

ORIGINAL PAPER

# Role of Cervical Cerclage in Obstetrics- A review in East of England Hospitals

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## ABSTRACT

**Objective:** The use and efficacy of cervical cerclage remains controversial. The Royal College of Obstetrics and Gynecology (RCOG) guideline in United Kingdom recommends history-indicated cerclage for women with three or more previous preterm births and/or mid-trimester losses. However, in clinical practice, cerclage is often offered with a history of one or more previous mid-trimester pregnancy losses.

**Method:** We did a retrospective review of 62 cases of cervical cerclage performed between the years 2006 - 2012. We reviewed the indications of cerclage, our local practice and analyzed the pregnancy outcome.

**Results:** 61% of the patients had elective cervical cerclage based on history of one or more previous mid-trimester pregnancy losses or preterm delivery, 32% had cerclage based on ultrasound and 6% had rescue cerclage. 76.7 % women had their cerclage removed after 37 weeks and delivered subsequently.

**Conclusion:** Cervical cerclage does appear to prolong pregnancy in high-risk women. Our local practice varies widely with the peri-operative management.

**Keywords:** Cervical cerclage, cervical insufficiency, preterm delivery

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## INTRODUCTION

Cervical cerclage is being performed for the treatment for cervical insufficiency since 1960 for the prevention of preterm delivery. Historically, studies have shown that the risk of cervical insufficiency increased from 2/1000 births among women aged 15-19 years to 7.5/1000 births among women aged 35-39 years. However, the incidence of cervical insufficiency diagnosis dropped by 44% from 1980 to 1990.<sup>1</sup> One of the reasons for this fall lies in the fact that the diagnosis of cervical insufficiency remains challenging. The definition of cervical insufficiency has been defined in various ways such as clinically; one or more 2<sup>nd</sup> trimester spontaneous pregnancy loss without any obvious sign of labour in absence of infection, bleeding or ruptured membranes or Sonographically by findings of short cervix 2.5 cm at gestational age of 16-22 weeks or evidence of shortening of cervix with or without funnelling on subsequent ultrasound. Various diagnostic tests have been used in an attempt to define cervical insufficiency such as patulous cervix on dilator test, defining cervix by hysterosalpingography in non-pregnant woman or calculating the cervical resistance index using cervical dilators.<sup>2-3</sup>

These methods are no longer in use to make the diagnosis of cervical insufficiency. Still there is no consensus for the diagnosis of cervical insufficiency and the clinical practice varies widely for the diagnosis and the use of cervical cerclage. Currently indications for cervical cerclage are either based on history of mid trimester loss or ultrasound indicated with cervical length of <25mm with or without signs of funnelling.<sup>4</sup> The use and efficacy of cervical cerclage also remains highly controversial.<sup>5</sup> The published guideline at RCOG recommends that 'History-

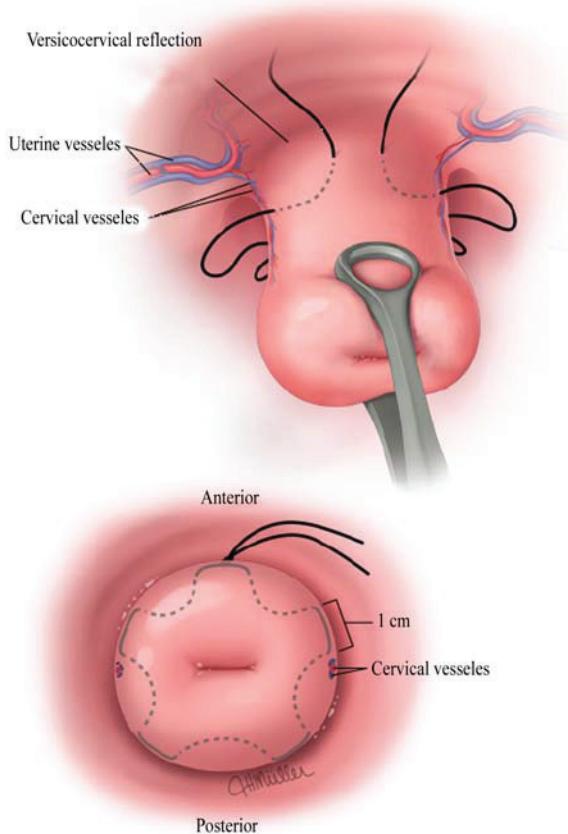
indicated cerclage should be offered to women with three or more previous preterm births and/or second-trimester losses'.<sup>5-6</sup> However, in clinical setting, cerclage is often offered with a history of one or more previous mid trimester pregnancy loss.<sup>7</sup> Cerclage is also often performed on a woman who had a previous cerclage and had a successful pregnancy thereafter. It becomes difficult for the clinician to establish that the cerclage is unnecessary in view of the possible psychological trauma to the woman. Although some literature suggests that not all women will require cerclage in their subsequent pregnancies.<sup>8</sup>

There is also limited evidence on the peri-operative management of insertion of cervical cerclage. The practice widely varies in terms of pre-operative vaginal swabs, intra-operative antibiotics, post-operative tocolytics and progesterone and post-cerclage ultrasound surveillance. We conducted 2 retrospective studies on cervical cerclage in 2 hospitals in East of England, United Kingdom. The aim of these 2 studies was to evaluate the efficacy of cervical cerclage in reducing the risk of preterm delivery and also to standardise the local practice in terms of identifying the patient group for cervical cerclage and their subsequent management and follow-up.

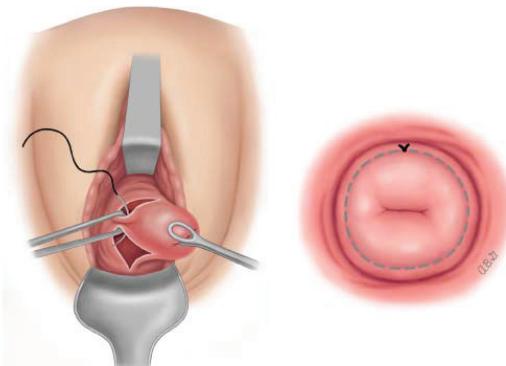
## MATERIALS AND METHODS

This was a retrospective study performed at 2 hospitals in East of England in the period from 2006 to 2012. 62 women were identified who had cervical cerclage; Hospital 1(n=30, 2006-2011) and Hospital 2 (n=32, 2006-2012). All of these women had Mc Donald transvaginal cervical cerclage i.e. a transvaginal purse string suture was placed at the cervico-vaginal junction, without bladder mobilisation or dissection (Figure 1 and 2).

Indications of the cervical cerclage were reviewed. The indications based on history were one previous spontaneous mid trimester pregnancy loss with clear evidence of painless cervical dilatation in absence of bleeding, infection or ruptured membranes, previous history of cervical cerclage and history of cervical cone biopsy. Ultrasound based diagnosis of cervical insufficiency was made when the cervix length measurement was 2.5 cm with or without funneling before 24 weeks of gestation. Rescue cerclage were performed where women presented painless cervical dilatation before 24 weeks of gestation and the dilatation of cervix was less than 3 cm.



**Figure 1 (McDonald Suture)**



**Figure 2 (Shirodkar Suture)**

Images taken from UpToDate.com (accessed 17/05/15)

Cervical suture was removed electively at gestation age of 36-37 weeks in women who planned for vaginal delivery or at the time of caesarean section in women with planned elective caesarean section for obstetric reasons or if women were in spontaneous labor before.

The outcomes of three groups of women were compared that had cerclage based on history, ultrasound and rescue cerclage in year 2006 – 2012. The pregnancy and perinatal outcomes were analysed. Descriptive statistics of the maternal and neonatal outcomes are outlined.

## RESULTS

**Table 1** describes the demographics of the population studied.

**Table 1** Demographics of the population

Age (years)	31.9 (19-40) +/- 5.7
GA at cerclage (weeks)	14.9 (9-23) +/- 2.6
Parity	0-4
Number of Neonatal admission	7 (13%)

Of the total 62 women, 38 women (61%) had elective cervical cerclage only based on history of one or more previous mid-trimester pregnancy losses or preterm delivery, previous successful cervical cerclage or previous cervical cone biopsy. 20 women (32%) with similar history had cerclage following ultrasound surveillance where cervical length either had evidence of shortening on subsequent scan or the cervical length was 25mm with or without funneling. 4 women (6%) had rescue cerclage at 19-22 weeks and all of these women miscarried 4-10 days later. 4 women were transferred in-utero at <32 weeks following preterm premature rupture of membranes and preterm labour for tertiary neonatal care. **Table 2** describes the gestational age at which cervical suture was inserted.

**Table 2** Gestational age of cervical suture insertion

GA at cerclage insertion (Weeks)	N=62
9	1
12-14	25
>14-16	25
17-20	4
21-24	3
No Documentation	4

Most women after elective cervical cerclage stayed in the hospital for 24-48 hours (78%). However, women who had emergency cerclage (n=4, 6%) and few elective cases (3%) were kept in the hospital for more than 48 hours for clinical reasons. In 13% cases, notes could not clarify the length of stay after the cervical suture insertion.

39 (65%) women were followed up with at least 1 transvaginal or trans-abdominal cervical length/ reassurance

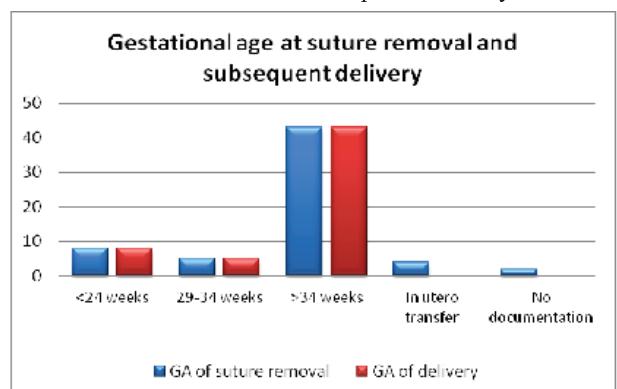
scan (**Table 3**).

**Table 3** Follow up scans of cervical length

Follow up scan	N (%)
Yes	39 (65%)
No	21 (34%)
Don't Know	2 (1%)

8 patients had cervical suture removed before 24 weeks and unfortunately had miscarriage. 5 patients had suture removed between 29 to 34 weeks and all delivered subsequently before 34 weeks. Majority of the patients (76.7%) had elective removal of sutures after 36-37 weeks and delivered subsequently. The main reasons for suture removal prior to 34 weeks were premature rupture of membrane followed by preterm labor and possible chorioamnionitis.

**Figure 1** represents the gestational age at which cervical suture was removed and subsequent delivery.



**Figure 1** Gestational age at suture removal and delivery

Out of 62 women, the number of women who had miscarriage, spontaneous vaginal delivery, caesarean section and instrumental delivery were 13% (8), 48% (30), 26% (16), 6.5% (4) respectively. 4 women were transferred in- utero to the tertiary centers.

Of 54 women with ongoing pregnancies, 45 babies (83%) were born with Apgar score of 8 or more at 1 and 5 minutes. 4 babies were born with Apgar score of less than 6 at 1 minute. Baby details were not available for those 4 patients who had in-utero transfer and were not recorded in 1 case. 7 babies were admitted in NICU due to prematurity.

This study also looked at the local policies and protocols for use of post cerclage tocolytics, vaginal swabs, use of

antibiotics and progesterone. It was observed that these practices varied between the hospitals and even within the trust varied from consultant to consultant (**Table 4**).

**Table 4** Local practice of peri-operative management

N=62 (%)	Tocolysis	Progesterone	Vaginal swab	Antibiotics
Yes	25 (40)	21 (34)	25 (40)	19 (31)
No	34 (55)	38 (61)	34 (55)	40 (64)
Not known	3 (5)	3 (5)	3 (5)	3 (5)

## DISCUSSION

Prematurity is the single most important factor in determining the perinatal outcome (RCOG, 2011). McDonald in 1980 suggested that cervical insufficiency complicates 1% of the Obstetric population.<sup>9</sup> In 1998, it was suggested that cervical insufficiency is responsible for mid-trimester pregnancy loss in 8% of the patients with recurrent miscarriage.<sup>10</sup> The Cochrane review suggest that the cervical cerclage in women at risk of preterm birth 'significantly reduces the risk of preterm birth' when compared with the women who had expectant management.<sup>11</sup> Indication of cervical cerclage remains controversial. The RCOG green top guideline no.60 recommends cervical cerclage in women in cases only with three or more previous mid trimester pregnancy loss or preterm births. However, 97% women in our study had previous history of mostly 1 or 2 mid-trimester pregnancy loss with or without ultrasound evidence of shortening of cervix. Other authors also suggest considering cervical cerclage with even one mid trimester loss if cervical length is less than 25 mm on ultrasound.<sup>12</sup> Our data has shown prolongation of pregnancy beyond 34 weeks of gestation with no increased risk of caesarean section and good neonatal outcome. The guideline from the American College of Obstetricians and Gynaecologist recommends cervical cerclage in women with spontaneous preterm births before 34 weeks and with ultrasound evidence of cervical shortening less than 25 mm before 24 weeks (ACOG 2014).

Traditionally, history indicated sutures are inserted between 12 to 14 weeks (RCOG, 2011). In our study 25 patients had their cervical cerclage during that time. Further 25 women had their sutures inserted between 14 and 16 weeks. This can be explained by the fact that most patients have their booking visit after the dating scan by 12-13 weeks. Therefore it is not unusual to have some of

the elective cerclage performed just after 14 weeks due the obvious time interval between the booking visit, result of screening test and the available theatre slots. Also, some women had ultrasound indicated cerclage, which is usually performed between 14-24 weeks (RCOG, 2011).

In terms of the gestational age of suture removal, most patients had their suture removed after 36-37 weeks and delivered subsequently at term. Mode of delivery after cerclage depends upon the obstetric indications. Caesarean section is only indicated for obstetric reasons. All 16 patients had their caesarean sections for obstetric indications.

Rescue cerclage in contrast was unsuccessful in all cases in this present data. However, a recent study has shown successful pregnancy outcome in 50% cases with a mean prolongation of the pregnancies by 7.4 weeks.<sup>13</sup> Another study has also shown an increase in the duration of the pregnancy by  $13.8 \pm 4.9$  weeks.<sup>14</sup> This was statistically significant to change the pregnancy from pre-viability to sufficient viability. As suggested by the studies, various factors including presence of vaginal infection and gestation of rescue cerclage (after 20 weeks) influence the outcome of the rescue cerclage. Another study showed improved outcome with modified cerclage techniques for emergency cerclage.<sup>15</sup> Clinicians should individualize the cases and consider whether it is justifiable to offer rescue cerclage to women with maternal morbidity implications. There is lack of evidence on usage of cerclage on multiple pregnancies. A recent systemic review and meta-analysis stated no significant difference in outcome between the cerclage and no cerclage group in twin pregnancies.<sup>16</sup>

In terms of the peri-operative practice for cervical cerclage, the evidence remained equivocal. Our study has shown variable practice not only amongst the 2 different hospitals in United Kingdom but also amongst the different consultants within the same hospital (**Table 4**). The guideline from ACOG stated that there is no evidence that antibiotics or prophylactic tocolytics improve the efficacy of cerclage (level B recommendation). There is insufficient evidence to recommend vaginal swab pre-operatively. However, any infection diagnosed should be treated prior to the cervical cerclage.<sup>5</sup> The recent evidence does not support follow up scan of the cervical length after cerclage (ACOG, 2014). Our local practice has been inconsistent in this aspect due to lack of strong evidence previously.

The strength of our study was that it is a study involving 62 patients over a period of 7 years. All patients who had cervical cerclage were included in this study to exclude bias.

## CONCLUSION

Cervical cerclage does appear to prolong pregnancy in high-risk women; however small numbers limited our study. The controversy remains in the safety and effectiveness of the procedure based only on history of 1 or 2 mid trimester miscarriage or pregnancy loss. Although there is consistent report of reduction in 20% of preterm births with cervical cerclage in all the studies, there was no improvement in the perinatal mortality or morbidity and there was increased incidence of maternal morbidity in terms of pyrexia, vaginal discharge and bleeding in women who had cervical cerclage.<sup>11</sup>

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**Conflicts of Interest:** “No conflict of interest associated with this work”.

**Contribution of authors:** “We declare that this work was done by the authors named in this article and all liabilities pertaining to claims relating to the content of this article will be borne by the authors”.

SP conceived and designed the study. SB prepared the first draft of the manuscript and wrote the first draft. SB collected the data. SB and SP both analyzed the data. SP has provided approval of the final version of this manuscript.

**Ethical clearance taken:** Not required

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