

Title: Comparison of Monofilament to Braided Suture in the Repair of Obstetric Anal Sphincter Injuries

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Background

Obstetrical lacerations are a common occurrence, affecting nearly 80% of all vaginal births. Approximately 5% of these injuries involve the anal sphincter complex, known collectively as obstetric anal sphincter injury (OASIS). OASIS lacerations are subject to wound breakdown and infection and can place women at risk for debilitating conditions, such as dyspareunia, flatal or fecal incontinence, and rectovaginal fistulas. Various interventions have been proposed to minimize wound breakdown and/or infection; however, little is known if repairing these injuries with a braided (polyglactin 910, Vicryl) versus a monofilament suture (polydioxanone, PDS) makes a significant difference in outcomes.

Objectives

To identify methods for repairing obstetrical anal sphincter injuries (OASIS) that may minimize wound complications, including wound breakdown and infection. Specifically, we aimed to compare outcomes of repairs performed with monofilament suture (polydioxanone or “PDS”) to those performed with braided suture (polyglactin 910 or “Vicryl”).

Methods

We performed an IRB-approved, retrospective cohort study of postpartum women at the University of Virginia from September 2010 through March 2023 whose deliveries were complicated by a third- or fourth-degree perineal laceration. Demographic and obstetrical data was collected on each patient and compared between those who had repairs performed with Vicryl and those who had repairs performed with PDS. Baseline characteristics were compared between groups using t-test for continuous variables and chi-square for categorical variables. The primary outcome of composite wound complication (breakdown or infection) was compared between suture groups using relative risk. Multivariable logistic regression was performed to assess for independent risk factors for wound breakdown. Data analysis was performed using SPSS (v.28) and a p-value of 0.05 was considered statistically significant.

Results

The study population consisted of 346 women with a mean age of 29 years (± 5.04) and an average BMI of 30 (± 2.48). They delivered infants with a mean weight of 3509 g (± 530.43) at an average of 39-weeks gestation; demographic data was similar between both the PDS and Vicryl repair groups (*Table 1*). The Vicryl group was more likely to have had an episiotomy during delivery (11.1% vs 2.2%, $p=0.03$), but less likely to have received intrapartum antibiotics (63.3% vs 88.9%, $p < 0.001$). Other notable intrapartum variables were largely similar between groups. There was no difference in the probability of wound breakdown in the Vicryl group (10.2%) compared to the PDS group (12%, $p=0.65$); the relative risk (RR) of wound breakdown with Vicryl vs PDS was 1.19 (95% CI 0.56-2.52). There was similarly no difference in wound infection between the two groups (2.8% Vicryl vs 2.2% PDS, $p=0.76$); RR of 0.78 (95% CI 0.16-3.85).

The RR of composite wound complication with Vicryl vs PDS was 1.10 (95% CI 0.52-2.30). Logistic regression analysis confirmed no difference when controlling for potential confounders, but interestingly showed that patients with wound complications were statistically more likely to be prescribed antibiotics in the ambulatory setting (aOR 14.28, p=0.002) and to be referred to an FPMRS provider (aOR = 12.50, p=0.004).

Conclusions

There was no difference in the risk of wound breakdown, wound infection, or composite wound complication in women undergoing repair of the anal sphincter with Vicryl vs PDS at the time of delivery. Those who experienced wound complications were more likely to require outpatient follow-up with a specialist in pelvic floor disorders, indicating a potential area for improving outcomes for patients affected by OASIS.

Tables:

Table 1: Demographic data.

Demographics	Vicryl	PDS	p-value
Age	28.93 (±5.04)	28.51(±5.04)	0.69
BMI	30.61 (±5.65)	30.63 (±5.10)	0.52
Birth weight (g)	3502.38 (±539.58)	3527.23 (±507.43)	0.75
Head circumference (cm)	34.47 (±1.54)	34.68 (±1.45)	0.22

μ ± standard deviation (SD)