

The Value of Cervical Cerclage in Preventing Pregnancy Loss

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Objective:To determine the value of cervical cerclage in preventing pregnancy loss in patients with presumed cervical incompetence.

Design: Retrospective study.

Setting: Department of Obstetrics and Gynecology, Bahrain Defense Force Hospital.

Method:The study was performed from 1 January 2009 to 30 May 2010. Fifty-six patients with a history of previous pregnancy loss, and patients with multiple pregnancies following assisted conceptions were included in the study.

Obstetrics data were obtained from clinical and surgical record. The McDonald technique cerclage was used. The gestational age at cerclage insertion was recorded. The cerclage was removed electively at 36-37 weeks or sooner as events detected.

Result:Thirteen (23.2%) patients had multiple pregnancies following assisted conception. Three (5.4%) had spontaneous abortion, twenty-two (39.3%) had preterm delivery, before 37 weeks, of these nine were the result of pregnancies following assisted conceptions, thirty-one (55.3%) reached term(37+weeks),thirty-four (60.7%) had vaginal delivery of which seven (20.6%) had their labor induced between 38-41 weeks. Nineteen (33.9%) patients were delivered by Caesarian section. Sixty-one babies were delivered in this period; nine neonates required intubation and admitted to intensive care unit because of prematurity and one death due to extreme prematurity of 26 weeks. In patients who had the cerclage removal electively,24 (42.9%) went into labor within 24hours; and 30 (53.6%) went into labor between 24 hours and 33 days.

Conclusion: Cervical cerclage is preventive in singleton pregnancy with short and incompetent cervix or in patients who had obstetric history. No benefit was observed for the use of cerclage in multiple pregnancies following assisted conceptions.

Bahrain Med Bull 2012; 34(3):

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In current Obstetric practice it is accepted that prematurity is one of the leading causes of perinatal mortality and morbidity. Placing a suture in the cervix has been widely used in the past 50 years in an attempt to prevent late miscarriage and preterm birth.

While the cause of premature birth in many instances is idiopathic, it is known to be a complication of certain conditions: diabetes mellitus, hypertension, ante partum hemorrhage, pre-eclampsia, prolonged preterm rupture of the membrane and others. Fetal anomalies may result in premature delivery. In addition, smoking and drug abuse can result in premature delivery. The condition of the uterus could result in late miscarriage and early delivery¹. Congenital uterine anomalies or the presence of uterine fibroid, especially submucosa have been implicated².

The condition of the cervix has been the subject of much study in the origin of premature delivery. Does "incompetence" of the cervix contribute to late miscarriage and premature delivery? The term cervical insufficiency or cervical incompetence has been used to describe the inability of the uterine cervix to retain a pregnancy in the absence of the contraction of labor³. The diagnosis of cervical incompetence is difficult⁴. The suspicion that the cervix might be incompetent is usually based on a history of late miscarriage or premature labor occurring without significant uterine contractions or other obvious cause like obstetric hemorrhage. Transvaginal ultrasound studies have revealed new understanding of normal cervical function in pregnancy and the significance and predictive value of cervical changes and may be useful in detecting a short cervix during pregnancy, but neither ultrasound nor hysterosalpingogram is of value in the diagnosis of cervical incompetence prior to pregnancy⁵. Previous surgery to the cervix, such as, amputation, conization, trachelectomy and LETZ may result in a cervix that is considerably shortened⁶.

The treatment of suspected cervical incompetence has been the insertion of a cerclage suture. This is a surgical procedure involving suturing the cervix with a purse-string type stitch aiming to keep the cervix closed during pregnancy. This has been used widely in the management of pregnancies considered high risk of preterm birth. This was described by McDonald in 1957 using a simple technique where a tape is inserted around the exposed vaginal cervix⁷. Shirodkar advocated a high suture in the cervical canal, which involved raising the vaginal epithelium and reflecting the bladder⁸. There have been individual modification of these techniques and recently, for selected cases, a cervical suture has been inserted abdominally as described by Gibb and Salaria⁹.

The aim of the study is to determine whether cervical cerclage placement in women with suspected incompetent cervix reduced the rate of preterm delivery or not.

METHOD

From 1 January 2009 to 30 May 2010, fifty-six (1.1%) mothers had a cervical cerclage insertion during pregnancy.

Obstetric data were obtained from the clinical and surgical records. Neonatal data were obtained from medical and nursing case records. McDonald technique was used under general anesthesia; non absorbable material was used⁷.

The reasons for insertion of cerclage were as follows:IVF with multiple pregnancies13 (23.2%), previous cerclage 3 (5.4%), previous preterm labor 18 (32.1%),recurrent abortion 21 (37.5%) and incompetent cervix 1 (1.8%).

Thirteen patients had a twin pregnancy following IVF. Three patients had the cerclage inserted because it was done so in a previous pregnancy. Eighteen patients had history of previous preterm labor and 21 had recurrent abortion. In one patient the reason given was “incompetent cervix”.

The gestational age at cerclage insertion was as follow: 9 weeks 2 (3.5%), 10 weeks 1 (1.8%), 11 weeks 7 (12.5%), 12 weeks 15 (26.8%), 13 weeks 22 (39.3%), 14 weeks 3 (5.4%), 15 weeks 4 (7.1%), 16 weeks 1 (1.8%) and 17 weeks 1 (1.8%).

All the cerclage insertions were carried out as elective procedures. Any complications associated with the procedure were documented. In each case it was planned to remove the cerclage at 36-37 weeks unless events dictated otherwise.

The gestational age at the time of delivery, mode of delivery, maternal and neonatal morbidity were the parameters used in assessing the usefulness of the procedure.

RESULT

During the 17 month study period, 5108 mothers delivered of whom 56 (1.1%) patients had an elective cervical cerclage insertion between 12-13 weeks. There were no immediate complications from the surgery.Thirteen (23.2%) patients had multiple pregnancy following IVF treatment.

Two (3.6%) patients had a spontaneous abortion at 18-19 weeks (one IVF pregnancy and one spontaneous pregnancy).One (1.8%) had a spontaneous abortion at 23 weeks (IVF conception), see table 1.

Table 1: Numbers of Abortion under Cerclage

Abortions	Number (%)
II Trimester 18-19 weeks (IVF pregnancy + spontaneous)	2 (3.6)
Late II Trimester 23 weeks (IVF pregnancy)	1 (1.8)

Twenty-two (39.3%) patients had preterm delivery, i.e.before 37 weeks, nine of them were the result of IVF conception, see tables 2, 3 and figure 1. In this group there was one unexplained prenatal death at 37 weeks.

The pregnancy reached term (37+weeks) in 31(55.3%) patients. Seven of them were delivered at 37 weeks; one followed IVF conception and one stillbirth. Ten patients reached 38 weeks; one is the result of IVF conception. Ten patients reached 40 weeks.Four was post term.

Table 2: Delivered before 37 Weeks (N=22)

Gestational Weeks	Number (%)
24-30	5 (22.7)
34	1 (4.5)
35+	6 (27.3)
36+	10 (45.5)

Table 3: IVF Pregnancy Outcome

Gestational Weeks	Number (%)
<u>Extreme premature</u> (26-30weeks)	3 (5.6)
<u>Preterm</u> (35-36 weeks)	6 (11.3)
<u>Term</u> (>37 weeks)	2 (3.6)

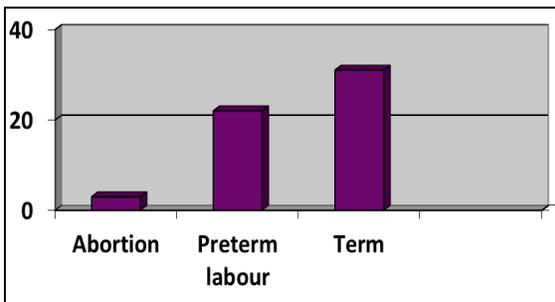


Figure1: Pregnancy Outcome

Thirty-four (64.1%) patients out of 53 had vaginal delivery; seven (20.5%) of them had their labor induced between 38-41 weeks because of bad obstetric history; one of these had an unexplained intrauterine death at 37 weeks. Nineteen (33.9%) patients were delivered by Caesarian section; the indications were as follows: nine pregnancies following IVF, three malpresentaion, four bad obstetric histories, two previous caesarian sections, one abruption of the placenta, see figure 2 and table 4.

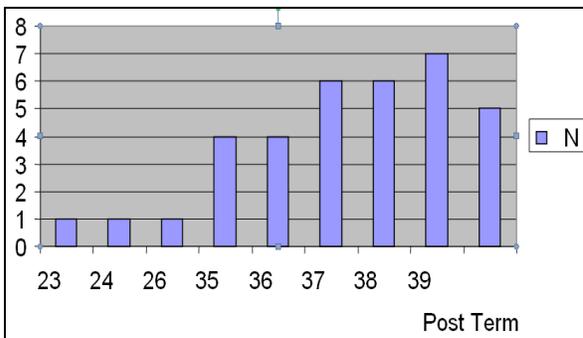


Figure 2: Spontaneous Labor (Total 34)

Table 4: The Mode of Delivery with Cerclage

Type of Delivery	Number
Spontaneous labor	34
Caesarian section	19
• Elective	17
• Emergency	2
Total deliveries with cerclage	53

The fifty-three patients who progressed beyond the stage of miscarriage had 61 babies including eight set of twins; nine neonates required intubation and were admitted to the neonatal intensive care unit because of prematurity. One neonatal death due to extreme prematurity of 26 weeks was documented. In mothers whose pregnancy progressed beyond 37 weeks the suture was removed as an elective procedure; otherwise, it was removed at the time of labor or miscarriage.

Twenty-three (41.1%) patients who had the cerclage removal electively went into labor within 24 hours and 30 (53.6%) went into labor between 24 hours and 33 days, see table 5. In assessing the result of cerclage benefit we have divided our patients to six subgroups, see table 6.

Table 5: Cervical Cerclage Removal

Weeks	Total Patients	Spontaneous Labor	Caesarean Section (No.)	Reasons
38	5	3	2	Due to IVF conception, BOH
37	22	17	4	Due to IVF conception, BOH
36	13	6	7	Due to previous 2 LSCS and IVF pregnancy
35	7	4 preterm labor	3	Due to IVF and previous 2 LSCS
30	2		2	Due to abruption and preterm labor
26	1	1 preterm labor		
24	2	1 preterm labor	1	Preterm labor with malpresentation
21	1	1 preterm labor		
Total	53		19	

Table 6: Subgroup Analysis

	Cerclage Benefit	No Cerclage Benefit		Total
		Preterm Delivery	II Trimester Abortion	
Singleton one II trimester abortion OR	3	2	1	6
Singleton one preterm delivery	6	4	Nil	10
Singleton two II trimester abortion OR	3	2	Nil	5
Singleton two preterm delivery	7	Nil	Nil	7
Singleton 3 or more II trimester abortion OR	3	Nil	Nil	3
Singleton 3 or more preterm delivery	Nil	1	Nil	1
Singleton with cervical surgery	1	Nil	Nil	1
Pregnancy with other indication e.g. recurrent abortion 7, previous cerclage 3	7	3	Nil	10
Multiple IVF pregnancy (twin)	2	10	1	13

DISCUSSION

Countless cervical sutures have been inserted in an effort to prevent late miscarriage and premature delivery since McDonald and Shirodkar published their work^{7,8}. Thousands of women believe the success of their pregnancies have been due to this intervention.

Traditionally the diagnosis of cervical incompetence has been most subjective and largely based on a history of late abortion or premature delivery for which no other reason can be identified. It is also known that prior cervical surgery could result in higher incidence of premature delivery and cervical suturing has been used in somewhat arbitrary fashion when such history exists.

Efforts to measure the length and shape of the cervix was attempted to determine its competence^{10,11}. Such measurements prior to pregnancy are not of value¹². In the medical Research Council/RCOG randomized study, it was concluded that ultrasound surveillance of the cervix had nothing to offer over expectant management¹³.

While the diagnosis of cervical incompetence is subjective, the treatment for the condition remains far from agreed. The preventive role of cerclage is highly debatable and controversial results are mentioned in many studies¹⁴. But one fact seems to be clear, i.e. it may help in selective cases.

Harger et al performed an evidence based analysis and correlated features, i.e. previous history of pregnancy loss, patients with cervical dilatation up to 4-6cm, absence of clinical features of placental abruption and history of cervical trauma leading to cervical incompetence¹⁴.

Three patients had more than three late abortion and all progressed to a term pregnancy; we conclude that the cerclage was of value in this group.

One patient had a suture inserted because of a previous LETZ procedure. She had a term baby. It cannot be concluded that the suture was of value in this case.

Thirteen patients had a suture inserted because of twin pregnancy following IVF treatment. Two reached term, 10 had preterm delivery and one had a late abortion. We conclude that there is no indication for cerclage insertion in this group, a conclusion supported by the RCOG, Green-top Guideline 2011^{15,16}.

CONCLUSION

It is concluded that cervical incompetence is a combination of physiological and anatomical components. Cerclage treatment is not necessarily the best modality of treatment and is not effective for all patients. Cervical cerclage has a preventive role in singleton pregnancy with short and incompetent cervix or bad obstetric history. No adverse pregnancy outcome was reported post LETZ. There was no benefit for cerclage in multiple (IVF) pregnancy.

We recommend that cervical cerclage should be used only in pregnancy with short and incompetent cervix and not for multiple pregnancies following assisted conception. Cerclage is useful only for women with history of second trimester abortion and recurrent first trimester abortion or symptomatic preterm labor.

Author contribution: All authors share equal effort contribution towards (1) substantial contributions to conception and design, acquisition, analysis and interpretation of data; (2) drafting the article and revising it critically for important intellectual content; and (3) final approval of the manuscript version to be published. Yes

Potential conflicts of interest: No

Competing interest: None **Sponsorship:** None.

Submission date: 29 April 2012 **Acceptance date:** 5 June 2012

Ethical approval: Approved by Obstetric and Gynecology Department, BDF Hospital.

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