

# #411 Estrogen Status and Fecal Incontinence



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## Introduction

- In the United States, more than 8% of non-institutionalized women aged 65 and over report fecal incontinence (FI) episodes.
- Obstetric or surgical damage to the anal cushions and sphincters is considered important risk factors. Other proposed independent factors include body mass index, obstetric history, and interestingly menopause.
- Studies found estrogen receptors in structures of the anal canal in women regardless of age.
- Limited data suggested hormone replacement therapy (estrogen patch) can increase anal canal pressure and increase collagen and elastic content of the pelvic floor.
- This theory was further demonstrated in old ovariectomized rats which showed estrogen replacement restores submucosal vessel number and collagen I/III ratio in postovariectomy anal canal.
- There are no studies to our knowledge that have clearly reported any association between estrogen status and FI.
- The purpose of this original study is to determine if a lack of estrogen (menopause per self-report, age  $\geq 55$  years, or status post bilateral oophorectomy) is a risk factor for FI.
- Additionally, to characterize other risk factors that may contribute to FI in women.

## Methods

- Following Institutional Review Board approval, our group conducted a retrospective chart review of a single tertiary care institution's electronic medical record (EMR) between January 1st 1997 and January 1st 2017 of women who presented for outpatient care across a variety of specialties.
- Cases are defined as women with diagnosis of FI. Controls are defined as women seen at WCM on the same day if possible (within 6 months) as the corresponding case.
- Cases are matched to controls with a ratio of 1:1.
- Estrogen status and other clinical data were pulled from the EMR using the Informatics for Integrating Biology and the Bedside (i2b2) program.
- Variable data was re-confirmed by manual analysis of the EMR. FI diagnosis (via ICD-9 and ICD-10 codes) was used to dichotomize patients into two groups (YES-FI and NO-FI).

## Results

TABLE 1. Demographics and Clinical Characteristics	Total Cohort (n = 482)	YES-FI (n = 241)	NO-FI (n = 241)	p-value	Unadjusted Odds Ratio (95% CI)
Age (years)	60.3 $\pm$ 16.8	60.3 $\pm$ 16.8	60.3 $\pm$ 16.8	1.000 <sup>a</sup>	
Race:				0.041	
- White	214 (44%)	97 (40%)	117 (49%)		
- Black	33 (7%)	12 (5%)	21 (9%)		
- Hispanic	6 (1%)	1 (0.4%)	5 (2%)		
- Asian	24 (5%)	8 (3%)	16 (7%)		
- Other/Declined	205 (43%)	123 (51%)	82 (34%)		
Body Mass Index (kg/m <sup>2</sup> ), N=413	26.1 $\pm$ 6.2	26.0 $\pm$ 6.3	26.2 $\pm$ 6.1	0.814 <sup>a</sup>	
Vaginal delivery, N=417	1.3 $\pm$ 1.6	1.7 $\pm$ 1.8	1.0 $\pm$ 1.2	<0.0001 <sup>a</sup>	
Cesarean delivery, N=417	0.3 $\pm$ 0.6	0.2 $\pm$ 0.6	0.3 $\pm$ 0.6	0.626 <sup>a</sup>	
Menopause, N=475	328 (69%)	163 (69%)	165 (69%)	0.994	1.0 (0.68-1.48)
History of bilateral oophorectomy, N=473	43 (9%)	28 (12%)	15 (6%)	<b>0.031</b>	<b>2.0 (1.05-3.91)</b>
Estrogen use, N=471	31 (8%)	17 (7%)	20 (8%)	0.694	0.87 (0.45-1.71)
History of gastrointestinal disorder, N=478	176 (37%)	132 (56%)	44 (18%)	<0.0001	5.6 (3.72-8.53)
History of rectal surgery, N=475	38 (8%)	37 (16%)	1 (0.004%)	<0.0001	44.3 (6.02-325.40)
History of urinary incontinence, N=450	108 (24%)	97 (43%)	11 (5%)	<0.0001	14.4 (7.43-27.84)
History of pelvic organ prolapse surgery, N=476	27 (6%)	25 (11%)	2 (0.8%)	<0.0001	14.2 (3.33-60.78)

Chi-Square test used unless otherwise indicated. A - Independent T test

- During the study period, a total of 482 women were analyzed, 241 cases (NO-FI) and 241 controls (YES-FI) (Table 1).
- Most (44%) of the cohort was Caucasian; the average age was 60.3( $\pm$ 16.8) years and the average body mass index was 26.1 ( $\pm$ 6.2). The only significant demographic difference between YES-FI and NO-FI women was seen in the race category.
- Having a history of bilateral oophorectomy showed significance (odds ratio, 2.0; 95% CI, 1.1 to 3.9) in YES-FI patients.

## Conclusions

- Our group has revealed for the first time a connection between estrogen status (having a history of bilateral oophorectomy) and FI.
- Known risk factors for fecal incontinence including vaginal delivery, history of gastrointestinal disorder, rectal surgery, urinary incontinence, and prolapse surgery have been confirmed in this study.
- As we continue to discover the benefits of retaining ovaries and the importance of estrogen status, urogynecologists, gynecologic surgeons, and clinicians can better counsel patients.

## References

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