

RISK FACTORS FOR ANAL SPHINCTER TEAR IN PRIMIPAROUS WOMEN

Hypothesis / aims of study

Anal sphincter tear at the time of vaginal delivery is a known risk factor for subsequent faecal incontinence and may also be a marker for the subsequent development of other pelvic dysfunction. Knowledge of potentially modifiable risk factors that increase the likelihood of anal sphincter tear during vaginal delivery may allow us to decrease the incidence and prevent significant lifetime morbidity. The Childbirth and Pelvic Symptoms (CAPS) study is a cohort study that examines the relationship between childbirth, anal sphincter tear and subsequent pelvic symptoms. We analysed baseline data from the CAPS cohort to determine risk factors for anal sphincter tear.

Study design, materials and methods

Primiparous women with and without anal sphincter tear at vaginal delivery were identified at 10 sites and approached to join the CAPS study. Women were eligible if they had a singleton, term (≥ 37 weeks) pregnancy with cephalic presentation, and excluded if they had inflammatory bowel disease, prepregnancy fecal incontinence, or anorectal surgery or neurological conditions that predispose to fecal incontinence. A third group consisting of women who underwent cesarean delivery prior to labor were included in the CAPS study as a second comparison group, but were not included in this analysis. Information about medical and obstetric factors was abstracted from the subjects' charts including age, race and ethnicity, marital/living status, level of education, diabetes mellitus, body mass index at term, gestational age, length of first and second stages of labor, use of oxytocin, mode of anesthesia, fetal station at full cervical dilation, fetal position at delivery, operative vaginal delivery, episiotomy use, and infant head circumference and birthweight.

Primiparous women with and without an anal sphincter tear at vaginal delivery were compared. Odds ratios (OR) were computed for dichotomous and continuous risk factors between the two groups of women and logistic regression was performed.

Results

406 women with anal sphincter tears and 393 controls who had vaginal deliveries without recognized sphincter tears participated in this study. Women were 27 ± 6 years old (mean \pm standard deviation), and delivered at 39.6 ± 1.1 weeks. Mean birth weight was 3462 ± 454 grams.

Among the continuous measures, maternal age, head circumference, infant birth weight and head circumference, and the length of the second stage of labor (all p -values <0.001), as well as gestational age ($p=0.003$) were greater in those subjects with sphincter tears than in the controls.

As detailed in Table I, among categorical variables, Black race (African-American vs. white) appeared to be protective for sphincter tears and episiotomy, forceps and vacuum were associated with sphincter tears.

Table I: Values for dichotomous variables. Values represent N (%)

	Tear N=406	No Tear N=393	Odds ratio; p value
Race Caucasian	296 (73%)	256 (65%)	
Race African American	62 (15%)	94 (24%)	0.6; $p=0.003$
Episiotomy	203 (54%)	96 (26%)	3.3; $p<0.001$
Forceps delivery	121 (30%)	23 (6%)	6.8; $p<0.001$
Vacuum delivery	101 (25%)	38 (10%)	3.0; $p<0.001$

Logistic regression analysis found that the two primary predictors of sphincter tears were episiotomy (any type, OR = 2.9, $p < 0.001$) and operative vaginal delivery by forceps or vacuum (OR = 5.4, $p < 0.001$). The next highest contributor to the model was birth weight (OR = 3 for a 1 kg gain, $p < 0.001$).

Interpretation of results

The most important finding of this study is confirmation that the practitioner may be in a position to control the two most predicative risk factors for occurrence of sphincter tear. The significant lifetime morbidity associated with sphincter tears should be considered in choosing between operative vaginal delivery and cesarean delivery. Clearly, decisions about mode of delivery involve many obstetrical parameters besides potential sphincter tear, and the need to effect prompt delivery may outweigh the risk of sphincter tear. Ideally some discussion concerning second stage interventions could occur during prenatal visits, when the patient is in a better position to provide informed consent.

Concluding message

Operative vaginal delivery and episiotomy, both potentially modifiable factors, are the strongest predictors of anal sphincter tear in primiparous women.

FUNDING:

NIH

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NICHD