RISK FACTORS FOR ANAL SPHINCTER LACERATION IN PRIMIPAROUS WOMEN

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OBJECTIVES: Anal sphincter laceration at vaginal delivery is a known risk factor for anal incontinence and may also be a marker for subsequent pelvic dysfunction. The Childbirth and Pelvic Symptoms (CAPS) study is a prospective study by the Pelvic Floor Disorders Network (PFDN) that examines the relationship between anal sphincter laceration and subsequent pelvic symptoms. We analyzed baseline data from the CAPS cohort to determine risk factors for anal sphincter laceration.
MATERIALS AND METHODS: Primiparous women with an anal sphincter laceration and primiparous women without anal sphincter laceration (controls) at vaginal delivery were compared. Enrollment took place at the seven clinical sites of the PFDN. Women were excluded if they had pre-pregnancy anorectal surgery or anal incontinence. Factors considered as possible predictors of anal sphincter laceration included: maternal factors (age, race, pre-pregnancy body mass index [BMI], pre-delivery BMI, diabetes), infant factors (gestational age, birth weight, head circumference), and delivery factors (occiput anterior [OA] or posterior [OP] position, vacuum or forceps delivery, episiotomy, use of oxytocin, length of first and second stages of labor). Odds ratios (OR) were computed for dichotomous and continuous risk factors between the two groups of women (tear and control). Logistic regression was performed using different variables within the risk factor groups.
RESULTS: 406 primiparous women with anal sphincter lacerations and 392 without lacerations participated in this study. Patients were 27±6 (mean±SD) years old and were 19% African American, 69% Caucasian, 4% Asian, and 8% other or unknown; 7% were Hispanic. The table details the proportion of women with anal sphincter lacerations according to obstetric predictor variables.

	Anal sphincter laceration	No anal sphincter laceration	Odds Ratio (p value)
Forceps delivery	30%	6%	6.7 (p<0.001)
Episiotomy	58%	26%	3.3 (p<0.001)
OP position	19%	9%	2.4 (p=0.002)
Vacuum delivery	25%	10%	2.3 (p=0.001)

Race (African-American vs white) appeared to be protective (OR=0.58, p=0.003) against anal sphincter laceration. Among the continuous variables, maternal age, head circumference, birthweight, and length of second stage of labor were greater in the subjects with sphincter lacerations when compared to controls (all p-values<0.001). Increased gestational age was also noted among women with sphincter lacerations when compared to controls (p=0.002). Logistic regression analysis found that the two strongest predictors of anal sphincter laceration were episiotomy (adjusted OR=2.8, 95% CI: 2.0 - 3.9, p < .001) and instrumental delivery by forceps or vacuum (adjusted OR=5.5, 95% CI: 3.9 - 7.9, p < .001). The next strongest risk factor was infant birthweight (kg) (adjusted OR= 3.1, 95% CI: 2.1 - 4.5, p < .001).
CONCLUSION: Instrumental delivery is the strongest risk factor for anal sphincter laceration in primiparous women, followed by episiotomy and increasing infant birthweight, itself a risk factor for episiotomy.

Key Words: anal sphincter laceration, episiotomy, forceps delivery

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