

# Rescue cerclage in IVF pregnancies with second trimester cervical dilatation: Case report and literature review

*IVF gebeliklerinde ikinci trimester servikal dilatasyonda acil serklaj: Vaka sunumu ve literatürün gözden geçirilmesi*

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## Abstract

Despite being available for over 50 years, cervical cerclage remains one of the controversial interventions in obstetrics. Rescue cerclage is the operative cervical closure of a widely dilated cervix with or without unruptured membrane prolapsus. In the literature, the effectiveness of rescue cerclage in the prolongation of pregnancy is debatable. Prolongation of pregnancy and improvement of neonatal survival is of utmost importance in pregnancies achieved by in vitro fertilization (IVF). We report here two IVF pregnancies with second trimester cervical dilatation treated with rescue cerclage and who delivered healthy babies near term without maternal and neonatal morbidities. (J Turkish-German Gynecol Assoc 2009; 10: 244-7)

**Key words:** Rescue cerclage, IVF, pregnancy, cervical dilatation

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## Özet

50 yıl önce tanımlanmış olmasına rağmen servikal serklaj halen obstetrideki tartışmalı girişimlerden biridir. Acil serklaj ise dilate olmuş bir servikste membranlar prolabe olmuş iken veya prolabe olmamış iken serviksin cerrahi olarak kapatılmasıdır. Literatürde acil serklajın gebeliği uzatmadaki rolü tartışmalıdır. Özellikle IVF sonrası elde edilmiş gebeliklerde, gebelik süresinin uzatılması ve yenidoğanın yaşama şansının artırılması çok önemlidir. Bu çalışmada ikinci trimester servikal dilatasyonu nedeniyle acil serklaj uygulanan iki IVF gebeliğinin önemli bir maternal ve neonatal morbidite olmadan terme yakın doğum ile sonuçlanmasını sunuyoruz.

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**Anahtar kelimeler:** Acil serklaj, IVF, gebelik, servikal dilatasyon

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## Introduction

Cervical cerclage is a prophylactic operative intervention that has been used in the management of second trimester loss since it was first described by Shirodkar and then McDonald in the 1950s. However, it remains one of the controversial interventions in obstetrics. Despite being available for over 50 years, very few randomized controlled trials have been conducted comparing cerclage with expectant management (1-3). Despite the confusion regarding the terminology of the cerclage procedure, three groups of indications were identified: elective or prophylactic cerclage based on obstetrical history alone, emergency cerclage performed upon the objective manifestation of cervical insufficiency, that is, cervical shortening (which might be named also as ultrasound-indicated cerclage) and rescue cerclage performed upon a dilated cervix with or without prolapsed unruptured membranes. However, the distinction between emergency and rescue cerclage is not clear in the literature and cervical suturing in the case of dilated cervix is named either as emergent, urgent or rescue cerclage.

Rescue cerclage is the operative cervical closure of a widely dilated cervix with or without unruptured membrane prolap-

pus. Prolongation of pregnancy and improvement of neonatal survival (birthweight greater than 1500 gr and preterm birth not before 28 weeks) is of utmost importance in pregnancies achieved by in vitro fertilization (IVF). Therefore IVF pregnancies with second trimester cervical dilatation constitute a challenge for the treating physician. In the literature, the effectiveness of rescue cerclage in prolongation of pregnancy is debatable.

With this report we present two pregnancies achieved in infertile couples who had undergone IVF treatment and were complicated by second trimester cervical dilatation and managed with so-called rescue cerclage. We wished to suggest that the rescue cerclage should be 'must' when the cervix was dilated and even membranes prolapsed in pregnancies achieved after IVF treatment.

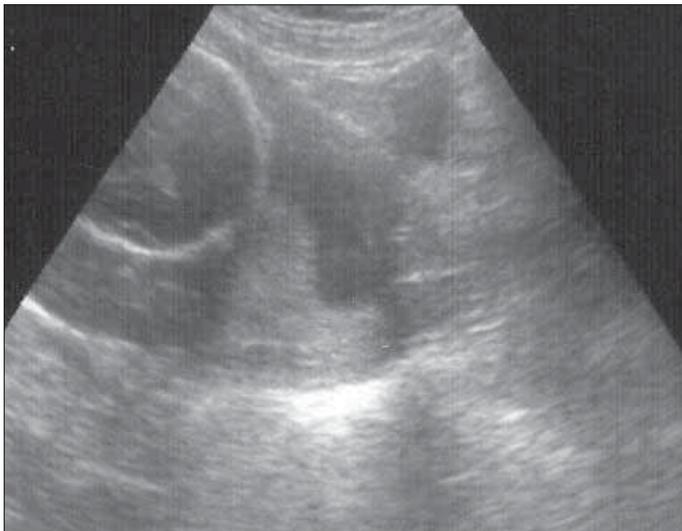
## Case 1

Mrs D.E., 22 years-old, had been married for three years and achieved a twin pregnancy following an IVF treatment for tubal factor infertility. At 16 weeks gestation, she presented with spotting and abdominal pain for the previous four hours.

On transabdominal ultrasound examination, both fetuses were alive and appropriately developed for the gestational age, however the cervix was observed to be dilated and effaced. On vaginal examination with a speculum, the membranes were bulging through the external cervical os and the legs of the underlying fetus were seen within it. Emergency cervical cerclage was performed promptly. The patient was placed in the Trendelenburg position and the herniating membrane was gently reduced with the aid of an inflated Foley catheter. Cervical cerclage was carried out by the McDonald technique with single stitch Mersilene tape under general anesthesia. She was hospitalized for the following four days with antibiotics and tocolysis. No complication occurred afterwards and she was discharged. The follow-up of the pregnancy was uneventful. No further hospitalization was required. At 35 weeks gestation, cesarean section was planned and two healthy babies, a boy of 1910 gr and a girl of 1950 gr, were delivered. Cerclage suture was removed during the operation. The infants did not need the intensive care unit and the patient was discharged with her babies on the second postoperative day.

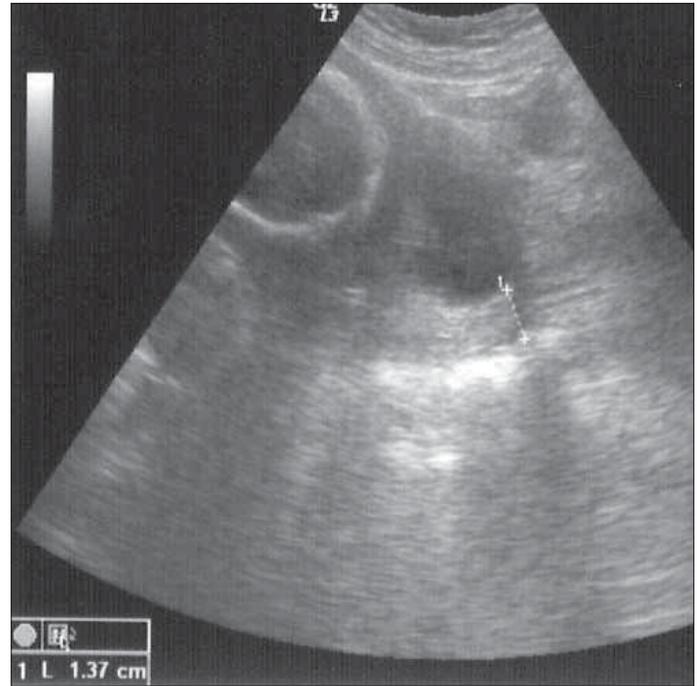
## Case 2

Mrs Y.İ., 34 years-old, had been married for 13 years and achieved a singleton pregnancy following an IVF treatment for unexplained infertility. At 20 weeks gestation, she presented with vague abdominal pain and spotting for the previous two hours. On ultrasound examination, the fetus was alive and appropriate for 20 weeks gestation. With transvaginal ultrasound, the cervix was observed to be 14 mm in length and funnelling was noted (Figure 1, 2). She was hospitalized and emergency cerclage was inserted immediately. The McDonald technique was applied (Figure 3). She was administered antibiotics and tocolysis during the postoperative period for one week and discharged at 21 weeks gestation. However, she noted abdominal and pelvic pain at home and although no cervical dilatation was observed on ultrasound, she was

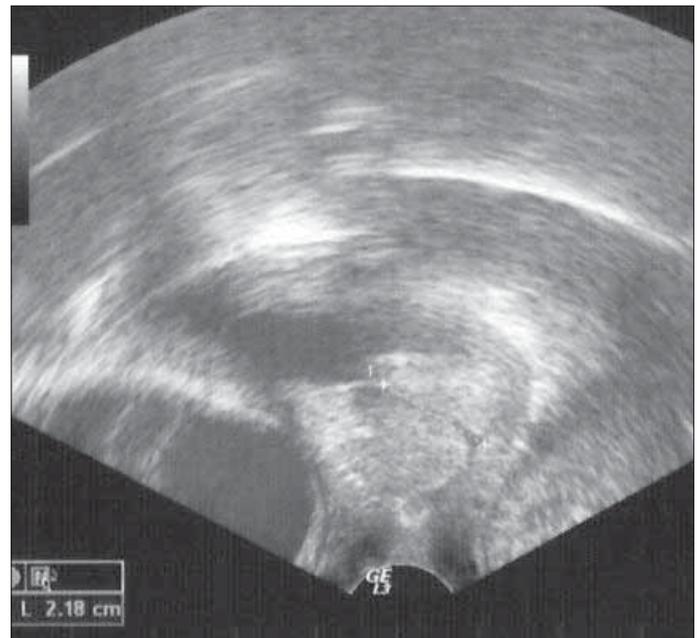


**Figure 1.** Ultrasound appearance of cervical dilatation and funnelling in case 2

hospitalized again. Because of her anxiety and recurrent pain complaints she was hospitalized intermittently until 34 weeks. Her pregnancy continued without any problem except her severe anxiety. At 34 weeks gestation the cerclage suture was removed and at 36 weeks of gestation she delivered a healthy 2600 gr girl with a normal vaginal delivery. Her baby did not need the intensive care unit and she was discharged with her baby on the postpartum day one.



**Figure 2.** Precerclage ultrasound measurement of cervical length in case 2 (1.37 cm)



**Figure 3.** Postcerclage ultrasound measurement of cervical length in case 2 (2.18 cm)

## Discussion

Cervical cerclage was first proposed by Shirodkar in 1955 (4) and then his technique was simplified by McDonald in 1957 (5). Despite being used in the management of suspected cervical insufficiency for nearly 50 years, there is still a wide variation in the use of cervical cerclage, which reflects the lack of evidence on the efficacy of the procedure. Traditionally, the decision to perform cervical cerclage has been based on a past obstetric history of a previous three or more preterm deliveries/second trimester losses. Cervical transvaginal ultrasound is being used by some as a screening test to identify those women who are at risk of preterm delivery, with an ultrasound-indicated cerclage inserted, based on the findings of a short cervix. For early preterm delivery a cervical length of less than or equal to 15 mm has a positive predictive value of approximately 50% and a negative predictive value of over 95% (6). The presence of cervical funnelling, an ultrasonographical finding whereby there is dilatation of the internal os with prolapse of the fetal membranes into the endocervical canal, was also noted to be associated with an increased risk of preterm delivery (7), although this may only be true for those with a short cervix (8). The evidence regarding whether ultrasound-indicated cervical cerclage reduces the risk of preterm delivery is conflicting. Study designs of the randomized controlled trials comparing ultrasound-indicated cerclage with conservative management make interpretation of their results difficult. Inclusion of high or low risk women makes a great difference. Furthermore, the appropriate threshold for ultrasound-indicated cerclage is unknown. Some investigators accepted the threshold as 15 mm, at which length intervention might be too late as a preoperative length of less than 15 mm is associated with visible fetal membranes at the time of suture placement, and a poor outcome (9). It was noted that the gestational age at delivery was higher if the cerclage was placed before 18 weeks of gestation and if cervical length was  $\geq 25$  mm (10).

In our report, case 1 presented with cervical dilatation and visible fetal membranes protruding into the vagina at 16 weeks. Case 2 presented with cervical funnelling and cervical length of 14 mm on transvaginal ultrasound at 20 weeks. Both were treated with emergency cervical cerclage.

Pregnancy outcome in women with a dilated cervix is usually grim. Management of advanced cervical dilatation can be rest in bed or cerclage. There has been no randomized study evaluating the effectiveness of rescue cerclage. In a study including 225 women, cervical cerclage was found to prolong gestation and improve neonatal survival compared with expectant management in women with cervical dilatation between 14 and 26 weeks (11). Another non-randomized prospective study comparing emergency cerclage with bed rest found that those treated with cerclage had a significantly higher mean birth weight, however no difference was observed in perinatal mortality (12). Factors associated with delivery prior to 28 weeks in those women treated with emergency cerclage were reported to be membranes bulging into the vagina through the cervical os, need of cerclage prior to 22 weeks gestation and nulliparity (13).

Despite being known for more than 50 years, there is still little evidence as to the efficacy of cervical cerclage. Furthermore, it

is unlikely that future trials comparing cerclage with no cerclage in women at high risk of preterm delivery will be performed. However, IVF pregnancies are a special group as intensive treatments probably have been performed to achieve a pregnancy and the loss of a pregnancy certainly would be more tragic both for the couple and the physician. Therefore, it would be prudent to offer cervical cerclage to women having IVF pregnancies even at an advanced cervical dilatation with bulging membranes. Those women with the highest risk of preterm delivery are the most likely to have the highest probability of deriving benefit from cervical cerclage. Therefore, even if miscarriage is inevitable, rescue cerclage might be considered in IVF pregnancies. The placement of rescue cerclage should be considered as a therapeutic procedure to prolong pregnancy and improve neonatal survival even in cases with membrane protrusion. In a meta-analysis, it was noted that cerclage should be avoided in multiple pregnancies (14). However, our first case was a successful rescue cerclage case with twin IVF pregnancy.

Cervical cerclage definitely carries risks. Reported adverse events are vaginal bleeding, premature preterm rupture of membranes (PPROM), and chorioamnionitis (15). In our cases no complication occurred either during or following the cerclage procedure. In both cases patients were managed in the postcerclage period with hospitalization, bed rest, antibiotics and tocolysis.

In conclusion, favorable pregnancy outcome might be accomplished in patients with advanced cervical dilatation in the second trimester of pregnancy following emergency cervical suturing even if performed when the membranes are bulging through the cervix into the vagina. Rescue cerclage in combination with antibiotics and tocolysis should be strongly advised in pregnancy prolongation in IVF pregnancies.

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## Erratum

J Turkish-German Gynecol Assoc 2009; 10: 3/132-6'da yayınlanan makalede eksik basılan Tablo 1 aşağıda yayınlanmıştır. Below is the missing Table 1 in the manuscript printed in J Turkish German Gynecol Assoc 2009; 10(3): 132-6.

**Table 1. Demographic features and cycle characteristics of women who became pregnant and those who did not following ART**

Variable	Pregnant (n=51)	Non-pregnant (n=34)	P
Age (years)	29.7±4.7	32.2±4.8	0.02
Infertility duration (years)	6.8±4.1	8.0±5.2	NS
Cause of infertility %, (n)			
Tubal	6 (3)	12 (4)	NS
Male	69 (35)	62 (21)	NS
Unexplained	25 (13)	26 (9)	NS
Gonadotropins used (IU)	2500±967	3278±1265	0.002
Stimulation duration (days)	9.9±0.9	10.1±1.2	NS
E2 on the day of HCG administration (pg/ml)	2637±971	2644±1154	NS
Total oocytes retrieved (n)	13.0±6.2	10.0±6.2	0.03
MII oocyte (%)	86±11	87±15	NS
Fertilization (%)	84±13	85±15	NS
ET day	2.9±0.9	2.7±0.9	NS
Grade I embryos transferred (n)	2.1±1.1	1.7±1.1	NS

The values are given as mean±SD or percent (numbers).

(HCG, human chorionic gonadotropin; E2, estradiole; MII, metaphase II; ET, embryo transfer; NS, not significant, p>0.05).

Student's t-test, Chi-squared test and Fisher's exact test