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Original Research Article

Assessment of the benefit of cervical cerclage in mothers diagnosed with short cervix

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ABSTRACT

Background: Cervical incompetence is the inability of the uterus to retain a pregnancy in the absence of signs and symptoms of clinical contractions or labour or both in the second trimester of pregnancy. Cervical cerclages could be better management for pregnancy outcome. In the present study, we evaluated the pregnancy outcome in mothers diagnosed with short cervix who underwent cervical cerclage during second trimester in tertiary care institute.
Methods: This research was conducted as prospective analytical study during the period of 25 months from January 2021 to April 2022. The cervical cerclage was performed as per McDonald's technique under short anaesthesia among the mothers who presented with short cervix was posted for cervical cerclage operation as per the standard procedure.
Results: In the present study, among 10 mothers with previous one second trimester miscarriage 7 cases (70.0%) reached full term, among 5 patients with previous two second trimester miscarriages 3 cases (60.0%) reached full term and among 2 patients with previous three second trimester miscarriages and 2 cases (100%) reached full term. Overall, 12 cases (70.58%) out of 17 patients with previous second trimester miscarriages had reached full term. Moreover, among 19 mothers with previous one preterm delivery 15 cases (78.94%) reached full term and among 8 mothers with previous two preterm deliveries and 5 cases (62.50%) reached full term. Overall, 20 cases (74.07%) of 27 mothers with previous preterm deliveries had reached full term. The majority of mothers (45, 97.82%) had live births. Only 1 case (2.17%) had second trimester miscarriage.
Conclusions: this study observed the cervical cerclages an effective method in management of short cervix and cervical incompetence.

Keywords: Cervical cerclages, Effective management, McDonald's technique, Pregnancy outcome, Short cervix

INTRODUCTION

The cervix plays an important role for maintaining the pregnancy within the uterus until the end of the gestation. It undergoes significant changes during labour that allow the safe delivery of the baby. Cervical incompetence is the inability of the uterus to retain a pregnancy in the absence of signs and symptoms of clinical contractions or labour or both in the second trimester of pregnancy.[1]

Generally, from the past decade the evaluation of cervix in pregnancy is extensively studied.[2,3] Measurement of cervical length during pregnancy is fundamental and handy for the obstetricians.[4] In recent practice, transvaginal ultrasonography has been increasingly used as a demonstrably valid and reproducible method of cervical assessment.[4,5] In other words, preterm birth or late miscarriage is a major cause of maternal and neonatal morbidity as well as mortality.

One of the most important risk factors for preterm birth is a history of preterm delivery and there is an etiology of preterm birth is primarily cervical insufficiency.[6] According to ACOG (American College of Obstetricians

and Gynaecologists), this insufficiency requires cervical cerclages for better pregnancy outcome.[7] The mainstay treatment of cervical incompetence is a surgical procedure, namely cervical cerclage. Cervical cerclages have been used to prevent preterm birth since the 1950s, yet their efficacy continues to be questioned and studied. The original method described in 1955 by Shirodkar was an interval repair of anatomical cervical defects associated with the obstetric history of recurrent spontaneous mid-trimester birth.[1]

Another widely accepted and less invasive procedure was described by McDonald in 1957.[1] A Cochrane review in 2017 supported that "pregnant women with cerclage were less likely to have preterm births compared to controls before 37, 34 and 28 completed weeks of gestation."[8] Nevertheless, outcomes may vary as per indication for cerclage.

In the present study, we evaluated the pregnancy outcome in mothers diagnosed with short cervix who underwent cervical cerclage during second trimester in tertiary care institute.

METHODS

In the present study, 50 pregnant mothers who underwent cervical cerclage for short cervix in the second trimester fulfilling the set inclusion criteria and have consented to participate in the study was enrolled after the approval of the institutional ethical committee.

This research was conducted as prospective analytical study during the period of 25 months from January 2021 to April 2022. The cervical cerclage was performed as per McDonald's technique under short anaesthesia among the mothers who presented with short cervix was posted for cervical cerclage operation as per the standard procedure.[6,9,10]

Inclusion criteria

All pregnant women with clinically or ultrasonographically diagnosed short cervix in second trimester or with bad obstetric history, singleton pregnancies, low risk pregnancies. Were included in inclusion criteria.

Exclusion criteria

Multiple pregnancies, high risk pregnancies like, pregnancy induced hypertension, gestational diabetes mellitus, antepartum haemorrhage, heart disease, premature rupture of membranes in present pregnancy, fever (pyrexia of unknown origin), foetal anomalies, not willing to participate.

All the cases are followed up and analysed as regard to age, socio-economic class, gravida, previous history of second trimester miscarriage or preterm delivery, cervical length on transvaginal ultrasonography, gestation age at cerclage, associated surgical complications, post operative morbidity, course of pregnancy, gestational age at delivery, mode of delivery and feto-maternal outcomes.

Statistical analysis

For statistical analysis, the collected data was entered using M.S. Excel. Categorical data was expressed in frequencies (%). Continuous data was reported as mean and standard deviations. This statistical analysis was carried out by using the IBM SPSS software (version 22.0, IBM corporation, New York, USA).

RESULTS

Table 1 evaluated demographic (age groups) and socio-economic profiles of studied mothers. In the present study, the majority (27, 54.0%) of the mothers were from the age group of 21-25 years followed by the age group of 26-30 years (12, 24.0%). Mean age of the mothers was 23.42±3.1 years. Most of the cases (21, 42.0%) belonged to modified Kuppuswamy socio-economic class IV followed by class III (17, 34.0%) and class V (9, 18.0%).

Table 2 evaluated clinical history of studied mothers. In the present study, the majority of mothers (37, 74.0%) were multigravida and 13 cases (26.0%) were primigravida. Out of the 37 multigravida, majority of mothers (15, 30.0%) were 2nd gravida followed by 3rd gravida (12, 24.0%).

Out of 37 multigravidas (10, 27.02%) had previous one second trimester miscarriage, 6 cases (16.21%) had previous two second trimester miscarriages and 2 cases (5.4%) had previous three second trimester miscarriages. Among 37 multigravidas, the majority mothers (21, 56.75%) had previous one preterm delivery followed by 9 cases (24.32%) had previously 2 preterm deliveries.

Table 3 evaluated surgical procedure of studied mothers. In the present study, the majority 48 of mothers (96.0%) had no postoperative complications, 1 case (2.0%) had bleeding per vaginum and 1 case (2.0%) had preterm premature rupture of membranes.

The majority of mothers (27, 54.0%) the cervical stitch was removed electively at 37 completed weeks followed by 19 cases (38.0%) in whom stitch was removed during labour. The duration between stitch removal and delivery (hours), the majority of the mothers (15, 30.0%) was 24 to <240 followed by 240 to <480 (10, 20.0%), 9 cases (18.0%) was 6 to <12 and 6 cases (12.0%) was <6 were recorded.

Table 4 evaluated course of pregnancy of studied mothers. In the present study, the majority of mothers (36, 76.26%) had full term delivery followed by 9 cases (19.56%) had preterm delivery. Only 1 case (2.17%) had miscarriage.

Table 5 evaluates the number of patients with previous second trimester miscarriages reached full term. In the present study, among 10 mothers with previous one second trimester miscarriage 7 cases (70.0%) reached full term, among 5 patients with previous two second trimester miscarriages 3 cases (60.0%) reached full term and among 2 patients with previous two second trimester miscarriages 2 cases (100%) reached full term. Overall, 12 cases (70.58%) out of 17 patients with previous second trimester miscarriages had reached full term.

Table 1: Demographic and socio-economic profiles of studied mothers.

Demographic and socio-economic profiles	Number	Frequency (%)
Age groups (Years)		
18-20	10	20.0
21-25	27	54.0
26-30	12	24.0
>30	1	2.0
Total	50	**100.0**
Mean±SD	23.42±3.1 years	
Socio-economic class		
I (Upper)	0	0.00
II (Upper Middle)	3	6.0
III (Lower Middle)	17	34.0
IV (Upper Lower)	21	42.0
V (Lower)	9	18.0
Total	50	100.0

Table 2: Clinical history of studied mothers.

Clinical history	Number	Frequency (%)
Gravidity		
1	13	26.0
2	15	30.0
3	12	24.0
4	6	12.0
5	1	2.0
6	1	2.0
7	2	4.0
Total	50	100.0
Number of previous second trimester miscarriages (in multigravidas)		
0	19	51.35
1	10	27.02
2	6	16.21
3	2	5.40
Total	50	100.0
Number of previous preterm deliveries (in multigravidas)		
0	7	18.91
1	21	56.75
2	9	24.32
Total	37	100.0

Table 3: Surgical procedure of studied mothers.

Surgical procedure	Number	Frequency (%)
Surgical complications		
None	48	96.0
Bleeding per vaginum	1	2.0
Preterm premature rupture of membranes	1	2.0

Continued.

Surgical procedure	Number	Frequency (%)
Total	50	100.0
Stich removal		
Elective (at 37 completed weeks)	27	54.0
Emergency (in labour)	19	38.0
Lost to follow up	4	8.0
Total	50	100.0
Interval between stitch removal and delivery in hours		
<6	6	12.0
6 to <12	9	18.0
12 to <18	3	6.0
18 to <24	1	2.0
24 to <240	15	30.0
240 to <480	10	20.0
Lost to follow up	4	8.0
Total	37	100.0

Table 4: Course of pregnancy of studied mothers.

Course of pregnancy	Number	Frequency (%)
Full term	36	78.26
Preterm	9	19.56
Miscarriage	1	2.17
Total	46	100.0

Table 5: Number of mothers with previous second trimester miscarriages reached full term delivery.

Number of previous second trimester miscarriages (in multigravidas)	Number	Among "N" number of patients reached full term	Frequency (%)
1	10	7	70.0
2	5	3	60.0
3	2	2	100.0
Total	17	12	70.58

Table 6: Number of mothers with previous preterm reached full-term delivery.

Number of previous preterm (in multigravidas)	Number	Among "N" number of patients reached full term	Frequency (%)
1	19	15	78.94
2	8	5	62.50
Total	27	20	74.07

Table 7: Pregnancy outcome among mothers.

Pregnancy outcome	Number	Frequency (%)
Miscarriage	1	2.17
Live	45	97.82
Still birth	0	0.00
Total	46	100.00

Table 6 evaluates the number of patients with previous preterm reached full term. In the present study, among 19 mothers with previous one preterm delivery 15 cases (78.94%) reached full term and among 8 mothers with previous preterm deliveries 5 cases (62.50%) reached full term. Overall, 20 cases (74.07%) of 27 mothers with previous preterm deliveries had reached full term.

Table 7 evaluated pregnancy outcomes of studied mothers. In the present study, the majority of mothers (45, 97.82%)

had live births. Only 1 case (2.17%) had second trimester miscarriage.

DISCUSSION

The term "short cervix" refers to the cervix measuring less than 25 mm. Cervical incompetence or insufficiency can be defined as the inability of the uterus to keep pregnancy until full term due to a structural or functional problem.[11] Moreover, cervical incompetence is a major cause of recurrent mid-trimester pregnancy losses, with serious psychological consequences for the women who experience them. It occurs in 1% of all pregnancies and has a recurrence rate of almost 30%.[11]

Few earlier studies established that cervical cerclages have been used to prevent preterm birth.[6,8] In this study, we have evaluated the efficacy and pregnancy outcomes of the women who had cervical cerclage for short cervix.

Majority of the study population were in the age group of 21-30 years (78.0%), which is the peak reproductive age among women, with mean age of 23.42±3.1 years. A similar study conducted in Bangladesh by Ara et al, in which they found the prevalence in similar age group.[12] In this study population with short cervix, they found that 20 of the 35 patients (57%) were between the age group of 20 and 29 and 15 were between the age group of 30 and 39. A study done by Kilani et al, also had 54.2% of their study population of short cervix between 20-30 years age group, which is similar to the present study.[13] But contrary to the present study, Goddy and Temitope had higher age group (30-39 years) in their study population.[14] This may be due to different geographical and racial differences.

In the present study, almost 60.0% of the study population were in lower and upper-lower socio- economic status. According to the study by Montemor et al, spontaneous abortions and preterm deliveries are more 81 common in the low socio-economic status population which supports the present study.[15] Low socio-economic status appears to be an indirect risk factor for poor outcomes like preterm deliveries, premature rupture of membranes, low birth weight, higher neonatal morbidity and mortality because of various reasons, like lack of knowledge and availability of services.

In the present study, primigravidas (26.0%) and multigravidas (74.0%) were recorded. A study done by Kumari et al, showed similar percentages.[16] In the present study almost 50.0% of the multigravidas in the study population had at least one miscarriage or one preterm delivery in the past pregnancy. The number of pregnancy losses reported by women ranged from one to three with mean of 1.7.

Goddy et al and Temitope et al reported that about 89.2% of previous mid-trimester miscarriage in their short cervix study population.[14] The history of a mid-trimester miscarriage usually alerts us of the possibility of cervical incompetence. The presence of more than one mid trimester miscarriage is highly suggestive of cervical incompetence. In the present study only 2 out of 50 cases had complications after surgery. Among those, one had bleeding per vagina, which subsequently led to miscarriage in the next 2 days. Another had preterm premature rupture of membranes noticed after one day of surgery, which was managed conservatively and the pregnancy continued till term. No case of cervical laceration or chorioamnionitis is seen in our study. A study by Goddy et al and Temitope et al, showed 7.7% cases had preterm premature rupture of membranes and only 1.5% had bleeding postoperatively which is almost similar with the present study findings.[14]

9 out of 46 cases had preterm premature rupture of membranes post cerclage in an Indian study done by Kumari et al, based on present study and other studies, it is understood that though there were mild complication, cerclage operation appears to be having less complications rate.[16] In the present study, 2 mean days of postoperative stay was seen after cerclage. Elective stitch removal was done in almost half of the study population and 38.0% of them had emergency removal during labour. Sadly 8.0% cases were lost follow up in spite of continuous reminders.

In the present study, the majority had normal full-term delivery (78.3%) followed by preterm delivery (19.5%). Most of the cases (78.26%) had delivery at and beyond 37 weeks of gestation followed by 5 cases (10.86%) at 34 to 366/7. Miscarriage was seen only in one case (2.2%). This is comparable with studies Yakoob et al, Temitope et al, Khan et al and Ikimalo et al.[1,14,17,18] Among cases who had miscarriages once in the past 70.0% reached full term, who had two miscarriages previously 60.0% reached full term and who had three miscarriages in the past all reached full term without any complications. Among cases with previous history of preterm deliveries, 74.0% reached full term. Most of the cases which had previous history of miscarriages reached full term without any complications. Cerclage procedure showed efficacious pregnancy outcomes among the studied mothers in terms of prevention of miscarriages and preterm deliveries.

In the present study, the live birth rate is 97.8% and there were no cases of stillbirths. Similar live birth rates were seen of about 91.3%, 93.7% and 89.0% in the studies by Kumari et al, Feyi-Waboso et al, Umezuruike et al and Ara et al.[12,16,18] Hence cerclage has high success rate in terms of live births.

CONCLUSION

Cases of short cervix have a favourable outcome when the cerclage is carefully placed. In the present study, the efficacy of cerclage was found to be high in terms of full-term delivery rate, live birth rate and neonatal survival rate. Cerclage was also beneficial in preventing subsequent preterm births. There was also an improvement in perinatal outcomes by extending gestation until term in the majority

of cases. Moreover, this study observed the cervical cerclages an effective method in management of short cervix and cervical incompetence.

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