

Compliance with clinical guidelines increases the safety of vacuum assisted delivery

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Background and Objectives

Vacuum assisted delivery (VAD) is a common and safe obstetric procedure. However, occasionally serious complications may occur. College Statements have been developed to reduce the risk of serious adverse events.

The aim was to evaluate whether compliance with RANZCOG College Statement C-Obs 16 advice reduced the risk of serious adverse outcome, specifically subgaleal haemorrhage and major birth trauma.

Methods and Materials

Retrospective audit of VADs in a level 5 hospital (NSW Maternity and Neonatal capability framework) from January 2020 to 2021.

Results

1960 women delivered in the study period, of whom 252 (12.8%) delivered by vacuum, and complete data was available from 241 cases and statement compliance was observed in 81%.

The main deviation from Statement compliance was pulls exceeding three. Statement compliance was associated with a significant reduction in the incidence of subgaleal haemorrhage (0% VS 11%, $p=0.0002$), major birth trauma (3% VS 22%, $p=0.0001$), requirement for neonatal resuscitation (14% VS 35%, $p=0.0026$) and APGAR scores at 1 minute less than 6 (5% vs 22% $p=0.0006$).

Statement compliance was associated with a significant reduction in maternal blood loss at delivery (388mL vs 438mL, $p=0.01$). Non-compliance with Statement advice was observed significantly more often in pregnancy complicated by gestational diabetes (3% vs 15%, $p=0.02$) and birth requiring instrument change (4% vs 13% $p=0.031$).

Results

Table 2. Predefined maternal and newborn adverse outcomes in compliant versus noncompliant VAD

Variable	Compliant deliveries N=195	Noncompliant deliveries N=46	p-value
Maternal outcomes			
Grade 3 tear N(%)			
Yes	6 (3%)	3 (7%)	0.38
No	189 (97%)	43 (93%)	
Blood loss at delivery mL			
Mean (sd)	388 (280)	438 (421)	0.01
Newborn outcomes			
Subgaleal haemorrhage N(%)			
Yes	0 (0%)	5 (11%)	0.0002
No	195 (100%)	41 (89%)	
Major birth trauma N(%)			
Yes	6 (3%)	10 (22%)	0.0001
No	189 (97%)	36 (78%)	
Special care nursery admission N(%)			
Yes	47 (24%)	11 (24%)	0.99
No	148 (76%)	35 (76%)	
Resuscitation required N(%)			
Yes	28 (14%)	16 (35%)	0.0026
No	188 (96%)	30 (65%)	
Apgar 6 or less at 1 minute N(%)			
Yes	9 (5%)	10 (22%)	0.0006
No	186 (95%)	36 (78%)	
Apgar 6 or less at 5 minutes N(%)			
Yes	1 (1%)	2 (4%)	0.094
No	194 (99%)	44 (96%)	

Conclusions

Compliance with RANZCOG College Statement C-Obs 16 is associated with lower rates of subgaleal haemorrhage and major neonatal trauma. The main deviation from compliance was pulls in excess of three.

Table 1. Demographic and birth characteristics of compliant versus non-compliant VAD

Variable	Compliant deliveries N=195	Noncompliant deliveries N=46	p-value
Maternal age (years)	32 (4)	33(3)	0.94
Mean (sd)			
Parity (prior to delivery) N(%)			
Nulliparous	177	41	0.78
Parous	18	5	
Gestational diabetes N(%)			
Yes	5 (3%)	7 (15%)	0.002
No	190 (97%)	39 (85%)	
Growth restriction N(%)			
Yes	2 (1%)	2 (4%)	0.17
No	193 (97%)	44 (96%)	
Other pregnancy complication N(%)			
Yes	28 (14%)	7 (15%)	0.82
No	168 (86%)	39 (85%)	
Epidural in labour N(%)			
Yes	133 (68%)	32 (70%)	0.86
No	62 (32)	14 (30%)	
VBAC N(%)			
Yes	10 (5%)	1 (2%)	0.70
No	185 (95%)	45 (98%)	
BMI > 30 N(%)			
Yes	13 (7%)	5 (11.5%)	0.35
No	182 (93%)	41 (89%)	
Birthweight Grams			
Mean (sd)	3394 (388)	3488 (394)	0.12
Gestational age at delivery (days)			
Mean (sd)	277 (8)	281 (8)	0.58
Change in instrument N(%)			
Yes	8 (4%)	6 (13%)	0.031
No	187 (96%)	40 (87%)	

References

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