FPIN's Clinical Inquiries

Open Glottis During Delivery and Perineal Trauma

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Clinical Question

Does maintaining an open glottis during delivery prevent perineal trauma?

Evidence-Based Answer

Open glottis pushing during the second stage of labor is a prolonged exhalation while contracting the stomach muscles. There is conflicting evidence about whether maintaining an open glottis during delivery prevents perineal trauma. (Strength of Recommendation: B, three randomized controlled trials [RCTs]) There were no differences in perineal tears or lacerations between the open glottis and closed glottis (i.e., Valsalva maneuver) delivery methods; however, in a primiparous population, a decrease in lacerations and a higher frequency of intact perineum occurred when using an open glottis delivery method. Perineal tears longer than 2 cm may be less frequent using open glottis pushing during delivery.

Clinical Inquiries provides answers to questions submitted by practicing family physicians to the Family Physicians Inquiries Network (FPIN). Members of the network select questions based on their relevance to family medicine. Answers are drawn from an approved set of evidence-based resources and undergo peer review. The strength of recommendations and the level of evidence for individual studies are rated using criteria developed by the Evidence-Based Medicine Working Group (https://www.cebm.net).

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Evidence Summary

A 2020 RCT (n = 250) in France compared the effectiveness of directed open glottis pushing vs. closed glottis pushing.[1] Participants were women of any parity, 18 years and older, with singleton pregnancies, a cephalic presentation at 37 weeks' gestation or longer, and without a history of a cesarean delivery or fetal heart tone abnormalities. All women in the study received standardized training in both types of pushing and were randomized to open glottis (n = 125) or closed glottis (n = 125) pushing during labor. Both groups had greater than 95% epidural rates. The primary outcome was the effectiveness of pushing, which was defined as a spontaneous vaginal delivery with no episiotomy or second-, third-, or fourth-degree perineal lacerations. No differences were noted between the groups in the effectiveness of pushing (adjusted relative risk [RR] = 0.92; 95% CI, 0.74 to 1.14) or in overall risk of perineal lacerations (adjusted RR = 0.98; 95% CI, 0.83 to 1.14) or second-degree lacerations (adjusted RR = 0.82; 95% CI, 0.44 to 1.53). Moderate compliance was noted in the open glottis group with limited validity.

A 2017 RCT (n = 166) in Iran compared the effect of deep abdominal breathing to the Valsalva maneuver on perineal integrity during the second stage of labor.[2] Participants were nulliparous women, 18 to 35 years of age, in a low-risk, full-term pregnancy who were candidates for vaginal delivery. The intervention group (n = 83) used a breathing technique of blowing with two deep abdominal breaths, taking another deep breath, then pushing with an open glottis for four to five seconds while controlling exhalation. The control group (n = 83) used the Valsalva maneuver of holding their breath while pushing. The primary outcome was perineal injury. When comparing the intervention group and the control group, the results showed a significantly higher frequency of intact perineum (41% vs. 19.3%, respectively; $P = .002$; number needed to

treat [NNT] = 5) and a significantly lower occurrence of posterior lacerations (14.3% vs. 34.9%; *P* = .003; NNT = 5). There were no significant differences in anterior or labial lacerations between the two groups.

A 2022 small, unblinded RCT (n = 35) from Brazil compared the frequency and severity of perineal lacerations in patients who delivered using the open glottis with vocalization technique (n = 19) compared with usual care (i.e., free to breathe and push as desired; n = 17).[3] Women in the open glottis with vocalization group were encouraged to emit sounds when exhaling. Participants had low-risk singleton pregnancies between 37 and 42 weeks' gestation and cervical dilation of up to 8 cm at enrollment. Exclusion criteria involved any indications for cesarean delivery or the inability to vocalize. There was no significant difference in the occurrence of perineal lacerations (RR = 0.8; 95% CI, 0.6 to 1.14) or second- or third-degree perineal tears (RR = 0.45; 95% CI, 0.19 to 1.07) between the vocalization and usual care groups. Tears longer than 2 cm occurred less often in the vocalization group (RR = 0.32; 95% CI, 0.11 to 0.93). The small sample size and lack of blinding limited the strength of this evidence.

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