Recent Change in the Incidence of Cervical Cerclage

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Abstract

OBJECTIVE: To estimate the incidence of cerclage by indication in an academic tertiary care center, given results of recent randomized studies.

STUDY DESIGN: This is a retrospective study of women at risk for preterm birth (PTB) who received a transvaginal cervical cerclage at Thomas Jefferson University Hospital between 1995-2008. The incidence of cerclage was calculated for each year as total, history-indicated (HIC), and ultrasound-indicated (UIC). Women with multiple pregnancy, transabdominal or physical-exam indicated cerclage were excluded.

RESULTS: A total of 323 women had a cerclage placed. 275 (83%) were HIC (n=146, 53%) or UIC (n=129, 47%). The total incidence of either HIC or UIC decreased from 2.2% in 1998 to 0.3% in 2008 (figure). Comparing the 5 year period between 1998-2002 to the 6 years between 2003-2008, the overall incidence decreased from 1.8% to 0.7% (p=<.001). A similar significant decrease was seen for both HIC (p=<.001) and UIC (p=<.001).

CONCLUSION: The use of more selective indications for cervical cerclage based on recent randomized studies was associated with decreased cerclage placement. The decrease in incidence of HIC may be due to more women with prior PTB being followed by transvaginal cervical length. The decrease in incidence of UIC is unexplained but may be due to the use of 17-α-hydroxy progesterone caproate in women with PTB.

BACKGROUND

- Cervical cerclage as an intervention to prevent preterm birth (PTB) was first described by Shirodker and then McDonald in the 1950s.
- 60-80% of women with prior PTB or cervical surgery neither develop cervical shortening up to 24 weeks in a subsequent pregnancy nor deliver preterm <35 weeks (CIPRACT)
- Recently, several randomized controlled trials (RCTs) have evaluated the effectiveness of transvaginal cervical cerclage in specific populations
- For example:
  - 5 RCTs have shown that cerclage may benefit women with prior preterm birth and **short cervical length**
  - History-indicated cerclage (HIC) placement based on history of **≥ 3 second trimester losses or PTBs** significantly reduces the risk of PTB before 33 weeks' gestation from 32% to 15% (MRC/RCOG)
- Based on these and other RCTs, the clinical use of cerclage may be changing

OBJECTIVE

- **To estimate the incidence of transvaginal cervical cerclage, by indication, in an academic tertiary care center**

METHODS

- Retrospective cohort study using the Thomas Jefferson Prematurity Database which consists of women with risk factors for PTB
- Inclusion criteria: all history- (HIC) or ultrasound-indicated (UIC) transvaginal cervical cerclages placed during pregnancy between 1998-2008
- Exclusion criteria: physical-exam indicated cerclage, transabdominal cerclage
- **Primary outcome: incidence of cerclage per year**
- Secondary outcome: incidence of cerclage from 1998-2002 versus 2003-2008

RESULTS

- 284 transvaginal cervical cerclages were placed between 1998-2008
- The most notable demographic difference was an increase in the incidence of prior poor obstetric outcome among those who received an ultrasound-indicated cerclage (table 1)
- The incidence of cerclage decreased significantly during the second half of the study period in all groups (table 2; p<.001)
- The figure shows the incidence of history- and ultrasound-indicated cerclage at Thomas Jefferson University Hospital by year compared to the incidence of all cerclages in the United States

Table 1.

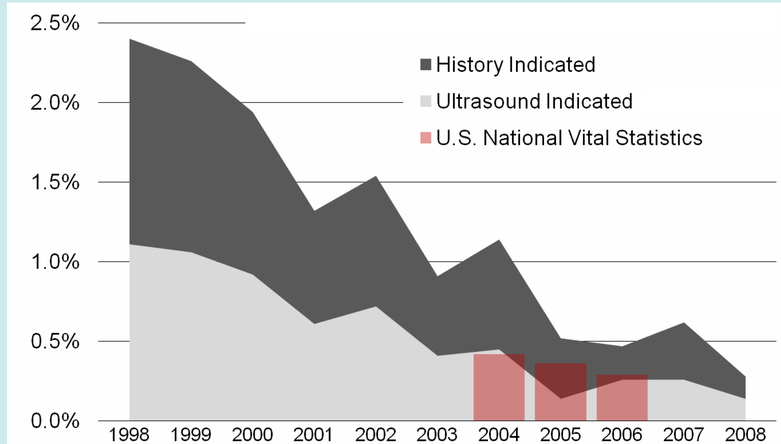
Variable		Cerclage Type-HIC 1998-2002	Cerclage Type-HIC 2003-2008	*p*	Cerclage Type-UIC 1998-2002	Cerclage Type-UIC 2003-2008	*p*
Age (y)		31.6±5.4	31.4±5.6	.870[a]	29.4±6.2	28.8±4.9	.526[a]
Age ≥35		23 (21.7%)	13 (26.5%)	.508[b]	18 (19.1%)	2 (5.7%)	.062[b]
Race (n=267)	Caucasian	40 (39.6%)	7 (15.2%)	.009[b]	26 (29.9%)	4 (12.1%)	.072[b]
	Afr. American	53 (52.5%)	36 (78.3%)		55 (63.2%)	24 (84.8%)	
BMI (n=202)		23.6±15.4	29.1±17.5	.049[a]	20.8±17.9	22.6±16.9	.604[a]
BMI <19		3 (2.8%)	1 (2.0%)	>.99[c]	2 (2.1%)	0	>.99[c]
Tobacco (n=204)		11 (14.1%)	7 (25.0%)	.241[c]	15 (19.0%)	5 (26.3%)	.529[c]
>1 D&E (n=271)		25 (25.0%)	14 (31.1%)	.443[b]	30 (32.3%)	10 (30.3%)	.836[b]
Cervical Conization (n=274)		13 (12.9%)	5 (10.6%)	.793[c]	8 (8.6%)	6 (18.2%)	.193[c]
Uterine Anomaly		2 (2.0%)	2 (4.3%)	.592[c]	3 (3.2%)	0	.566[c]
Prior Obstetric Outcome							
Delivery 20-37wks (n=282)		80 (75.5%)	30 (62.5%)	.099[b]	39 (41.9%)	24 (68.6%)	.007[b]
Delivery 14-34wks (n=277)		82 (79.6%)	37 (78.7%)	.901[b]	47 (50.0%)	25 (75.8%)	.010[b]
Delivery 14-24wks (n=275)		72 (71.3%)	34 (72.3%)	.895[b]	44 (46.8%)	17 (51.5%)	.642[b]

Data expressed as mean±SD or n (%). [a]T-test; [b]Chi -square; [c]Fisher's exact.

Table 2.

Cerclage Type	Year 1998-2002	Year 2003-2008	Total	RR 95%CI
History-Indicated	107 (1.01%)	48 (0.38%)	155 (0.67%)	0.38 (0.27-0.53)
Multiples	*7 (0.07%)*	*2 (0.02%)*	*9 (0.04%)*	
Ultrasound-Indicated	94 (0.89%)	35 (0.28%)	129 (0.56%)	0.31 (0.21-0.46)
Multiples	*6 (0.06%*	*3 (0.02%)*	*9 (0.04%)*	
Both (HIC+UIC)	201 (1.9%)	83 (0.66%)	284 (1.23%)	0.34 (0.27-0.44)
Deliveries	**10,544**	**12,675**	**23,219**	

Data expressed as n (%).



	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
HIC	1.29%	1.20%	1.02%	0.71%	0.82%	0.50%	0.69%	0.38%	0.21%	0.36%	0.14%
UIC	1.11%	1.06%	0.92%	0.61%	0.72%	0.41%	0.45%	0.14%	0.26%	0.26%	0.14%
U. S. National Vital Statistics							0.42%	0.36%	0.29%		

Table 1: Demographics (top left)
Table 2: Incidence of cerclage (bottom left)
Figure: Cerclage Incidence at our center and in the United States (above)

CONCLUSIONS

- **More selective indications for cervical cerclage based on recent randomized studies were associated with decreased cerclage placement**
  - The decrease in incidence of history-indicated cerclage may be due to the fact that more women with prior PTB are being followed by transvaginal cervical length measurements
  - The decrease in incidence of ultrasound-indicated cerclage may be due to the use of 17-α-hydroxy progesterone caproate in women with PTB