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Original Article

Cervical Insufficiency and Cerclage Treatment of Pregnant Syrian Refugees

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ABSTRACT

Objective: We aimed to evaluate the cervical cerclage treatment among the Syrian refugees with cervical insufficiency.

Material and methods: Retrospective data of 42 Syrian pregnant women who had cervical cerclage suture due to cervical insufficiency between 2015 and 2017 scanned and analyzed with SPSS 22.

Results: The mean age of the cases included in the study was 27.4±6.8. 12 cases (28.6%) had spontaneous pregnancy losses twice in the 2nd trimester. 24 cases (57.1%) gave birth via spontaneous vaginal delivery, whereas 18 cases (42.9%) gave birth via cesarean section. A statistically significant difference was determined between pre-cerclage and post-cerclage cervical length. Whilst no difference was detected in pre-cerclage cervical length for deliveries at week 37, a significant difference was detected in post-cerclage length.

Conclusion: Increased miscarriages and second trimester pregnancy losses seen in the first years of the war especially due to use of chemical weapons and the stress suffered thereafter as well as the increased reproductive interest after the war bring together a greater desire for a healthy pregnancy and delivery. We believe that cervical-length measurement using transvaginal sonography during post-cerclage checks is important and that measurement of a cervical length equal to or above 30 mm may increase the probability of term delivery and decrease maternal, and most importantly, neonatal complications associated with preterm labor.

Keywords: syrian refugee; migration; cervical insufficiency; cerclage

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Introduction

The term cervical insufficiency is used to describe the inability of the uterine cervix to retain a pregnancy in the absence of uterine contractions or labor or in the second trimester without the signs and symptoms of both [1, 2]. It is thought to occur in 1% of the obstetric population and suspicion is raised when there is a history of recurrent midtrimester loss, previous preterm delivery, or a previous short cervix [2]. Based on existing data, the ultrasonic finding of a short cervical length in the second trimester is associated with preterm delivery, however, is not sufficient for diagnosing cervical insufficiency. One of the biggest obstetric challenges is the diagnosis and management of a short cervix as there are numerous definitions and guidelines [3].

Although women with a current singleton pregnancy, prior spontaneous preterm birth at less than 34 weeks of gestation, and short cervical length less than 25 mm before 24 weeks of gestation do not meet the diagnostic criteria for cervical insufficiency, available evidence suggests that cerclage placement reduces preterm birth and associated morbidity and mortality. Based on these results, cerclage should be scheduled after a combination of history and ultrasonographic findings [4, 5].

Moreover, in women between 16 and 24 weeks of gestation without a history of preterm birth, measurement of a cervical length less than 25 mm, followed by cervical placement was not found to be related to preterm delivery and reduction of associated neonatal morbidity and mortality [6].

The pathophysiology of cervical insufficiency has not yet been fully explored. Factors likely to increase the risk of cervical insufficiency include surgical trauma associated with conization, loop electrosurgery excision procedures, mechanical expansion of the cervix after termination of pregnancy or obstetric lacerations, however the data that verify these correlations are inconsistent [1, 2, 3, 7]. Other recommended etiologies include congenital Mullerian anomalies, cervical collagen and elastin deficiencies and in utero exposure to diethylstilbestrol. However, these factors are not specifically related to cervical insufficiency, and are not indicated for use of cervical cerclage.

Cervical length is best measured using transvaginal ultrasound [8]. The measurement varies depending on the week of gestation and shortening occurs during pregnancy. In pregnancies between weeks 22 and 25, average cervical length is expected to be 35 mm. A short cervix is defined as a cervix shorter than 25 mm in midtrimester pregnancy [9, 10, 11, 12]. A short cervix is important in that it is inversely proportional to preterm birth risk; the shorter the cervix is, the higher the preterm birth risk will be. If other risk factors for preterm birth exist, the risk will increase [11].

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Historically, several non-surgical and surgical methods have been proposed to treat cervical insufficiency. Certain non-surgical approaches including activity restriction, bed rest and pelvic rest were not proven to be effective and are not recommended to be used for the treatment of cervical insufficiency [11, 12] Another non-surgical approach to be considered in patients at risk of cervical insufficiency is vaginal pessary. Evidence for potential benefit of pessary placement in high risky patients is limited [13, 14, 15].

Surgical approaches include transvaginal and transabdominal cervical cerclage. The currently used standard transvaginal cerclage methods cover modifications of McDonald and Shirodkar techniques. The superiority of this suture type or surgical technique over the other has not been established [16, 17].

In the McDonald procedure, a simple purse-string suture made of nonabsorbable material is placed at the cervicovaginal junction [18]. Retrospective studies have not shown the benefit of placing an additional suture for reinforcement or restoration of cervical mucus [19]. The Shirodkar procedure involves dissection of vesicocervical mucosa to place the suture as close as possible to cervical internal os. The bladder and rectum are dissected from the cervix in a cephalic style, a suture is placed and tied, and the mucosa is placed above the knot [20, 21].

Transabdominal cervico-isthmic cerclage is generally used in case of anatomic limitations [e.g. after a trachelectomy] or unsuccessful transvaginal cerclage procedures, or in patients with a history of unsuccessful transvaginal cerclage procedures that resulted in second trimester pregnancy loss [22].

Transabdominal cerclage may be performed by laparotomy or operative laparotomy according to the doctor's experience or the patient's choice. There is no evidence showing that laparotomy or laparoscopic surgical approaches to cervico-isthmic cerclage placement are superior to other techniques or each other [23]. Abdominal cerclage procedures are generally performed at the end of the first trimester or in the second trimester [week 10-14 of gestation] or sometimes in the absence of pregnancy under elective conditions [23, 24]. These permanent sutures may be left in situ after delivery via cesarean section.

It has been reported that there are 1.1 million children below 10 years of age among 4 million Syrian refugees who fled their countries after the outbreak of civil war in 2011 and had to live a stressful life, and the number of Syrian babies born in Turkey in 9 years is around 500 thousand.

In Osmaniye province where 50 thousand Syrian refugees are hosted, pregnant refugees who applied for medical care during this stressful period were treated and monitored for pregnancy. In the light of the literature, we aimed to discuss retrospectively the results of the patients who suffered miscarriages due to cervical insufficiency and were treated with McDonald cerclage method and monitored at Osmaniye State Hospital between 2015 – 2017.

Material and methods

Pregnant women who applied to the gynecology and obstetrics clinic between the years 2015 – 2017 who have minimum one prior second trimester spontaneous painless pregnancy loss, and short cervix according to anamnesis and ultrasound findings during routine gynecologic follow-up and who currently had a singleton pregnancy and did not show any risk at screening tests were included in the study after informing them in detail about the cervical suture to be placed [cerclage] and obtaining their consents. Women who had multiple pregnancy, early membrane rupture, vaginal bleeding, positive chorioamnionitis findings, showing high risk at screening tests, and with prolapsed amnion membrane out of the cervical opening were excluded from the study. All 42 cases consisted of Syrian refugees, and had not undergone any cerclage, pessary or medical treatment of the cervix in any of their prior pregnancy losses and current pregnancies until our treatment and follow-up. Detailed consents were obtained from all cases for using their information in the analysis of data. The study was approved by the Ethical Review Committee of Osmaniye State Hospital, Osmaniye (Ethics Committee Decision Date - No: E-77378720-774.99).

Ages, gravidity, parity, number of second trimester losses, number of first trimester abortions, week of birth, types of delivery, infants' gender, fetal weight, week of cerclage, pre- and post-cerclage cervical lengths (mm) in transvaginal ultrasonography were collected and assessed from the patient files and the electronic system both retrospectively.

In all cases, the McDonald procedure was carried out by the same gynecology, anesthesia and operating room team using a simple nonabsorbable purse-string suture (Ethicon Mersilene Tape RS22 5mm x 40cm Double Arm) placed at the cervicovaginal junction. Prophylactic antibiotics (1st generation cephalosporins) were administered to the cases 1 hour before the procedure. In addition, no medical treatment was used in the post- or pre-operative period.

All cases were sent home after two days of follow-up in the maternity ward, and four weeks later they were called for follow-up, and cervical lengths were measured by transvaginal ultrasonography, and recorded. Pre- and post-cerclage records were compared and their length differences were compared. All cases were followed up by the physician who performed the procedure throughout their pregnancy, and deliveries were planned. Cerclage suture was removed either before or after delivery, depending on the type of delivery.

SPSS 22 software was employed in data analysis. The Kolmogrov Simirnov test was used to examine normal distribution, and the Levene test was used to examine homogeneity of quantitative data. Parametric methods were used to analyze normally distributed data, whereas non-parametric methods were used to analyze non-normally distributed data. Quantitative data were expressed by mean, std, median and minimum-maximum values. Categorical data were expressed by n[count] and percentage (%). The independent t-test, a parametric method, was used in pairwise comparison of independent groups. The Mann Whitney u-test, a non-parametric method, was used in pairwise comparison of independent groups, whereas the Wilcoxon test was used to compare dependent groups. The data were analyzed at 95% confidence interval, and a p value less than 0.05 was considered significant.

Results

We retrospectively evaluated the data between 2015 and 2017 of 42 cases of cervical insufficiency and cervical cerclage suture, among our Syrian pregnant patients who have immigrated to our country due to the civil war in their country since 2011 and gave birth to the 5th generation for about 9 years.

The mean age of the cases included in the study was 27.4±6.8. It was observed that the median birth weeks of the cases who had an average gravidity of 3 (min; 2-max; 5) and a parity of 1 (min; 0-max; 2) was week 38 (min; 34-max; 40). When the cases were assessed in terms of fetal weight, mean fetal weight was 3106 ± 342 grams. 6 cases (14.2%) had a history of abortus in the first trimester, 30 cases (71.4%) had 1 spontaneous loss in the 2nd trimester, and 12 cases (28.6%) had spontaneous losses twice in the 2nd trimester.

In terms of the week of cerclage, it was observed that the mean value was 15 weeks and 3 days, whereas the smallest cerclage week was 13 and the highest cerclage week was 20.

From anamnesis before the cerclage operation, and transvaginal ultrasonographic exam performed after the cerclage procedure, the mean, shortest and longest uterine cervix length was 17.5 mm, 12 mm, and 21 mm, respectively. In transvaginal ultrasonographic checks of the same cases at week 4 after cerclage procedure, it was observed that average uterine cervical length was 32.5 mm, whereas the shortest cervical length was 26 mm and the longest 40 mm. A statistically significant difference was determined between pre-cerclage and post-cerclage cervical length (respectively 17.5,32.5)(p:0.01) (Table 1).

Table 1. Demographic and clinical characteristic findings

Age	27.4 ± 6.8
Gravidity	3 (2-5)
Parity	1 (0-2)
Delivery week (w)	38 (34-40)
Fetal weight (gr)	3106 ± 342
Cerclage week (w)	15.5 (13-20)
Pre-cerclage length (mm) *	17.5 (12-21)
Post-cerclage length (4w) (mm)*	32.5 (26-40)
2nd trimester spontaneous loss 1 2	 30 (71.4%) 12 (28.6%)
Number of 1st abortions	6 (14.2%)
Delivery method C/S Nsd	 18 (42.9%) 24 (57.1%)
Gender M F	 21 (50%) 21 (50%)

*Sd Standard deviation, C / S: Cesarean section, NSD: Normal spontaneous birth, Tr: Trimester * p<0.01*

Whilst no difference was detected in pre-cerclage cervical length for deliveries at week 37 (p:0.324), a significant difference was detected in post-cerclage length (p:0.02) (Table 2).

Table 2. The correlation between cervical length and delivery week

	Delivery week (w)		
	<37w	≥37 w	*P-value*
Pre-cerclage cervical length (mm)	16.5 (15-18)	18.5 (12-21)	0.324
Post-cerclage cervical length (mm)	30 (26-31)	33.5 (27-40)	*0.020*

24 cases (57.1%) gave birth via spontaneous vaginal delivery, whereas 18 cases (42.9%) gave birth via cesarean section. It was observed that the gender of babies born after cerclage was distributed evenly between male and female (50%).

Discussion

These people who had been leading a hard life after the outbreak of civil war in 2011 and who mostly consisted of women and children took shelter in our country as refugees. During wartime and in the aftermath of the war, this process led to the emergence of accounts of bad pregnancy, especially in the first years, something we have seen this clearly and continue to witness in the gynecology and obstetrics department. Thus, we combined detailed histories of cervical insufficiency, physical examination findings and ultrasonography findings of all patients in our study, and after analyzing our data accordingly, we applied cervical cerclage procedure on all patients whom we diagnosed with cervical insufficiency.

Cerclage placement can be indicated based on history of cervical insufficiency, physical examination findings or history of preterm birth, and some ultrasonographic findings. Indications for cerclage are present for those cases who have a history of labor pains or one or more second third trimester pregnancy losses related to painless cervical dilatation without placenta abruption, or a history of previous cerclage in the 2nd trimester due to painless cervical dilatation and have painless cervical dilatation in the second trimester during physical examination and spontaneous preterm labor before 34 weeks of gestation in previous pregnancy, and were found to have short cervical length (minimum 25 mm) in ultrasound exam before 24 weeks of gestation during current singleton pregnancy [4, 5, 6, 25]. In a recent study in relation to the place of ultrasound in cerclage procedure, it is stated that ultrasound is safe until week 24, and does not increase premature delivery and obstetric complication risk, and short cervical length in ultrasound is an important criteria, but further randomized studies are needed to evaluate pregnancy outcomes after week 24 [26].

It is not recommended to diagnose cervical insufficiency and to perform cerclage procedure in cases without a history of preterm spontaneous birth and in whom short cervix is detected. Furthermore, there are studies suggesting progesterone vaginal to reduce preterm birth risk when a cervical length equal to or less than 20 mm is detected before gestation or week 24 of gestation in asymptomatic women who do not have a history of premature birth [27].

Although there are studies suggesting progesterone vaginal instead of cerclage in cases with short cervical length, but without a history of preterm birth, it is stated that preterm delivery is delayed and associated complications are clearly reduced when cerclage is combined with progesterone vaginal in cases with a cervical length less than 10 mm [28]. All our cases are patients who were diagnosed with a history of minimum one 2nd trimester loss and a short cervix in ultrasonography taken before week 24, and no progesterone or a medical treatment which is a derivative thereof was applied in the preop or postop period.

In twin pregnancies, in cases where the cervical length is less than 25 mm, placement of cervical cerclage suture is not recommended as it may increase preterm birth risk. Again, the same studies suggest that there is insufficient evidence that cervical electrosurgical excision procedure, cervical biopsy and cerclage in Mullerian anomaly prevent preterm delivery [25, 29]. In our study, all our pregnant women had singleton pregnancies and no cervical excisional procedure was applied to any of them, and no embryological developmental defects were detected.

Morbidity and mortality rates are low after cerclage procedure, whether abdominal or vaginal, and premature membrane rupture, chorioamnionitis, and cervical lacerations are complications associated with suture displacement. Besides, complications inevitably increase when cerclage is indicated, and for instance, cerclage is performed due to rupture of membrane or in emergency patients presenting with a dilated external cervical os. Uterine rupture and sepsis likely to develop in pregnancy are quite rare but may develop in all types of cerclage [24, 30]. In all our cases, the cerclage procedure was performed under elective conditions according to history and transvaginal ultrasonographic findings, and no serious complications developed.

The abdominal approach is associated with increased risk of development of intraabdominal pathologies and life-threatening vaginal bleeding compared with the vaginal approach. Also, in risky conditions, it prevents uterine discharge and vaginal birth and birth should be scheduled for week 39 [24, 31]. The cerclage procedure was performed vaginally on all cases. The spontaneous monitoring of the cases was carried out under ambulatory outpatient conditions.

Prophylactic antibiotic therapy and use of tocolytics are not recommended in pre- or post-operative period and are not shown to increase the effectiveness of cerclage. The use of antibiotic and tocolytic therapy is recommended only if

indicated [31, 32]. Tocolytic therapy or antibiotic therapies were not administered in preoperative and postoperative monitoring of the 42 patients for whom we planned cerclage under elective conditions. Also, clinical importance of restricted activity, bed rest and certain vitamin reinforcements have not been established.

The primary result of our study and the subject that requires discussion here is whether we should perform ultrasonographic follow-up in the postop period and whether we can predict the timing of delivery according to the size of the cervical length. In particular, Hedriana HL and Dijkstra K et al. recommend that ultrasonographic assessment after cerclage placement, especially without complication and under elective conditions will only lead to cost and loss of time, and that only routine pregnancy monitoring should be performed in cases without clinical symptoms [33, 34].

They emphasize that success of prophylactic cerclage based on shortened cervical length in ultrasonography and history of bad pregnancy was high, but success decreased as cervical dilatation increased, when the literature was reviewed [35]. In several studies comparing vaginal prophylactic cerclage with emergency cerclage, it is stated that term live birth rates were high and maternal and neonatal complication rates due to preterm birth were low [36, 37].

We performed a vaginal cerclage procedure on all cases in our study under elective conditions, and then we meaningfully demonstrated that our maternal and neonatal results were very good and term delivery rates were very high, particularly in cases where postoperative transvaginal measurement indicated cervical lengths equal to and above 30 mm.

It is recommended to remove the cerclage suture after week 37 in patients who have not developed any complications in the preoperative and postoperative period after vaginal cerclage. It is recommended that the cerclage suture be removed before the scheduled delivery week and not postponed until the last day, especially in the case of planned vaginal delivery. Yet, particularly in pregnancies that are about to end, the removal of cerclage is not seen an indication to start the birth. In cases with indications for cesarean delivery, scheduled delivery should be conducted from week 39 onwards, and cerclage suture should be removed during scheduled cesarean section, but it should be kept in mind that delivery may start spontaneously between 37th and 39th weeks of gestation [38]. In our study, deliveries were scheduled according to clinical symptoms such as painful contractions, rupture of membranes, cervical dilatation and vaginal bleeding, and follow-up.

Given that no prospective studies exist regarding cases with cervical cerclage and premature rupture of membranes and upon reviewing the literature, the majority of which are retrospective studies, it has been reported that retention of cerclage for more than 24 hours, especially after premature rupture of membranes contributes to the prolongation of pregnancy [39]. Other studies however suggest increase in neonatal morbidity and mortality due to retention of cerclage after preterm membrane rupture particularly in preterm pregnancies, maternal sepsis, neonatal sepsis, respiratory distress syndrome and maternal chorioamnionitis It is stated that the reliability of all these studies is limited, given their retrospective character. If the cerclage suture is removed after premature rupture of membranes, its retention and prophylactic antibiotic treatment longer than 7 days are not recommended [39, 40].

The diagnosis of threatened preterm labor may be difficult in cases with cerclage, and although removal of the cerclage suture is recommended in cases of cervical changes related to delivery, painful contractions and severe vaginal bleeding, detailed information should be given to the patient and their relatives when these clinical findings are not found, and the decision should be made based on the clinical condition, and the cases should be monitored routinely in terms of preterm birth [41].

The limitations of our study are that it is retrospective and there is no control group, and the most important advantage is that it can be the first article written by discussing the effects of war on pregnancy outcomes.

In conclusion, increased miscarriages and second trimester pregnancy losses seen in the first years of the war especially due to use of chemical weapons and the stress suffered thereafter as well as the increased reproductive interest after the war bring together a greater desire for a healthy pregnancy and delivery. We believe that cervical-length measurement using transvaginal sonography during post-cerclage checks is important and that measurement of a cervical length equal to or above 30 mm may increase the probability of term delivery and decrease maternal, and most importantly, neonatal complications associated with preterm labor.

Disclosure

Authors have no potential conflicts of interest to disclose.

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