Appendix 1. The JUMODA Study Group

List of participating centers and collaborators of the JUMODA (JUmeaux Mode d'Accouchement) study group and the GROG (Groupe de Recherche en Obstétrique et Gynécologie): **Alsace**: Coordinator: Pr Langer: CHU Hautepierre (Dr Sananes), CMCO de Schiltigheim (Dr Favre), CMC de Colmar (Dr Kutnahorsky), CHR de Mulhouse (Mme Fessler), CHR d'Haguenau (Dr Lehmann), Clinique Sainte-Anne, Strasbourg (Dr Adam, Dr Plemere) **— Aquitaine**: Coordinator: Dr Chabanier: CHU de Bordeaux (Dr Chabanier), Clinique Bagatelle, Talence (Dr Trebesses), CH de Bayonne (Dr Poumier-Chabannier), CH de Mont de Marsan (Dr Defert), CH de Pau (Dr Bohec), Polyclinique de Navarre, Pau (Dr Collin) **— Auvergne**: Coordinator: Dr Venditelli: CHU de Clermont-Ferrand (Dr Venditelli), Clinique de la Chataigneraie, Beaumont (Dr Deffarges, Dr Vidal), CH de Vichy (Dr Desvignes), CH du Puy-en-Velay (Dr Samuel) **— Basse Normandie**: Coordinator: Pr Dreyfus, CHU de Caen (Dr Beucher, Dr Dolley), Clinique du Parc, Caen (Dr Durin), CH d'Avranches (Dr Six), CH de Lisieux (Dr Beniada), CH de Saint-Lô (Dr Balouet), CH de Cherbourg (Dr Desprès, Mme Mathis) **— Bourgogne**: Coordinator: Pr Sagot: CHU de Dijon (Dr Yacoub), CH de Chalon-sur-Saône (Dr Bulot), CH d'Auxerre (Dr Dellinger), CH de Mâcon (Dr Spagnolo) **— Bretagne**: Coordinator: Pr Poulain: CHU de Rennes (Pr Poulain), Clinique de la Sagesse, Rennes (Dr Moquet, Mme Bourgault), CHP Saint-Grégoire (Dr Seconda), CH de Saint-Brieuc (Dr Moinon), CH de Saint-Malo (Dr Roy-Dahhou), CH Bretagne Sud, Lorient (Dr Pittion), CH Bretagne Atlantique, Vannes (Dr Chauveau), CHU de Brest (Dr Laurent, Dr Lelièvre), CH de Quimper (Dr Bellot), Polyclinique de Keraudren, Brest (Dr Salnelle) **— Centre**: Coordinator: Pr Perrotin: CHRU de Tours (Pr Perrotin), CH d'Orléans (Dr Ramos), CH de Blois (Dr Montmasson), CH de Chartres (Dr Ollivier), CH de l'agglomération montargoise (Dr Hoock, Dr Ben Romdhane) **— Champagne Ardennes**: Coordinator: Pr

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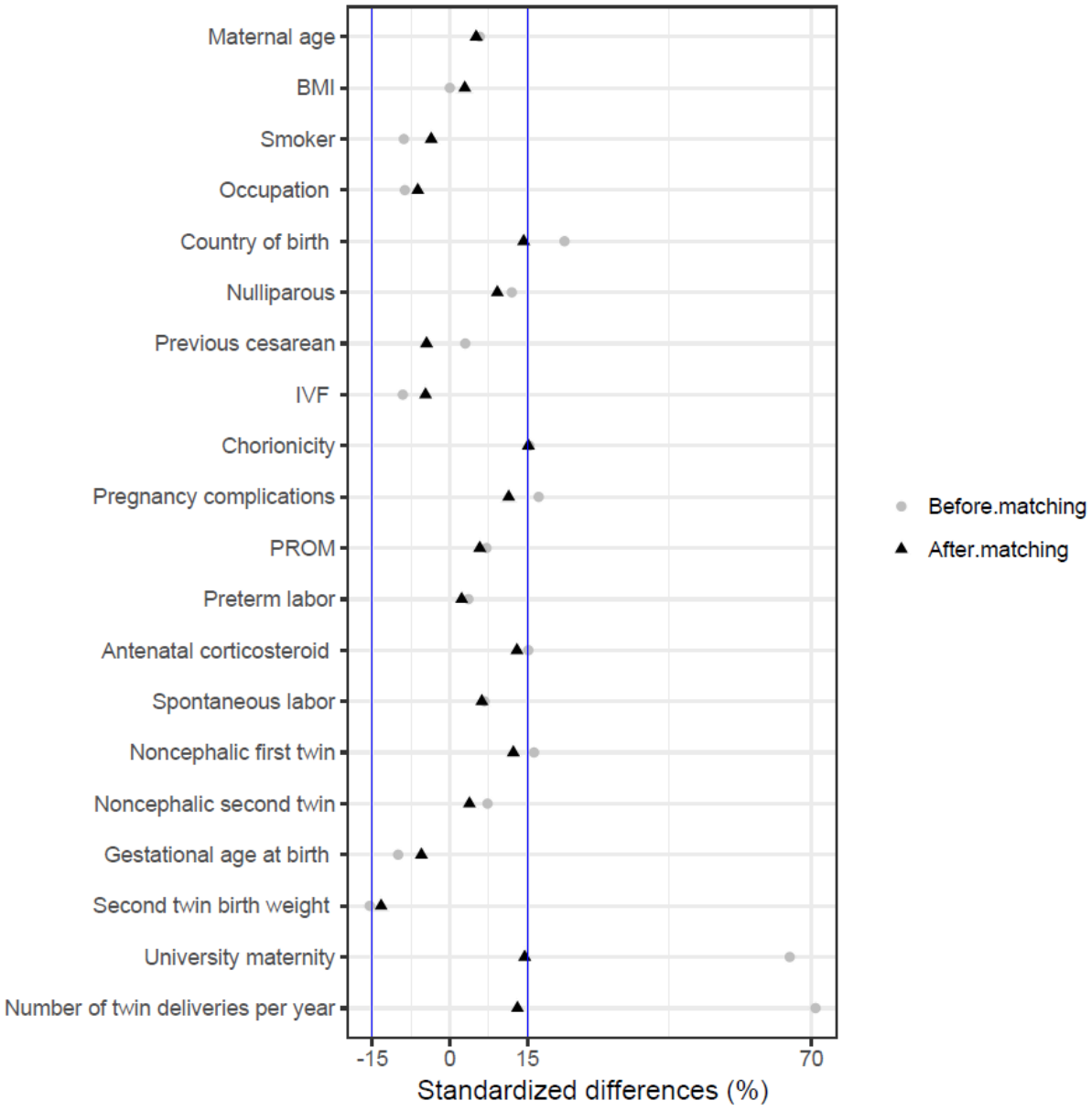
Appendix 2. Absolute standardized differences for baseline maternal, pregnancy, delivery and neonatal covariates in the resident and senior groups before and after matching. BMI, body mass index. IVF, in vitro fertilization, PROM, premature rupture of membranes.



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Appendix 3. Neonatal Outcomes According to Whether a Resident or Senior Obstetrician Initially Managed The Breech Second-Twin Vaginal Delivery

	Residents N=349	Seniors N=552	OR (95% CI)	aRR (95% CI)*
	n (%)	n (%)		
Primary outcome: Composite morbidity	7 (2.0)	23 (4.2)	0.43 (0.18-1.01)	0.40 (0.14-1.14)
Death	1 (0.3)	1 (0.2)		
Perpartum	0 (0.0)	0 (0.0)		
Neonatal	1 (0.3)	1 (0.2)		
Apgar score <4 at 5 min	0 (0.0)	1 (0.2)		
Birth trauma	0 (0.0)	2 (0.4)		
Long bone fracture	0 (0.0)	0 (0.0)		
Brachial plexus palsy	0 (0.0)	1 (0.2)		
Skull fracture	0 (0.0)	1 (0.2)		
Encephalopathy	0 (0.0)	1 (0.2)		
≥2 seizures within 72 hr after birth	0 (0.0)	0 (0.0)		
Endotracheal tube >24 hr within 72 hr after birth	4 (1.2)	10 (1.8)		
Proven neonatal sepsis	2 (0.6)	8 (1.5)		
Bronchopulmonary dysplasia	2 (0.6)	4 (0.7)		
Intraventricular hemorrhage	2 (0.6)	1 (0.2)		
Grade I-II	2 (0.6)	1 (0.2)		
Grade III-IV	0 (0.0)	0 (0.0)		
Periventricular leucomalacia	0 (0.0)	0 (0.0)		
Stage II-III necrotizing enterocolitis	1 (0.3)	1 (0.2)		

All variables were included in the primary outcome except grade I-II intraventricular hemorrhage.
No infant had spinal cord, phrenic, facial nerve injury, subdural or intracerebral hemorrhage.
*adjustment on parity, chorionicity, pregnancy complications, preterm rupture of membranes, antenatal corticosteroids, first-twin presentation, gestational age, birth weight, number of annual twin deliveries at the hospital, maternity unit level, percentage of second twin deliveries performed by residents at the center.

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Appendix 4. Neonatal Outcomes According to Whether a Resident or Senior Obstetrician Initially Managed the Transverse Second-Twin Vaginal Delivery

	Residents N=196	Seniors N=279	RR (95% CI)	aRR (95% CI)*
	n (%)	n (%)		
Primary outcome: Composite morbidity	6 (3.1)	6 (2.2)	1.44 (0.46-4.53)	1.75 (0.63-4.87)
Death	0 (0.0)	0 (0.0)		
Perpartum	0 (0.0)	0 (0.0)		
Neonatal	0 (0.0)	0 (0.0)		
Apgar score <4 at 5 min	0 (0.0)	0 (0.0)		
Birth trauma	0 (0.0)	3 (1.1)		
Long bone fracture	0 (0.0)	2 (0.7)		
Brachial plexus palsy	0 (0.0)	0 (0.0)		
Skull fracture	0 (0.0)	1 (0.4)		
Encephalopathy	0 (0.0)	0 (0.0)		
≥2 seizures within 72 hr after birth	0 (0.0)	1 (0.3)		
Endotracheal tube >24 hr within 72 hr after birth	4 (2.0)	2 (0.7)		
Proven neonatal sepsis	2 (1.0)	1 (0.4)		
Bronchopulmonary dysplasia	0 (0.0)	1 (0.4)		
Intraventricular hemorrhage	0 (0.0)	1 (0.4)		
Grade I-II	0 (0.0)	1 (0.4)		
Grade III-IV	0 (0.0)	0 (0.0)		
Periventricular leucomalacia	0 (0.0)	0 (0.0)		
Stage II-III necrotizing enterocolitis	1 (0.5)	0 (0.0)		

All variables were included in the primary outcome except grade I-II intraventricular hemorrhage.
No infant had spinal cord, phrenic, facial nerve injury, subdural or intracerebral hemorrhage.
*adjustment on parity, chorionicity, pregnancy complications, preterm rupture of membranes, antenatal corticosteroids, first-twin presentation, gestational age, birth weight, number of annual twin deliveries at the hospital, maternity unit level.

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Appendix 5. Neonatal Outcomes According to Whether a Resident or Senior Obstetrician Initially Managed the Noncephalic Second-Twin Vaginal Delivery Before 37 Weeks of Gestation

	Residents N=285	Seniors N=406	RR (95% CI)	aRR (95% CI)*
	n (%)	n (%)		
Primary outcome: Composite morbidity	13 (4.6)	25 (6.2)	0.67 (0.34-1.32)	0.93 (0.42-2.02)
Death				
Perpartum	0 (0.0)	0 (0.0)		
Neonatal	1 (0.4)	1 (0.3)		
Apgar score <4 at 5 min	0 (0.0)	0 (0.0)		
Birth trauma	0 (0.0)	3 (0.7)		
Long bone fracture	0 (0.0)	1 (0.3)		
Brachial plexus palsy	0 (0.0)	1 (0.3)		
Skull fracture	0 (0.0)	1 (0.3)		
Encephalopathy	0 (0.0)	0 (0.0)		
≥2 seizures within 72 hr after birth	0 (0.0)	0 (0.0)		
Endotracheal tube >24 hr within 72 hr after birth	8 (2.8)	12 (3.0)		
Proven neonatal sepsis	4 (1.4)	8 (2.0)		
Bronchopulmonary dysplasia	2 (0.7)	5 (1.2)		
Intraventricular hemorrhage	2 (0.7)	2 (0.5)		
Grade I-II	2 (0.7)	2 (0.5)		
Grade III-IV	0 (0.0)	0 (0.0)		
Periventricular leucomalacia	0 (0.0)	0 (0.0)		
Stage II-III necrotizing enterocolitis	2 (0.7)	1 (0.3)		

All variables were included in the primary outcome except grade I-II intraventricular hemorrhage.
No infant had spinal cord, phrenic, facial nerve injury, subdural or intracerebral hemorrhage.
*adjustment on country of birth, parity, chorionicity, pregnancy complications, preterm rupture of membranes, antenatal corticosteroids, first twin presentation, birth weight, twin delivery per year per center, maternity level, percentage of second twin delivery performed by residents in the center.

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Appendix 6. Neonatal Outcomes According to Whether a Resident or Senior Obstetrician Initially Managed the Noncephalic Second-Twin Vaginal Delivery at or After 37 Weeks of Gestation

	Residents N=260	Seniors N=425	RR (95% CI)	aRR (95% CI)
	n (%)	n (%)		
Primary outcome: Composite morbidity	0 (0.0)	4 (0.9)	-	-
Death	0 (0.0)	0 (0.0)		
Perpartum	0 (0.0)	0 (0.0)		
Neonatal	0 (0.0)	0 (0.0)		
Apgar score <4 at 5 min	0 (0.0)	1 (0.2)		
Birth trauma	0 (0.0)	2 (0.5)		
Long bone fracture	0 (0.0)	1 (0.2)		
Brachial plexus palsy	0 (0.0)	0 (0.0)		
Skull fracture	0 (0.0)	1 (0.2)		
Encephalopathy	0 (0.0)	1 (0.2)		
≥2 seizures within 72 hr after birth	0 (0.0)	0 (0.0)		
Endotracheal tube >24 hr within 72 hr after birth	0 (0.0)	0 (0.0)		
Proven neonatal sepsis	0 (0.0)	1 (0.2)		
Bronchopulmonary dysplasia	0 (0.0)	0 (0.0)		
Intraventricular hemorrhage	0 (0.0)	0 (0.0)		
Grade I-II	0 (0.0)	0 (0.0)		
Grade III-IV	0 (0.0)	0 (0.0)		
Periventricular leucomalacia	0 (0.0)	0 (0.0)		
Stage II-III necrotizing enterocolitis	0 (0.0)	0 (0.0)		

All variables were included in the primary outcome except grade I-II intraventricular hemorrhage.
No infant had spinal cord, phrenic, facial nerve injury, subdural or intracerebral hemorrhage.

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