

CERVICAL INCOMPETENCE AND PREGNANCY OUTCOME IN JOS UNIVERSITY TEACHING HOSPITAL: A FOUR-YEAR REVIEW

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Introduction

Cervical incompetence is the inability of the cervix to retain a pregnancy until term, because of a structural or functional defect^{1,2,3}. The basic defect in cervical incompetence is the weakness of the sphincter mechanism of the cervical os, such that when the contents of the gravid uterus attain a critical weight that exceeds the power of resistance of the internal cervical os, the cervical canal dilates with expulsion of the contents of the gravid uterus.^{2,3,4}

Cervical incompetence as a cause of recurrent midtrimester abortion was known before the days of lash and lash. The first reference to the condition to be found in literature was an observation on the weak cervix made by G.T Gream (1865)³.

Palmer (1950)⁵ and lash and lash (1951)⁵, however rekindled interest in the subject by carrying out repairs of cervical defect in the non-pregnant state. Palmer, advocated "isthmorrhaphy" In the non pregnant state, having excised part of the isthmus and reunited the area to constrict the patulous cervix, whilst Lash and Lash published a paper on the support of the incompetent non pregnant cervix by excision of a diamond area at the level of the internal cervical os, followed by repair of the deficiency³.

In 1955, Shirodkar demonstrated by cine film a technique of encircling the supravaginal part of the cervix at the level of the internal os, using a buried strip of fascia lata. This method has been modified in favour of various types of unabsorbable suture⁶

A little later, McDonald described a simpler procedure in which a strong non-absorbable suture is passed in purse string fashion around the vaginal part of the cervix to approximate to the level of the internal os.⁶

Various aetiological factors have been reported as being responsible for cervical incompetence. They range from cervical trauma at dilatation and curettage for termination of pregnancy, birth injuries, surgeries on the cervix such as conization and amputation of the cervix, to congenital weakness of the sphincter mechanism at the level of the internal os.^{7,8}

The diagnosis of cervical incompetence is often based on the history of repeated midtrimester

ABSTRACT

Background: Cervical incompetence continues to pose a challenge to the obstetrician as a cause of repeated midtrimester abortion. Several observational studies into the efficacy of cervical Cerclage have claimed high rates of successful pregnancy outcome in women with poor obstetric history attributed to cervical incompetence.

Objectives: The objectives of the study are to determine the prevalence of cervical incompetence in Jos University Teaching Hospital (JUTH), the complications of the treatment modalities, and the pregnancy outcome.

Study design, setting and subject: This is a 4 years retrospective review of 144 pregnancies in (135) patients with cervical incompetence in the Jos University Teaching Hospital. Patients diagnosed to have cervical incompetence and who had cervical Cerclage, antenatal care and delivery in the Jos University Teaching Hospital, Jos, formed the study population.

Main outcome measures: Prevalence, post insertion complications and Pregnancy outcome, among patients with cervical incompetence who had cervical cerclage in Jos University Teaching Hospital, Jos Plateau state.

Results: A total of one hundred and forty four pregnancies were reviewed retrospectively in one hundred and thirty five patients with cervical incompetence over a four-year period. The diagnosis of cervical incompetence was established by history 63% of pregnancies, and by ultra-sonography in 35% of pregnancies. The McDonald technique of repair was employed in 90% of the cases. The incidence of cervical incompetence over the period of review was 1 in every 69 deliveries. The most common post insertion complications were premature rupture of membranes (20.8%) Vulvovaginitis (16%) and urinary tract infection (10.5%). The term births accounted for 62.5% and preterm births for 22.9%, with overall fetal salvage of 85.4%.

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abortions and preterm births and the finding of progressive cervical effacement and dilatation without clinically demonstrable uterine activity on serial vaginal examination and ultrasonography. In the non-pregnant state, Hager's test and hysterosalpingography are helpful in diagnosis^{7,9,10,11}.

The treatment options for cervical incompetence ranged from bed rest and prolonged hospitalization to the use of cerclage

procedures.¹⁰ The commonly employed ones being McDonald and Shirodkar cerclages. High fetal salvage rates are obtained with the McDonald and Shirodkar Cerclage^{12, 13}.

Complications of cervical Cerclage includes; infection, which varies from suture line infection to abscesses, chorioamnionitis and intrauterine infection, rupture of the fetal membranes, bleeding, bladder injury and cervical damage following premature labour as well as as cervical dystocia in labour due to fibrosis after the stitch has been removed.^{1,14,15} other complications are uterine rupture where the patient has been labouring without removal of the stitch and Vesico vaginal fistula can be caused by injury to the bladder at the time of insertion of the stitch.^{16,17,18,19}

Other types of Cerclage done transvaginally include; the Wurms also called the Hefner Cerclage²⁰, it is done especially when the incompetent cervix is diagnosed late in pregnancy²¹. It is done with a "U" or Matress suture and is of benefit when there is minimal amount of cervix left²¹. The lash procedure is performed transvaginally in the non pregnant state. It is typically done after cervical trauma that has caused an anatomical defect; however, this procedure may have a possible side effect of infertility²¹.

Transabdominal placement of a Cerclage(performed either prior to conception or during early pregnancy, at 11-14 weeks) at the cervicoisthmic junction is a safe and effective procedure for reducing the incidence of spontaneous pregnancy loss in selected patients with cervical incompetence.²² Potential advantages of the transabdominal over transvaginal Cerclage are more proximal placement of the stitch(at the level of the internal os), decreased risk of suture migration, absence of foreign body in the vagina that could promote infection and the ability to leave the suture in place for future pregnancies²³. A disadvantage of this approach is the potential need for two laparotomies during pregnancy(one to place the cerclage and another to remove it)²³. A suitable and safe alternative to the transabdominal cervicoisthmic Cerclage is the transvaginal

cervicoisthmic Cerclage placement, which is a modification of the Shirodkar type Cerclage. However because of its complexity, it is reserved for patients with risk factors such as anatomically altered cervix caused by surgery, lacerations and congenital defects, some of which can not be managed by the traditional, transvaginally inserted Cerclage. Additional advantages of the transvaginal approach include potential saving of two laparotomies and the extended hospital stay as well as the associated costs and inconvenience.²⁴

Post operatively, patient is placed on bed rest for 24 hours, possibly in the Trendelenburg position, and monitored for uterine activity. On discharge patient is advised to be on pelvic rest (no sex) and to reduce physical activity. Perioperative antibiotics is advisable, although it may be mentioned that some has observed no difference in outcome between those patients given antibiotics and those not so treated.² The use of tocolytics in the perioperative period is controversial and is perhaps best reserved for those with uterine irritability.² Advise on follow up is important to enable monitoring of the cervix and stitch and watch for signs of premature labour.²²

No study has been done to access the pregnancy outcome of cervical incompetence in Jos. It is against this background that this study was done to determine the prevalence of cervical incompetence, the complications of the treatment and pregnancy outcome in our centre.

Materials and Methods

The case files of patients who had cervical cerclage in the Jos University Teaching Hospital between 1st January 1997 and 31st December 2000 were recovered from the medical records department. Additional information on fetal outcome was obtained from the special care baby unit (SCBU) records. During the period of study, one hundred and fifty two(152) patients were diagnosed to have cervical incompetence, only one hundred and thirty five(135) case notes were available for analysis, giving a retrieval rate of 88.8%. There were 144 pregnancies in the 135

patients whose case notes were available, who had cervical incompetence during the period of the study. Patients who had antenatal care elsewhere, those who had cervical cerclage inserted in other facility and those who presented with advanced cervical dilatation and had emergency Cerclage were excluded from the study. The total delivery, in the Hospital during the same period was 9,977.

All the patients had antenatal care and were delivered in the Hospital. The outcome of the pregnancy was reported in each case. Diagnosis of cervical incompetence was made based on history of two or more midtrimester abortions or preterm deliveries. Others were diagnosed before pregnancy using Hager's test and Hysterosanpingography (HSG).

Results

Cervical Incompetence was encountered in 1 in every 69 deliveries during the period of study. The age range of the patients was between 19 and 40 years, with average age of 28.9 years. The parity ranged from 0 - 5, with a mean parity of 1.2 (Table 1).

Seventy five percent (75%) of the patients had previous induced abortions, whilst 16.7% had a history of previous preterm birth (Table II). In 63% (90 patients) of cases the diagnosis was made in pregnancy from history, and by Ultrasonography in 35 % (51 patients) of cases. A preconceptional diagnosis was made in 2% of cases (Table III).

The commonest post insertion complication was Prelabour Rupture of Membranes (PROM), occurring in 20.8% of the cases. Vulvovaginitis accounted for 16.7% whilst urinary tract infections accounted for 10.8% (Table IV).

All the patients were managed by Cerclage procedure. 129 (90%) of the cases had McDonalds Cerclage whilst the remaining 15(10%) had Shirodkar Cerclage. Patients who had Shirodkar Cerclage had no midtrimester abortion. However, 3(20%) of them had preterm delivery and 12 (80%) had term delivery. The fetal salvage rate amongst those who had Shirodkar was 100% in this study. With McDonald's

Table I: Age and parity distribution

(a) Age distribution

Age group in years	Number	Percentage
15-19	6	4.2
20-24	21	14.6
25-29	48	33.3
30-34	54	37.5
35-39	12	8.3
≥40	3	2.2
Total	144	100

Age range 19-40 yrs Mean Age 28.9

(b) Parity Distribution

Parity group	Number	Percentage
0	69	47.9
1-2	51	35.4
3-4	18	12.5
≥5	6	4.2
Total	144	100

Parity range 0-5 Mean parity 1.2

Table II: Previous abortions/preterm births

(a) previous abortion

Number	Percentage
None	12 (8.3)
1-3	102 (71)
≥4	6 (4)
Total	120 (83.3)

(b) Previous preterm birth

Number	Percentage
1-3	21 (14.6)
≥4	3 (2.1)
Total	24 (16.7)

Table III: Method of diagnosis

Method	Number	Percentage
1. History	90	63
2. HSG & Hagers test	3	2
3. Ultrasonography	51	35
Total	144	100

Table IV: Post-insertion complications

Complication	Number	Percentage
PROM	30	20.8
Vulvovaginitis	24	16.7
UTI	15	10.5
Vaginal bleeding	12	8.3
Preterm contractions	12	8.3
Total	93	64.6

Table V: Pregnancy outcome

Outcome	Treatment modality	Shirodkar	Total
Midtrimester Abortion	McDonald	0	21 (14.6%)
	Shirodkar	0	0
Preterm Births	30 (23.3%)	3 (20%)	33 (22.9%)
Term Births	78 (60.4%)	12 (80%)	90 (62.5%)
Fetalsalvage rate	83.7%	100%	85.4%

procedure, 21(16.3%) had midtrimester abortion, 30(23.3%) had preterm delivery whilst 78(60.4%) had term delivery, with a fetal salvage rate of 83.7%. The total fetal salvage rate was 85.4% (Table V).

Thirty three (22.9%) of the cases had preterm delivery whilst 90(62.5%) had term delivery.

Discussion

The prevalence of Cervical incompetence of 1 in 69 deliveries found in this study is low compared with a high figure of 1 in 29-39 deliveries reported by other authors^{4, 8, 9}. However, this figure is higher than the incidence of 1 in 146 deliveries reported from Zaria¹⁰, and 1 in 200 deliveries reported from Maiduguri¹. The difference in the incidence reported from various centers may be related to the differences in the prevalence of induced abortions in the respective communities.¹⁰

Only 2% of the cases were diagnosed preconceptionally, the rest were diagnosed during pregnancy from obstetric history and serial vaginal examination or at routine ultrasonography. Ifenne et al in Zaria¹⁰ also found this low preconception diagnosis. This may be due to the fact that after an abortion, most of the patients are lost to follow up, such that the investigations needed to confirm the cause of the abortion are not done.

Most of the cerclages

(64.5%) in this study were inserted at 14-16 weeks gestation. Because of the possibility of early spontaneous abortion in the first trimester due to chromosomal abnormalities and the fact that the cervix starts playing a major role in supporting the uterine content after the first trimester of pregnancy, the recommended time for cerclage insertion is at 14-18 weeks¹, after ultrasonography to confirm fetal viability, exclude major fetal anomaly and molar gestation². If the operation is delayed until cervical dilation had occurred, the procedure should be limited to the provision of a rigid area around the cervix to prevent further dilatation¹². A tight suture at this stage has the effect of confining the pregnancy into a space smaller than its volume and therefore results in rupture of membranes¹³.

The common post insertion and associated labour complications observed in this study like preterm rupture of membranes, vulvovaginitis, urinary tract infections, haemorrhage and cervical dystocia were also found by other workers^{1,8,9}.

Approximately 92% of the patients had spontaneous vaginal delivery as similarly observed by other authors^{1,8,9}. Preterm labour and birth was common in this study, it occurred in 22.9% of cases. This was also observed by Audu I et al¹.

All the patients had prophylactic tocolysis with Nifedipine, a calcium channel blocker or Salbutamol, a beta adrenergic agonist for a period of one week in this review to prevent onset of uterine contractions. The use of tocolytics in the perioperative period is controversial and is perhaps best reserved for those with uterine irritability².

The fetal salvage for shirodkar cerclage was better than that for McDonald as was the case with many other authors^{10,13}. But a study by Marinho and Edozien found no difference in the fetal salvage rate between the two procedures⁷.

McDonald cerclage was more commonly performed in this study, as was similarly observed by Ifenne D, I et al¹⁰ and other authors^{7,12}. This may be due to the fact, that McDonald cerclage is simple, less traumatic and

with few complications^{7,15}

The overall fetal salvage observed in this study is comparable to that observed by Ifenne et al¹⁰, and Audu et al¹. The perinatal mortality was low (2.1%). There was no maternal death.

In conclusion, the prevalence of cervical incompetence in this study is

high when compared to findings by other authors from the Northern part of Nigeria. However the post insertion complication is similar to the findings by other workers. The fetal salvage rate (85%) in this study is high and is comparable to the findings by other workers. We recommend a well designed prospective randomised study to determine the incidence of

cervical incompetence and fetal salvage rate among patients with recurrent second trimester pregnancy losses due to cervical incompetence.

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