

OBSTETRIC ANAL SPHINCTER INJURIES IN VAGINAL DELIVERY OF TWINS

Hypothesis / aims of study

Perineal trauma affects most women undergoing vaginal delivery with the most severe trauma being obstetric anal sphincter injuries (OASIS). Therefore, many women choose to undergo caesarean section, which does not come without risks. OASIS can predispose to pelvic floor dysfunction, which encompasses pelvic organ prolapse and urinary and anal incontinence. Extensive research on the effect of vaginal delivery of singletons on OASIS has been conducted, however the increasing number of twin pregnancies necessitates the evaluation of twin deliveries on the pelvic floor and more specifically on the incidence of OASIS. The aim of this study is to investigate the incidence of OASIS in women following vaginal delivery of twins compared to singletons.

Study design, materials and methods

A retrospective cohort study was conducted involving women that gave birth at a tertiary maternity unit between 1999 and 2015. After applying the exclusion criteria there were 51 957 and 261 women delivering singletons and twins, respectively. All women <18 years, >47 years, delivering a baby <500g, delivering before 36 weeks or after 43 weeks, delivery of a singleton or one or both twins by caesarean section and women who had intrauterine death of the singleton or one or both twins were excluded. The two groups of women were compared in their demographics and birth outcomes. The relative risk of sustaining OASIS in women delivering singletons compared to twins was obtained. Secondary analyses to adjust for confounding, involved matching women in the singleton group to those in the twin group at a ratio of 2:1. They were matched for age, parity, ethnicity, gestation and instrumentation. Conditional logistic regression was then performed.

Results

There was an almost 3-fold rise in total OASIS incidence from 1999 to 2015. There were 6 (2.3%) women in the twin group and 1975 (3.8%) women in the singleton group that sustained OASIS. The singleton group were at an increased risk, although not statistically significant, of sustaining OASIS compared to the twin group [RR 1.65, 95% CI: 0.75 to 3.65, P=0.205]. There was a statistically significant difference between the singleton and twin groups in all demographics and birth outcomes shown in table 1 and 2, respectively. Following matching, conditional logistic regression indicated that women delivering singletons were at an increased risk, although not significant, of OASIS compared to mothers delivering twins [RR=1.73, 95% CI: 0.68 to 4.45, P=0.253].

Demographics	Mothers delivering singletons n= 51 957	Mothers delivering twins n= 261	Test statistics
Ethnicity n (%)			$\chi^2= 12.26, df= 3, P<0.05$
White	27 077 (52.1)	144 (55.2)	
Black	7387 (14.2)	50 (19.2)	
Asian	9463 (18.2)	29 (11.1)	
Other	8030 (15.5)	38 (14.6)	
Nulliparous n (%)	25 426 (48.9)	109 (41.8)	$\chi^2= 5.35, df= 1, P<0.05$
Maternal age			$t= -5.81, df= 522.61, P<0.0001$
Mean (SD)	31.0 (5.48)	32.9 (5.17)	
Median	31.4	33.3	
Min:Max	18.0:47.0	18.2:46.0	

Table 1: Demographics of women satisfying the inclusion criteria delivering singletons and twins. Chi-Squared test (χ^2) was used to compare ethnicity and parity between the two groups and t-test was used to compare maternal age variable

Birth outcomes	Mothers delivering singletons n= 51 957	Mothers delivering twins n= 261	Test statistics	Unadjusted RR (95% CI)
OASIS n (%) Yes No	1975 (3.8) 49982 (96.2)	6 (2.3) 255 (97.7)	$\chi^2 = 1.61, df = 1, P=0.205$	1.65 (0.75–3.65)
Episiotomy n (%)	10 678 (20.6)	72 (27.6)	$\chi^2 = 7.86, df = 1, P=0.005$	0.75 (0.61–0.91)
Instrumental delivery n (%)	10 472 (20.2)	102 (39.1)	$\chi^2 = 57.60, df = 1, P < 0.0001$	0.52 (0.44–0.60)
Stage 2 >120 min n (%)	12 432 (24.2)	105 (40.7)	$\chi^2 = 37.74, df = 1, P < 0.0001$	0.60 (0.51–0.69)
Regional anaesthesia n (%)	16 050 (30.9)	176 (67.4)	$\chi^2 = 161.91, df = 1, P < 0.0001$	0.46 (0.42–0.50)
Shoulder difficulty n (%)	1 692 (3.3)	2 (0.8)	$\chi^2 = 5.13, df = 1, P=0.024$	4.25 (1.07–16.92)
				Mean difference (95% CI)
Gestation in days				
Mean (SD)	280.7 (9.06)	263.5 (5.70)	$t = 48.44, df = 266.64, P < 0.0001$	17.2 (16.51–18.31)
Median	281.6	263.8		
Min:Max	252:301	252:282		
Weight (g)				
Mean (SD)	3383.8 (475.35)	2754.1 (329.99)	$t = 30.67, df = 265.45, P < 0.0001$	629.7 (589.3– 670.2)
Median	3380.0	2780.0		
Min:Max	1351:6100	1870:3710		
Head circumference (cm)				
Mean (SD)	342.3 (16.05)	335.0 (13.81)	$t = 8.34, df = 246.17, P < 0.0001$	7.4 (5.6–9.1)
Median	340.0	335.0		
Min:Max	225:580	290:365		

Table 2: Birth outcomes of women delivering singletons and women delivering twins. Groups are compared in continuous and categorical variables using the t-test and Chi-Squared test, respectively, Test statistics denoted χ^2 . Degrees of freedom denoted df.

Interpretation of results

This study identified a possibly clinically significant difference in the risk of sustaining OASIS in women delivering singletons compared to those delivering twins however, this was not statistically significant. Many variations between the two groups may have been accountable for this difference however, by matching for 5 factors known to impact OASIS in singletons, we tried to eliminate any confounding effect of age, parity, ethnicity, gestation and instrumentation. Notably, differences between the two groups in birth outcomes that were not matched for included duration of second stage of labour, regional anaesthesia, shoulder dystocia, weight and head circumference. The lack of statistical significance may be due to low numbers of OASIS in the twin delivery group.

Concluding message

Over the studied time period OASIS incidence increased. Mothers delivering singletons had a tendency to be at an increased risk of sustaining OASIS compared to mothers delivering twins but this risk was not statistically significant. We adjusted for potential confounding due to age, nulliparity, ethnicity, gestation and instrumentation with an increased risk of OASIS observed in singletons compared to twins which was not statistically significant. After the use of 2 study designs and adjusting for confounding we confirm that we found no statistically significant increase in risk of OASIS in twin deliveries. These findings could be useful in counselling women delivering twins, reassuring them that they are not at an increased risk of OASIS.

Disclosures

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