

## Case Report

# Successful cerclage on cervix in the mid trimester: case report

Saika Shaheed<sup>1</sup>, Munima Haque<sup>2\*</sup>, Rebeka Haider<sup>1</sup>

<sup>1</sup>Department of Obstetrics and Gynaecology, Dhaka Central International Medical College and Hospital, Dhaka, Bangladesh

<sup>2</sup>Research Fellow, Relevant Science and Technology Society, Dhaka, Bangladesh

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### \*Correspondence:

Dr. Munima Haque,

E-mail: [munima.haque@gmail.com](mailto:munima.haque@gmail.com)

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### ABSTRACT

Cervical cerclage (CC) has been utilized for the cure of loss in second trimester pregnancy. The detection of cervical incompetency is problematic normally having repeated second trimester demise or early preterm delivery after cervical dilatation without pain having no bleeding, contractions, or other reasons for repeated loss in pregnancy. This study was performed at a tertiary care hospital in Dhaka, Bangladesh. These are 2 cases of patients undergoing emergency mid-trimester cerclage for advanced cervical dilatation with protruding membranes in 2016 and 2017. The 1st case patient was at 22 weeks of gestation and was admitted into hospital due to short history of lower abdominal pain and per vaginal bleeding. Vaginal inspection showed the cervix was dilated 1.5 cm. At 37 weeks of pregnancy she gave birth to a healthy female newborn by caesarean section and McDonald suture was removed. After delivery, mother and baby both were in good health. The 2nd case was of a patient of 26 years of age, second gravida, 24 weeks pregnant due to ovulation induction drug, who had a history of an abortion at 10 weeks. At her 24 weeks of pregnancy, she complained of profuse P/V whitish discharge and lower abdominal pain. It was found cervix was 2.5 cm dilated and bulging of membrane. Immediately McDonald suture was given. Patient was clinically improved, and USG showed OS is closed, length of the cervix is about 4.4 cm. At 32 weeks patient came with a complaint of rupture of membrane, then emergency caesarean section was done. A healthy premature female baby weighted 1.8 kg was delivered by vertex presentation. After operation, cerclage was removed. After delivery mother and baby both were in good health. Satisfactory neonatal result may be achieved in women having cervical deficiency in second-trimester pregnancy after emergency CC.

**Keywords:** Cervical cerclage, Cervical incompetence, McDonald cerclage, Preterm delivery, Shirodkar cerclage

### INTRODUCTION

Preterm birth stays as the most normal reason of perinatal illness and death. A short cervical length on transvaginal ultrasonography has been found as one of the top forecasters of preterm birth.<sup>1-3</sup> Once a short cervical length is perceived, strengthening the cervix and retaining at best the bottom half of the endocervical canal sealed by a stitch (cerclage) has been suggested as useful cure.<sup>4</sup> CC is the placement of a stitch inside and about the border of

the cervix, (with the goal to upkeep its reliability and keep closed) for preventing or curing cervical deficiency and resulting natural preterm birth. Transvaginal cerclage in pregnancy was initially narrated in 1955 and was done by an obstetrician V. Shirodkar in year 1951.<sup>5</sup> Multiple studies showed deviations on the surgical method of transvaginal cerclage and McDonald procedure is widely utilized.<sup>6,7</sup> Detailed technical info of CC have been studied for their efficiency in extending pregnancy.<sup>8</sup>

A perinatal database reviewed from 1995 to 2000 of 802 births of multiple pregnancies of 14 weeks or more showed that expectant management with serial cervical tests appeared more sensible for the preterm delivery.<sup>9</sup> A review of 20 cases of emergency CC done over a 3 years period showed incidence of membrane prolapse with infection causing rupture of membranes as the robust predictor of negative outcome. Analysis also reveals a significant link between initial white blood cell count and perinatal outcome.<sup>10</sup> A survey using patients having CC between 1985 and 2009 on selected 177 patients having cerclages over 16 weeks gestation showed that elective and ultrasound indicated CC showed to have less problem and high live birth rates.<sup>11</sup> The pregnancy results of 68 women patients carrying singleton pregnancies having late mid-trimester cervical from January 2003 to December 2005 showed that when pregnancies are complicated by late mid-trimester cervical dilation, placement of Shirodkar cerclage can be a useful remedial choice.<sup>12</sup> A literature review for the period January 1995 to December 2004 suggested that emergency cerclage (under ideal settings), can substantially extend pregnancy and elevate occurrence of viable pregnancy result.<sup>13</sup> Women with a dilated cervix from 10 centers showed that physical examination-directed cerclage seemed to extend pregnancy and improve neonatal survival, contrasted with expectant supervision in patients with cervical dilation from 140/7 to 256/7 weeks.<sup>14</sup>

A survey was performed on patients treated with emergency CC from January 1984 to April 1994 where McDonald cerclage was used in 16 women from 16 to 28 weeks pregnancy having dilated cervix and bulging membranes. It is shown that pregnancy can be substantially extended after emergency CC, and the method lead to better neonatal result.<sup>15</sup> In 2702 women with singleton pregnancies at 23 weeks with a cervical length of  $\leq 15$  mm, there is over 50% possibility of spontaneous delivery at  $<32$  weeks. Placing of a Shirodkar suture in patient having a petite cervix may be linked with a ten-fold decrease in danger for such early delivery.<sup>16</sup> A survey on 7 patients undergoing emergency late second trimester emergency CC from 20 to 28 weeks of pregnancy from January 2009 to January 2014 using McDonald's technique showed that favorable neonatal result can be achieved in patients with cervical deficiency in the second trimester of pregnancy after emergency cervical suturing, even if done when the membranes are protruding across the cervix.<sup>17</sup> A review done on all women treated with CC in the late second trimester with advanced cervical dilatation for whom emergency CC by McDonald method were performed, showed that for post emergency CC the results for extension of pregnancy, live births and neonatal survival is better.<sup>18</sup> A study of 158 women under emergency CC showed that emergency CC is successful in extending pregnancy and recuperating neonatal result in patients having cervical deficiency.<sup>19</sup>

The results of 14 patients having twin pregnancies were studied with substantial cervical dynamics undergoing

cerclage showed that the average duration between cerclage placement and giving birth was 71.1 days indicating patients carrying twin pregnancies with advanced cervical changes may profit by therapeutic cerclage.<sup>20</sup> Cervical length measured by transvaginal sonography at 23 weeks of pregnancy in 464 twin pregnancies showed that in twin pregnancies cervical length measurement gives useful forecast of risk for natural early preterm delivery  $<33$  weeks.<sup>21</sup> Analysis were performed on 28 cases of ultrasound-directed and 14 of physical exam-directed CC of twin pregnancies from January 2001 to December 2009. The occurrence of preterm delivery  $\geq 34$  weeks was 32% and 50% in the ultrasound-directed and physical exam-directed CC group. Perinatal survival was 96% in the ultrasound-directed CC group, while 86% in the physical exam-directed CC group.<sup>22</sup>

A survey of 56 pregnant women undergoing CC from January 2007 to December 2010 showed that this method extended pregnancy in all women of 38 days in average, while neonatal results were high in case of preliminary cervical dilatation of  $\leq 4$  cm.<sup>23</sup> A review on 20 emergency CC done over 3 years duration showed occurrence of membrane prolapse having infection instigating tear of membranes being the sturdiest forecaster of inferior result. Study also showed a substantial link concerning early white blood cell count and perinatal result.<sup>24</sup> A 22-year-old, primigravida women of  $\pm 20$  weeks of pregnancy having abdominal pain, was detected with advanced cervical incompetence. An emergency CC was performed 24 hours after admittance, she gave birth normally at 38 weeks of pregnancy with satisfactory results.<sup>25</sup> Fifteen women with singleton pregnancies from 18 to 26 weeks' gestation underwent emergency cerclage during February 1994 and February 1997. Results show that emergency cerclage should be taken as a treatment choice in patients having cervical dilatation without pain and membrane prolapse during mid-trimester.<sup>26</sup>

A survey of all CCs placed from 2004 to 2008 was performed in 145 women showed that although cerclage produces better outcomes when done as an optional method, emergency CC still provide advantages.<sup>27</sup> A cross sectional survey performed during 1980-1990 showed that the occurrence rate of cervical inability in Denmark was on the average 4.6 out of 1000 births, 6 out of 10 patients having cervical inability were treated with cerclage.<sup>28</sup> Thirty-four studies where transvaginal emergency CC was done in women with a dilated cervix showed that emergency cerclage is linked with an extended latency phase, mostly superior pregnancy results when compared with bed rest.<sup>29</sup>

A review on 43 patients having twin pregnancies undergoing cerclage placement in the second trimester from July 1997 to March 2012 showed that cerclage in twin pregnancies can be linked to a high probability of birth after 32 weeks and higher survival.<sup>30</sup> A survey of 7 patients undergone emergency late second trimester

cerclage from January 2009 to January 2014 showed that favorable neonatal result can be achieved in women with cervical deficiency with pregnancy at second trimester after emergency CC.<sup>31</sup> From February 1994 to February 1997, 15 women with singleton pregnancies from 18 to 26 weeks' pregnancy went through emergency cerclage. Results show that emergency cerclage can be used as a treatment in female having cervical dilatation without pain and membrane prolapse in the mid-trimester.<sup>32</sup>

A study on 24 women treated with emergency CC in the late second trimester having advanced cervical dilatation showed that pregnancy continuation, live births and neonatal survival results are better in post emergency CC.<sup>33</sup> A study including 158 women having emergency CC due to cervix dilatation and bulging membranes in mid-trimester showed that having emergency cerclage provided live infants births with 82.28% success.<sup>34</sup>

## CASE REPORT

### Case 1

Patient NT, 29 years of age, second gravida, 7 weeks of gestation was induced by Tab. Letrozole (ovulation induction drug). Her pregnancy was confirmed by USG and she was on regular antenatal checkup. She has history of spontaneous vaginal delivery of twin pregnancy at 16 weeks pregnancy. She has no history of DM, HTN, Hypothyroidism. At 22 weeks of gestation, she was admitted into hospital due to lower abdominal pain history and per vaginal bleeding. Per speculum inspection exposed the cervix was dilated 1.5 cm. USG of pregnancy profile also shows 24+ weeks single alive pregnancy bulging with amniotic membranes may be due to cervical incompetence (width of cervical funneling 2.72 cm, funnel length 0.43 cm, and length of cervix from internal OS external 2.27 cm).

A single pregnancy is observed in USG anomaly scan, the gestational age corresponds to 22 weeks. No major structural abnormality was seen in the USG. The placenta is anterior and grade 0 in type and well away from the Os. No retroplacental collection is seen. She has no history of fever and her other biochemical investigations like CBC, Urine R/M/E and C/S, blood sugar were within normal level. On that day patient was taken to emergency operation theater and Macdonald's suture was given to prevent premature delivery.

Post operatively she received intravenous antibiotics and other hormonal supports. Patient was clinically improved day by day and after two days USG done which show OS is closed, length of the cervix is about 4.2 cm.

Her Hb% was 9.8 g/dl, WBC 9.2x10<sup>9</sup>/L, CRP was 4 mg/L. All her USG reports were normal. After 5 days patient was discharged with oral antibiotic and other hormonal support like Inj. Hydroxyprogesterone caproate, Tab. Dydogesterone, Tab. Ritodrine.



**Figure 1. Emergency ultrasonography just before cerclage at 23 weeks 5 days gestation for case 1 patient.**

After that patient was regular antenatal checkup and serial trans-vaginal scans of the cervix were performed to see length of cervix. At 28 weeks of gestation Steroid injection was given to patient for lung maturation of fetus. At 37 weeks of pregnancy she gave birth to a healthy female baby of 3.1 kg weight by caesarean operation due to breech presentation and Macdonald suture was removed at that time. After delivery, both mother and baby had good progress in recovery and was released after three days.

### Case 2

Patient FM, 26 years of age, second gravida, 24 weeks of pregnancy due to ovulation induction drug, came for visit for advice on pregnancy. Previously she had history of a missed abortion at 10 weeks. She has no history of diabetes, hypertension, and hypothyroidism.

At her 24 weeks of pregnancy, she complained of profuse P/V whitish discharge and lower abdominal pain. She was consulted on that day. As per speculum examination, it was found cervix was 2.5 cm dilated and bulging of membrane. Immediately she was transferred to operation theatre and McDonald's suture was given.

Post operatively she received intravenous antibiotics and other hormonal supports. Patient was clinically improved day by day and after two days USG done which show OS is closed, length of the cervix is about 4.4 cm. Her Hb% was 12 g/dl, WBC 14x10<sup>9</sup>/L, CRP was 44 mg/L. All her USG reports were normal, placenta and weight, no anomaly. After 6 days patient was discharged with oral antibiotic and other hormonal support like Inj. Hydroxyprogesterone caproate, Tab. Dydogesterone, Tab. Ritodrine. After that patient was scheduled for regular antenatal checkup and serial trans-vaginal scans of the cervix were performed to see length of cervix. Her urine tests showed plenty of pus cells all through her pregnancy.

At 32 weeks patient came with a complaint of rupture of membrane, then emergency caesarean section was done. A healthy premature female baby weighted 1.8 kg was delivered by vertex presentation. Liquor was very small in amount. There was cord present around the neck of the baby by one knot. After operation, cerclage was removed. Post operation, the baby was kept at NICU for 7 days for proper supervision. The CRP was high. After delivery, both mother and baby both were healthy and was discharged after three days.

## DISCUSSION

Over 60 years passed since the first cerclage in pregnancy was achieved, there are not any suitable advices or high evidence concerning how the process should be done properly.<sup>5,6</sup> Obstetricians must follow the finest worldwide surgical practices to lower adhesions, reduce tissue trauma, and evade ischemia and inflammation. Second choice are: (1) taking a fetal ultrasound prior to cerclage for safeguarding fetal feasibility, check gestational age, and evaluate fetal anatomy for excluding medically substantial physical anomalies; (2) directing spinal anesthesia instead of general; (3) executing McDonald cerclage using one stitch positioned at highest feasibility; and (4) the usage of a same day surgery environment.<sup>8</sup>

Cervical suture has been utilized extensively for the cure of pregnancies which are at great danger for preterm delivery. Since the introduction of this methods from 1955 multiple reports declared fruitful pregnancy results in patients who had a bad obstetric history due to cervical deficiency. High success rates were noted where the suture was included as an emergency technique due to premature cervical dilatation. Therefore, there is ambiguity on these women who can profit from elective cerclage.<sup>35</sup> The cure of patients with cervical deficiency having advanced cervical variations in the second trimester is a test to every obstetrician. Emergency cerclage surgery may be firsthand for extending pregnancy until fetal feasibility is achieved. Numerous patients need lengthy hospitalization or bed-rest and limited pregnancies attain full-term. Although emergency cerclage have benefits, the incidence of obstacles rate is greater. There is a high rate of infections and chorioamnionitis prevention needed to improve the result of the method. Cerclage can decrease the hazard of pregnancy loss or neonatal death prior to release from hospital in single pregnancies classified as at danger of preterm birth, but larger studies are intended for clarifying the risks and advantages. Women must be informed of the elevated danger of pyrexia for patient and remedied appropriately.<sup>36</sup>

The customary cure of cervical incompetence is transvaginal CC. A prophylactic cerclage is measured as a primary inhibition, named as primary cerclage. A therapeutic cerclage is named as secondary cerclage, except the membranes are open to the vagina so named as

tertiary cerclage. A primary cerclage avoids decreasing cervical length, a secondary cerclage including bed-rest averts preterm birth prior to 34 weeks of pregnancy, while a tertiary cerclage including bed-rest decreases preterm birth prior to pregnancy at 34 weeks but bed-rest only cannot.<sup>37</sup> A guide gives an advice to clinicians to decide women who have the highest probability of having cervical incompetency and what situation is a cerclage most useful.<sup>38</sup> CC tries to extend pregnancy in women having cervical inability. There is no proper technique for finding the disorder, although it is alleged to happen in parous patients in earlier mid-trimester losses linked to cervical dilatation without pain. Maximum cerclage surgeries are achieved by the vaginal path as compared to MacDonald and Shirodkar methods. Trans-abdominal cerclage is advocated, although it creates extra illness and Caesarean section is needed for the birth. It locks the suture over the height of placing, while the sutures which are inserted vaginally are located at a lower stage in the cervix.<sup>39</sup>

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