjusted for parity.

Wen, et al Adjusted odds ratios and 95% confidence intervals for the effects of instruments (vacuum or forceps) on major adverse infant outcomes obtained from multiple logistic regression analysis, Quebec, Canada, 1991/1992–1995/1996

Adverse outcomes	Vacuum vs. unassisted		Forceps vs. unassisted	
	OR*	95% CI*	OR	95% CI
Intracranial hemorrhage	4.5	3.0, 6.6	5.0	3.3, 7.7
Cephalhematoma	9.9	9.4, 10.5	5.9	5.5, 6.3
Facial-nerve injury	2.3	1.6, 3.4	9.8	7.3, 13.1
Convulsions	1.8	1.3, 2.4	2.0	1.4, 2.7
Neonatal in-hospital death	0.9	0.4, 2.1	1.0	0.4, 2.3

OR, odds ratio; CI, confidence interval

Sources: 36, 37, 40,