

Original Article/Artigo Original

Emergency Cervical Cerclage – Retrospective Analysis of 18 Cases Cerclage Emergente – Análise retrospectiva de 18 casos

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ABSTRACT

Overview and Aims: Cervical insufficiency represents an important cause of second trimester pregnancy losses. Emergency cerclage has been proposed in women with mid-trimester cervical dilation. The aim of this study was to evaluate the efficacy of this procedure concerning perinatal outcome.

Study Design: Retrospective observational study.

Population: All pregnant women submitted to emergency cervical cerclage, from January 2005 to January 2011.

Methods: Emergency cerclage was performed when dilated external cervical os (≥ 2 cm) and visible membranes were seen between the 16 and 24 weeks of gestation. Major fetal malformations, uterine contractions, rupture of membranes, chorioamnionitis and significant vaginal bleeding were excluded before the procedure.

Results: A total of 18 emergency cerclages were performed. We report a mean prolongation of pregnancy of 7.5 ± 6.7 weeks, a neonatal survival rate of 78.6% and an admission rate to neonatal intensive care unit of 69.2%. The late abortion rate was 27.8% and the preterm birth rate less than 32 weeks was 58.3%. No major maternal complications were observed.

Keywords: Emergency cervical cerclage can be a safe alternative to expectant management (bed rest only) in women with mid-trimester cervical dilation and prolapsed membranes.

Keywords: cervical cerclage, uterine cervical incompetence, premature birth

INTRODUCTION

The terms “cervical insufficiency” or “cervical incompetence” have been used to describe the inability of the uterine cervix to retain a pregnancy in the absence of contractions or labor.

The incidence of cervical insufficiency is difficult to ascertain, due to the lack of clear diagnostic criteria. However, this clinical entity is widely recognized as an important cause of preterm birth, being responsible for appro-

ximately 10-25% of second trimester pregnancy losses.¹

The most challenging presentation of cervical incompetence refers to a woman presenting at mid trimester with cervical dilation and prolapsed or visible membranes. Moreover, this frequently occurs in women without a history of preterm birth or risk factors for cervical incompetence. In these situations an attempt can be made to perform an emergency cervical cerclage with the aim of prolonging the gestation and improving the perinatal outcome.

Studies published on this issue are mostly retrospective. Few small prospective trials have evaluated this situation, comparing emergency cerclage with expectant management (bed rest only), and the reported outcomes are

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very heterogeneous in what concerns perinatal mortality and prolongation of pregnancy.

The purpose of this study is to evaluate the efficacy of emergency cerclage in women presenting with cervical incompetence and prolapsed/visible membranes.

METHODS

We performed a retrospective observational study of all pregnant women who underwent an emergency cervical cerclage, between January 2005 and January 2011.

An emergency cerclage was offered to patients with membranes at or beyond (prolapsed membranes) a dilated external cervical os (≥ 2 cm), accessed through vaginal speculum examination, between 16 and 24 weeks of gestation. The detailed inclusion and exclusion criteria considered for cerclage placement are described in Table I. The gestational age was determined using data obtained by a first-trimester ultrasonography (11-13 weeks).

All patients were observed for 8-24 hours to exclude preterm labor as the cause of the cervical dilation. Uterine activity was assessed with patient perception of contractions as well as abdominal palpation. Infection was excluded cli-

Table I – Inclusion and Exclusion Criteria for Emergency Cerclage Placement

Inclusion Criteria

- Cervical dilation ≥ 2 cm with visible membranes
- Live fetus
- Intact membranes

Exclusion Criteria

- Uterine contractions
- Clinical evidence of chorioamnionitis
- Significant vaginal bleeding
- Known fetal malformations
- Placenta previa
- Known congenital uterine malformation
- Oligohydramnios or hydramnios

nically by absence of pyrexia, uterine tenderness, and maternal or fetal tachycardia. A white blood count of less than 14,000/mL and a negative C-reactive protein test were also necessary. All women had a high vaginal swab culture to exclude the presence of pathogens.

Cerclage placement was performed using the McDonald technique, under general or spinal anesthesia. The patient was placed in dorsal lithotomy position with steep Trendelenburg tilt, and the vaginal walls, fornices and cervix were prepared with antiseptic solution. If necessary, the prolapsed membranes were displaced upward into the uterine cavity

with a gelatin sponge (Spongostan®) mounted on a forceps. Cerclage was performed using a 5 mm polyester cerclage tape (Mersilene®) and the knot was tied anteriorly leaving a long tail of tape to ease removal. All patients were given clindamycin 900 mg every 8 hours intravenously until 24 hours after the procedure. In the postoperative period they received prophylactic tocolysis using 100 mg indomethacin rectally twice a day for 24 hours. After a 48-hour period of absolute bed rest in the hospital, an ultrasound examination of the cervix was performed to confirm correct placement of the suture. Patients were then discharged with an indication for restricted physical activity and sexual abstinence until 34 weeks of gestation.

Follow-up included antenatal clinic assessment at 4-week intervals. The suture was removed at 37 weeks of gestation or whenever preterm rupture of membranes, labor or suspicion of infection was established.

All women with a gestational age of 24 weeks received betamethasone (two administrations of a 12 mg dose with a 24 hour interval) for acceleration of fetal lung maturity. All fetal deaths before the 24th week were considered as late abortions.

The main evaluated outcomes were the prolongation of pregnancy, the rate of late abortions, neonatal survival and neonatal morbidity, defined as admission to the neonatal intensive care unit (ICU). Approval by the ethics committee of our institution was not requested in this context..

RESULTS

During the study period, 18 emergency cervical cerclages were performed at our unit, 2 of them in twin pregnancies. A description of the 18 cases is presented in Table II. Five women were primigravidas and 4 had at least one previous spontaneous preterm delivery or midtrimester abortion in the previous pregnancy. None referred a history of cervical trauma or surgery. Mean gestational age at *cerclage* placement was 20.8 ± 2.5 weeks, with a mean cervical dilation of 2.4 ± 0.6 cm. Prolapsed membranes were observed in 13 cases.

All cervical cerclages were performed according to McDonald technique, with a post procedure mean distance between stitches and external cervical *os* of 19 ± 2.3 mm. Membrane rupture did not occur during cerclage placement in any patient, and there were no surgical or anesthetic complications.

The suture was removed in 8 patients (44.4%) due to preterm premature rupture of membranes (PPROM), 3 of which before 24 weeks. In 7 of those, PPRM was accompanied or followed by uterine contractions or chorioam-

Table II – Individual case data concerning maternal characteristics, intervention and perinatal outcomes

Case Nr.	Age (y)	Previous Gestations	Gest. Age (wk)	Subsequent Pregnancy Course	Suture Removal (wk)	Gest. Age at delivery (wk)	Delivery	Perinatal outcomes
1*	32	G2P0	20	PPROM Chorioamnionitis	22	22	Vaginal	Late abortion
2	33	G4P0	17	Uneventful	37	38	Vaginal	2875g AS 9/10
3*	21	G1P0	19	Uneventful	37	40	Vaginal	2840g AS 9/10
4*	28	G3P0	17	PPROM + PTL	29	29	Vaginal	1320g AS 8/9 RDS I; NICU 25 days
5*	29	G6P2	20	PPROM at 23 wk Chorioamnionitis at 25 wk	25	25	Cesarean (Pelvic)	670g AS 4/8 Sepsis; IVH NICU 15 days Neonatal death
6	31	G6P2	18	PPROM + PTL Chorioamnionitis	20	20	Vaginal	Late abortion
7	36	G1P0	23	PTL	27	27	Vaginal	1120g AS 9/10 Leukomalacia; NICU 72 days
8	31	G1P0	22	Chorioamnionitis	23	23	Vaginal	Late abortion
9	28	G2P0	23	Labor induction (Preeclampsia)	34	34	Cesarean (failed induction)	1580g AS 9/10 NICU 30 days
10	26	G2P0	21	Uneventful	37	37	Vaginal	2935g AS 9/10
11	35	G3P2	22	Suspected fetal hypoxia	30	30	Cesarean (fetal hypoxia)	1300g AS 8/9 NICU 45 days
12	29	G4P0	16	PPROM + PTL	19	19	Vaginal	Late abortion
13	32	G1P0	21	Twin; PTL Chorioamnionitis	21	21	Vaginal	Late abortion
14*	31	G2P1	24	Chorioamnionitis	25	25	Vaginal breech	786g AS 1/8 NICU 82 days Sepsis; RDS I; retinopathy
15	33	G4P1	21	PPROM at 30 wk Labor induction (oligoamnios)	30	32	Cesarean (failed induction)	1905g AS 7/8 NICU 21 days
16	35	G2P1	23	Twin; PTL	35	35	Cesarean (arrested dilation)	2690g AS 10/10 2620g AS 10/10
17	27	G1P0	24	PPROM + PTL	25	25	Vaginal	800g AS 8/9 Sepsis; IVH NICU 3 days Neonatal death
18	29	G2P0	24	PPROM at 27 wk Spontaneous labor	27	29	Vaginal	1340g AS 9/10 Anemia ; NICU 60 days

* Women with visible but not prolapsed membranes

PPROM, Preterm premature rupture of membranes; PTL, preterm labor; AS, Apgar score; ICU intensive care unit; RDS, respiratory distress syndrome; IVH, intraventricular hemorrhage

nionitis. The diagnosis of chorioamnionitis alone was the reason for suture removal in 3 patients and preterm labor in 2. In 2 cases it was removed to proceed to labor induction due to maternal or fetal disease. In 3 women cerclage was removed electively at term.

We report 6 cases of chorioamnionitis (33.3%), 3 of them in women with previous PPROM.

Mean prolongation of pregnancy after cerclage placement was 7.5 ± 6.7 weeks. We report 5 cases of late abortion (27,8%) and 10 preterm deliveries (55,6%), 7 of them before 32 weeks (from which 4 before 28 weeks). Of the 18 pregnancies, 13 ended in live births (72.2%) and 11 of the 14 liveborn infants survived (1 twin pregnancy), corresponding to a neonatal survival rate of 78.6%. Nine of the 14 liveborn infants (69.2%) were admitted to the neonatal intensive care unit (NICU) with a median stay of 30 days (range 3-82). The mean birth weight was 1770 ± 824 g with a median weight 1460g (range 670-2 935g).

Cesarean delivery rate was 27.8%. We didn't observe any case of cervical laceration or cervical dystocia due to scar tissue.

DISCUSSION

The progressive asymptomatic cervical dilation and subsequent membrane prolapse represents a challenge for obstetricians, regarding both its pathophysiological basis and the adequate clinical approach. The role of emergent cervical cerclage applied to this clinical entity also remains controversial.

Few small prospective trials have studied this situation, comparing emergency cerclage with expectant management (bed rest only). The most significant improvement in perinatal mortality was reported in a non-randomized study (46 patients) describing a reduction in perinatal mortality from 70% in the bed rest group to 17% in the cerclage group (RR 0.22).² A small randomized trial (23 patients) found a significant prolongation of pregnancy and a significantly lower preterm delivery before 34 weeks of gestation, but no significant difference in the neonatal survival in the cerclage group.³ A larger observational study of pregnancies with cervical dilation at 14 to 25 weeks' gestation, which included a subgroup of women presenting with a cervical dilation of 2-4cm (61 with visible or prolapsed membranes), also found a significantly increased gestational age at delivery, neonatal survival and birth weight (versus expectant management).⁴

In our series, the interval from cerclage to delivery (7.5 ± 6.7 wks) was similar to cerclage group as described

in other reports. Daskalakis² described a mean extension of pregnancy of 8.8 vs. 3.1wks (cerclage vs. bedrest), Althisius³ group reported 7.7 vs. 2.9 wks and Cockwell⁵ a 7-week pregnancy prolongation after cerclage.

The neonatal survival rate we have observed (78.6%) is very similar to the best rates reported for cerclage groups in larger published studies. However, the live-born rate (72.2%), which is superior to previously reported survival rates in bedrest groups, is lower than the described for cerclage groups in larger series and prospective studies. In the large retrospective study of 161 women, Siedentopf observed a live birth rate of 78% in cerclage group and of 44% after conservative management⁶; the prospective non randomized study of Daskalakis² reached a 86.2% live birth rate in the study group (vs. 41.2% in the control group) and the randomized trial of Althisius reported no late abortions³. This means that the main difference in our series' perinatal outcome is the number of late abortions, which, in all but one case, occurred subsequently to a suture removal, before 24 weeks, after a diagnosis of chorioamnionitis.

In the group of cases we present, chorioamnionitis occurred more frequently than in published series that report this complication.^{2,3,7} Some authors have suggested amniocentesis as a possible strategy to exclude subclinical intraamniotic infection previous to cerclage placement and minimize cases of chorioamnionitis. Amniotic fluid culture is recognized as the most accurate method for diagnosis, but several other tests have been described, namely glucose concentration, white blood cell concentration, lactate dehydrogenase level and measurement of cytokines (eg, IL-6). However, considering the delay in obtaining definitive culture results, the poor predictive value of available tests and the lack of data showing an improvement in maternal/neonatal morbidity, the systematic use of amniocentesis before emergency cerclage is not indicated.^{8,9,10,11} Daskalakis² and Ouviaña Millán⁷, who described lower rates of chorioamnionitis (3/29 and 0/8, respectively), also did not include amniocentesis in their protocol.

Although we had a high rate of NICU admission, it was inferior to every bedrest outcome reported by other groups, and most of them corresponded to very preterm births. A factor that may worsen our pregnancy outcome is the fact that the majority of our cases had membrane prolapse beyond external cervical os.

To date, there have been no consensual attitudes concerning gestational age limits for cerclage placement, antibiotic and tocolysis regimen, duration and pattern of bed rest or discharge moment.

We have generally considered, at our unit, the 24th week as the upper limit for performing an emergency cerclage, because before this gestational age fetal viability is extremely low, making the risk of an invasive procedure to prolong pregnancy acceptable.

The McDonald procedure is the most commonly used technique in our department (and the one used in all cases reported in our series) because it is simpler and less time consuming, when compared with the Shirodkar technique, and no differences have been found between the two procedures in what concerns efficacy.⁷

The main limitation of our study is the absence of a control group. We are aware that comparisons between studies are of limited value, as articles published on this issue are mostly small sample studies and show significant disparities concerning selection criteria. The retrospective design and the limited number of cases may also be considered weaknesses of our report. Daskalakis considers the inclusion of women with previous preterm delivery as a possible bias when studying the management of cervical insufficiency with bulging fetal membranes². Having in mind that we intend to identify and counteract the pathophysiological process that causes “cervical insufficiency”, we believe that women with a past obstetric history suggesting this condition should not be excluded.

The experience we report allows us to consider emergency cerclage as an alternative to expectant management (bed rest only) for women with mid-trimester cervical dilation, since the higher neonatal survival and lower NICU admission rates described in our series are far better than those reported for bed rest alone in previously published studies.

The findings reported here and in other papers published to date need to be replicated. Considering the rarity of this condition, the only viable way to reach consistent conclusions that can guide our attitudes is to evaluate it in

a multicenter randomized controlled trial, comparing cerclage placement and bed rest with bed rest only

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