Appendix 1. Administrative Billing Codes Used for Inclusion and Exclusion Criteria for Identification of the Cohort of Hysterectomy Patients for Benign Indications, 2014–2017

Code Type	Codes
Procedure Codes Used for Inclusion in Hysterectomy Cohort	
Hysterectomy Procedure	
ICD-9	68, 68.3, 68.31, 68.39, 68.4, 68.41, 68.49, 68.5, 68.51, 68.59, 68.6, 68.61, 68.69, 68.7, 68.71, 68.79, 68.9
ICD-10	0UT90ZL, 0UT90ZZ, 0UT94ZL, 0UT94ZZ, 0UT97ZZL, 0UT97ZZ, 0UT98ZL, 0UT98ZZ, 0UT9FZL, 0UT9FZZ
CPT	56308, 58150, 58152, 58180, 58200, 58210, 58260, 58262, 58263, 58267, 58270, 58275, 58280, 58285, 58290, 58291, 58292, 58293, 58294, 58541, 58542, 58543, 58544, 58548, 58550, 58552, 58553, 58554, 58570, 58571, 58572, 58573, S2078
Diagnostic Codes Used for Excluding Those with Cancer-related, Trauma-, Menopausal, or Pregnancy-related Indications for Hysterectomy	
Anal, Breast, Bladder, Colorectal, and Gynecologic Cancers (uterine, ovarian, cervical, vaginal, & vulvar)	
ICD-9	153.0-153.9, 154.0-154.8, 158, 158.8, 158.9, 173.5, 173.51, 173.52, 173.59, 174, 174.1-174.9, 179, 180, 180.1, 180.8, 180.9, 181, 182, 182.1,183, 183.2, 184, 184.1-184.4, 188.0-188.9, 195.3, 197.6, 198.6, 198.81, 198.82
ICD-10	C18.0-C18.9, C20, C21-C21.2, C21.8, C50.01, C50.011, C50.012, C50.019, C50.02, C50.021, C50.022, C50.029, C50.1, C50.11, C50.111, C50.112, C50.119, C50.12, C50.121, C50.122, C50.129, C50.2, C50.21, C50.211, C50.212, C50.219, C50.22, C50.221, C50.222 C50.229, C50.3, C50.31, C50.311, C50.312, C50.319, C50.32, C50.321, C50.322, C50.329, C50.4, C50.41, C50.411, C50.412, C50.419, C50.42, C50.421, C50.422, C50.429, C50.5, C50.51, C50.511, C50.512, C50.519, C50.52, C50.521, C50.522, C50.529, C50.6, C50.61, C50.611, C50.612, C50.619, C50.62, C50.621, C50.622, C50.629, C50.8, C50.81, C50.811, C50.812, C50.819, C50.82, C50.821, C50.822, C50.829, C50.9, C50.91, C50.911, C50.912, C50.919, C50.92, C50.921, C50.922, C50.929, C51-C55, C56.1, C56.2, C56.9, C57.0, C57.00, C57.01, C57.02, C57.1, C57.10, C57.11, C57.12, C57.2, C57.20, C57.21, C57.22, C57.3, C57.4, C57.7, C57.8, C57.9, C58, C67.0-67.9, C76.3, C79.6, C79.60, C79.61, C79.62 C79.81, C79.82

Robinson WR, Mathias JG, Wood ME, Anderson LG, Howard AG, Carey ET, et al. Ethnoracial differences in premenopausal hysterectomy: the role of symptom severity. Obstet Gynecol 2023;142.
The authors provided this information as a supplement to their article.

Code Type	Codes
Pre-Cancerous Lesions	
ICD-9	233, 233.1, 233.2, 233.3, 233.31, 233.32, 233.39, 236, 236.3, 621.3, 621.31-621.35, 622.1, 622.11, 622.12, 795, 795.01-795.06, 795.08, 795.09, 795.1, 795.11, 795.12-795.15, 795.19
ICD-10	D06.0-D06.9, D07, D07.0, D07.1, D07.2, D07.3, D39, D39.0, D39.8, D39.9, N85.0, N85.00, N85.01, N85.02, N87, N87.0, N87.1, N87.9, R87.6, R87.61, R87.610-R87.615, R87.62, R87.620-R87.623, R87.628, R87.810, R87.811, R87.820
Pregnancy Diagnostic Codes	
ICD-9	633, 633.01, 633.1, 633.11, 633.2, 633.21, 633.8, 633.81, 633.9, 633.91, 640-649, 650-659, 660-669, 670-677, 678-679
ICD-10	O00.0-O00.91, O09-O09, O10-O16, O20-O29, O30-O48, O60-O77, O80-O82, O85-O92, O94-O9A

Appendix 2. Prevalence Ratios From Fully Adjusted Multivariable Regression Models Stratified by Common Gynecologic Diagnoses Treated by Hysterectomy

	Bulk score	Bleeding score		Pain score	
	Fibroids (N =916)	Fibroids (N =916)	AUB or Menorrhagia (N = 1273)	Chronic pelvic pain (N = 481)	Endometriosis (N = 313)
Characteristics	PR (95% CI)	PR (95% CI)	PR (95% CI)	PR (95% CI)	PR (95% CI)
Racial and ethnic groups					
White (ref)	1.00	1.00	1.00	1.00	1.00
Black	1.92 (1.52- 2.44)	1.55 (1.17- 2.04)	1.57 (1.25- 1.97)	0.90 (0.64- 1.26)	0.86 (0.53- 1.38)
Hispanic	1.43 (1.01- 2.03)	1.95 (1.35- 2.83)	1.86 (1.36- 2.56)	1.07 (0.65- 1.75)	0.80 (0.34- 1.88)

AUB: Abnormal Uterine Bleeding

Models adjusted for age at the time of hysterectomy, categorized BMI, cervical dysplasia, ovarian cyst or pelvic mass, previous laparotomy, number of previous gynecological treatments, Charlson's comorbidity index, and hysterectomy hospital site. Lead surgeon is included as a random effect.

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The authors provided this information as a supplement to their article.

Appendix 3. Prevalence Ratios From Fully Adjusted Multivariable Regression Models Including Number of Deliveries (Variable Has High missingness) as a Covariate

Characteristics	Bulk score PR (95% CI)	Bleeding score PR (95% CI)	Pain score PR (95% CI)
Racial and ethnic groups			
White (ref)	1.00	1.00	1.00
Black	3.48 (2.67- 4.53)	1.74 (1.37- 2.23)	0.92 (0.71- 1.20)
Hispanic	2.39 (1.64- 3.48)	1.84 (1.31- 2.57)	0.82 (0.55- 1.22)

Models adjusted for age at the time of hysterectomy, categorized BMI, cervical dysplasia, ovarian cyst or pelvic mass, previous laparotomy, number of previous gynecological treatments, Charlson's comorbidity index, number of deliveries, and hysterectomy hospital site. Lead surgeon is included as a random effect.

Appendix 4. Prevalence Ratios From Fully Adjusted Multivariable Regression Models Including Ovarian Cyst or Pelvic Mass as an Interaction Term, With Sample Sizes (N) Divided by Top Quartile of Severity on the Given Symptom Score

Bulk Score					
	Racial and ethnic groups				
	White		Black		Hispanic
Ovarian cyst/Pelvic Mass	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)
Absent	113/758	1.00	259/263	1.00	50/91	1.00
Yes	13/146	0.87 (0.59- 1.29)	18/25	0.85 (0.64- 1.14)	<5/14	1.10 (0.63- 1.92)

Bleeding Score					
	Racial and ethnic groups				
	White		Black		Hispanic
Ovarian cyst/Pelvic Mass	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)
Absent	143/728	1.00	188/334	1.00	54/87	1.00
Yes	20/139	1.26 (0.91- 1.74)	6/37	0.95 (0.69- 1.31)	7/10	1.06 (0.62- 1.80)

Pain Score					
	Racial and ethnic groups				
	White		Black		Hispanic
Ovarian cyst/Pelvic Mass	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)
Absent	210/661	1.00	111/411	1.00	34/107	1.00
Yes	43/116	1.38 (1.07- 1.78)	5/38	1.57 (1.07- 2.29)	<5/15	1.50 (0.77- 2.91)

The measure of effect modification:

Bulk regression– three level race* ovarian cyst/pelvic mass Overall F-test p-value = 0.7328;

Bleeding regression - three level race* ovarian cyst/pelvic mass Overall F-test p-value = 0.4627;

Pain regression – three level race* ovarian cyst/pelvic mass Overall F-test p-value = 0.8484;

Models adjusted for age at the time of hysterectomy, categorized BMI, cervical dysplasia, ovarian cyst or pelvic mass, previous laparotomy, previous treatment count, Charlson's comorbidity index, and hospital site. Lead surgeon is included as a random effect.

Robinson WR, Mathias JG, Wood ME, Anderson LG, Howard AG, Carey ET, et al. Ethnoracial differences in premenopausal hysterectomy. Obstet Gynecol 2023;141.
The authors provided this information as a supplement to their article.

Appendix 5. Prevalence Ratios (PRs) From Fully Adjusted Multivariable Regression Models Including Cervical Dysplasia as an Interaction Term, With Sample Sizes (N) Divided by Top Quartile of Severity on the Given Symptom Score

Bulk Score						
	Racial and ethnic groups					
	White		Black		Hispanic	
Dysplasia	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)
Absent	43/274	1.00	95/73	1.00	22/31	1.00
Yes	47/271	0.55 (0.30- 1.03)	90/87	0.88 (0.53- 1.39)	14/30	0.52 (0.16- 1.69)

Bleeding Score						
	Racial and ethnic groups					
	White		Black		Hispanic	
Dysplasia	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)
Absent	32/285	1.00	32/285	1.00	15/38	1.00
Yes	45/273	0.71 (0.44- 1.16)	45/273	0.40 (0.18- 0.92)	16/28	0.93 (0.41- 2.10)

Pain Score						
	Racial and ethnic groups					
	White		Black		Hispanic	
Dysplasia	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)	$N^{Top\ 25th}/N^{bottom\ 75th}$	PR (95% CI)
Absent	52/265	1.00	52/265	1.00	9/44	1.00
Yes	65/253	1.09 (0.78- 1.53)	65/253	0.57 (0.23- 1.42)	11/33	0.48 (0.11- 2.05)

The measure of effect modification:

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Bulk regression– three level race* Dysplasia Overall F-test p-value = 0.4735

Bleeding regression - three level race* Dysplasia Overall F-test p-value = 0.3421

Pain regression – three level race* Dysplasia Overall F-test p-value = 0.2625

Models adjusted for Age at the time of hysterectomy, categorized BMI, cervical dysplasia, ovarian cyst or pelvic mass, previous laparotomy, previous treatment count, Charlson's comorbidity index, and hospital site. Lead surgeon is included as a random effect.

Appendix 6. Fully Adjusted Multivariable Regression Models Including Prior Gynecologic Treatments as an Interaction Term

Bulk Score						
	Racial and ethnic groups					
	White		Black		Hispanic	
Prior tx	N w/wo outcome	PR (95% CI); p-value	N w/wo outcome	PR (95% CI)	N w/wo outcome	PR (95% CI)
0	43/274	1.00	95/73	1.00	22/31	1.00
1	47/271	1.14 (0.75-1.76)	90/87	0.89 (0.66- 1.20)	14/30	0.69 (0.35- 1.35)
>=2	36/351	0.76 (0.47-1.21)	92/128	0.75 (0.55- 1.02)	17/44	0.65 (0.34- 1.26)

Bleeding Score						
	Racial and ethnic groups					
	White		Black		Hispanic	
Prior tx	N w/wo outcome	PR (95% CI)	N w/wo outcome	PR (95% CI)	N Top 25th /bottom 75th	PR (95% CI)
0	32/285	1.00	48/120	1.00	15/38	1.00
1	45/273	1.42 (0.89- 2.26)	58/119	1.08 (0.73- 1.6)	16/28	1.12 (0.55- 2.28)
>=2	86/309	2.20 (1.43- 3.40)	88/132	1.25 (0.86- 1.81)	30/31	1.53 (0.81- 2.88)

Pain Score						
	Racial and ethnic groups					
	White		Black		Hispanic	
Prior tx	N w/wo outcome	PR (95% CI)	N w/wo outcome	PR (95% CI)	N w/wo outcome	PR (95% CI)
0	52/265	1.00	20/148	1.00	9/44	1.00
1	65/253	1.15 (0.79- 1.67)	36/141	1.42 (0.82- 2.48)	11/33	1.25 (0.52- 3.04)

>=2	136/259	1.42 (1.00- 2.03)	60/160	1.51 (0.90- 2.55)	16/45	1.13 (0.50- 2.58)

The measure of effect modification: Bulk regression– three level race* categorized prior tx count Overall F-test p-value = 0.7585; Bleeding regression - three level race* categorized prior tx count Overall F-test p-value = 0.0898; Pain regression – three level race* categorized prior tx count Overall F-test p-value = 0.9088; Models adjusted for Age at the time of hysterectomy, categorized BMI, cervical dysplasia, ovarian cyst or pelvic mass, previous laparotomy, previous treatment count, Charlson's comorbidity index, and hospital site and includes Provider as a Random effect.