CASE REPORT

The effectiveness of McDonald Transvaginal Cerclage in preventing preterm labor

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ABSTRACT

Objective: To determine the success and effectiveness of the use of McDonald's transvaginal cerclage techniques and the thread material used to prevent premature labor in cases of uterine cervical incompetence.

Case Report: This was a retrospective study. Data for 13 patients were taken from the medical records of Dr. Hasan Sadikin Hospital, Bandung, Indonesia, and private clinics from the years of 2009 to 2021. The procedure used was a McDonald's cerclage technique with material suture using silk no. 1 and mersilene tape thread. Indications were used based on a previous history of obstetrics preterm, abortion beyond 13 weeks or based on cervical length. The criterion for cerclage success was achieving pregnancy at 36 weeks. Adjuvant therapy using tocolytics was administered intermittently in all patients. The patient was advised to douch the vagina using an antiseptic if there was excessive vaginal discharge. According to the success criteria, 92% of elective McDonald cerclages were able to maintain a pregnancy well up to 36 weeks. A total of 11 elective cases used silk no. 1, while mersilene was used in 1 case. The silk no. 1 thread material was used in the elective cases with 91% success. One case using mersilene tape was able to maintain pregnancy until delivery by cesarean section at 38 weeks of age with bicornuate uterine pathology. One case of emergency cerclage with silk no. 1 failed to maintain pregnancy until 36 weeks.

Conclusion: The use of cerclage in conjunction with adjuvant therapy and antiseptic douching efforts has resulted in good success in maintaining pregnancy in cases of cervix incompetence with a history of obstetric preterm and recurrent abortus. When there is no tape-shaped thread material suture, the use of silk thread or other monofilament threads with a larger diameter can be considered.

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Highlights:

1. Cervical cerclage is effective to prevent preterm birth.
2. The use of silk thread (monofilament) or ribbon for suture material is successful in maintaining pregnancy.

INTRODUCTION

Cerclage or suturing of the uterine cervix is a way to reduce the risk of preterm labor or delivery in the second trimester.[1] The incidence of preterm labor is determined by factors such as multiple pregnancies, uterine anomalies, history of cervical trauma due to destructive procedures or dilatation during curettage, and size of the cervix. A short cervix is mainly detected on transvaginal ultrasound examination.[2] There are 2 transvaginal suturing techniques, the Shirodkar technique and the McDonald technique (and its modifications). The cerclage technique has been used in singleton pregnancies or multiple pregnancies.[3]

Most cerclage techniques are currently performed transvaginally. However, if transvaginal surgery is problematic, it can be performed transabdominally.[4] The success rate of transvaginal cerclage varies greatly between studies. Zakkia found a success rate of 73.[3] percent, while Waloch found a success rate of 90.8 percent.[5,6] The use of monofilament and thin thread material is ideal because it reduces the risk of infection.[7] Although it has several advantages, the use of tape-shaped thread is not more effective than monofilament thread.[8] The purpose of this study was to determine the success and effectiveness of the McDonald's transvaginal cerclage technique, as well as the thread material used.

CASE REPORT

From 2009 to 2021, data were collected retrospectively from the medical records of Dr. Hasan Sadikin Hospital in Bandung, Indonesia, as well as from private clinics in the same town. The procedure used was a McDonald's cerclage technique, with the types of thread available for use were silk no. 1 and Mersilene. Indications used were based on previous obstetric history, such as preterm delivery at least once, repeated abortions beyond 13 weeks, or based on cervical length using a transvaginal ultrasound device. After the cerclage, the patient was advised to douch the vagina using an antiseptic if there was excessive vaginal discharge. Adjuvant therapy using tocolytics, given intermittently in all patients, was recommended to be consumed if there were uterine contractions. The tocolytics used were β2 agonists or isoxsuprine. Subsequent pregnancy control was carried out according to the general antenatal care schedule. The criteria for the success of cerclage is when the pregnancy reaches 36 weeks (when the sutures are opened) and is accompanied by good fetal condition based on clinical evaluation and ultra-sound.

After collecting the data, there were 13 cases that met the criteria, and a cerclage was taken. There were some cases where they met the criteria for cerclage but refused to do the procedure. A total of 6 cases (46%) of deliveries were directly monitored because the patient was pregnant again and had a second cerclage sutured or gave birth in a hospital that was recommended, especially by cesarean section. In some cases, vaginal delivery after 36 weeks may be required.

In 54% of cases, women gave birth in several medical service sites or other hospitals with no information, so that the time of delivery was unknown. However, according to the success criteria, a total of 11 elective cases used silk no. 1 with 91% success rate. One case of emergency cerclage with silk no. 1 failed to maintain pregnancy until 36 weeks. Meanwhile, one case using mersilene tape was able to maintain pregnancy until delivery by cesarean section at 38 weeks of age with bicornuate uterine pathology. The complete cases can be seen in Table 1.

Table 1. Number of cases that underwent cerclage

No		Living baby	Cervical length	Cerclage (Weeks)		Delivery time (weeks)	Thread Types	Obstetrics history
				Start	Off			
1	G2P1A0	0	2.5 cm	24	36	No data	Silk	1 preterm
2,3[A]	(2)G3P0A2	0	1.5 cm	17	36	Aterm	Silk	2 abortion*
	(3)G4P1A2	1	2.2 cm	15	36	Aterm	Silk	2 abortion*
4	G3P2A0	0	Not measured	20	Aterm	No data	Silk	2 preterm
5	G4P3A0	1	Not measured	16	36	No data	Silk	3 preterm
6[B]	G4P3A0	0	Not measured	25	35	35	Silk	3 preterm
7,8[A]	(7)G5P4A0	0	Not measured	16	36	Aterm	Silk	4 preterm
	(8)G6P5A0	1	Not measured	14	36	Aterm	Silk	4 preterm
9	G3P2A0	0	3.0 cm	16	36	No data	Silk	2 preterm
10[C]	G3P2A0	0	3.0 cm	14	38(CS)	38	Mersilene	2 preterm
11	G3P0A2	0	3.0 cm	14	38(CS)	38	Silk	2 abortion*
12	G3P0A2	0	3.4 cm	14	37	No data	Silk	2 abortion*
13[D]	G2P1A0	1	1.5 cm	30 (EMG)	30	30	Silk	-

Notes: A: 2 times cerclage; B: Midwife, living baby 2300 grams; C: Bicornuate uterus, D: Hospital, living baby 1440 grams,
*Beyond 13 weeks, EMG: Emergency, CS: Cesarean Section.

DISCUSSION

Elective cerclage, according to Table 1, can maintain pregnancy up to 36 weeks, almost the same as that obtained by Waloch.[6] The majority of cerclage suturing used silk sutures with a combination of intermittent administration of tocolytic β2 agonist or isoxsuprine. Combination therapy can be done by tocolytics so that contractions are reduced or lost and the pressure on the threads decreases, thereby reducing the risk of labor.[9] Tocolytics are used in varying doses with the main aim of making contractions disappear. The average number of preterms before cerclage in this study was 2.6 times.

The technique used in all cases was McDonald's, which was relatively easier to do than Shirodkar's technique, with no difference in the success rate of the procedure.[10] The thread material used was silk no. 1. In the majority of cases, it could maintain pregnancy for up to 36 weeks. Thus, the use of silk no. 1 suture may be considered in the absence of other types of suture, although combination therapy with tocolytics may increase the success of cerclage.[11] In Arora's study, the comparison of the use of silk and nylon did not differ in terms of the success rate or the degree of fibrosis that occurred.[12]

Douching is recommended in all patients only when there is excessive vaginal discharge to reduce the potential for infection. Douching is not recommended to be done routinely because it will reduce the balance of the vaginal atmosphere, so that in the long term it will reduce health.[13] Silk or mersilene is a foreign object in the vagina so that it increases the risk of infection. So, whatever type of thread is chosen, the possibility of infection must always be considered and addressed at the cerclage procedure.

Case no. 10 is a unique case with the cause of preterm labor being a bicornuate uterus with 2 lethal preterm deliveries. Bicornuate uterus is one of the causes of abortus or recurrent preterm labor because it has a shorter cervical length when compared to pregnancy with normal uterus.[14] Based on the research, it was decided to use a tape-shaped thread (mersilene) in this case because the tape form is stronger in resisting contraction than monofilament although it is not more effective. Pregnancy care in case no. 10 went well and an elective cesarean section was performed at 38 weeks with the fetus in a transverse position. The cerclage was then opened after a cesarean section.

Case no. 13 was an emergency case at 30 weeks of gestation with a cervical shortening of 1.5 cm and strong uterine contractions. After that, the cerclage was carried out with silk no. 1 because tape-shaped was not available. Uterine contractions were abolished by titrating β2-agonist tocolytics, but 2-day treatment tended to not disappear completely, and cervical shortening continued. On the second day of treatment, it was decided to remove the cerclage because it was not effective. Shortly after being released, there was labor. The success of emergency cerclage tends to be lower than when performed at the early of the 2nd trimester or without contractions.[15]

There were 4 cases of cerclage with an indication of a history of abortion beyond 13 weeks. Cervical length was measured in all of these abortion cases, with an average of 2.4 cm. Procedure using silk thread with a 100% success rate of pregnancy can be maintained until at least 36 weeks. Cases 2 and 3 are the same person with a very short cervical length below 2.5 cm. Cerclage efforts are very helpful in cases of abortion, especially in cases of incompetent cervix, such as this one with indication short cervical length.[16]

Cases 7 and 8 are examples of cerclage cases with repeated preterm indications, with a history of four preterms and no living children. After a successful 5th pregnancy, the patient was then pregnant again (6th) and a second cerclage procedure was performed. The second cerclage procedure had made it to 36 weeks of gestation. The indication in this case was repeated preterm.[17] As there was no clear evidence of a difference between using an obstetric history indication or a short cervix for cerclage, so clinical indications such as the number of preterm deliveries or ultrasound measurement of cervical length can still be used.[18] The outcome of pregnancy of the two babies from this patient was good and the babies survive.

Delivery after cerclage can still be done vaginally.[19] The opening of the cerclage is at 36-37 weeks of gestation.[6] Delivery interval after cerclage removal was 9.3 days, and only 20% were delivered within 48 hours.[20] It is expected that after entering 37 weeks, term labor is the best time for labour. Cerclage is not an indication for cesarean section.[21] Obstetric indications continue to be the best choice for mode of delivery following cerclage.

The limitations in this study were the minimal number of patients, limited transvaginal ultrasound equipment, and delivery that was not fully monitored after the cerclage was opened. So, it is necessary to collect more cases with better diagnostic procedures and delivery management at the recommended place, so that the conclusions drawn are more precise, especially regarding the success of the procedure.

CONCLUSION

The use of a combination of cerclage with adjuvant therapy and antiseptic douching efforts has good success in maintaining pregnancy in cases of uterine cervical incompetence. When there is no tape-shaped thread material suture, the use of silk threads no 1 or larger diameter can be considered.

DISCLOSURE

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Conflict of interest

No conflict of interest

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