

EFFICACY OF CERVICAL CERCLAGE USING MCDONALD'S TECHNIQUE IN PREVENTING PRETERM BIRTHS

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ABSTRACT

Objective: To study the efficacy of cervical cerclage using McDonald's technique in prevention of preterm deliveries.

Study Design: Quasi-experimental study.

Place and Duration: September 2008 to January, 2010 in CMH Mardan.

Material and Method: Patients with singleton pregnancy having a history of one or more second trimester losses were selected on the basis of history, physical examination and ultrasound assessment of cervical length with a cut off of 2.5cm. Patients in advanced labor, fetal anomalies, polyhydramnios, or chorioamnionitis were excluded. Cervical cerclage using the McDonald's technique was applied at 14 - 22 weeks of gestation under general anesthesia and later removed after 37 completed weeks or when the patient went into labor.

Results: A total of 52 patients were included. The rate of term deliveries was 80.77% while preterm were 19.23%. The live baby rate was 96.15% with a neonatal morbidity of 3.85%. The average prolongation in the gestation was 20.34 weeks. Most of the patients delivered normally with minimal rate of complications.

Conclusion: The use of cervical cerclage in patients with short cervixes as assessed by examination and ultrasound scan is effective in preventing preterm births and prolonging gestations.

Keywords: Cervical cerclage, Cervical incompetence, Preterm labor, Recurrent miscarriage.

INTRODUCTION

A major contributor to the neonatal morbidity and mortality are preterm births. One significant factor resulting in preterm deliveries is cervical insufficiency. The ideal treatment for cervical insufficiency remains controversial¹. The role of cerclage has been considerably debated. Whether to apply the cerclage or manage the patient conservatively by monitoring cervical length by ultrasound also remains debatable. However for a patient who has had previous second trimester loss with a less clear causative factor and a short cervix in a subsequent pregnancy to have a cerclage inserted is a matter of clinical judgment².

Different techniques have been used to apply a cerclage to an incompetent os. As the McDonald's cerclage is much easier to apply compared to the Shirodker's technique, it is most commonly used. The role of trans-abdominal cerclage is also less clear³. However

a lower incidence of PPRM and preterm delivery was reported in the trans-abdominal group in the studies.

The objective of this study was to observe the efficacy of the McDonald's cerclage in prevention of preterm births in patients with previous second trimester losses.

PATIENTS AND METHODS

This quasi experimental study was performed at CMH Mardan from September 2008 to January 2010. The patients were selected on the basis of history and examination. A complete general and obstetrical history was taken and a thorough examination carried out. Speculum examination was performed to assess the length and dilatation of the cervix. A trans abdominal scan was performed for well-being of the fetus, exclude anomalies and assess cervical length. A cut off length of 2.5 cm was taken and patients were selected for the procedure if the cervical length on trans-abdominal scan was less than 2.5 cm. The patients were admitted, basic investigations including hemoglobin concentration, blood grouping Rh factor and hepatitis screening performed. A written, informed consent was

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obtained and documented accordingly. Under general anesthesia, a cervical cerclage was applied using the McDonald's technique as an elective procedure between 14 and 22 completed weeks of gestation except for two patients where an emergency cerclage was applied. Post operatively they were given antibiotics and were kept in the hospital under observation for 24-48 hrs with advice to visit the antenatal clinic regularly after discharge and continue with light routine daily activities and avoid strenuous physical exertion. Patients were advised to visit the antenatal clinic fortnightly till 37 weeks of gestation and then weekly till delivery. They were also informed to report immediately if pains or watery discharge start at any time. On each antenatal visit general health of the patient was checked and fetal growth and well being monitored both clinically and by ultrasound scan. The cerclage was removed after 37 completed weeks or earlier when the patient went into labor.

Singleton pregnancies with history of one or more second trimester losses were included.

Patients with twin gestation, fetal anomalies, polyhydramnios, ruptured membranes, chorioamnionitis, and active labor with more than 3cm dilatation were excluded.

Data was analyzed using SPSS 10. Descriptive statistics were used to describe the data. Mean and standard deviation (SD) frequentative variables. Qualitative variables were presented as frequencies and percentage.

RESULTS

There were 1360 deliveries during the study period of 17 months in Combined Military Hospital Mardan with an average delivery rate of 80 per month. A total of 52 patients were included which account for 3.82% of the total deliveries during the study period. Most of the patients belonged to lower socioeconomic class with an average age of 24 years and 5 months. Their general characteristics are shown in table 1. Eleven (21.2%) had previous one second trimester loss, twenty three (44.2%) had 2 miscarriages, twelve (23.1%) had 3 and six (11.5%) had more than three miscarriages. Rescue cerclage was applied

in two cases (3.85%). One patient had a rescue cerclage applied at 2.5 centimeters cervical dilatation and bulging membranes. The patient was shifted to tertiary care hospital for neonatal care where the cerclage had to be removed as the miscarriage could not be prevented. The second patient with rescue cerclage also went into labor at 27 weeks. In both cases the babies could not survive and were the contributors to neonatal morbidity which was 3.85%. Eight patients (15.38%) delivered preterm babies between 29-36 weeks gestation but they still went home with live babies. The overall preterm delivery rate was 19.23%. The remaining 42 patients delivered term babies with a percentage of term deliveries of 80.77%. Table 2 shows the gestation at delivery. The average gestational age at delivery was 37.19 ± 3.04 weeks. The overall neonatal outcome was very good with a live baby rate of 96.15%.

The rate of normal deliveries was high with a small percentage requiring cesarean section or an instrumental delivery (Figure). The average prolongation in gestational age was 20.34 ± 4.24 weeks (Table 3). The rate of complications was very low. No case of post operative bleeding chorioamnionitis, antepartum hemorrhage or intrapartum complication was encountered.

DISCUSSION

Diagnosis of cervical incompetence is difficult. History of painless cervical dilatation followed by delivery may be associated with history of forceful cervical dilatation, cervical lacerations during previous labor or cone biopsies. Physical examination aided by sonographic evaluation of cervical length can help in the diagnosis. A patient is at risk of preterm labor and delivery if the cervix is short. Hassan et al in a study concluded that nearly 50% of patients with a cervical length of less than or equal to 15mm had an early spontaneous preterm delivery⁴. The placement of a cerclage has shown to improve the outcome in terms of prolongation of pregnancy and prevention or preterm births.

We conducted a study to determine the efficacy of cervical cerclage in preventing preterm labor. Our study included a small

Table-1: General characteristics of the patients (n=52).

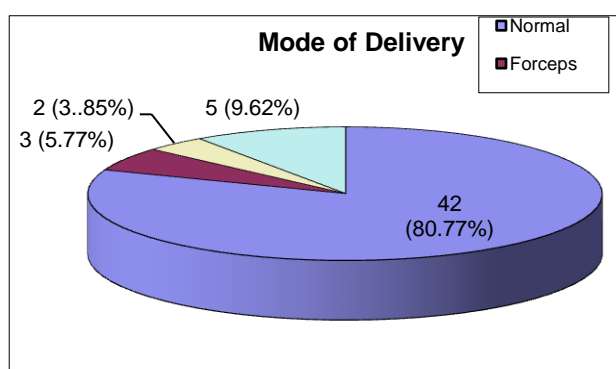
Characteristics		Frequency	Percentage
Age	< 20	6	11.53
	21-25	13	25
	26-30	21	40.38
	31-35	12	23.08
Parity	1-3	31	59.62
	4-6	15	28.85
	>6	6	11.53
Previous mode of deliveries	Normal	34	65.38
	Forceps	11	21.15
	Vacuum	7	13.46

Table-2: Description of Gestation at Delivery (n=52).

Gestation at delivery	Frequency	Percentage
Less than 28 weeks	2	3.85
29 - 32 weeks+6 days	3	5.77
33 - 36 weeks +6 days	5	9.62
37- 40	42	80.77

Table-3: Prolongation of Pregnancy (n=52).

Gestation of cerclage application (weeks)	Prolongation of weeks	Frequency (%)
14+1-16	17-27	42 (80.77)
16+1-18	16-22	5 (9.62)
18+1-20	9	3 (5.77)
20+1-22	6	2 (3.85)

**Figure: Description of mode of delivery (n=52).**

group of patients selected on the basis of history and examination and cervical length on scan. All these patients were at risk of having miscarriages and preterm deliveries. Cerclage application proved beneficial as shown by the results of the study. McDonald technique is simple and the cerclage easy to apply. We did not perform serial sonographic assessment of

the cervix as waiting for the cervix to get effaced and the os to open and then apply the cerclage would only have increased the risk of preterm delivery and neonatal morbidity as reported by Rust and colleagues⁵. Post operatively we did not encounter any miscarriage, bleeding or chorioamnionitis. All the patients remained well and the majority of them were discharged within 48 hours. Stitch removal also did not pose any problem unlike the MRC/RCOG trial⁶. There were no hospital admissions after the application of the cerclage till the time when the patient went into labor whether prematurely or at term. Obstetrical interventions and cesarean section rate was not significantly raised as reported by Kuhn⁷. We had to use tocolytics only in one case of a rescue cerclage. The results of both rescue cerclage were not encouraging as both patients delivered preterm babies and were the contributors of neonatal morbidity. This was predictable keeping in view the state of the cervix at the time of application of the cerclage as reported by Gupta as well⁸.

In our study 80.77% had term delivery and a live baby rate of 96.15%. A similar result was obtained in a study conducted by Shamshad who had a live baby rate of 85% and 73.7% of cases achieved a gestation of more the 37 weeks⁹. Comparable results were obtained by Naheed in her study¹⁰. Their term delivery rate was 95.4% and preterm deliveries were 4.6% with a neonatal morbidity of 4% as compared to 3.85% in our study. Naheed reported a neonatal survival of 95.4% which is comparable to the 96.15% in our study¹⁰. Harger also reported a fetal survival rate of 87%¹¹. Most of the local studies have reported a high neonatal survival rate and a higher rate of term deliveries. The international studies have quoted a slightly lower term delivery rate and more deliveries before 34 weeks. Rust conducted a trial on sonographic findings and found that the cerclage failed to change the perinatal outcome⁵. Where the cervix is short and there are associated ruptured membranes, subclinical infection or funneling of the cervix, the results are likely to be less effective¹². The difference is due to patient selection and the timing of

application of the cerclage. Where there is history of one or more mid trimester losses coupled with a clinically short cervix, the patient can benefit from timely application of the stitch.

CONCLUSION

Cervical cerclage is a simple procedure needing little surgical expertise but has very good results. In patients with history of miscarriages and short cervixes on examination should have the cervical length assessed more objectively through cervical or abdominal scans prior to the application of the cerclage. Its timely application can be very effective in preventing preterm labor and prolonging the gestation thereby improving neonatal survival and reducing the neonatal morbidity associated with prematurity.

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