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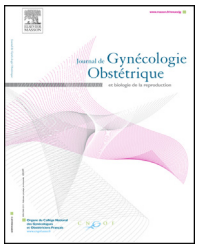

ORIGINAL ARTICLE

Effectiveness of elective cervical cerclage according to obstetric history

Efficacité de cerclage préventif selon les antécédents obstétricaux

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Cervical cerclage;
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Trachelorraphy

Summary
Objective. — To assess the effectiveness of elective history-indicated cervical cerclage according to obstetrical history.
Study design. — We analyzed pregnancy outcome of a retrospective cohort of women who have had history-indicated McDonald's cerclage. Principal outcome was gestational age (GA) at delivery.
Result. — Between January 2003 and December 2013, 205 women were included. We analyzed population in two risk groups: 1- Low-risk (≤ 2 prior preterm birth (PTB)/second trimester loss (STL), or prior success of cerclage), 2- High risk (≥ 3 prior PTB/STL, or prior failure of cerclage). In the high-risk group, there was a higher frequency of deliveries before 37 weeks (47.5% vs. 24.5%, $P = 0.001$, OR = 2.79, 95% CI [1.49—5.23]). Fifty percent of women ($n = 6/12$) delivered before 37 weeks in case of three or more prior PTB/STL, and 51% ($n = 24/47$) in case of prior failure of cervical cerclage.
Conclusion. — Elective cervical cerclage may be indicated for women with ≤ 2 prior PTB/STL, or prior successful cerclage. For women with ≥ 3 prior PTB/STL, trachelorraphy or cervico-isthmic cerclage could be possible alternatives to cervical cerclage.

Introduction

Preterm birth rate is currently increasing in some middle and high-income countries, and allocated healthcare

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budget is high [1,2]. The risk of preterm birth is higher in case of prior second trimester loss (STL) or prior preterm birth (PTB), and cervical insufficiency remains one of the major causes. ''Cervical insufficiency'' designates uterine cervix inability to maintain pregnancy when no symptoms or clinical signs, such as contractions, labor, or both, are identified [3—5]. Women often require care after such an event. However, providing a preventive approach and undertaking cervical cerclage have not yet demonstrated any benefit. The management of women with prior PTB or STL pregnancies remains an important challenge in modern obstetrics.

Cervical cerclage is the cornerstone of the treatment of women with a history of cervical insufficiency. However, it is still the most controversial surgical intervention since it is performed despite the lack of a targeted population on which the evidence of a benefit have been well established. Different countries' recommendations [6,7] attempt to define a targeted population that should be offered a cerclage (women with ≥ 3 prior STL or PTB; women with one prior PTB or STL and according to ultrasound monitoring). Recommendations are based on studies with low levels of evidence; indeed, there are major differences in management between countries, and especially recommendations are difficult to implement in the first place. After a failure of cervical cerclage, an alternative can be proposed to women: trachelorraphy or cervico-isthmic cerclage. These are definitive surgical techniques, which can be performed outside of pregnancy.

The aim of this study was to assess whether cervical cerclage placement, indicated by prior obstetrical events is effective in preventing second trimester loss or preterm birth in women with different levels of risk according to their obstetrical history.

Material and methods

The study was conducted at the tertiary unit of Robert-Debré Hospital in Paris, France, between January 2003 and December 2013. A cohort of women who underwent transvaginal cervical cerclage and delivered in the unit were identified using a database. Women with a singleton who underwent a history-indicated transvaginal cerclage placement before 16 weeks' gestation were included in study. We excluded medical termination of pregnancy and induced prematurity. Indication for cerclage was based on:

- obstetric history: second trimester loss or preterm birth (< 37 gestational weeks);
- on gynecological history and risks factors for STL/PTB: conisation, diethylstilbestrol exposure, uterine anomaly;
- on cervical incompetence diagnosis.

Cervical incompetence was defined from obstetric history, medical examinations outside of pregnancy (hysteroscopy...), clinical examination in early pregnancy (examination of cervix, passage of a Hegar dilatator without discomfort).

Cervical cerclage was performed using McDonald's technique, with one stitch of Mersilene 5 mm tape (Ethicon, Inc., Somerville, NJ), placed in a purse-string fashion. It was inserted as a prophylactic measure in asymptomatic women, usually at 12—14 weeks' gestation, following assessment of viability by ultrasound guidance and chromosomal risk. Before placement, a high vaginal swab was taken for culture and sensitivity. Active infections were treated with antibiotics before cervical cerclage. A clinical examination of cervix was performed before procedure. Cerclage was performed under spinal anesthesia or general anesthesia. A muco-cutaneous disinfection was carried out with mucosal disinfectant, then a purse-string suture was placed in four passes circumferentially around cervix. Suture had to be placed as high as possible. It was usually tied anteriorly just enough to admit a fingertip at external os while internal os being closed. Successive knots were placed (at least five knots) and then ends had to be left long enough (usually, 2 cm) to facilitate later removal. After procedure, another clinical examination of cervix was performed along with a transvaginal ultrasound measure to evaluate distance between internal os and stitches and to provide a reference measurement for monitoring. Women usually got out from hospital 24 hours after cerclage placement. Women did not receive 17-hydroxy-progesterone caproate. Their activity restriction was linked to their lifestyle. They had a monthly consultation in which a vaginal swab was withdrawn and active infections were treated with antibiotics. A transvaginal ultrasound of cervix was performed only in case of clinical symptoms.

Cervical cerclage was removed at 37 weeks' gestation or when performing a planified cesarean section if indicated. Cerclage could have been removed earlier in emergency in case of premature labor or in case of a premature rupture of membranes with suspected infection.

All maternal medical records were reviewed. Characteristics of women, operative details, cerclage removal data, maternal and neonatal outcomes were collected for analysis.

Firstly, the analysis was made by differentiating women with cerclage history and those who had never benefited.

We performed the analysis by comparing two groups of women defined by their level of risk as defined in the recommendations:

- low-risk in case of one or two prior PTB or STL, or history of success of cerclage;
- high risk in case of three or more prior PTB or STL, or history of failure of cerclage.

Subsequently, we performed the analysis on three groups of women according their history, by individualizing the group of women with a history of 2 STL/PTB (motivated by the fact that, in clinical practice, it is difficult to meet the recommendations for these women, which are not realize preventive cerclage). In our unit, the policy is to achieve a preventive cerclage for these women. Again we excluded patients with a history of cerclage failure because for these patients, the treatment is more consistent between practitioners and a cervico-isthmic cerclage is provided. The three groups included in this analysis were defined by:

- one prior PTB or STL, or previous cerclage success;
- two prior PTB or STL;
- three or more prior PTB or STL.

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