International Journal of Science and Research (IJSR)
ISSN: 2319-7064
ResearchGate Impact Factor (2018): 0.28 | SJIF (2018): 7.426

Successful Delivery Outcome after Cervical Cerclage on Cervical Insufficiency with PPROM in Limited Resource Setting: A Case Report

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Abstract: ***Objective: To report the Successful Delivery Outcome After Cervical Cerclage On Cervical Insufficiency With PPROM In Limited Resource Setting. Methods: Reporting Successful Delivery Outcome After Cervical Cerclage On Cervical Insufficiency With PPROM In Limited Resource Setting. Result: A 43 year-old woman admitted to ArifinAchmad Regional Hospital with PRROM on G6P5A0 1 live child with previous C-section one times, singleton live intrauterine fetus and bad obstetric history on December 2016. On history taking, we noted a past history of 5 times preterm labor, with 4 times of second trimester pregnancy losses. On physical examination found pooling of fluid that confirmed with nitrazine paper test, the external uterine osteum was closed. An abdominal ultrasonography evaluated correspond to 26-27 wga singleton live intrauterine fetus with the cervical length was 5,8 mm, single pocket AFI was 3,8. Patient met the diagnostic criteria of history indicated cerclage with sign and symptom of proceeding infection could be rule out. Elective cerclage with Mc Donald's technique was performed. Patient was received ceftriaxone and 3 type of tocolytics (Isoxsuprine Hydrochloride, ketoprofen and nifedipine) for 3 days. Patient was treated as outpatient clinic for two months with recommendation of bed rest, rehydration two litres of fluids per day, abstinence sexual intercourse, serial US examination and vaginal toilet. Patient was scheduled for elective caesarean section at 36 wga. The cerclage was removed first then followed by delivery of the baby. Discussion: Cerclage in PPROM did not significantly prolong the gestational latency period. it did not significantly increase the rates of neonatal sepsis, or the neonatal death rates. Maternal chorioamnionitis was significantly more prevalent among women offered cerclage retention. Our consideration when we did the cerclage and retain the cerclage although the patient already in PPROM condition that there was no sign of infection, chorioamnionitis, preterm labor and fetal distress from the clinical, laboratory result, serial ultrasound before and after we did the cerclage.[4] Conclusion: Cerclage in PPROM remains a matter of debate and controversial case. The current recommendation is individualized management that weighs the risks of prematurity and infection.***

Keywords: Cervical Cerclage, PPROM, USG, Delivery

1. Introduction

Cervical insufficiency may be present in up to 1% of obstetric populationsand it is estimated to occur in 8% of women with recurrent mid-trimester losses.[1]Despite having been part of obstetric practice for over a century, both the role of cervical cerclage and indications for it remain ill-defined and controversial, with wide practice variations in different clinical settings.Furthermore, there is little consensus on the optimal cerclage technique and timing of suture placement.[1, 2]

The term cervical insufficiency is used to describe the inability of the uterine cervix to retain a pregnancy in the absence of the signs and symptoms of clinical contractions, or labor, or both in the second trimester. It is usually characterized by dilatation and shortening of the cervix before the 37th week of gestation in the absence of preterm labour, and is most classically associated with painless, progressive dilatation of the uterine cervix in the second or early third trimester resulting in membrane prolapse, premature rupture of the membranes, mid trimester pregnancy loss, or preterm birthdue to a functional or structural defect of the cervix.[1, 3]

The management of cervical insufficiency can be viewed as falling broadly into two main types: those in which it is clear that surgical intervention in the form of cerclage is indicated, and those in which a conservative path will be pursued. [1] Historically, several nonsurgical and surgical modalities have been proposed to treat cervical insufficiency. Certain nonsurgical approaches, including activity restriction, bed rest, and pelvic rest have not been proved to be effective for the treatment of cervical insufficiency and their use is discouraged. Another nonsurgical treatment to be considered in patients at risk of cervical insufficiency is the vaginal pessary. Evidence is limited for potential benefit of pessary placement in select highrisk patients.[3]

Surgical approaches include transvaginal and transabdominal cervical cerclage. The standard transvaginal cerclage methods currently used include modifications of the McDonald and Shirodkar techniques. Trans abdominal cervicoisthmic cerclage generally is reserved for patients in whom cerclage is indicated based on the diagnosis of cervical insufficiency but cannot be placed because of anatomical limitations (eg, after a trachelectomy), or in the case of failed transvaginal cervical cerclage procedures that resulted in secondtrimester pregnancy loss [1-3]

Preterm premature rupture of the membranes (PPROM) complicates a number of pregnancies and is accompanied by significant neonatal and maternal mortality and morbidity including chorioamnionitis, endometritis, maternal and neonatal sepsis, and preterm birth. A number of studies have investigated during the last two decades the maternal and neonatal outcomes among women that opted for cerclage

retention after the occurrence of PPROM. However, their results seem to be inconclusive.[4]

The decision performing and retaining cerclage in PPROM case remain controversial. RCOG recommend that PPROM was one of the contraindication in performing cervical cerclage.[2]There are no prospective studies with which to guide the care of women with PPROM who have a cervical cerclage. Results from retrospective studies have not been consistent, but generally have found that cerclage retention for more than 24 hours after preterm PROM is associated with pregnancy prolongation. In some, but not all studies, cerclage retention with PPROM has been associated with increased rates of neonatal mortality from sepsis, neonatal sepsis, respiratory distress syndrome, and maternal chorioamnionitis.[4]

2. Case Illustration

A 43 year-old woman admitted with PRROM 4 hours on G6P5A0 1 live children with previous c-section 1 times, singleton live intrauterine fetus and bad obstetric history on December 2016. On history taking, we noted a past history of 5 times preterm labor, with 4 times of second trimester pregnancy losses (1 of them with caesarean section), all of them without any history of placental abruption. A history of prior cervical trauma such repeated therapeutic abortion, repetitive cervical dilatation, cone biopsy, cervical tears and lacerations, trachelectomy, using diethylstilbestrol was denied.

On physical examination found that leakage fluid that confirmed with nitrazine paper test, the external uterine ostium was not dilated. An abdominal ultrasonography evaluated biometry correspond to 26-27 wga singeleton live intrauterine fetus with the cervical length was 5,8 mm, single pocket amniotic fluid index was 3,8 cm, and placenta was implanted onlateral corpus 2 cm from the edge of internal uterine ostium, the anatomical uterus was normal

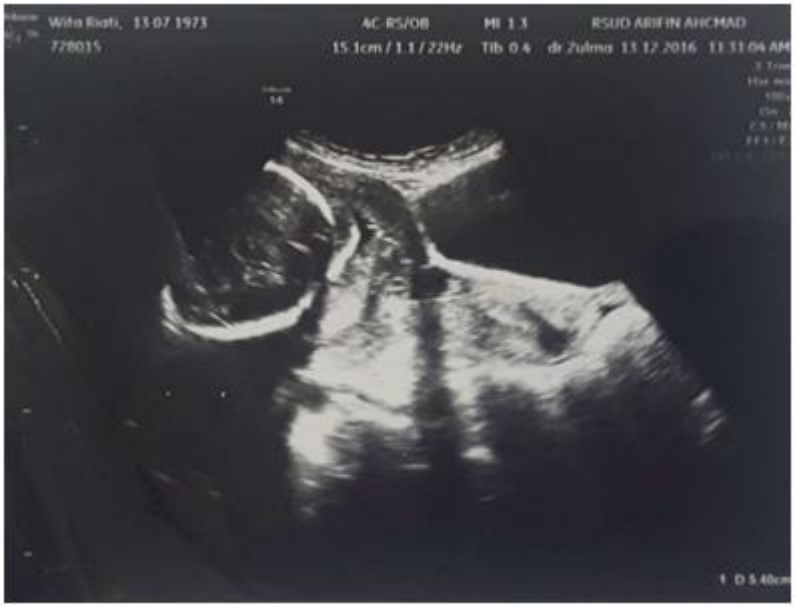

Figure 1: Abdominal US examination on cervical length

Patient meet the diagnostic criteria of history indicated cerclage with sign of symptom of proceeding infection can be rule out with no fever, no tachycardia, normal leucocyte count and urinalysis also vaginal swab was shown no sign of bacterial infection. Elective cerclage with Mc Donald's technique using silk 2.0 was performed on to this patient. Patient was received ceftriaxone and 3 type of tocolytics (Isoxsuprine Hydrochloride, ketoprofen and nifedipine) after the procedure for 3 days of hospitalization.Then patient was treated as outpatient clinic for 2 months with recommendation of bed rest, rehydration 2 litres of fluid per day, abstinence from sexual intercourse, serial US examination and vaginal toilet with Normal Saline solution was scheduled for 2 times per week. Oral Cefadroxil and Nifedipine was given to the patient to prevent infection and preterm labor.

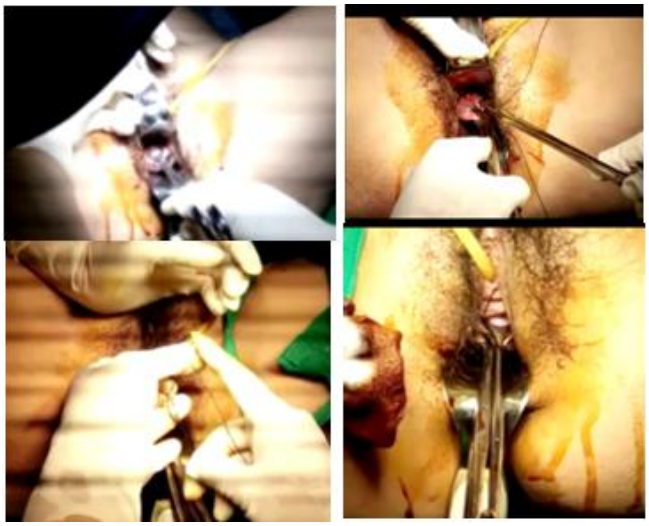

Figure 2: Documentation of cerclage procedure

Patient was scheduled for elective caesarean section on February 2017 when the pregnancy already at 36 wga. Under spinal anaesthesia the cerclage was removed first and then followed by delivery of the baby. Born baby 2250 gram with spontaneous breathing, no sign of respiratory distress and neonatal sepsis. After 3 days care in the ward patient was discharged.

3. Discussion

Cervical insufficiency arises from the woman's inability to support a full-term pregnancy due to a functional or structural defect of the cervix.[1] The pathophysiology of cervical insufficiency is still poorly understood. Factors that may increase the risk of cervical insufficiency include surgical trauma to the cervix from conization, loop electrosurgical excision procedures, mechanical dilation of the cervix during pregnancy termination, or obstetric lacerations. Other proposed etiologies have included congenital müllerian anomalies, deficiencies in cervical collagen and elastin, and in utero exposure to diethylstilbestrol.[3]

There is no diagnostic test for cervical insufficiency. Without a reliable diagnostic test, it becomes necessary to screen for or to predict the likelihood of cervical insufficiency. This process is based upon the identification and recognition of key risk factors in the woman's history and in the index pregnancy. [1,3]The risk factor was described before, in the index pregnancy, findings indicative of possible cervical insufficiency include cervical funnelling, cervical shortening, and overt cervical dilatation. Even in the absence of funnelling, a cervical length determined by ultrasound to be < 25 mm prior to 27 weeks increases the risk of pregnancy loss or preterm birth. [1]

There are essentially four methods that can be used to evaluate the uterine cervix: digital examination, transabdominal ultrasound, transperineal ultrasound (TPS) and TVS. It is the digital examination that provides the most comprehensive evaluation of the cervix, assessing dilatation, position, consistency and length. However, this examination suffers from being subjective. It is limited especially in its ability to establish accurately the cervical length. It also cannot detect reproducibly any changes at the internal cervical os and the upper portion of the cervicalcanal.[5]Cervical-length measurement using transvaginal sonography (TVS) is an essential part of assessing the risk of preterm delivery. At mid-gestation, it provides a useful method with which to predict the likelihood of subsequent preterm birth in asymptomatic women.Summarized the results of five studies that used cervical-length measurements between 20 and 24 weeks, with cut-offs of 20–30mm, to predict preterm birth before 34 weeks' gestation. The resultant positive likelihood ratios ranged from 2.3 for 30mm to 7.6 for 20mm.[1, 2, 5]

In order to for the measurement to be accurate and reduce false positive the following factors need to be taken into account when performing TVS, such as maternal bladder should be essentially empty, a longitudinal view of the cervix should be obtained, the cervical canal and surrounding cervical mucosa need to be identified, magnification of ultrasound image need to be 50-75% of the image, pressure from the probe on the cervix should be as little as possible, duration of examination should be 3-5 times due to cervix was not a static structure and last calipers should be place correctly.[5]Our limitation that we did not do the TVS for measurement of cervical length in this patient, so that the result could be inaccurate.

Cerclage placement may be indicated based on a history of cervical insufficiency, physical examination findings, or a history of preterm birth and certain ultrasonographic findings. History-indicated cerclage can be considered in a patient with a history of unexplained one or more second-trimester delivery in the absence of labor or abruptio placentae. Historyindicated cerclages typically are placed at approximately 12–14 weeks of gestation.[1-3] Three randomized controlled clinical trials have reported on the efficacy of history-indicated cerclage in women chosen because of various historical features alone, the result was intent-to-treat study of 1,292 women with singleton pregnancies at risk of preterm delivery, found that there were fewer deliveries before 33 weeks of gestation in the cerclage group (83 [13%] compared with 110 [17%], P=0.03).[1]

SOGC and RCOG recommend that women with a history of one or more spontaneous mid-trimester losses or preterm births who are undergoing transvaginal sonographic surveillance of cervical length should be offered an ultrasoundindicated cerclage if the cervix is 25 mm or less and before 24 weeks of gestation.[1-3] Cerclage is associated with significant decreases in preterm birth outcomes, as well as improvements in composite neonatal morbidity and mortality, and may be considered in women with this combination of history and ultrasound examination findings.[1]

Recommendation from ACOG stated that women who present with advanced cervical dilation in the absence of labor and abruptio placentae have historically been candidates for examination-indicated cerclage (known as emergency or rescue cerclage).[1] Insertion of a rescue cerclage may delay delivery by a further 5 weeks on average compared with expectant management/bed rest alone. It may

also be associated with a two-fold reduction in the chance of delivery before 34 weeks of gestation. [2]

Meta analysis of randomized clinical trials have shown that cerclage is associated with increased medical interventions and doubles the risk of puerperal pyrexia (OR 2.35; 95% CI 1.37–4.05). but no apparent increase in chorioamnionitis (OR 0.73; 95% CI 0.36–1.46)[1,3]The complications reported with cerclage include sepsis, premature rupture of membranes, premature labour, cervical dystocia, cervical laceration at delivery (11% to 14%), and haemorrhage (especially with transabdominal cerclage).[1,3]

In women with a history of cervical insufficiency, urinalysis for culture and sensitivity and vaginal cultures for bacterial vaginosis should be taken at the first obstetric visit and any infections so found should be treated.[1] Even tough, Neither antibiotics nor prophylactic tocolytics has been shown to improve the efficacy of cerclage, regardless of timing or indication. In addition, further ultrasonographic surveillance of cervical length after cerclage placement is not necessary.[3]In this patient, we still gave broad spectrum antibiotic and tocolytics due to PPROM condition and prevent preterm labor that usually associated with PPROM.

Patients who present with spontaneous preterm labor (painful preterm contractions causing cervical change, significant vaginal bleeding, or tension on the cerclage suture) or other indications for delivery (eg, chorioamnionitis, acute placental abruption, non reassuring fetal status) should have their cerclage removed. Otherwise, cerclage removal is typically recommended at 36 to 37 weeks. [2,3,6]A number of studies have addressed the question of cerclage removal and performing cerlage with premature membrane rupture and no associated contractions. Meta-analysis has shown an increased rate of chorioamnionitis and neonatal mortality rate with delayed removal, with sepsis the principal cause; therefore a policy of removal within 48 hours (allowing time for corticosteroid administration if appropriate) is advocated[1,2,4].

Jenkins et al. retrospectively studied 62 women, approximately 50% of whom had an elective cerclage in place and the remainder a rescue cerclage in place, who had PPROM between 24 and 34 weeks of gestation but no signs of preterm labour or infection. 63 In 37 women there was immediate removal (less than 24 hours) of the suture and in 25 women removal was delayed (over 24 hours) based on clinician preference. The duration of latency from PPROM to delivery was significantly longer in the delayed-removal group (10.1 days versus 5.0 days; $P < 0.001$), but there was no significant difference in gestational age at delivery. Delayed removal was associated with significantly more women delivering more than 48 hours after presentation (96% versus 54%; $P < 0.001$) compared with immediate removal, accompanied by a trend towards lower neonatal mortality (4% versus 11%). There was no significant trend towards a higher rate of maternal infection (44% versus 22%) and neonatal sepsis (16% versus 5%) in the delayed-removal group.[2]It is unclear how factors (such as labor or infection) contributed to decisions for cerclage removal, which may have yielded biased results.[3]

Another metaanalysis study have shown that review of six studies involving 293 parturient. Cerclage retention did not significantly prolong the gestational latency period (MD 2.56 days, 95 % CI - 1.06, 6.71). It did, however, increased the rates of delivery after the first 48 h (OR 6.27, 95 % CI 1.08, 36.24). As a technique, it did not significantly increase the rates of neonatal sepsis (OR 1.42, 95 % CI 0.65, 3.12) or the neonatal death rates (OR 1.09, 95 % CI 0.48, 2.47).Maternal chorioamnionitis was, however, significantly more prevalent among women offered cerclage retention (OR 1.78, 95 % CI 1.02, 3.12). Despite the fact that the majority of the included studies used as criteria for assessment of chorioamnionitis the presence of maternal and fetal tachycardia, uterine tenderness, foul smelling vaginal fluids, and white blood cell counts, they did not provide the actual number of patients experiencing these.[4]Our consideration when we did the cerclage and retain the cerclage although the patient already in PPROM condition that there was no sign of infection, chorioamnionitis, preterm labor and fetal distress from the clinical, laboratory result, serial ultrasound before and after we did the cerclage.

4. Conclusion

To summarize, regarding cerclage in PPROM remainsamatterofdebate and controversial case. The current recommendation is individualized management that weighs the risks of prematurity and infection. Taking in mind, however, the serious adverse maternal and neonatal outcomes that might accompany it. The decision should be personalized, based on the clinical circumstances, the skills and expertise of the clinical team, and the woman's informed consent.

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