

# Determining factors in pregnancies with cerclage: duration of cerclage use and history of cervical incompetence

García-Huidobro MT, Espinosa MF, Aedo S, Guerra F, Vogt S.

Universidad Austral de Chile. Unidad de Medicina Materno-Fetal, Hospital Base de Valdivia, Chile.

**Objective:** Analyze and compare the obstetric outcomes of pregnancies with cerclage performed in Hospital of Valdivia, Chile, between 2016 and 2021 and establish prognostic variables to predict gestational age at delivery.

**Methods:** Retrospective observational study including single pregnancies with cervical cerclage before 27 weeks between January 2016 and December 2021, at the Hospital Base Valdivia, Chile. Obstetric outcomes were compared according to the indication for cerclage: history of cervical incompetence, ultrasound, and physical examination. Using clinical variables obtained from medical records, a multivariate survival analysis was conducted to find prognostic factors for gestational age at delivery. Finally, a statistical model was selected based on the significant variables found, which allows for the prediction of gestational age at delivery in women with cerclage.

**Results:** A cohort of 69 pregnant women was included. 26 (37.6%) cerclages were performed for a history of cervical incompetence, 32 (46.3%) by ultrasound, and 11 (16.1%) by physical examination. We found no significant differences when comparing gestational ages at delivery among the groups analyzed (Figure 1). Of the prognostic variables analyzed, the time of use of the cerclage (Hazard Ratio: 0.84 (95% CI: 0.77 to 0.91) and the indication of cerclage for a history of cervical incompetence (Hazard Ratio: 3.19, 95% CI: 1.22 to 8.33) were significant. Based on these variables, we constructed a predictive model of gestational age at delivery (Table 1).

**Conclusion:** The increase in the use of cerclage time and the absence of an indication for cerclage due to cervical incompetence are independent prognostic factors that favor term delivery in pregnancies with cerclage. Rigorous preconception and prenatal control could allow us to detect patients early who benefit from this intervention, allowing us to indicate cerclage at the right time and thus reduce the incidence of premature delivery.

Figure 1. Kaplan-Meier survival curves for the entire cohort and according to cerclage indication in 69 pregnant women undergoing cerclage, during the follow-up period from January 2016 to December 2021, at the Maternal Fetal Medicine Unit of Valdivia Base Hospital in Chile.

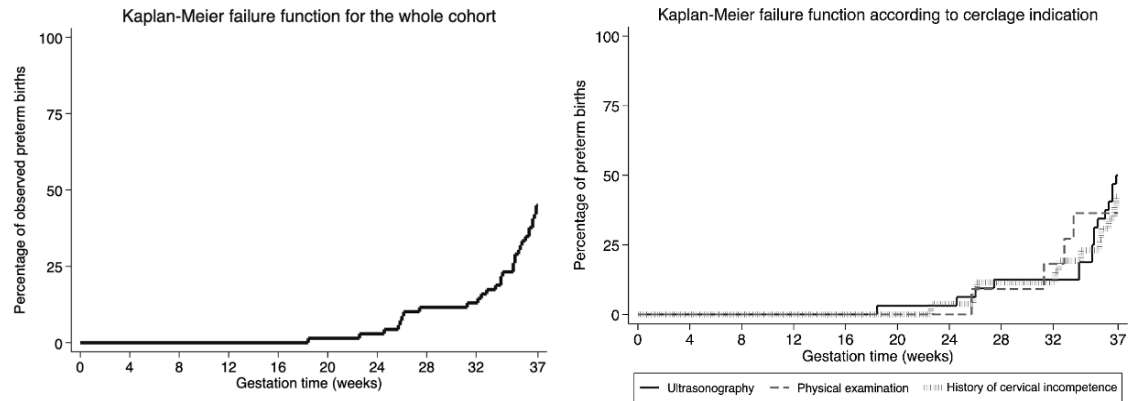


Table 1. Proportions of preterm birth (%) and restricted mean time of occurrence of preterm birth predicted by flexible parametric model (FP), in 69 pregnant women undergoing cerclage, in the follow-up period from January 2016 to December 2021, at the Unit of Maternal Fetal Medicine of the Hospital Base Valdivia de Chile

Characteristic		Gestation age at birth (weeks)							
		28		32		34		37	
Time of cerclage use (weeks)	Cerclage due to history of cervical incompetence	Preterm birth %	Mean time of birth (weeks)	Preterm birth %	Mean time of birth (weeks)	Preterm birth %	Mean time of birth (weeks)	Preterm birth %	Mean time of birth (weeks)
Percentile 10 8 weeks	No	10,6	27,5	26,4	30,8	40,8	32,1	69,8	33,5
	Yes	30,1	26,6	62,4	28,8	81,2	29,3	97,8	29,6
Percentile 50 13,6 weeks	No	4,9	27,8	10,8	31,5	17,7	33,2	36,0	35,4
	Yes	12,5	27,5	30,5	30,6	46,2	31,8	75,8	33,0
Percentile 90 22 weeks	No	0,9	27,9	2,5	31,9	4,2	33,8	9,4	36,6
	Yes	2,9	27,9	7,8	31,6	12,9	33,5	27,2	35,8

FP= flexible parametric model at 5 years time, selected with two degrees of freedom for the "cubic spline" function of basal risk rate, which considers the following variables: history of cervical incompetence and time of cerclage use.