

Table S1. Demographics of eligible cohort prior to matching.

| Variable | | Colonoscopy pre-BRS (n=11112) | Colonoscopy post-BRS (n=9555) | Colonoscopy pre-SO (n=117802) | Colonoscopy post-SO (n=142948) | p-value |
|--|--------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|---------|
| Age at time of colonoscopy | | 52 [48-57] | 52 [49-59] | 55 [51-60] | 56 [51-62] | <0.001 |
| Sex | | | | | | <0.001 |
| Male | | 2713 (24.4) | 2164 (22.7) | 47038 (39.9) | 55030 (38.5) | |
| Female | | 8399 (75.6) | 7391 (77.4) | 70764 (60.1) | 87918 (61.5) | |
| Charlson comorbidity index | | 3 [2-4] | 2 [1-3] | 3 [2-4] | 2 [1-4] | <0.001 |
| Years from pre-BRS or pre-SO colonoscopy to index visit date* | Median [IQR] | 0.8 [0.3-1.8] | n/a | 1.3 [0.5-2.4] | n/a | <0.001 |
| | Range | 0.003-6.3 | n/a | 0.003-6.5 | n/a | |
| Years from index visit date to post-BRS or post-SO colonoscopy | Median [IQR] | n/a | 2.7 [1.8-4.2] | n/a | 2.3 [1.6-3.6] | <0.001 |
| | Range | n/a | 1.0-8.5 | n/a | 1.0-8.7 | |
| Screening colonoscopy indication | | 6170 (55.5) | 5803 (60.7) | 64868 (55.1) | 86012 (60.2) | <0.001 |
| Alcohol use | | 133 (1.2) | 48 (0.5) | 1544 (1.3) | 1001 (0.7) | <0.001 |
| Tobacco use | | 1751 (15.8) | 1026 (10.7) | 16009 (13.6) | 12244 (8.6) | <0.001 |

Table S2: Polyp rates in the pre-matching cohort

| All patients | | | | |
|-------------------|-------------------------------|-------------------------------|-------------------------------|--------------------------------|
| Variable | Colonoscopy pre-BRS (n=11112) | Colonoscopy post-BRS (n=9555) | Colonoscopy pre-SO (n=117802) | Colonoscopy post-SO (n=142948) |
| Colorectal polyps | 5250 (47.3) | 4389 (45.9) | 61067 (51.8) | 81382 (56.9) |
| Rectal polyps | 1260 (11.3) | 753 (7.9) | 14258 (12.1) | 13264 (9.3) |
| Males | | | | |
| | Colonoscopy pre-BRS (n=2713) | Colonoscopy post-BRS (n=2164) | Colonoscopy pre-SO (n=47038) | Colonoscopy post-SO (n=55030) |
| Colorectal polyps | 1533 (56.5) | 1201 (55.5) | 28335 (60.2) | 35258 (64.1) |
| Rectal polyps | 393 (14.5) | 215 (9.9) | 6744 (14.3) | 6083 (11.1) |
| Females | | | | |
| | Colonoscopy pre-BRS (n=8399) | Colonoscopy post-BRS (n=7391) | Colonoscopy pre-SO (n=70764) | Colonoscopy post-SO (n=87918) |
| Colorectal polyps | 3717 (44.3) | 3188 (43.1) | 32732 (46.3) | 46124 (52.5) |
| Rectal polyps | 867 (10.3) | 538 (7.3) | 7514 (10.6) | 7181 (8.2) |

Table S3: The full pre-matched cohort. Comparison of colorectal/ rectal polyps' unadjusted odds ratios by sex pre- and post-BRS, pre- and post-SO

| Unadjusted OR (95% CI) Post- vs. Pre- colonoscopy | | Males | Females |
|--|-----------|------------------|------------------|
| Colorectal polyps | BRS | 0.96 (0.86-1.08) | 0.96 (0.90-1.02) |
| | SO | 1.18 (1.15-1.21) | 1.28 (1.26-1.31) |
| | BRS vs SO | 0.82 (0.73-0.92) | 0.75 (0.70-0.80) |
| Rectal polyps | BRS | 0.65 (0.55-0.78) | 0.68 (0.61-0.76) |
| | SO | 0.74 (0.72-0.77) | 0.75 (0.72-0.77) |
| | BRS vs SO | 0.88 (0.73-1.05) | 0.91 (0.81-1.02) |

Table S4: The full pre-matched cohort. Comparison of rectal polyp odds ratios by sex pre- and post-bariatric surgery, pre- and post-severe obesity in full cohort prior to matching

| Post- vs. Pre- colonoscopy | | Males | Females |
|----------------------------|-----------|------------------|------------------|
| Adjusted* OR (95% CI) | BRS | 0.92 (0.77-1.11) | 1.00 (0.89-1.13) |
| | SO | 1.08 (1.03-1.13) | 1.11 (1.06-1.15) |
| | BRS vs SO | 0.86 (0.71-1.03) | 0.91 (0.81-1.02) |

*Models adjusted for age at colonoscopy, tobacco use, alcohol use, Charlson comorbidity index, screening colonoscopy, date of colonoscopy (before/after Oct. 1, 2015)

Table S5: The propensity-matched analysis. Comparison of colorectal/ rectal polyps' unadjusted odds ratios by sex pre- and post-BRS, pre- and post-SO

| Unadjusted OR (95% CI) Post- vs. Pre- colonoscopy | | Males | Females |
|--|-----------|------------------|------------------|
| Colorectal polyps | BRS | 0.80 (0.63-1.02) | 0.99 (0.87-1.13) |
| | SO | 1.32 (1.03-1.70) | 1.26 (1.11-1.44) |
| | BRS vs SO | 0.61 (0.43-0.86) | 0.79 (0.66-0.94) |
| Rectal polyps | BRS | 0.67 (0.45-0.99) | 1.05 (0.83-1.34) |
| | SO | 1.08 (0.73-1.61) | 0.85 (0.68-1.08) |
| | BRS vs SO | 0.62 (0.35-1.08) | 1.23 (0.88-1.73) |

BRS: Bariatric Surgery; SO: Severe Obesity

Table S6: The propensity-matched cohort. Rectal polyps' rates by group and sex - the propensity-matched analysis.

| | Pre-BRS (n=2420) | Post-BRS (n=2420) | Pre-SO (n=2420) | Post-SO (n=2420) |
|----------------------|-----------------------------|------------------------------|----------------------------|-----------------------------|
| All patients | | | | |
| Rectal polyps | 8.5% | 7.9% | 8.9% | 8.2% |
| Males | | | | |
| Rectal polyps | 12.5% | 8.7% | 10.0% | 10.8% |
| Females | | | | |
| Rectal polyps | 7.4% | 7.7% | 8.6% | 7.5% |

BRS: Bariatric Surgery; SO: Severe Obesity

Table S7: The propensity-matched cohort. Diabetes at index visit date, defined as date of bariatric surgery. Diabetes medications' cessation or new usage at time of colonoscopy.

| Variable | BRS Males (n=530) | BRS Females (n=1890) |
|---|------------------------------|---------------------------------|
| Diabetes at index | 305 (57.5) | 775 (41.0) |
| Diabetes medications at index | 237 (44.7) | 568 (30.1) |
| Cessation of diabetes medications at post-index colonoscopy | 138/237 (58.2) | 355/568 (62.5) |
| Began diabetes medication after index | 9/293 (3.1) | 44/1322 (3.3) |

Results are presented as count (percentage)

Figure S1: Flowchart of 1:1:1:1 propensity matching algorithm (LPS SD: Logit of propensity score standardized difference)

