SEQUENTIAL CERVICAL CERCLAGE IN THE SAME PREGNANCY: TWO MULTIFETAL PREGNANCY CASE REPORTS

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SUMMARY

The common availability of assisted reproductive techniques (ART) has brought the increase of multiple pregnancies. Usually, soon after the preterm delivery of the first fetus in multiple pregnancies, the delivery of the remaining fetus also happens. Delayed interval delivery of the remaining fetus after preterm delivery of the first one allows to gain time for fetal lung maturity and to cope with prematurity. We present here live healthy neonatal outcomes in two sequential cases, one twin and one triplet pregnancies, after emergency cerclage followed by second emergency cerclage due to cervical tear with a delayed delivery of 72 and 74 days respectively. The success of pregnancy prolongation in cervical cerclage cases depends on how effectively uterine contractions are prevented and how possible subclinical infections are controlled. We suggest that use of antibiotics, anti-inflammatory and tocolytic agents should be the main target to safely postpone delivery of the remaining twin.

Key words: *cervical cerclage, multifetal gestation*

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AYNI GEBELİKTE ARDIŞIK SERVİKAL SERKLAJ: İKİ ÇOĞUL GEBELİK OLGU SUNUMU

ÖZET

Yardımla üreme tekniklerinin yaygınlaşması, beraberinde çoğul gebeliklerde artışı da getirmiştir. Çoğul gebeliklerde birinci fetusun preterm doğumundan çok kısa süre sonra sıklıkla ikinci fetusun doğumu da gerçekleşir. Birinci fetusun doğumunun ardından ikinci fetusun doğumunun bir süre geciktirilebilmesi o fetusun akciğer maturasyonu ve prematüriteyle mücadele edilebilmesi için zaman kazandıracaktır. Bu olgu sunumunda preterm prematür membran rüptürü sonrası iki kez servikal serklaj uygulanarak doğumların 72 ve 74 gün süre ile geciktirildiği ikiz ve üçüz gebeliklere ait olgular sunulmuştur. Servikal serklaj uygulanan gebeliklerde serklajın başarısı subklinik infeksiyonların ne derece kontrol edilebildiği ve uterin kontraksiyonların ne derece önlenebildiğine bağlıdır. İntrauterin kalan diğer fetus ya da fetusların doğumunun güvenle ertelenebilmesi, uygun antibiyotik, anti-inflamatuar ve tokolitik ajanların kullanılmasına bağlı olduğunu savunmaktayız.

Anahtar kelimeler: *çoğul gebelik, servikal serklaj*

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INTRODUCTION

The incidence of multifetal gestations has increased substantially due to advancements in the assisted reproductive technologies[1]. As a result of the increase in the number of multifetal pregnancies, perinatal morbidity and mortality also increased. Despite advances in management of prematurity, it still remains the leading cause of perinatal morbidity and mortality. Multifetal gestation itself is also an important risk factor in prematurity.

Delayed multifetal delivery as a result of premature rupture of the membrane of one fetus is an uncommon clinical situation and survival of the remaining fetus is also rare. Intervention with cervical cerclage, tocolysis, antibiotics and steroid therapy are the most common options, but there is still no consensus on which treatment option should be used when and there is still discrepancy about the results[2-4].

We report live healthy neonatal outcomes in two sequential cases, one twin and one triplet pregnancies, after emergency cerclage followed by second emergency cerclage due to cervical tear with a delayed delivery of 72 and 74 days respectively.

CASE REPORTS

CASE 1

A 40 year old gravida 2, para 0, abortus 2 pregnant woman was admitted to our clinic at the 21+2 week of twin gestation due to gush of fluid from the vagina. Both of the pregnancies were achieved with assisted reproductive technologies (ART).

Amniotic fluid collection was seen at the posterior cervix and a protruding umbilical cord from 2 cm dilated cervix was inspected. Ultrasonographic examination revealed a dichorionic diamniotic twin pregnancy and heart beat of the presenting fetus was absent while it was present in the second twin. While the first fetus was in a breech presentation and severe oligohydramnios was detected, the second fetus was in a cephalic presentation and amnios fluıd index was detected normal with fetal biometry appropriate with the gestational age. Body temperature was 37.2°C without uterine precision, fetal tachycardia, leukocytosis (>15000/L) and increased C -reactive protein (>15 mg/L).

The patient underwent surgery and umbilical cord was ligated with an absorbable suture material (No:0 Vicryl, Ethicon, Somerville, NJ) and sectioned inside the cervix. A Mc Donald proximal cerclage 2.5cm above the cervical edge was placed with 5 mm Mersilene tape followed by placement of a distal cerclage with No: 1 Vicryl. Tranvaginal ultrasound measurement the next day after the cerclage revealed a 33mm long cervical length.

Sulbactam - ampicillin IV (3 gr/day), amikacin (im) (1.5 gr/day, one week), metronidazole (iv) (500mg/day, 3 day), povidone iodine intravaginal (0.2gr/day, one week), indomethacin rectal (300mg/day, 3 day) and 17 a hydroxyprogesterone (17-OHP) im (500 mg/week) were taken by patient.

She was kept in the hospital at strict bed rest then after and transient oligohydramnios diagnosed at the last day of indomethacine treatment by amniotic fluid index of 45mm. Oligohydramnios resumed within one week of cessation of COX inhibitor. Regular clinical and laboratory examinations for signs of chorioamnionitis and weekly ultrasound examinations for fetal growth, cervical length and dilatation were evaluated. Twelve mg betamethasone was administered intramuscularly in order to promote fetal lung maturity every 24h at 24th weeks of gestation.

At the 26th weeks of gestation, her pelvic examination revealed that cervical cerclage sutures had torn the cervix and loosened. Purulent discharge was observed from the cervix so the cerclage sutures were removed. Eight hours after the examination a macerated stillborn female (240 g) was delivered. The membranes of the remaining fetus were intact and this time antibiotic regimen was commenced with erythromycin (1.5 g/day for 12 days) and ornidazole (1g/day for 5 days). The vagina was washed daily with povidone iodine until the next cerclage.

Eleven days after the loosening of the cervical cerclage at the 28th weeks of gestation, ultrasonographic cervical length measurement revealed progressive shortening and pelvic examination revealed 6cm cervical dilatation and 80% effacement with protruding fetal membranes into the vagina. For these reasons, a second cerclage procedure was planned and again a McDonald cerclage was performed about 2 cm above the cervical edge. After the procedure, sulbactam - ampicillin iv (3 gr/day, 7 day), povidone iodine intravaginal (0.2gr/day, one week), indomethacin rectal (300mg/day, 3 day) and 17 a hydroxyprogesterone (17-OHP) im (500 mg/week)

were taken by patient. On the postoperative10 th day of the cerclage procedure, 60 mg/day nifedipine for three days were taken orally.

At 31+4 weeks of gestation, she complaint of gush of fluid from the vagina. The cerclage was removed and induction was started with oxytocin. She had a normal progress of labor.

Seventy-two days after the first cerclage, a healthy female infant of 1540g (1 and 5 minute Apgar scores of 8 and 10 respectively) was delivered vaginally. Again there was no sign of intrauterine infection for the second twin and cord blood culture was negative for bacteriological analysis. Postpartum ultrasound and magnetic resonance imaging of the newborns' cranium was normal. The baby was discharged from the hospital on 37th postpartum day. The baby is completely healthy at two years of age.

CASE 2

A 22-year-old woman, gravida two, parity two admitted to our clinic with the complaints of back and pelvic pain at 18+5 weeks of gestation. Her history revealed that after two unsuccessful ICSI attempts the couple experienced a preterm delivery at 24th weeks of gestation 3 years ago which was also achieved with ICSI. Her present pregnancy was also an ICSI pregnancy and she had no live child.

Pelvic examination revealed a fully dilated and effaced cervix and the presenting fetus was at the station of (-1), but collection of amniotic fluid in the posterior fornix was not observed and the chorioamniotic membranes were intact.

During ultrasonographic examination of the triplets at admission, fetal cardiac activities of all the triplets were positive. Her laboratory findings did not suggest the evidence of chorioamnionitis such as fever >38°C, uterine tenderness, fetal tachycardia, marked leukocytosis (>15,000x106/L) or elevated C-reactive protein (>15 mg/L).

After the initial evaluation, the presenting triplet was born and immediately after the first delivery, the umbilical cord was ligated on placental site as high as possible with an absorbable suture (No: 0 Vicryl, Ethicon Inc. Somerville, NJ) and sectioned inside the cervix. A proximal cerclage was placed with 5 mm Mersilene tape (Ethicon, Summerville, NJ) followed by placement of a distal cerclage with No:1 Vicryl. Tranvaginal ultrasound measurement the next day after the cerclage revealed a 26mm long cervical length. Sulbactam - ampicillin IV (3 gr/day, 14 day), amikacin (im) (1,5 gr/day,one week), metronidazole (iv) (500mg/day, 3 day), povidone iodine intravaginal (0.2gr/day, one week), indomethacin rectal (300mg/day, 3 day) were taken by patient. Due to regular uterine contractions, 60 mg/day nifedipine for 10 day orally and 17 a hydroxyprogesterone (17-OHP) im (500 mg/week) added into regimen. 17 days after surgery the patient was discharged from the hospital and followed up once a week.

At 25th week of gestation, she experienced uterine contractions and she was hospitalized. Her pelvic examination revealed that cervical cerclage sutures had torn the cervix and loosened. Aggressive tocolysis with oral nifedipine (60 mg/day) was given and betamethasone 12 mg intramuscularly was performed to promote fetal lung maturity at two doses 24 hours apart. Although contractions declined, her transvaginal ultrasonographic assessment of the cervical length was 12mm with funneling of membranes to the stitch. Consequently, at 26th weeks of gestation, a second cerclage procedure was planned due to protruding membranes through the torn side of a five cm dilated cervix. The first cerclage was removed, the torn cervix was repaired with No: 1 vicryl sutures and a second Mc Donald cervical cerclage was performed one cm above the previous cerclage again. Antibiotic regimen was changed with amoxicillin-clavulonic acid (2 g/day for 7 days) and erythromycin (2 g/day for 7 days) and oral nifedipine (60 mg/day)

At 29+2 weeks of gestation, she complaint of a gush of fluid from the vagina. The cerclage was removed and emergency cesarean section was performed due to footling of the presenting fetus.

Seventy-four days after the first cerclage, two healthy one male and one female infant of 1420g and 1200g (1 and 5 minute Apgar 8 and 10 respectively for both) were delivered. Postpartum ultrasound and magnetic resonance imaging were normal for both of the newborns. Both of the babies were discharged from the hospital on the 41th postpartum day. The babies were completely healthy at two years of age.

DISCUSSION

Antenatal complications related with gestational week and number of fetuses are seen frequently in multiple

pregnancies. Especially the most important complication is preterm birth and premature rupture of the membranes. Delayed delivery is a therapeutic option for the management of the remaining fetus(es) and involves alternative management strategies[5-8]. Besides all these alternative treatment modalities, there is still no consensus on which is the best model of management. Although many authors have the common opinion about tocolytic, antibiotic regimens, cervical cerclage is still controversial. Our strategy based on high ligature of the first fetuses cord, immediate emergency cerclage procedure for delayed interval delivery and continuous hospitalization and medication as described before by Lavery et al.[9]. Zhang et al have stated that cerclage procedure extends the time interval from the procedure till birth without any increased risk of intrauterin infectionsin their review with seven cases[10]. Cristinelli et al. have performed 60% cervical cerclage, 79% tocolytic prophylaxis and 71% antibiotic in their series with six cases and have delayed delivery of remaining fetus with a median of seven days (2-93 days)[11]. Farkouh et al. have gained an average of 36 days (3-123) after antibiotics and tocolytic regimen in their review of 24 cases, but the time gained was less in patients with a prior cervical cerclage[12].

Weiner et al. have suggested before that intrauterin inflammatory response or decidual bleeding might play a role in preterm labor[13]. Drawing on the hypotheses, we performed both antibiotics and antiinflammatory treatments on both of our patients. Whether a predisposing factor or a result, women with cervical length <20 mm have higher rate of placental inflammation and if cervical dilatation is present microbial invasion of amniotic cavity might be as high as 51.5%[14,15].

Bacterial vaginosis, microbial invasion of amniotic cavity and intra-amniotic inflammation might also cause cervical insufficiency through IL-8 mediated degradation of cervical matrix[16]. Our antibiotic treatment aimed to cover the most commonly isolated microorganisms in delayed delivery cases such as E. Coli, beta-hemolytic group B streptococcus, Gardnerella and Klebsiella. Also vaginal povidone iodine, used in our study, normalize IL-8 concentrations in cervix of 23.2% of the patients and was shown to lower preterm delivery rate at less than 34 weeks of gestation[17].

Aggressive tocolytic treatment was used during hospital stay after delivery of the first fetus with multiple combinations of prostaglandin inhibitors, calcium-channel blockers, and progesterone.

Prostaglandins are one of prelabor factors that act both in cervical ripening and stimulation of uterine contractions. The background evidence for indomethacine relies on increased production of prostaglandins in the myometrium and fetal membranes [18,19]. One of the fetal side effects described for COX inhibitors is transient, dose related and reversible oligohydramnios[20]. For these reasons we administered indomethacine for 3 days for both uterine quiescence and transient oligohydramnios which may be used for decreasing intrauterine pressure on dilated cervices. Progesterone treatment was prescribed to cerclage cases as it was found to decrease recurrent preterm delivery and suppress genes necessary for uterine contractility[21]. Progesterone prevents the activation of collagenolytic pathways and the cervix remains resistant. Also, it stabilizes lysosomal membranes and inhibits prostaglandin synthesis thus resulting in uterine relaxation[22,23].

During myometrial contractions, influx of calcium from extracellular space through voltage-dependent channels takes place[24,25]. Calcium channel blockers decrease both intracellular calcium and release of calcium from intracellular storage sites[26]. We administered nifedipine, a dihydropyridine channel blocker, to abolish uterine contractions.

The success of pregnancy prolongation depends on how effectively uterine contractions are prevented and possible subclinical infections are controlled. Use of antibiotics, anti-inflammatory agents and decreasing cytokines levels should be the main target to safely postpone delivery of the remaining twin. These measures were shown also to help cervical remodeling and the role of cerclage is possibly to form a physical barrier only to the increased expulsion pressure of uterus caused by prostaglandin surge and contractions due to this.

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