Outcomes of emergency cervical cerclage after amnioreduction in twin pregnancies with a fully dilated cervix and amniotic membrane prolapse

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Abstract

Objective: The aim of this study was to evaluate the effectiveness of emergency cervical cerclage (EmC) in twin pregnancies with a fully dilated cervix and amniotic membrane prolapse.

Material and Methods: This retrospective study examined records from December 2015 to December 2022 and included 20 twin pregnancies. The patients were divided into two groups, the EmC group (EmC group) and the no EmC (control) group, and pregnancy outcomes were compared.

Results: EmC was performed after amnioreduction in 11 twin pregnancies. Nine patients who refused EmC were followed up with expectant management. The mean gestational age at first examination was similar between the EmC (21.36±1.62 weeks) and control group (21.00±3.16 weeks, p=0.372). The median (range) volume of removed amniotic fluid was 151.82 (120-420) mL. Cases in the EmC group gained a significantly longer delay until delivery (47.72±28.14 days) compared to controls (2.33±0.5 days, p<0.001). All of the women in the control group gave birth within three days following admission to hospital. The mean gestational age at birth was significantly higher in the EmC group (28.18±4.53 weeks) than in the control group (21.57±3.53 weeks, p<0.001). Thirteen (59.09%) infants survived in the EmC group while only two infants (22.22%) of one patient survived in the control group (p<0.001).

Conclusion: EmC increases the survival rate of infants by prolonging the gestational age at delivery in twin pregnancies. Clinicians and patients should be encouraged regarding the use of EmC in twin pregnancies with a fully dilated cervix and prolapsed amniotic membranes. (J Turk Ger Gynecol Assoc. 2025; 26: 26-33)

Keywords: Twin pregnancies, fully dilated cervix, membrane prolapse, amnioreduction, emergency cervical cerclage

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Introduction

Twin pregnancy rates have increased markedly, mostly due to increased use of assisted reproductive technology and increasing maternal age and currently account for approximately 2-4% of total births worldwide (1). This significant increase has correlated with an increase in the preterm birth (PTB) frequency, as twin pregnancies have a 50% PTB rate, 12

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times greater PTB risk, and 5 times greater neonatal death risk than singleton pregnancies (2). It was reported that survival and survival without severe morbidity substantially improved with every additional week of pregnancy prolongation (3). Since PTB is the major reason for neonatal morbidity and mortality, despite significant advances in the area of neonatal intensive care, all possible measures should be considered to prevent PTB in twin gestations (4).

One of the main underlying mechanisms leading to spontaneous PTB in twins is acute cervical insufficiency (incompetency), defined as cervical dilatation without pain in the mid-trimester. This pregnancy complication is responsible for about 10-25% of all second-trimester pregnancy losses (5). The cervical insufficiency rate in cases with twins (5%) is significantly higher than among singleton cases (0.05-1.8%) (6). Cases frequently admitted to obstetric units with minimal symptoms, ending in a spontaneous cervical dilatation with membrane prolapse at or beyond the external cervical os. Also, direct contact of fetal membranes with vaginal flora could increase the risk of chorioamnionitis, and thus, extreme PTB (7). The total PTB rate in cervical insufficiency cases has been estimated to be nearly 90% (8). To decrease the adverse obstetric outcomes associated with PTB in twin pregnancies with acute cervical insufficiency, an optimal strategy for preventing PTB should be considered to prolong these pregnancies.

The use of therapeutic interventions, such as vaginal progesterone and tocolytics, in singleton pregnancies with dilated cervix was reported to decrease the PTB rate and neonatal morbidity and mortality (9,10). However, twin gestations did not exhibit as great a benefit from these treatment modalities as singletons (9,11). Cervical cerclage is a widely used method for prolonging the pregnancy duration in cases with cervical insufficiency. Two main types of this procedure are elective cerclage and emergency cerclage (EmC). Elective cerclage is usually performed at the end of the first trimester and indication is based on a history of a painless second-trimester delivery (12). EmC (rescue cerclage, physical examination-indicated cerclage), which refers to the placement of a cerclage in cases presenting with a painless cervical dilatation and prolapsed amniotic membranes towards the vagina, is a difficult method to conduct effectively (13). The main challenge in EmC is probably the elevated infection risk, because of the increased exposure of the amniotic membranes to vaginal bacteria, and it is hard to push the membranes back into the uterus against intrauterine pressure, especially in cases with a fully dilated cervix (14). Thus, the effectiveness and safety of this procedure remain controversial. Previous studies have demonstrated encouraging outcomes concerning the advantages of EmC in singleton pregnancies (15). However, data on the efficacy of dilated cervix-based cerclage in twin pregnancies are limited. Unlike singleton pregnancies, few studies have been conducted on the use of cerclage for dilated cervix in twin pregnancies with conflicting outcomes. Some of these investigations showed that EmC reduced the PTB and adverse neonatal outcome rates in twin pregnancies with dilated cervix (16). However, a recent study demonstrated that the neonatal outcomes of EmC had a more favorable prognosis in singleton pregnancies than in twin pregnancies, and twin pregnancy is an independent risk factor for PTB (17). Moreover, to the best of our knowledge, no study to date compares the efficacy of EmC and expectant management in twin pregnancies with fully dilated cervix and prolapsed membranes. Thus, there is little evidence to inform patient counseling about the risks and benefits of EmC placement in twin pregnancies. Thus, the capability to guide a patient with a twin pregnancy who is considered to be suitable for EmC is limited.

The aim of this study was to compare the outcomes of two groups of twin pregnancies with and without EmC and all with fully dilated cervix and prolapsed membranes. A secondary aim was to evaluate the effectiveness of EmC in these patients.

Material and Methods

This retrospective study included data on twin pregnancies with a fully dilated cervix and bulging intact fetal membranes presenting between December 2015 and December 2022. Cases included in this investigation were those with twin pregnancies who presented between 17 and 24 weeks of gestation with painless, fully dilated cervix diagnosed by physical examination and who delivered at the same hospital by the end of the pregnancy course. The study project was approved by the Institutional Ethics Committee of Dicle University Faculty of Medicine (approval number: 2021/322, date: 30.06.2021). The data were collected retrospectively from the patient files recorded during the examination, cerclage, antepartum, intrapartum, and postpartum periods. The patients were divided into two groups: the EmC group and the control group, consisting of women who refused cerclage (expectant management group). The results of both groups were compared. All patients were informed in detail about possible risks that may occur during and after the EmC procedure. Amnioreduction and EmC were performed only on patients who accepted the possible risks and gave their informed consent.

Exclusion criteria were: patients who had active uterine contractions; preterm premature amniotic membrane rupture; severe vaginal bleeding; history- or US-indicated cerclage placed earlier in the current pregnancy; clinical chorioamnionitis or placental abruption on presentation; intrauterine fetal demise or selective fetal reduction of one or more fetuses before

presentation; willingness for pregnancy termination; and pregnancies carrying fetuses with chromosomal or structural abnormalities detecting by US examination or other prenatal screening procedures. Furthermore, twin pregnancies that underwent cerclage due to cervical shortening or funneling, or prior history-indicated cerclage were not included in this study. Cases were excluded if EmC was performed after the delivery of one fetus of a twin pregnancy. We also excluded patients with missing medical records.

The fetuses and cervical structures of all patients were evaluated by an experienced clinician (A.Y.) with transabdominal and transvaginal ultrasound (Figure 1). Based on the patient's medical history for the current pregnancy, all patients underwent speculum and digital cervical examination several times prior to arrival. We avoided speculum and digital examination prior to EmC. Amnioreduction was performed in all patients before EmC. EmC was performed by the same surgeon (A.Y.), after all patients were evaluated clinically and had undergone laboratory investigations, including fever, leukocytosis, uterine contractions, bleeding, and premature rupture of membranes. We performed external tocodynamometry in all pregnant women before cerclage placement to eliminate PTB or impending miscarriage. EmC was not performed in cases considered to be in preterm labor following uterine activity monitoring. Tocolytics were not administered routinely preoperatively to all cases in the EmC group. After EmC, all cases received one of the following tocolytics: indomethacin, nifedipine, or progesterone. Moreover, one of these tocolytics was administered to all cases in the control group. All cases in the EmC group received broad-spectrum antibiotics perioperatively. These cases were hospitalized following the EmC procedure for 10-14 days and then discharged with close outpatient follow-up if the transvaginal US showed a closed cervix. Parenteral antibiotic and vaginal iodine treatment were continued in the hospital for 10-14 days in patients in the EmC group whose pregnancy was still ongoing. The regimens and duration of use were determined based on the discretion of the attending surgeon. Antenatal corticosteroid treatment was administered, based on the gestational age at presentation and outcomes of the EmC. Abstinence from sexual intercourse was recommended and the patients were advised to avoid challenging physical effort. Bed rest was not routinely advised. The patients in the control group were followed up as inpatients and received tocolytic drugs, parenteral antibiotics, antenatal corticosteroids (at 23-24 weeks of pregnancy), and bed rest until delivery.

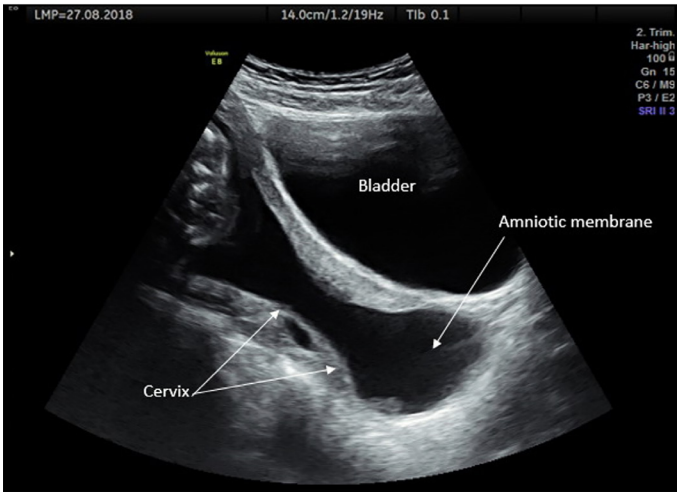

Figure 1. Transabdominal ultrasound image of a patient presented with a fully dilated cervix and amniotic membrane prolapse

Demographic, clinical features and treatment approaches of both groups were evaluated in detail. The mean gestational age of both groups during the first admission and delivery, the occurrence of clinical chorioamnionitis, fetal survival, time from EmC to delivery, mean birth weight, neonatal intensive care unit (NICU) admission, and postnatal survival were evaluated. Data regarding pregnancy and neonatal outcomes in cases delivered at another hospital were collected by phone contact with families directly or with the treating clinicians of the hospitals.

Clinical chorioamnionitis was diagnosed by the presence of maternal fever (≥38 ºC orally) with no evidence of an extrauterine cause related to at least two of the following signs: abdominal pain, uterine tenderness, maternal tachycardia (>100 beats/minute), fetal tachycardia (>160 beats/minute), leukocytosis, and new-onset purulent foul-smelling vaginal discharge (18).

Technical details of EmC

1. Amnioreduction: Amnioreduction was conducted under transabdominal ultrasound guidance with a 20-gauge needle at different positions on the ventral aspect of the uterus. Amnioreduction facilitates the repulsion of amniotic membranes and reduces tension on the fetal membranes and the risk of membrane rupture. Thus, amnioreduction provides retraction before cerclage placement and allows preservation of the borders of the cervix (19). The volume of amniotic fluid reduction was determined according to the distension of the bulging sac, ranging from 120 to 420 mL (20). Amnioreduction proceeded until the prolapsed membranes showed a deflated appearance.

2. Surgical technique:

- Under general or spinal anesthesia and after cleaning the perineum, the vagina is gently explored with Breisky retractors in the Trendelenburg position.

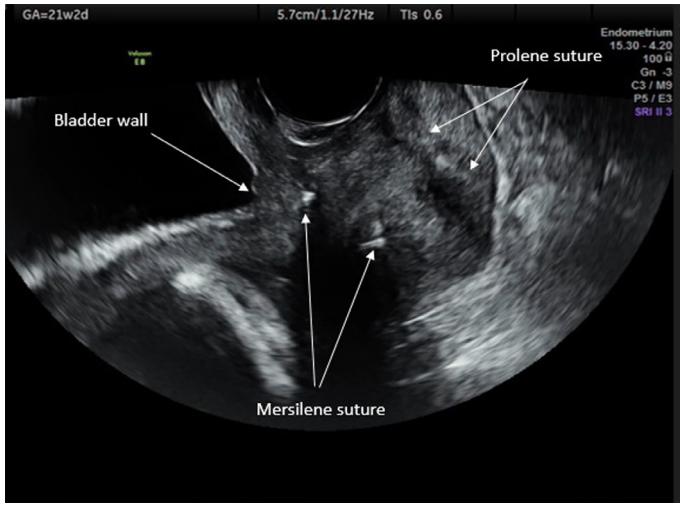

Figure 2. Transabdominal ultrasound image of a patient following emergency cervical cerclage

- After cleaning the vagina with plenty of iodine, the cervix is pulled up by holding with forceps.
- Light pressure is applied to the lower outer cervical wall with the Breisky retractor tip and the pouch is gently pushed back with a finger.
- When the pouch is fully retracted, the entire cervix is grasped with ovarian forceps, and the membranes are prevented from protruding.
- Double suture technique: The proximal cervix is sutured as high as possible with polyester fiber ligature (Ethicon Mersilene Tape® RS22 5 mm x 40 cm). Care should be taken to avoid penetrating the ureters. The open distal cervix is sutured with a polypropylene (Prolene Ethicon®) suture (Figure 2).

Statistical analysis

SPSS, version 22.0, was used for analyzing the clinical data (IBM Inc., Armonk, NY, USA). Descriptive statistics are summarized as counts and percentages for categorical variables, and mean ± standard deviation and range (minimum-maximum) for continuous variables. A Kolmogorov-Smirnov test was performed to determine whether or not parameters were normally distributed. Continuous variables were compared using either the Student's t-test or the Mann-Whitney U test among the groups, as appropriate. Differences in categorical variables between groups were evaluated using Fisher's exact test. A p-value of less than 0.05 was considered statistically significant.

Results

A total of 20 patients with fully dilated cervix and bulging intact fetal membranes were included. Eleven patients who underwent EmC after amnioreduction were included in the study group and nine patients who were followed up with expectant management were included in the control group.

The type of pregnancy, the volume of amniotic fluid reduction, mode of delivery, and neonatal survival in both groups are presented in Table 1. On examination of pregnancy history, none of the patients in the EmC group had any surviving children. Three of eleven (27.3%) conceived spontaneously and the other eight conceived through ovulation induction protocols or IVF treatment. Five patients in the control group had previously surviving children and eight of nine (88.9%) conceived spontaneously.

Demographic and clinical characteristics and pregnancy outcomes of both groups are presented in Table 2. The mean maternal age did not differ between the EmC group (26.90±6.12 years) and the control group (27.55±5.65 years, p=0.405). The mean number of gravida and previous abortions were also similar in the EmC and control groups (2.54±1.69 vs. 2.66±1.80, p=0.439 and 1.18±1.53 vs. 0.44±1.01, p=0.342 respectively). The mean gestational age at the first examination was similar between the EmC group (21.36±1.62 weeks) and the control group (21.00±3.16 weeks, p=0.372). The median (range) amount of removed amniotic fluid was 151.82 (120-420 mL). No cases experienced intraoperative membrane rupture in the EmC group. Cases in the EmC group gained a significantly longer interval time to delivery (47.72±28.14 days) compared to pregnant women in the expectant management group (2.33±0.5 days, p<0.001). When the surviving neonates in both of the groups were compared, the mean interval time to delivery was prolonged by 64 days the EmC group, while the mean interval time to delivery was prolonged by only two days in surviving neonates in the control group (p<0.001). All of the pregnant women in the control group gave birth within three days of admission to hospital. The mean gestational age at birth was significantly higher in the EmC group (28.18±4.53 weeks) than in the control group (21.57±3.53 weeks, p<0.001). Furthermore, the mean gestational age at delivery of the surviving fetuses differed between the two groups, with EmC cases delivering at a mean of 30.57±3.82 weeks, compared with cases managed expectantly which were delivered at 25 weeks (p<0.001).

All pregnant women in the EmC group were delivered due to the preterm onset of active uterine contractions. Nine (81.81%) of the patients in the EmC group were delivered by Cesarean section. The survival rates were significantly different between the two groups (p<0.001) with 13 (59.09%) babies in the EmC group surviving, including one with cerebral palsy (CP) while in the control group, the twin babies of only one patient (11.11%) survived. The mean overall birth weight in the EmC group was 1264±70 grams and in the 13 surviving neonates it was 1640±509 grams. In cases treated with expectant

Table 1. Type of pregnancy, the volume of amniotic fluid reduction, mode of delivery, and neonatal survival in both groups

Groups	Pregnancy type	Amnioreduction (mL)		Delivery type	Neonatal survival	
		Fetus 1	Fetus 2		Fetus 1	Fetus 2
EmC group, (n=11)	In vitro fertilization	180	0	Cesarean	Healthy	Healthy
	In vitro fertilization	140	140	Cesarean	Healthy	Healthy
	Spontaneous	140	100	Cesarean	Healthy	Cerebral palsy
	Spontaneous	140	0	Vaginal	Demise	Demise
	Ovulation induction	140	120	Cesarean	Healthy	Healthy
	In vitro fertilization	160	0	Vaginal	Demise	Demise
	In vitro fertilization	180	120	Cesarean	Demise	Demise
	Ovulation induction	160	100	Cesarean	Healthy	Demise
	In vitro fertilization	420	140	Cesarean	Demise	Demise
	Spontaneous	240	0	Cesarean	Healthy	Healthy
	In vitro fertilization	400	320	Cesarean	Healthy	Healthy
Control group, (n=9)	In vitro fertilization	-	-	Cesarean	Healthy	Healthy
	Spontaneous	-	-	Vaginal	Demise	Demise
	Spontaneous	-	-	Cesarean	Demise	Demise
	Spontaneous	-	-	Cesarean	Demise	Demise
	Spontaneous	-	-	Abortion	Demise	Demise
	Spontaneous	-	-	Abortion	Demise	Demise
	Spontaneous	-	-	Abortion	Demise	Demise
	Spontaneous	-	-	Abortion	Demise	Demise
	Spontaneous	-	-	Abortion	Demise	Demise

Table 2. Demographic and clinical characteristics and results of both groups

	Emergency cerclage group (n=11)		Control group (n=9)		p
	Mean ± SD	Range	Mean ± SD	Range	
Maternal age, years	26.90±6.12	18-38	27.55±5.65	18-37	0.404
Gravida, (n)	2.54±1.69	1-5	2.66±1.80	1-6	0.439
Parity, (n)	0.36±1.15	0-4	1.22±1.64	0-5	0.098
Previous abortion, (n)	1.18±1.53	0-4	0.44±1.01	0-3	0.342
Previous term delivery, (n)	-	-	1.22±1.64	0-5	-
Gestational age at presentation, weeks	21.36±1.62	19-24	21.00±3.16	17-24	0.372
Gestational age at birth, weeks (all fetuses)	28.18±4.53	22-34	21.57±3.53	17-24	**<0.001**
Gestational age at birth, weeks (survivors)	30.57±3.82	23-34	25	25	**<0.001**
Prolonged gestational age (all fetuses), days	47.72±28.14	7-91	2.33±0.5	2-3	**<0.001**
Prolonged gestational age (survivors), days	64.0±20.38	28-91	2	2	**<0.001**
Birth weight (all fetuses), (g)	1264±70	450-2400	573±12	380-700	**0.008**
Birth weight (survivors), (g)	1640±509	660-2400	648±24	630-665	**<0.001**
NICU admission of the surviving neonates	13 (100%)		2 (100%)		1.000
Number of babies surviving	13 (59.09%)		2 (11.11%)		**0.001**
SD: Standard deviation, NICU: Neonatal intensive care unit					

management, the mean weight of four individual twins was 573 grams (excluding five miscarriages), and the two surviving babies were 630 and 665 grams. The 1 min Apgar score of the surviving neonates in the EmC group ranged between 2 and 8, and the 5 min Apgar score between 4 and 9. The 1 min and 5 min Apgar scores of the surviving babies in the control group were 4-7 (fetus 1) and 5-7 (fetus 2), respectively. All surviving neonates required NICU admission in both of the groups.

None of the cases who underwent EmC with amnioreduction suffered from complications, including preterm premature membrane rupture, clinical chorioamnionitis or other adverse outcomes associated with amniocentesis. Moreover, no cases in the control group experienced clinical chorioamnionitis.

Discussion

In the current study, 11 cases with twin pregnancies who experienced EmC for a painless fully dilated cervix are included and their features at presentation and pregnancy outcomes after the EmC procedure are described. These features and pregnancy outcomes were compared with patients with twin pregnancies with a fully dilated cervix who experienced expectant management. The findings show that the use of EmC in twin pregnancies with fully dilated cervix was related to a significantly longer interval from presentation to delivery compared with expectant management. All cases managed expectantly gave birth within three days, starkly underlining the unfavorable prognosis in the absence of intervention. Thus, the mean gestational week at delivery was significantly higher in the EmC group than in the expectantly managed group. Furthermore, the rate of neonatal survival to discharge was substantially higher in the EmC group compared with the control group. To the best of our knowledge, this is the first cohort study comparing the efficacy of EmC and expectant management in twin pregnancies with fully dilated cervix and prolapsed membranes. Our clinical protocol is to routinely recommend an EmC procedure to twin pregnancies with painless fully dilated cervix in the second trimester.

This study included only twin pregnancies with fully dilated cervix and prolapsed membranes. Pelvic discomfort and vaginal discharge should be questioned at every ultrasound examination in all twin pregnancies. If there is a complaint, cervical length, funneling and softness should be evaluated by transvaginal sonography.

There are a few articles in the literature about singleton pregnancies undergoing EmC after amnioreduction. In a retrospective cohort study on cerclage vs. expectant management of twin pregnancies with ≥1 cm cervical dilatation, Roman et al. (16) stated that although the cerclage results are promising, more studies are needed. In a meta-analysis, three randomized controlled trials included twin pregnancies with a cervical length <2.5 cm, screened by transvaginal ultrasound before 24 weeks of gestation. A total of 49 twins with a short cervical length were identified with 24 in the cerclage group and 25 in the control group. The key message of this meta-analysis is that cerclage does not prevent PTB in asymptomatic twin gestations with a maternal short cervical length measured by transvaginal ultrasound (21). In a study conducted in Denmark, cerclage was applied to 65 twin pregnant women with emergency and ultrasound indications. Pregnancy was prolonged by 48 days in the 18 patients group with emergency cerclage indication and by 81 days in the 47 patients group with ultrasound cerclage indication (22). In another study, EmC was applied to 12 multiply pregnant (10 twins and 2 triplets) women with visible fetal membranes through a dilated internal cervical os on speculum examination. These authors concluded that emergency cerclage placement was associated with a pregnancy prolongation of 60.25 days and a presumed parallel benefit of increased neonatal survival and higher birth weight (23). A retrospective cohort study in dichorionic diamniotic twin gestations with short cervix has shown that cervical cerclage was associated with a 60% reduction in the rate of spontaneous birth <32 weeks gestation (24). We suggest that EmC may be more effective than any other method in patients with complete cervical dilatation and membrane prolapse. Gestational week went from around 21 weeks in the EmC group to approximately 28 weeks in all cases in the EmC group and was over 30 weeks in surviving cases in this group, whereas the gestational age was prolonged by only 2.3 days in the non-cerclage group. It is not possible to find published randomized controlled studies, there are only case reports in which EmC was applied following amnioreduction. In a series of eight singleton cases who underwent EmC after amnioreduction, a median of 132.9 (60-230) mL amniotic fluid was removed and the mean gestational age was prolonged by 27.1 days and four live infants were delivered (25). In the present study, the median volume of removed amniotic fluid was 151.82 mL and the mean gestational age was prolonged by approximately 48 days in the EmC group compared to only 2.3 days in the control group. Of note, in the seven pregnancies with surviving newborns from the EmC group, pregnancy was prolonged by approximately 64 days. We hope that our results will encourage the concerned obstetricians, especially in patients with a strong desire to have children, that EmC may be used in consenting, fully-informed patients.

Pregnant women who present with cervical dilation of ≥4 cm may experience poorer pregnancy outcomes following EmC. When cervical dilation reaches ≥4 cm, the membranes bulging beyond the cervix increase their level of distension (26). In addition, repeatedly manipulating the membranes during surgery can further raise this distension, heightening

the risk of rupture. The primary goal of amnioreduction is to alleviate membrane distension. Following amnioreduction, membrane distension is significantly decreased, which in turn simplified the procedure and reduced operation time (25). Our findings indicate that amnioreduction can effectively improve pregnancy and delivery outcomes in patients with significant cervical dilation, aligning with previous research.

In the present study, all cases in the EmC group received parenteral prophylactic antibiotics and vaginal iodine therapy for 10-14 days. Also, anti-contraction medications were used in both groups and all were advised bed rest. Given our findings, it appears that these treatments alone were not effective, unless cerclage was also applied. Due to the parenteral and local treatment, no signs of systemic infection were found in any of the patients. We believe that the addition of vaginal iodine treatment during parenteral treatment is effective in preventing ascending infection.

In a systematic review on PTB prevention in twin pregnancies, the use of vaginal progesterone in twin pregnancies was shown to reduce preterm labor and improve newborn outcomes. It was concluded that there were very limited data on cerclage and further research was required to reduce the risks of PTB and its sequelae in twin pregnancies, including the use of combinations of therapies (27). The risk of PTB is high in multiple pregnancies and it is much more difficult to prevent PTB in these patients compared to singleton pregnancies. Demonstrably effective interventions for the prevention of PTB in twin gestations are lacking. In the present study, most of the patients used progesterone during their pregnancies, and bed rest is commonly advised in patients who become pregnant with infertility treatment, but PTB was not prevented by progesterone. In the present study, PTB was irreversible, and some patients were treated with “heroic cerclage” to give them a chance. Despite the worse obstetric history in the EmC cases, much better results were obtained with high-level EmC compared to the control group. No serious infection was detected in any of the patients clinically in the postoperative period. In one twin, a younger sibling was diagnosed with CP in the late postoperative period.

The main strength of this study is that, to the best of our knowledge, this is the first cohort study to demonstrate the efficacy of EmC in twin pregnancies with a fully dilated cervix. All cases in the EmC group were evaluated and informed by a single perinatologist, EmC was performed by an experienced surgical team and followed up by the same team after surgery.

Study limitations

However, there are some limitations. A lack of detailed information on patient management before hospital presentation introduces a potential confounding factor, which could affect the accuracy of the study's outcomes. Moreover, the retrospective nature of this study may introduce bias to the findings. The relatively small sample size also increases the risk of bias and also limits the generalizability of the findings, making it difficult to draw strong conclusions applicable to the wider population. Finally, variability in patient choices introduced a level of selection bias that could affect the comparability between the EmC and control groups.

Conclusion

Although the obstetric history of the EmC group was worse than that of the control group, a significantly higher proportion of neonates survived compared with the expectant management group (59% vs. 11%). Moreover, EmC prolonged the gestational age at delivery, thus, increasing the babies’ chances of survival. However, given the limitations of our study, more prospective randomized controlled studies are needed.

Ethics

Ethics Committee Approval: *The study project was approved by the Institutional Ethics Committee of Dicle University Faculty of Medicine (approval number: 2021/322, date: 30.06.2021).*

Informed Consent: *Amnioreduction and EmC were performed only on patients who accepted the possible risks and gave their informed consent.*

Footnotes

Author Contributions: *Surgical and Medical Practices: A.Y., Concept: A.Y., S.C.O., R.G., E.Z.Y., G.B., M.Y., Design: A.Y., S.C.O., R.G., M.Y., Data Collection or Processing: A.Y., R.G., Analysis or Interpretation: A.Y., S.C.O., Literature Search: A.Y., S.C.O., E.Z.Y., G.B., Writing: A.Y., S.C.O., Critical review: S.C.O.*

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