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Original Research Article

A study of short cervix in mid trimester of pregnancy

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ABSTRACT

Background: Preterm birth is truly a global problem. Cervical length is one of the major determinants of preterm births. Diagnosis of cervical insufficiency can be made by history of previous mid trimester loss, on clinical evaluation or sonographically by measuring cervical length or seeing funnelling of OS. The mainstay treatment of cervical insufficiency is the cervical cerclage.
Methods: Present study includes 55 cases of cervical length less than or equal to 2.5 cm on TVS examination between 18 to 22 weeks of gestation of singleton pregnancy was conducted at department of obstetrics and gynaecology at SMT NHL medical municipal hospital, Ahmedabad from July 2022 to December 2023 and shows comparison of rate of full term and preterm deliveries.
Results: Out of 55 patients with cervical incompetence, 22 (40%) patients were diagnosed on examination. Out of 55 patients with cervical incompetence 33 (60%) patients had preterm births and only 19 (35%) patients delivered full term, 3 (5%) had abortions. Present study shows there were 35% full term deliveries, 60% preterm deliveries and 5% had abortion among patients having cervical length less than or equal to 2.5 cm.
Conclusions: Internal OS status of every patient should always be examined by ultrasound between 18 to 22 weeks. Thus, cervical length is very useful in prognostication and prediction of preterm birth. There are highest chances of late preterm in cervical incompetent patients. Our study showed better outcome with OS tightening group compared to conservative group.

Keywords: Cervical incompetence, Transvaginal sonography, Internal OS, Cervical length, Preterm delivery, Mid trimester

INTRODUCTION

Cervical insufficiency (cervical incompetence) is the inability of the uterine cervix to retain a pregnancy owing to structural and functional defects in the absence of contraction or labour.[1] Cervical insufficiency is characterised by painless cervical dilatation in second trimester of pregnancy, usual timing being between 16 to 24 weeks of pregnancy. The cause of cervical insufficiency can be congenital or acquired. Congenital cause includes mullerian duct anomalies and diethylstilboestrol (DES) exposure in utero. DES, a synthetic oestrogen designed to supplement a woman's natural oestrogen and prevent miscarriage or preterm delivery, was used by an estimated 5-10 million people between 1938 and 1971.[2] As this medication has not been used since the early 1970s, women of reproductive age now have not been exposed in utero. However, approximately two-thirds of women exposed to DES in utero have reproductive tract anomalies and a significantly increased risk of cervical insufficiency.[3-5] Acquired cause include surgical trauma to the cervix and various obstetric injuries. Diagnosis of cervical insufficiency can be made by history of previous mid trimester loss, on clinical evaluation or sonographically by measuring cervical length or seeing funnelling of OS. Several methods have been proposed for

the diagnosis of "cervical insufficiency" in the nonpregnant state, including the progressive passage of Hegar number 6 to 8 mm or Pratt dilators through the internal cervical OS, the use of balloon elastance test, or the ability of the cervix to hold an inflated Foley catheter during hysterosalpingography.[6-10] Strongest evidence of cervical insufficiency is lack of any other causes for recurrent pregnancy loss. However, there is a paucity of scientific evidence to support the value of these tests in predicting subsequent pregnancy outcome.[11] Cervical length is one of the major determinants of preterm births. The risk of preterm births varies inversely with cervical length measured by transvaginal/transabdominal scan in between 20-24 weeks.[12] Ultrasound assessment of cervical length has therefore become an important component of obstetric scan. Many studies have found that measurement of cervical length trans-vaginally at 20-24 weeks is a reliable predictor of preterm delivery.[13] Cervical insufficiency leads to miscarriages or preterm deliveries. Preterm birth is truly a global problem. In lower-income countries, on average 12% of babies are born preterm, compared with 6-12% in higher income countries.[14] Incidence range from 5-10% globally and approximately 20% in India (FOGSI 2019). Mainstay treatment of cervical insufficiency is the cerclage, which may be placed via vaginal or abdominal (cervico-isthmic) routes. Alternative treatment for cervical insufficiency includes vaginal progesterone, pessary, tocolysis etc.

Objective of present study was to study outcome of pregnancy in patients having cervical incompetence and the role of placement of cerclage in patients having cervical incompetence and to detect risk factor involved in occurrence of cervical incompetence.

METHODS

Present study is a prospective study on outcome of pregnancy in cervical incompetent patients. Study was conducted at department of obstetrics and gynaecology at SMT NHL medical municipal hospital, Ahmedabad from July 2022 to December 2023. 55 cases were studied during pregnancy, diagnosed and treated with various modalities like OS tightening, bed rest, progesterone suppository, tocolysis etc. All patients were monitored during antenatal period and labour. Cervical length is measured through transvaginal sonography with mind ray v11-3hu TVS probe using 5 MHz frequency.

Inclusion criteria

Inclusion criteria of my study are all singleton pregnancies and patients having cervical length less than or equal to 2.5 cm on TVS examination between 18 to 22 weeks of gestation.

Exclusion criteria

All pregnancies other than singleton pregnancies and patients with pregnancy more than 22 completed weeks were excluded from our study irrespective of status of cervix.

Statistical analysis

Data analysis is done by using Microsoft excel or SPSS version 23.

RESULTS

Out of 55 patients, 16 patients (29%) were primi-gravidas and 39 (71%) were multigravidas suggesting that as gravidity increases cervical incompetence is seen more frequently. Cervical incompetence seen in primi patients suggest incompetence can be congenital. The 8 (21%) patients had history of 1 preterm delivery or 1 preterm delivery and 1 dilatation and evacuation procedure in past. The 22 (40%) patients did not have any complains, they were diagnosed on examination. Out of 55 patients with cervical incompetence 33 (60%) patients had preterm births and only 19 (35%) patients delivered full term, 3 (5%) had abortions. Among patients having external and internal OS open on digital examination, with OS open even on TVS examination, 8 (50%) had preterm delivery. Patients having both OS closed on digital examination and on USG had 7 (41%) full term delivery. Patients who had both OS closed on digital examination but internal OS open on sonography had 6 (35%) preterm delivery. The 36 patients had cervical length between 2 to 2.5 cm in whom 15 (42%) patients delivered full term and 20 (55%) patients had late preterm delivery.

Table 1: Age of study population.

Age (in years)	N (%)
≤20	5 (9.09)
21-25	24 (43.63)
26-30	17 (30.9)
31-35	9 (16.36)
Total	55

Table 2: Gravidity.

Gravidity	N (%)
Primi	16 (29)
2nd	15 (27.3)
3rd	17 (30)
4th or more	7 (12.7)
Total	55

The 17 patients had cervical length between 1.5 to 2 cm, among whom 4 (23%) had full term delivery and 8 (47%) patients delivered late preterm. Two patients had cervical length of ≤1.5 cm in whom 50% patients aborted and rest 50% delivered early preterm and none reached full term. Patients having cervical length between 1.5 to 2 cm, 4 (23%) reached full term compared to 15 (42%) in group of patients having cervical length between 2 to 2.5 cm. Among OS tightening group, 12 (38%) patients reached up to full term compared to 7 (30%) in conservative group.

Majority 14 (44%) patients had emergency removal for prelabour rupture of membranes. Our study had 28 (51%) healthy babies. Patients who underwent cerclage operation, 6 (19%) had baby birth weight between 2.6 to 3 kg, among them 1 (4%) patient had baby weight greater than 3.1 kg compared to 3 (14%) and 0% in conservative group, 20 (36%) patients underwent caesarean delivery for various obstetric indications.

Table 3: Distribution according to past obstetric history.

Obstetric history	N (%)
Previous 1 preterm delivery	8 (21)
Previous 2 preterm delivery	2 (5)
Previous 1 full term delivery	6 (16)
Previous 1 dilatation and evacuation	2 (5)
Previous 2 or more spontaneous abortion	4 (10)
Previous 1 or more dilation and evacuation and 1 preterm delivery	8 (21)
Previous 1 dilatation and evacuation and 1 full term delivery	4 (10)
Previous 1 full term delivery and 1 preterm delivery	1 (3)
2 dilatation and evacuation and 1 full term delivery	1 (3)
1 preterm delivery, 1 full term delivery and 1 dilation and evacuation	2 (5)
Total	38

Table 4: Symptoms at the time of ultrasonography.

Symptoms	N (%)
Abdominal pain	14 (26)
Backache	11 (20)
Discharge	8 (14)
Asymptomatic	22 (40)
Total	55

Table 5: Condition of cervix between 18 to 22 weeks of gestation on digital and TVS assessment.

Outcome	External and internal OS closed, (on TVS), N (%)		External OS open and internal OS closed, (on TVS), N (%)		External and internal OS open, (on TVS), N (%)	
	OS closed	OS open	OS open	OS closed	OS open	OS closed
Full term	7 (41)	0	2 (9)	6 (27)	1 (6.25)	3 (18.75)
Preterm	4 (24)	6 (35)	9 (41)	4 (18)	8 (50)	1 (6.25)
Abortion	0 (0)	0 (0)	0 (0)	0 (0)	3 (18.75)	0 (0)
Total	17		22		16	

Table 6: Correlation of TVS measured cervical length and gestational at delivery.

Cervical length on TVS (cm)	N	Gestational age at delivery, n (%)			Abortion, N (%)
		<33.6 weeks	34-36.6 weeks	≥37 weeks	
≤1.5	2	1 (50)	0 (0)	0 (0)	1 (50)
1.5 to 2	17	3 (18)	8 (47)	4 (23)	2 (12)
2 to 2.5	36	1 (3)	20 (55)	15 (42)	0 (0)
Total	55	5	28	19	3

Table 7: Birth weight.

Birth weight (kg)	No. of babies, N (%)	
	Conservative	N wiring
<1.5	1 (4)	5 (16)
1.6-2.0	2 (10)	7 (22)
2.1-2.5	15 (71)	12 (39)
2.6-3.0	3 (14)	6 (19)
3.1-3.5	0 (0)	1 (4)
Total	21	31

Table 8: Outcome according to treatment modalities.

Cerclage	N (%)	Gestation age at delivery, N (%)			Abortion, N (%)
		<33.6 weeks	34-36.6 weeks	≥37 weeks	
Yes	32 (58)	5 (16)	14 (43)	12 (38)	1 (3)
No	23 (42)	0 (0)	14 (60)	7 (30)	2 (10)

Table 9: Mode of delivery.

Cerclage	N	Mode of delivery, N (%)		Abortions, N (%)
		Vaginal delivery	C section	
Yes	32	22	9	1
No	23	10	11	2
Total	55	32 (59)	20 (36)	3 (5)

DISCUSSION

Present study shows there were 35% full term deliveries, 60% preterm deliveries and 5% had abortion among patients having cervical length less than or equal to 2.5 cm. Nelson et al was similar study occurred in 1998 showing there were higher rate of preterm deliveries in cervical incompetent patients.

Even similar study at Kasturba medical college, Manipal showing 50% full term delivery in patients having cervical incompetence. Comparison with other studies suggest, there is higher rate of preterm delivery in patients diagnosed with cervical incompetence. So, each and every patient must be examined for cervical incompetence in mid trimester of pregnancy to offer timely intervention to prevent preterm labour.

Table 10: Comparison of pregnancy outcome with other studies.

Variables	N	Outcome, N (%)		
		Full term	Preterm	Abortion
Present study	55	19 (35)	33 (60)	3 (5)
Nelson et al[16]	133	35 (26)	98 (74)	0 (0)
Guzman et al[17]	138	69 (50)	69 (50)	0 (0)
Nalini et al[18]	98	49 (50)	49 (50)	0 (0)

Present study shows that most of the patients in between 21-30 years. But according to study done by Carvalho et al there was no significant age difference.[18] Out of 55 patients, 16 patients (29%) were primigravidas and 39 (71%) were multigravidas. Similar study was undertaken in Kasturba medical college at Karnataka which had 44 primi and 58 multigravidas were having incompetent cervix suggesting cervical incompetency increases with an increase in gravidity.[17] Eight (21%) patients had history of 1 preterm delivery or 1 preterm delivery and 1 dilatation and evacuation procedure in past. Study done by Belotserkovtseva et al 41.3% having history of preterm delivery and 61.5% having history of 1 dilatation and evacuation procedure in past.[19] The 17 patients had cervical length between 1.5 to 2 cm, among whom 4 (23%) had full term delivery and 8 (47%) patients delivered late preterm. 2 patients had cervical length of ≤1.5 cm in whom 50% patients aborted and rest 50% delivered early preterm and none reached full term. Patients having cervical length between 1.5 to 2 cm, 4 (23%) reached full term compared to 15 (42%) in group of patients having cervical length between 2 to 2.5 cm. Study done by Gahlot et al, out of 132 patients, 62 patients delivered preterm whom have mean cervical length 24.83±4.6 mm.[20] Patients who underwent cerclage operation, 6 (19%) had baby birth weight between 2.6 to 3 kg, among them 1(4%) patients had baby weight greater than 3.1 kg compared to 3 (14%) and 0% in conservative group. Study done by Kaya et al, 183 patients were undergoing cerclage operation delivered at gestation age 37 weeks± 4 days and have birth weight 3 kg±870 gm.[21]

Limitation of my study is failed to identify local infection as cause of preterm birth.

CONCLUSION

Preventing preterm delivery remains a major challenge even for 21st century. The cervix plays the fundamental role in supporting a pregnancy and preventing ascending infection from lower genital tract till full term. Injury to cervix during previous deliveries or previous cervical procedure may contribute to cervical incompetence. Cervical incompetence seen in primi patients suggests incompetence can be congenital as well. Previous history of past preterm births, abortion and cervical procedures like dilatation and evacuation are strongly related to cervical incompetence and such detail history should

always be elicited before going for further evaluation for every pregnant patient. It is important that each and every patient should be examined between 18 to 22 weeks of gestation regardless of her complaints. Internal OS status of every patient should always be examined by ultrasound between 18 to 22 weeks. Patients with internal OS open on digital and ultrasound examination should be monitored closely. As the cervical length decreases chances of preterm birth increases. Lesser the cervical length poorer is the obstetric outcome. Thus, it is very useful in prognostication and prediction of preterm birth. There are highest chances of late preterm in cervical incompetent patients. According to our study OS tightening done with right technique is definitely helpful in prolonging gestational duration and preventing abortion. Our study showed better outcome with OS tightening group compared to conservative group. In our study 36% patients went under C section for various obstetrics indications suggesting cervical shortening does not necessarily result in vaginal deliveries. Ultrasonographic and digital assessment of cervix has a promising role to offer in prediction of preterm births. Whatever the aetiology of preterm delivery, dilatation of cervix remains common point and digital + transvaginal sonography of cervix provides good predictor of preterm delivery. Considering the magnitude of preterm labour, cost of management of preterm babies and morbidity and mortality associated with it, assessment of cervix at 18 to 22 weeks of gestation should be a routine screening method and should be offered to all pregnant patients. Finding short cervix at 18 to 22 weeks of gestation on digital and ultrasound examination helps to predict preterm labour with fair accuracy.

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