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RISK FACTORS FOR ANAL SPHINCTER TEAR IN MULTIPAROUS PATIENTS

Hypothesis / aims of study
To assess maternal, newborn and obstetric risk factors associated with anal sphincter tear in multiparous patients without a history Cesarean delivery.

Study design, materials and methods
A case-control study using an obstetric automated record system (OBAR) was accessed to identify the records of all multiparous patients who delivered between 1992 and 2004 without Cesarean section. A number of clinical variables from the index pregnancy and prior pregnancies were examined as potential correlates of anal sphincter tear in this patient population. Crude and adjusted odds ratios (OR) with 95% confidence intervals (CI) were calculated for the potential risk factors. All significant variables were entered into a stepwise logistic regression model, which was used to determine the best set of predictor variables for anal sphincter tear. Analyses were performed using SAS.

Results
Out of the 18,263 multiparous vaginal deliveries, 145 (0.79%) had sustained an anal sphincter tear, the majority of which occurred in the second delivery. The mean age of the cases (N=145) was 29.0 ± 6.5 and controls (N=139), 26.1 ± 5.8 (p=0.0001); parity 2.9 ± 1.3 cases, 3.1 ± 1.5, controls (p=0.2896); birthweight 3663 ± 610g, cases, 3137 ± 716g, controls, (<0.0001); head circumference 34.5 ± 1.7 cm, cases, 33.5 ± 2.6, controls (p=0.0003); previous pregnancy birthweight 3200 ± 95 g, cases, 3033 ± 665, controls, (p=0.2569); previous pregnancy head circumference, 33.6 ± 2.2 cm, cases, 33.5 ± 2.6 cm, controls (p=.7483); pregnancy interval 3.6 ± 2.6 years, cases, 2.7 ± 1.5 years, controls (p=0.0167). In univariate analyses, occurrence of an anal sphincter tear was associated with a previous anal sphincter tear (OR 4.5, 95% CI 1.2,17.2), birth weight (3000-3900g vs. < 3000g , OR 3.0, CI 1.6-5.9; >/=4000g vs. < 3000g, OR11.2, CI 4.5, 27.8), use of forceps (OR 3.5, CI 1.9-6.6), maternal age > 32 years (OR 2.3, CI 1.3-4.0), being married (OR 2.7, CI1.7, 4.5), private pay status (OR 3.3, CI 1.9, 5.8), diabetes (OR 2.9, CI 1.0, 8.20), white race (OR 2.6, CI 1.6-4.2), shoulder dystocia (OR 8.0, CI 2.7, 23.5), infant head circumference > 34.5 cm (OR 2.4, CI 1.4, 4.0), and parity > 2 (OR 1.9, CI 1.2-3.2). Multivariable logistic regression analysis continued to show a significant association of anal sphincter tear with birth weight (OR 4.4, CI 1.7, 11.6), use of forceps (OR 6.2, CI 3.1, 12.6), shoulder dystocia (OR 8.1, CI 2.1, 31.5), private pay (OR 3.8, CI 1.8-8.2) and parity = 2 compared to > 2 (OR1.9, CI 1.0, 3.6). In a second model including variables from a previous pregnancy, previous sphincter tear was significant (OR 4.3, CI 1.0-17.8).

Interpretation of results
Multiparous anal sphincter tears are associated with both maternal and newborn characteristics. When considering factors associated with a previous vaginal delivery, the strongest risk factor for multiparous anal sphincter tear was a previous anal sphincter tear.

Concluding message
The strongest risk factors for anal sphincter tear in multiparous women are shoulder dystocia, use of forceps, birth weight and laceration in a previous delivery.