The place of transabdominal ultrasonography as a diagnostic tool for measurements of the cervical length

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Introduction

- Preterm birth is associated with neonatal morbidities and mortalities
- Complicates 8% of all pregnancies (Li, 2010)
- Tocolytics, antibiotics for infection and improvements in neonatal intensive care have improved prognosis and outcomes
- Despite of these, rate has increased over decades

- Primary prevention (prophylactic progesterone supplement, cerclage) vs tocolysis ??

- Routine cervical length assessment??

- Transvaginal route or transabdominal ultrasonography

Primary Prevention

- In general population, patients with short cervix benefit from progesterone treatment. (Fonseca, 2007- Hassan, 2011)

- Cerclage do not decrease risk of preterm birth in women with CL ≤ 25 mm (Wood AM, AM J Perinatol, 2018)

- Vaginal progesterone and cerclage are equally effective for preventing preterm birth

 (Conde-Agudelo, Am J Obstet Gynecol. 2018)

Vaginal progesterone for preventing preterm birth and adverse perinatal outcomes in singleton gestations with a short cervix: a meta-analysis of individual patient data.

Romero R[1], Conde-Agudelo A[2], Da Fonseca E[3], O'Brien JM[4], Cetingoz E[5], Creasy GW[6], Hassan SS[2], Nicolaides KH[7].

Table 4. Summary of Findings table on the quality of evidence for each outcome measure

Outcomes	Anticipated absolute effects* (95% CI)		Relative effect (95% CI)	No of Participants (studies)	Quality of the evidence (GRADE)
	Risk with placebo	Risk with vaginal progesterone			
Preterm birth <33 weeks	Study population		RR 0.62 (0.47 to 0.81)	974 (5 studies)	⊕⊕⊕⊕ High
	225 per 1000	139 per 1000 (106 to 182)			
Preterm birth <37 weeks	Study population		RR 0.90 (0.77 to 1.05)	974 (5 studies)	⊕⊕⊕⊕ High
	418 per 1000	376 per 1000 (322 to 439)			
Preterm birth <36 weeks	Study population		RR 0.80 (0.67 to 0.97)	974 (5 studies)	⊕⊕⊕⊕ High
	349 per 1000	279 per 1000 (234 to 338)			
Preterm birth <35 weeks	Study population		RR 0.72 (0.58 to 0.89)	974 (5 studies)	⊕⊕⊕⊕ High
	296 per 1000	213 per 1000 (172 to 264)			
Preterm birth <34 weeks	Study population		RR 0.65 (0.51 to 0.83)	974 (5 studies)	⊕⊕⊕⊕ High
	265 per 1000	172 per 1000 (135 to 220)			
Preterm birth <32 weeks	Study population		RR 0.64 (0.48 to 0.86)	974 (5 studies)	⊕⊕⊕⊕ High
	193 per 1000	124 per 1000 (93 to 166)			
Preterm birth <30 weeks	Study population		RR 0.70 (0.49 to 0.98)	974 (5 studies)	⊕⊕⊕⊕ High
	141 per 1000	99 per 1000 (69 to 138)			

Vaginal progesterone, oral progesterone, 17-OHPC, cerclage, and pessary for preventing preterm birth in at-risk singleton pregnancies: an updated systematic review and network meta-analysis

A Jarde,[a] O Lutsiv,[b] J Beyene,[c] SD McDonald[a]

Table S4. Effectiveness of progesterone, cerclage and pessary compared to control in women with a previous preterm birth.

Outcome (studies in the NMA)	Intervention	k	N	SUCRA	OR/ (95% CrI/ CI)	NNT (95% CI)	Quality of evidence
Subgroup of women with a history of previous preterm birth							
Preterm birth < 34 weeks	**Progesterone**	4	372	n.a. (MA)	**0.36 (0.21 to 0.62)**	6 (5 to 11)	Moderate
(no NMA)	Cerclage	0	0	-	-		-
	Pessary	0	0	-	-		-
Preterm birth < 37 weeks	**Progesterone**	11	2407	84%	**0.45 (0.26-0.71)**	6 (4 to 13)	Low†
(k=13)	Cerclage	2	275	58%	0.60 (0.17-1.80)		Very Low†
	Pessary	0	0	-	-		-
Neonatal death	**Progesterone**	5	2043	n.a. (MA)	**0.50 (0.27 to 0.91)**	66 (45 to 371)	Moderate
(no NMA)	Cerclage	1	194	n.a.	1.02 (0.39 to 2.70)		Very Low
	Pessary	0	0	-	-		-
Subgroup analyses by route of administration of progesterone in women with a previous preterm birth							
Preterm birth < 34 weeks	**Progesterone (PV)**	3	224	n.a. (MA)	**0.29 (0.12 to 0.68)**	8 (6 to 18)	Moderate
(no NMA)	**Progesterone (PO)**	1	148	n.a.	**0.42 (0.22 to 0.83)**	5 (4 to 22)	Low
	17-OHPC	0	0	-	-		-
	Cerclage	0	0	-	-		-
	Pessary	0	0	-	-		-
Preterm birth < 37 weeks	Progesterone (PO)	2	181	75%	0.37 (0.11-1.18)		Moderate
(k=17) *	**Progesterone (PV)**	5	1610	72%	**0.43 (0.23-0.74)**	6 (4 to 14)	Moderate†
	17-OHPC	4	616	52%	**0.53 (0.27-0.95)**	7 (80 to 4)	Moderate
	Cerclage	2	275	46%	0.60 (0.19-1.74)		Very Low†
	Pessary	0	0	-	-		-
Neonatal death	**17-OHPC**	2	509	n.a. (MA)	**0.39 (0.16 to 0.95)**	24 (17 to 295)	Low
(no NMA)	Progesterone (PO)	1	148	n.a.	0.40 (0.10 to 1.63)		Very Low
	Progesterone (PV)	2	1386	n.a. (MA)	0.76 (0.28 to 2.07)		Low
	Cerclage	1	194	n.a.	1.02 (0.39 to 2.70)		Very Low
	Pessary	0	0	-	-		-

Table S5. Effectiveness of progesterone, cerclage and pessary compared to control in women with a cervical length ≤ 25 mm.

Outcome (studies in the NMA)	Intervention	k	N	SUCRA	OR/ (95% CrI/ CI)	NNT (95% CI)	Quality of evidence
Subgroup of women with a cervical length ≤ 25 mm							
Preterm birth < 34 weeks	Cerclage	2	136	n.a. (MA)	0.22 (0.01 to 4.99)		Very Low
(no NMA)	**Progesterone**	1	226	n.a.	**0.45 (0.24 to 0.84)**	7 (5 to 28)	Low
	Pessary	4	1036	n.a. (MA)	0.68 (0.20 to 2.29)		Very Low
Preterm birth < 37 week	Pessary	2	488	n.a. (MA)	0.36 (0.09 to 1.48)		Very Low
(no NMA)	Cerclage	1	101	n.a.	0.83 (0.33 to 2.07)		Very Low
	Progesterone	1	458	n.a.	0.84 (0.57 to 1.24)		Low
Neonatal death	Cerclage	3	389	n.a. (MA)	0.55 (0.18 to 1.68)		Low
(no NMA)	Progesterone	1	458	n.a.	0.56 (0.13 to 2.39)		Very Low
	Pessary	2	488	n.a. (MA)	1.02 (0.11 to 9.90)		Low
Subgroup analyses by route of administration of progesterone in women with a cervical length ≤ 25 mm							
Preterm birth < 34 weeks	Cerclage	2	136	n.a. (MA)	0.22 (0.01 to 4.99)		Very Low
(no NMA)	**Progesterone (PV)**	1	226	n.a.	**0.45 (0.24 to 0.84)**	7 (5 to 28)	Low
	Pessary	4	1036	n.a. (MA)	0.68 (0.20 to 2.29)		Very Low
	Progesterone (PO)	0	0	-	-		-
	17-OHPC	0	0	-	-		-
Preterm birth < 37 weeks	Pessary	2	488	n.a. (MA)	0.36 (0.09 to 1.48)		Very Low
(no NMA)	Cerclage	1	101	n.a.	0.83 (0.33 to 2.07)		Very Low
	Progesterone (PV)	1	458	n.a.	0.84 (0.57 to 1.24)		Low
	Progesterone (PO)	0	0	-	-		-
	17-OHPC	0	0	-	-		-
Neonatal death	Cerclage	3	389	n.a. (MA)	0.55 (0.18 to 1.68)		Low
(no NMA)	Progesterone (PV)	1	458	n.a.	0.56 (0.13 to 2.39)		Very Low
	Pessary	2	488	n.a. (MA)	1.02 (0.11 to 9.90)		Low
	Progesterone (PO)	0	0	-	-		-
	17-OHPC	0	0	-	-		-

Routine Cervical Length Assessment

The American College of
Obstetricians and Gynecologists
WOMEN'S HEALTH CARE PHYSICIANS

PRACTICE BULLETIN

CLINICAL MANAGEMENT GUIDELINES FOR OBSTETRICIAN—GYNECOLOGISTS

NUMBER 130, OCTOBER 2012

(Replaces Practice Bulletin Number 31, October 2001 and Committee Opinion No. 419, October 2008)

Prediction and Prevention of Preterm Birth

Recommendations based on limited or inconsistent scientific evidence (Level B):

▶ Although this document does not mandate universal cervical length screening in women without a prior preterm birth, this screening strategy may be considered.

The role of routine cervical length screening in selected high- and low-risk women for preterm birth prevention

CrossMark

Society for Maternal-Fetal Medicine (SMFM); Jennifer McIntosh, MD; Helen Feltovich, MD;
Vincenzo Berghella, MD; Tracy Manuck, MD

uation) from 16 until 24 weeks of gestation. **We recommend routine transvaginal CL screening for women with singleton pregnancy and history of prior spontaneous PTB. (GRADE 1A)**

Transabdominal vs Transvaginal

- Transabdominal > 30 mm = transvaginal > 25 mm

(Chadhury, JTGGA, 2013)(O'Hara, AJUM,2015)

- Parity, BMI were not associated with the discrepancy between TA and TV measurement.

- Postvoiding TA measurement > 35mm is a safe.

(Friedman, AJOG,2013)

AIM

- The place and safety of transabdominal ultrasonography as a diagnostic tool for cervical assessment

MATERIAL & METHOD

- Prospective cross sectional study

- 226 patients between November 2018 –February 2019

- Second trimester anatomy scan at 18-24 weeks of gestation

- Inclusion criteria: Patients without symptoms of preterm birth, >18years old

- Exclusion criteria: Unable to measure with transabdominal route, multiple gestation, PPROM, history of cervical surgery

- All cervical measurements including transabdominal route were measured after voiding

RESULTS

- The mean value of absolute difference between both approaches was 5.4 mm ± 4.3 mm (p< 0.05)
- İntraclass correlation coefficient was 0.65 (no correlation)
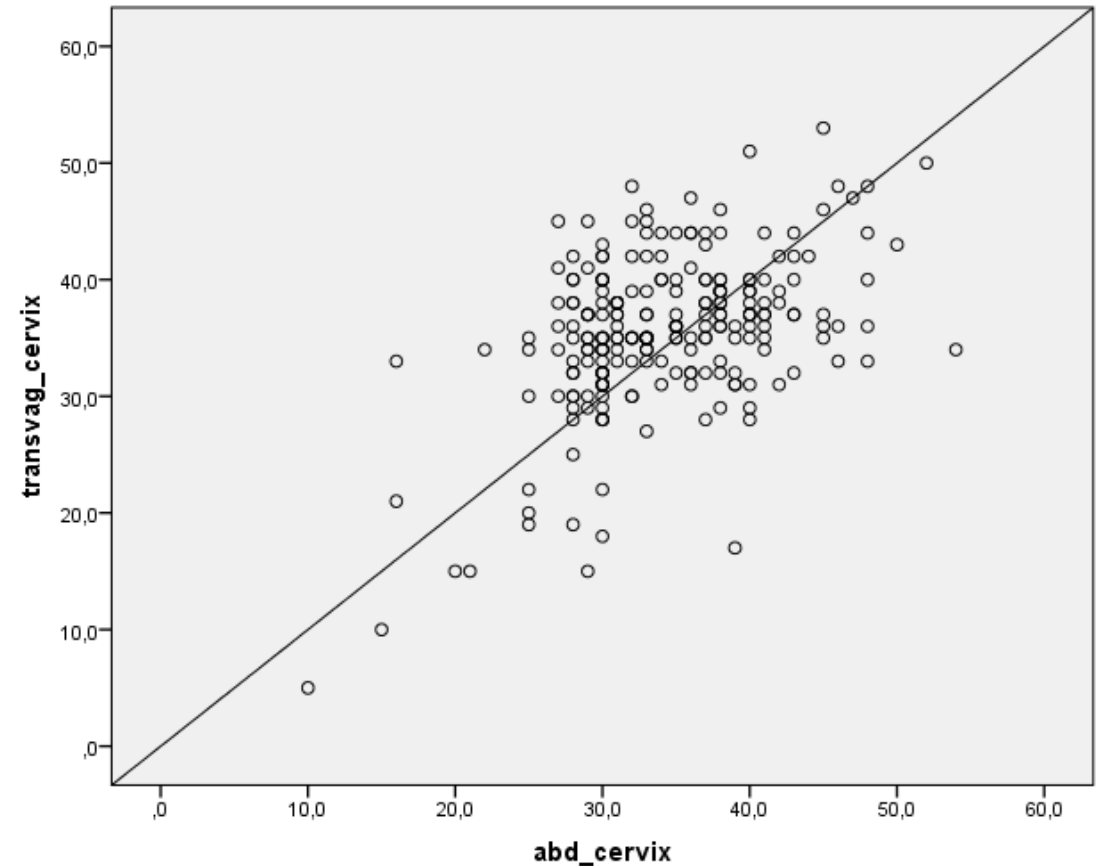
RESULTS

- BMI did not affect the accuracy of transabdominal approach (p>0.05)

BMI	Patient (N)	Difference
< 25	84	5,7
25-29,9	85	4,46
> 30	54	4,7

RESULTS

- Only 8 of 13 patients whose cervixes were measured less than 25 mm by transabdominal route were confirmed by transvaginal route.

		Transvaginal		
		< 25 mm	> 25 mm	Total
Transabdominal	<25 mm	8 (3.5%)	5 (2.2%)	13 (5.7%)
	>25 mm	6 (2.7%)	207 (91.6%)	213 (94.3%)
	Total	14 (6.2%)	212 (93.8%)	226 (100%)

- Cohen' s Kappa value: 0.56 (weak correlation)

CONCLUSION

- If the cervical length is longer than 30 mm by transabdominal route,we can consider it is safe for low risk population

- Transvaginal ultrasonography is still the best way as both screening and diagnosing for cervical length for especially high-risk population.

- Thanks for your attention