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OBJECTIVE: To assess survival at discharge without severe neonatal morbidity according to the planned mode of delivery for preterm twins born before 32 weeks of gestation.

STUDY DESIGN: JUMODA (JUmeaux MÔde D'Accouchement) was a national prospective population-based cohort study of twin deliveries performed in 176 maternity units in France from 02/2014 to 03/2015. In this planned secondary analysis, we included low risk diamniotic twin pregnancies between 26 and 32 weeks of gestation without contra-indication for vaginal delivery. Suspected fetal growth restrictions and twin-to-twin transfusion syndromes were excluded. The primary outcome was survival at discharge without severe neonatal morbidity defined as one or more of the following: bronchopulmonary dysplasia, grade-3 or -4 intraventricular hemorrhage, periventricular leukomalacia, and stage-2 or -3 necrotizing enterocolitis. The association between planned mode of delivery and survival without severe neonatal morbidity was assessed by multivariate Poisson regression model with adjustment for potential confounders. A propensity score approach with inverse probability of treatment weighting (IPTW) was also performed to control indication bias.

RESULTS: Of the 424 twin pregnancies included in this analysis, 232 (54.7%) had planned vaginal delivery and 192 (45.3%) planned cesarean delivery. Survival at discharge without severe morbidity did not differ in very preterm twins born after planned vaginal (375/464 (80.8%) and planned cesarean delivery (308/384 (80.2%), $P=0.82$, aRR 1.01, 95%CI 0.89-1.15). After applying propensity scores and assigning IPTW, compared with planned vaginal delivery, planned cesarean delivery was not associated with improved survival at discharge without severe neonatal morbidity (RR 1.11, 95%IC 0.84-1.46). Results were similar for first and second twins analyzed separately (respectively aRR 0.95, 95%CI 0.82-1.09 and aRR 1.05, 95%CI 0.92-1.20).

CONCLUSION: Compared with planned vaginal delivery, planned cesarean delivery for very preterm twins is not associated with greater survival at discharge without severe neonatal morbidity.

Figure: Flow chart

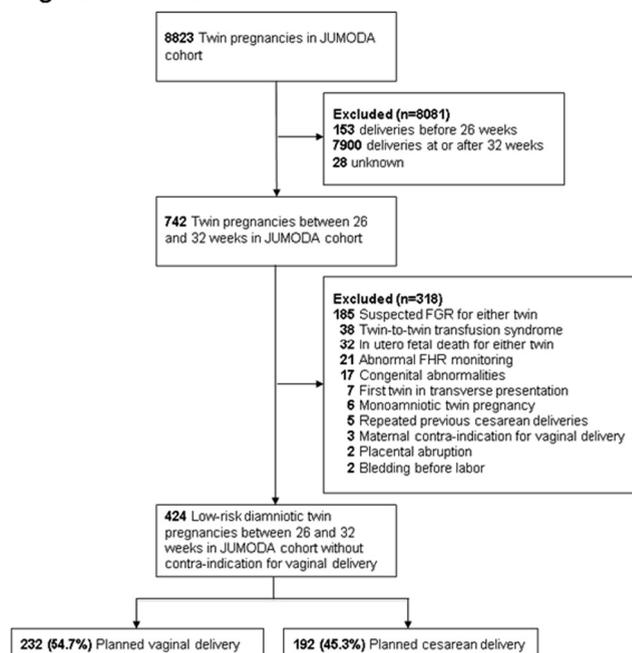


Table: Association between planned mode of delivery and survival without severe neonatal morbidity

	Planned vaginal delivery N=464 n (%)	Planned cesarean delivery N=384 n (%)	aRR (95% CI)*
Survival at discharge without severe morbidity	375 (80.8)	308 (80.2)	1.01 (0.89-1.15)
Death			
Intrapartum	5 (1.1)	12 (3.1)	
Neonatal	0	0	
Severe morbidity			
Bronchopulmonary dysplasia	5 (1.1)	12 (3.1)	
Intraventricular hemorrhage grade III-IV	74 (16.0)	55 (14.3)	
Periventricular leukomalacia	9 (1.9)	7 (1.8)	
Necrotizing enterocolitis grade ≥ 2	4 (0.9)	7 (1.8)	
	6 (1.3)	6 (1.6)	

*adjusted for previous cesarean, chorionicity, first twin presentation, gestational hypertensive pathology, antenatal corticosteroids, birth weight less than 10th centile, gestational age at delivery, maternity level

17 Neonatal outcomes in multiple gestations exposed to late preterm steroids

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OBJECTIVE: In 2016, the Society of Maternal Fetal Medicine (SMFM) released recommendations for the use of antenatal late preterm steroids. Multiple gestations were not studied in the Antenatal Late Preterm Steroids trial and were excluded from the SMFM recommendations outside of research or quality improvement. However, many practitioners have expanded their use to include multiple gestations in the late preterm period. The purpose of this study is to evaluate outcomes in neonates of multiple gestations exposed to antenatal late preterm steroids.

STUDY DESIGN: We conducted a multi-center, retrospective study of deliveries from October 2016 to December 2019. Neonates of multiple gestations that were exposed to antenatal corticosteroids between 34 0/7 weeks and 36 6/7 weeks gestation were compared to a control group of unexposed neonates of multiple gestations matched



for neonatal sex, gestational age at delivery, delivery method, delivery hospital, fetal sex, maternal race/ethnicity, and pregnancy complications. Patients with preexisting diabetes and those that were exposed to antenatal corticosteroids outside the late preterm period were excluded.

RESULTS: 252 neonates met inclusion criteria and were matched with 504 controls. The rate of NICU admission in neonates exposed to late preterm steroids was 37.3%, compared to 19.0% in the unexposed group ($p < 0.001$; OR 2.53, CI [1.78, 3.60]). CPAP use was higher in the exposed group (11.9% vs 6.7%, $p = 0.02$; OR 1.87, CI [1.07, 3.23]). Overall length of hospital stay was longer in the steroid exposed group (131 vs 96 hours, $p < 0.001$, CI [20.5, 49.1]). No differences were noted in rates of hypoglycemia, mechanical ventilation, or surfactant administration.

CONCLUSION: No benefit was observed in neonates of multiple gestations exposed to antenatal late preterm steroids. Neonates of

multiple gestations exposed to late preterm steroids were more likely to experience CPAP use, NICU admission, and longer length of hospital stay. Larger studies are needed to evaluate the effects of antenatal corticosteroids in the late preterm period on multiple gestations.

Table 1
Neonatal outcomes in multiple gestations exposed to late preterm steroids

Outcome	Steroids (n=252)		Controls (n=504)		p	OR	CI
NICU admission	94	37.3%	96	19.0%	<0.001	2.53	[1.78, 3.60]
Hypoglycemia, < 40 mg/dL	79	31.3%	123	24.4%	.045	1.41	[1.00, 2.11]
Received CPAP in NICU	30	11.9%	34	6.7%	.02	1.87	[1.07, 3.23]
Hyperbilirubinemia, > 15 mg/dL	7	2.8%	9	1.8%	.42	1.57	[0.49, 4.81]
5 minute Apgar < 7	5	2.0%	5	1.0%	.31	2.02	[0.46, 8.86]
Hospital transfer	3	1.2%	7	1.4%	1.00	0.86	[0.14, 3.79]
Mechanical ventilation	3	1.2%	2	0.4%	.34	3.02	[0.34, 36.4]
Surfactant given	3	1.2%	3	0.6%	.41	2.10	[0.27, 15.1]
Neonatal death	0	0.0%	1	0.2%	1.00	0.00	[0.00, 77.9]
Hospital length of stay, hrs	131	+/- 100	96	+/- 82	<0.001	na	[20.5, 49.1]
NICU length of stay, hrs ¹	197	+/- 122	170	+/- 95	.22	na	[-16.0, 68.8]

¹ Only neonates that had a NICU stay

SMFM=Society for Maternal Fetal Medicine; NICU=neonatal intensive care unit; CPAP=continuous positive airway pressure