The loop electrosurgical excision procedure and risk of preterm birth at a southern United States medical center

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Background

- Cervical excisional procedures are associated with adverse pregnancy outcomes
- Data from the United States show less risk compared with studies in other regions of the world

Kyrgiou M. *BMJ* 2016;354:i3633.

Objective

To determine the association between cervical excisional procedures and preterm birth in women at a southern US institution.

Methods

- Retrospective cohort study
- Cases: women undergoing loop electrosurgical excision procedure (LEEP) with a subsequent pregnancy and delivery between 1992-2013
- Controls: women undergoing pregnancy and delivery, without a history of LEEP, matched to cases by year of delivery (1:2)

Methods (2)

- Data was abstracted on
  - LEEP clinicopathologic characteristics (indication, demographics, histology)
  - Pregnancy characteristics and outcomes (preterm birth risk factors, gestational age at delivery, neonatal outcomes)

Methods (3)

- Primary outcome: preterm birth <37 weeks
- Secondary outcomes: preterm birth <34 weeks and <28 weeks, PPROM, neonatal outcomes (Apgar scores, birthweight, NICU admission, stillbirth/neonatal death)
- Adjusted odds ratios and 95% confidence intervals were calculated

Results

	No history of LEEP n = 870	History of LEEP n = 440
Mean age*	25.3 ± 6.3	28.5 ± 5.0
Race*		
White	294/870 (33.8)	129/440 (29.3)
Black	445/870 (51.2)	281/440 (63.9)
Hispanic	98/870 (11.3)	25/440 (5.7)
Other	33/870 (3.8)	5/440 (1.1)
Smoking status*		
Never	580/795 (73.0)	261/408 (64.0)
Former	43/795 (5.4)	35/408 (8.6)
Current	172/795 (21.6)	112/408 (27.4)
Parity*		
Nullipara	499/855 (58.4)	75/440 (17.1)
1	177/855 (20.7)	159/440 (36.1)
2+	179/855 (20.9)	206/440 (46.8)

*p<0.05

Results

	No history of LEEP n = 870	History of LEEP n = 440
RTIs during pregnancy (GC, CT, HIV, HSV, Hep C, Hep B, syphilis, trich, yeast, BV)	322/802 (40.1)	177/395 (44.8)
Gestational hypertension*	203/848 (23.9)	68/414 (16.4)
Preeclampsia*	121/837 (14.5)	37/415 (8.9)
Diabetes	74/850 (8.7)	41/417 (9.8)
Anxiety/Depression	108/845 (12.8)	55/411 (13.4)
Unmarried	581/839 (69.3)	311/431 (72.2)
Insurance status		
Government assistance	621/837 (74.2)	326/425 (76.7)
Private insurance	174/837 (20.8)	88/425 (20.7)
Unknown	42/837 (5.0)	11/425 (2.6)

*p<0.05

Results

	Controls n (%)	Cases n (%)	AOR*	95% CI
Preterm birth <37 weeks	216/870 (25)	102/440 (23)	0.75	0.53 – 1.06
Preterm birth <34 weeks	130/870 (15)	56/440 (13)	0.84	0.54 – 1.31
Preterm birth <28 weeks	43/870 (5)	19/440 (4)	0.67	0.33 – 1.37

*Adjusted for race, age, smoking status, parity, hypertension, preeclampsia, and diabetes

Results: other obstetric outcomes

	Controls n (%)	Cases n (%)	AOR*	95% CI
PPROM	107/859 (12)	62/437 (14)	0.98	0.64-1.50
Mode of delivery (Cesarean vs. vaginal birth)	272/870 (31)	101/440 (23)	0.60	0.44-0.83

*Adjusted for race, age, smoking status, parity, hypertension, preeclampsia, and diabetes

Results: neonatal outcomes

	Controls n (%)	Cases n (%)	AOR*	95% CI
Apgar scores <7	45/850 (5)	20/433 (5)	0.68	0.33-1.43
Birthweight <2500g	208/869 (24)	83/440 (19)	0.07	0.05-1.02
NICU admission	238/851 (28)	100/433 (23)	0.79	0.56-1.11
Stillbirth/neonatal death	18/870 (2)	6/439 (1)	0.48	0.15-1.61

*Adjusted for race, age, smoking status, parity, hypertension, preeclampsia, and diabetes

Conclusion

- History of LEEP was not associated with preterm birth in a subsequent pregnancy in women at a southern US institution
- History of LEEP was not associated with adverse neonatal outcomes

Discussion

- This study does not confirm the increased obstetric risk associated with cervical excisional procedures in other studies
- The lack of association of LEEP with adverse obstetric and neonatal outcomes could reflect the underlying high-risk nature of the obstetric population at our institution

Thank you!

Ancillary analysis: controls without history of dysplasia

	Controls n (%) N=583	Cases n (%) N=440	AOR*	95% CI
Preterm birth <37 weeks	108 (19)	102 (23)	1.01	0.68-1.50
Preterm birth <34 weeks	53 (9)	56 (13)	1.30	0.77-2.19
Preterm birth <28 weeks	16 (3)	19 (4)	0.99	0.43-2.29

*Adjusted for race, age, smoking status, parity, hypertension, preeclampsia, and diabetes

Ancillary analysis: controls with history of dysplasia but no treatment

	Controls n (%) N=183	Cases n (%) N=440	AOR*	95% CI
Preterm birth <37 weeks	42 (23)	102 (23)	0.78	0.45-1.47
Preterm birth <34 weeks	25 (14)	56 (13)	0.75	0.39-1.47
Preterm birth <28 weeks	8 (4)	19 (4)	0.58	0.20-1.71

*Adjusted for race, age, smoking status, parity, hypertension, preeclampsia, and diabetes