

Abstract Submitted
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The physical mechanism of successful treatment for cervical insufficiency ALEXA BAUMER, ALEXIS AMECHI, PAIGE CODRINGTON, MEGAN C. LEFTWICH, The George Washington University — Cervical insufficiency is a medical condition during pregnancy in which the uterine cervix softens and begins to dilate before reaching full term, usually between 18 and 22 weeks gestation. It is the most common cause of second trimester pregnancy loss. One clinical technique used to treat cervical insufficiency is the cervical cerclage, a procedure to close the cervix with a purse-string stitch. There are conflicting findings on the efficacy of a cerclage, with most studies relying on statistical evidence. The purpose of this investigation is to examine the mechanical limitations of a cervical cerclage by pressurizing a stitched, synthetic cervix until rupture. A synthetic model of the cervix is generated using ultrasound images collected by clinical collaborators and fabricated with silicon to imitate physiological properties. Medical residents from The George Washington University Hospital stitch the synthetic cervixes using clinical techniques. Pressure transducers record the maximum force on the stitch before rupture. The results of this study will provide insight into the most effective clinical interventions and the mechanism of their success.

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