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Study of Predictive Value of Transvaginal Sonographic Cervical Length Measurement in Preterm Labour

Dr. Snehil[1], Dr. Krishna Sinha[2], Dr. Anupama Sinha[3]
[1]*Assistant Professor, Department of Obstetrics and Gynecology, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India*
[2]*Associate Professor, Department of Obstetrics and Gynecology, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India*
[3]*Associate Professor, Department of Obstetrics and Gynecology, Jawaharlal Nehru Medical College and Hospital, Bhagalpur, Bihar, India*

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I. Introduction

Preterm Labor is defined as onset of uterine contractions of sufficient and frequency to effect progressive dilatation &effacement of cervix at less than 37 wks of gestation ACOG CRITERIA to document PTL.
1. Contraction of 4 in 20 minutes or 8 in 60 minutes
2. Cervical dilatation greater than 1 cm &cervical effacement of 80 %or greater.

Threatened PTL is often used to describe pregnancies complicated by episodes of clinically significant uterine activity but without cervical changes.
Preterm birth is defined as birth before 37 completed week of gestation.
Prediction of preterm delivery is important and its aim is-
•To identify women at high risk for preterm labor.
•To identify women who might benefit from increased surveillance and potentiate early use of therapy to abort threatened PTL.

II. Aims And Objectives

The specific aim of study is to determine the diagnostic accuracy of cervical length measurement using transvaginal sonography in second trimester between 16 – 20 weeks of pregnancy as predictive value for spontaneous preterm labor in 100 asymptomatic women with singleton pregnancy.

III. Materials And Methods

Study Design: This is a prospective study in 100 asymptomatic pregnant patients in the POG 16-28 wks.

Setting: Department of OBS AND GYN, JAWAHARLAL NEHRU MEDICAL COLLEGE,BHAGALPUR.
Recruitment period: DECEMBER 2019 to MARCH 2021

Inclusion Criteria:
Healthy asymptomatic women.
Period of gestation between 16 -28 wks
Low risk for preterm birth
Singleton pregnancy.

Exclusion criteria
Any associated medical disorder. Presence of any fetal anomaly. Previous cervical circlage.
Presence of any risk factor of preterm labor. Previous preterm birth PPROM Chorioamnionitis Polyhydramnios APH Twins

IV. Methodology

History: In each case detailed history is taken as per Performa at the time of admission. Age, Occupation / Education, Parity, LMP/ EDD, Booked / Unbooked, Menstrual History, Obs History, Past Obs History, Past Medical / Surgical history, Family history, Personal history
General physical Examination Obstetric Examination

Investigation:
Routine - Hb , Blood Group , Blood Sugar / LFT / KFT , VDRL,HIV ,HBsAg, Urine-routine examination.

Specific – Along with obstetric ultrasound transvaginal sonographic cervical length measurement done.
If CL was less than or equal to 3.5 cm and POG less than 24 wks then patient was called for rescreening at 28 wks. If the first visit was made at 27 wks patient directly called at 28 wks for cervical length measurement.

Method of cervical length measurement

Transvaginal sonography was performed to measure cervical length using a transvaginal probe. Before examination each patient was made to empty her bladder and placed in dorsal lithotomy position .The vaginal probe was covered with a sterile condom with gel applied on both side. The transducer was withdrawn slightly until the image blurred and was gently reinserted with minimal pressure to restore a clear image of cervix.
Cervical length was measured in sagittal section visualizing internal and external os and endocervical canal as landmarks. When cervical canal was found curved it was measured in multiple linear segments .Three measurements were taken and shortest of three measurements recorded.

All the cases were divided into three groups on the basis of POG at the first visit of ANC. Three groups were
16 – 20 wks •21 – 26 wks •At 28 wks.
All patients followed till the development of labor and POG noted.
If patient developed preterm labor management was done with individualization of the case.
All statistical calculation was done in these three groups differently and all results given under this same division.
Outcome: evaluated as the POG of onset of labor

V. Observatons & Results

AGE DISTRIBUTION

AGE (yrs)	TERM LABOUR	PRETERM LABOUR	TOTAL
15-20	20	03 (13%)	23
21-25	41	07 (14.5%)	48
26-30	21	04 (16%)	25
31-35	03	00	3
> 35	00	01 (100%)	1
TOTAL	85	15	100

Mean age 23.4
Pvalue.17 (NS)

GRAVIDITY DISTRIBUTION

GRAVIDITY	TERM LABOUR	PRETERM LABOUR	TOTAL
G 1	49 (57.6%)	5 (33.3%)	54
G 2	23 (27.8%)	6 (40%)	26
G 3	10 (11.7)	02(13.3%)	12
G 4	02 (2.3%)	02(13.3%)	4
G 5	01 (1.1%)	00	1
TOTAL	85	15	100

PREDICTIVE VALUE AT CL CUT OFF IN POG 16-20 WKS

CL CUT OFF	Sn	Sp	PPV	NPV
3.5 cm	66.67%	97.78%	66.67%	97.78% to
3.0 cm	0%	100%		91.67%

PREDICTIVE VALUE AT CL CUT OFF IN POG 21-26 WKS

CL CUT OFF	Sn %	Sp %	PPV %	NPV%
3.5 CM	85.71	59.46	28.57	95.65
3.00 CM	71.4	97.3	83.3	94.74
2.5 CM	14.29	100	100	84.26

PREDICTIVE VALUE AT CL CUT OFF AT 28WKS POG

CL CUT OFF	Sn %	Sp %	PPV %	NPV%
3.5 CM	100		34.88	
3.00 CM	80	60.7	52.1	85.0
2.5 CM	46.6	100	100	77.8

VI. Discussion

The mean age of women was 23.4 yrs with range between 18-37 years. This corresponds to the the study of Hebbar et al (2005)in which mean age of women was 24.3 yrs. This finding is non- significant for the outcome of preterm delivery , as also demonstrated by the study of Heath et al (2003). Our study shows that G2 were at greater risk for preterm delivery and this also corresponds to study of Hibbard et al (2000) where the incidence of preterm delivery was more in multipara's. The validity of CL at 3.5 cm for PTL is reflected by Sn of 66.67% , Sp of 97.78%, PPV of 66.67% ,NPV of 97.7%. The validity of CL at cut off value of 3 cm is reflected by Sp of 100%, and NPV of 91.6%. Sn and PPV could not be calculated because of no cases with CL less than 3 cm. The specificity and NPV was very high and that goes well with the high specificity and NPV of the other authors. While observing the sensitivity it was higher than the sensitivity of the study of Hibbard et al(2000) and Barber MA et al(2010) .This could be because of a small sample size and high incidence of PTL in women <3.5 cm whose number was less because most of women had CL more than 3.5 cm.For value of <3.0 cm sensitivity and PPV could not be calculated because no women had CL <3.0 cm in the study group. The specificity and NPV are quiet high hence CL screening can be implicated in threatened PTL by ruling out short cervix. This could be used to reduce the hospital admission rate and lessen the burden on health resources in developing areas.

Predictive value of CL for PTL in 21-26 wks group

The validity of CL at 3.5 cm for predicting PTL is reflected by Sn of 85.7% , Sp of 59.46%,PPV of 25.67% ,NPV of 95.65%. The validity of CL at cut off value of 3 cm is reflected by of Sn 71.4%, Sp of 97.3%, and PPV of 83.3% and NPV of 94.74%. The validity of CL at cut off value of 2.5 cm is reflected by Sn of 14.29, Sp of 100%, and PPV 100% and NPV of 84.26% The specificity and negative predictive value of CL is very high. At the chosen cut off value for CL at 3.5 cm the sensitivity was high and specificity low .But the NPV was high .Other authors have not compared the validity of CL at 3.5 cm. At 3 cm cut off the validity was comparable to study of Iams et al (1996) ,Hibbard et al (2000) and Barber et al (2010) (10 th percentile) .Hence CL cut off at 3 cm would be the most appropriate for the optimum efficacy of CL screening.

Predictive value of CL for PTL at 28 wks POG

At 3.5 cm cut off validity of CL at 3.5 cm for PTL is reflected by sensitivity of 100% ,PPV of 34.8% . CL cut off at 3 cm had sensitivity of 80.%,specificit y of 60.7%, and PPV of 52.1% and NPV of 85%. The specificity and negative predictive value of CL was very high .The validity of CL at cut off value of 2.5 cm is reflected by sensitivity of 46.6 ,specificity of 100%, and PPV 100% and NPV of 77.8% .The efficacy of CL screening at 3.5 cm gives very high Sn (100%) but it is not justified because most of the cases would have CL <3.5 cm at 28 wks because the lower uterine segment formation starts.As the CL cut off values are increased the Sn increases and as the cut off value is decreased the Sp and PPV increases. Hence it would be more appropriate to decrease the CL cut off value for this POG when compared to cut off values of group 1 (16- 20 wks) and group 2(21-26 wks.).The Sn% and Sp% in present study at 3.0 cm are comparable to the study of Tong song et al (CL cut off 3.5 cm).

VII. Conclusion

The conclusions drawn from this study are:

- The mean age of patient for ANC is a non significant for the outcome of PTL.
- Incidence of PTL was more in multipara's.
- Incidence of PTL was more in women who made 1st ANC visit late in second trimester.

– Low socioeconomic status is a risk factor for PTL

In 16 -20 wks POG CL screening has a very high specificity and NPV but suffers a low sensitivity and PPV. By using CL as initial surveillance method the 'at risk' population is effectively selected for further CL follow up and resources can be directed to more needful cases. Hence it could be used to reduce the hospital burden of admissions for PTL by ruling out short CL. In POG 21-26 along with high specificity and NPV the sensitivity and specificity improves and shorter CL chosen as cut off is an effective tool to predict PTL. This POG is the most appropriate for CL screening and CL cut off at 3.0 cm has the best efficacy in this period. At POG 28 wks CL has good correlation with PTL but further guidelines are required for its use .Also its integration with biochemical markers would improve the prediction rate.

References

[1]. Crane JM and Hutchinson D .Chochrane library articles for review s of trans vaginal cervical length and its relation to pre term labour. Ultrasound Obstet Gynecol. 2008 May;31 •Berghella V, Tolosa JE ,Kuhlman KA et al. Cervical ultrasonography compared to manual examination as a predictor of preterm delivery .Am J Obstet and Gynecol 1997 ;177 :pg 723 -730 • www.who.int/bulletin/volumes/88/1/08-062554/en.

[2]. F.Gary Cunningham , Leveno, Bloom , Hauth, Gilstrap, Wenstorm ;Preterm birth , Williams Obs. Ed 23 rd pg.

[3]. .Stiphen A Walkinshaw.Preterm labour &delievery of preterm infant :Turnbull Obstetrics.3rd ed. Pg 493-514

[4]. WHO. International statistical classification of diseases& related health problems, 10 th revision , Vol 2. Geneva , Switzerland: WHO, 1983.

[5]. Strobino B , Pantel –Silverman J .Gestational vaginal bleeding and pregnancy outcome.AM J Epidemiol 1989 :129 :p 806-815 (Level II -2)

[6]. Locksmith G , Duff P . Infection , antibiotics & preterm delivery. Semin Perinatol 2001 oct :25 (5) p 295 -309

[7]. (9)Jacquiline Grimes – Dennis &Vincanzo , Berghella . Cervical length &Prediction of preterm delivery . Curr. Opinion in Obstet Gynecol 2007,19:p 191-195

[8]. Owen J ,Yost N,Berghella v ,et al . Mid Trimester endovaginal sonography in women at high risk for spontaneous preterm birth .JAMA 2001

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