previously published evidence for cerclage effectiveness.[4,5] After the procedure, all women were routinely treated with intravenous cefuroxime 750 mg and metronidazole 500 mg every 8 hours for the first 2 days, while prophylaxis was continued for an additional 8 days with oral roxithromycin 300 mg once a day.

RESULTS: Overall, 101 patients were included, of whom 25 were treated with elective cervical cerclage (CL ≤15mm), whereas 76 received vaginal progesterone. Of the latter, 37 women were diagnosed with progressive CL shortening (≤15 mm) and were also managed with cerclage; thus, only 39 women remained in the progesterone-only group. One woman was excluded from analysis because she declined cerclage insertion. Baseline characteristics concerning first-trimester abortions and second-trimester pregnancy losses, history of preterm birth, cervical conization, and presence of preterm contractions were similar in the 3 groups. The perinatal outcome was comparable among the groups; preterm premature rupture of membranes was more frequent in the cerclage group, as well gestational latency period (increased in the progesterone group) (Table). The Kaplan−Meier survival plot depicted comparable outcomes among the 3 groups concerning gestational age at delivery (log rank 1.275, $P = .529$).

CONCLUSIONS: Our study findings support a stepwise approach in cervical shortening management, with the addition of cervical cerclage in women who do not respond to vaginal progesterone, or in those with a very short cervix during the initial evaluation. This approach was complemented by an extended course of antibiotic and anti-inflammatory prophylaxis, as there is evidence that supports a cross-link between intra-amniotic inflammation/infection and preterm birth. ■

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 https://doi.org/10.1016/j.ajog.2019.01.221

Delivery type, opioid prescribing, and the risk of persistent opioid use after delivery

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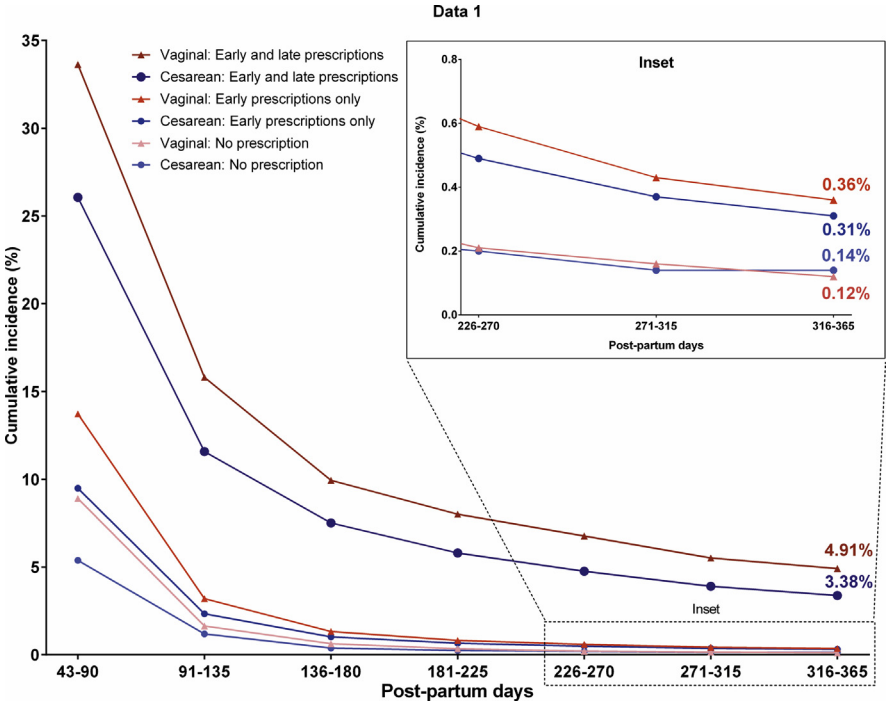
OBJECTIVE: Cesarean delivery is associated with the persistent use of opioid pain relievers (OPRs), although whether this relates to the procedure or subsequent OPR prescribing is unclear.[1,2] We examined OPR prescribing and persistent OPR use among women undergoing cesarean and vaginal delivery.

STUDY DESIGN: We included pregnant women aged 15−44 years enrolled in Tennessee Medicaid and opioid-naïve ≥180 days prior to delivery (Jan. 1, 2007, through Sept. 30, 2015). We classified OPR exposure based on filled prescriptions during the postpartum period: no prescription, early only (≥1 fill from delivery to day 7 and none from days 8 through 42), early and late (≥1 fill from delivery to day 7 and days 8 through 42).

Persistent OPR use was defined as ≥1 OPR fill in each 45 day period from days 43 through 365 after delivery. We compared the risk of persistent OPR use by OPR exposure group and delivery type using Poisson regression with robust standard errors to calculate relative risks and 95% confidence intervals (CIs) adjusted for patient demographics, rurality,[3] smoking, depression, severe maternal morbidity, and pain conditions.

RESULTS: Of 102,541 women, 89.0% with a cesarean (early-only: 70.2%; early-late: 17.1%) and 52.7% with a

FIGURE
Persistent opioid use at year following delivery by postpartum prescription exposure and delivery type



No prescription = 0 fills delivery day 42 (n = 3450 cesarean, n = 33,722 vaginal); early only = ≥1 fill from delivery day 7 and none from days 8 through 42 (n = 21,980 cesarean, n = 30,564 vaginal); early and late = ≥1 fill from delivery day 7 and day 8–42 (n = 5349 cesarean, n = 4482 vaginal); late only (not displayed) = 0 fill from delivery day 7 and ≥1 fill days 8 through 42 (n = 548 cesarean, n = 2446 vaginal).

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vaginal delivery (early-only: 42.9%; early-late: 6.3%) filled ≥1 OPR prescriptions during the postpartum period.

The incidence of persistent OPR use was low overall (0.67%) and higher among women with cesarean vs vaginal delivery (0.84% vs 0.59%: adjusted relative risk [aRR], 1.26, 95% CI, 1.08–1.47). However, when examined by OPR exposure, persistent OPR use was similar by delivery type among those with no postpartum prescription (aRR, 0.70 [95% CI, 0.25–1.96]) or only an early prescription (aRR, 0.91 [95% CI, 0.67–1.24]) and lower among women with a cesarean delivery among those with an early and late prescription (aRR, 0.66 [95% CI, 0.54–0.81]).

Among women with a vaginal delivery, persistent OPR use was higher among women with only early OPR prescriptions (aRR, 2.58, 95% CI, 1.80–3.71) and with early and late OPR prescriptions (aRR, 28.87, 95% CI, 20.37–40.91) compared with no prescription. Similarly, among women with a cesarean delivery, persistent OPR use was higher among women with only early OPR prescriptions (aRR, 2.75, 95% CI, 1.10–6.87) and with early and late OPR prescriptions (aRR, 23.22, 95% CI, 9.44–57.14) compared with no prescription (Figure). The findings were similar if we excluded women with complicated vaginal deliveries (third- to fourth-degree lacerations and tubal ligations) or Centers for Disease Control and Prevention–defined severe maternal morbidity.[4]

DISCUSSION: OPR prescribing after delivery was common and associated with persistent OPR use in the Tennessee Medicaid population, with only modest differences by delivery type. Women who filled early and late prescriptions were at highest risk for persistent OPR use. Persistent OPR use was higher for cesarean deliveries because of higher rates of OPR prescribing because no difference was observed within levels of postpartum OPR use. These findings suggest postpartum OPR exposure, not the delivery type, is the primary risk factor for persistent OPR use.

Because of the high frequency of childbirth in the United States, even a small increased risk of persistent OPR use would affect a substantial number of US women. Based on our findings and assuming that postpartum OPR prescribing increases the risk of persistent OPR use, we estimated that postpartum OPR prescribing resulted in 21,576 new persistent OPR users annually (95% CI, 20,483–22,388).[5] Study limitations included the inability to verify actual OPR use and the use of data from a single state. These findings highlight the need for judicious opioid prescribing during the vulnerable postpartum period, especially among women who require additional OPR prescriptions. ■

ACKNOWLEDGEMENT

We are indebted to the Tennessee Division of TennCare of the Department of Finance and Administration, which provided data for the study.

We are also indebted to the Tennessee Department of Health for providing data for the study.

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The funder of the study had no role in the study design, data analysis, data interpretation, or writing of the report.

Dr Osmundson had final responsibility for the decision to submit for publication.

Dr Grijalva was supported by the National Institutes of Health—National Institute on Aging through grant R01AG043471. Dr Osmundson was supported by grant K12HD04348317 from the National Institutes of Health. Dr Patrick was supported by grant K23DA038720 from the National Institute on Drug Abuse. Dr Min was supported by the Veterans Affairs Office of Academic Affiliations. Dr Grijalva has received consulting fees from Pfizer, Sanofi, and Merck and received research support from Sanofi-Pasteur, Campbell Alliance, the Centers for Disease Control and Prevention, the National Institutes of Health, the Food and Drug Administration, and the Agency for Healthcare Research and Quality. The other authors report no conflict of interest.

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