

VARIATION IN WEIGHT AND OBESITY CO-MORBIDITIES AFTER OPEN ROUX-EN-Y GASTRIC BYPASS (ORYGB) BY HEALTH INSURANCE: MEDICAID VS MEDICARE VS PRIVATE VS SELF-PAY IN 4,225 BOLD DATABASE PATIENTS.

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**TO THE EDITOR:** Today, ORYGB is performed primarily on difficult patients with complicated intra-abdominal pathology, massive obesity not conducive to laparoscopy, or prohibitive medical conditions. In managing these complex surgical patients, every clinical insight helps. Gomez et. al. reported significant variation in weight loss and resolution of medical problems in the super-obese after bilio-pancreatic diversion/duodenal switch[1]. However, whether or not health insurance status influences results in ORYGB patients is unknown. Therefore, the objective of this study was to identify ORYGB outcomes variation by health insurance status.

**METHODS:** Data from 4,225 Surgical Review Corporation's Bariatric Outcomes Longitudinal Database (BOLD) [2] patients who underwent ORYGB was analyzed retrospectively in four groups: Medicaid (n=272), Medicare (n=632), Private insurance (n=3253) and Self-Pay (n=68).

Statistics: General Linear Models included baseline and post-operative data, and were modified for binomial distribution of dichotomous variables [3].

**RESULTS:** Age: Medicaid 41±11, Medicare 53±11, Private 40±11, Self-Pay 40±12 (p<0.001). Sex (F/M%): Medicaid 84/16, Medicare 72/28, Private 75/25, Self-Pay 63/37 (p<0.0001). Weight at 6 months (kg): Medicaid 113+-29, Medicare 111+-31, Private 104+- 25, Self-Pay 115+-34

( $p < 0.05$ ). BMI at 6 months: Medicaid, Medicare, Self-Pay all 40+-9, Private 37+-8. Weight and BMI did not vary after 6 months. Other Results are displayed in Tables 1 and 2. Through 24 months, abdominal hernia, abdominal panniculitis, cholelithiasis, GERD, dyslipidemia, and tobacco use varied significantly according to health insurance status. Hypertension, back pain, leg edema, musculoskeletal pain, impaired functional status, and asthma varied through 12 months, as did depression through 18 months. BMI, obstructive sleep apnea, obesity hypoventilation syndrome, stress urinary incontinence, gout and psychological impairment differed up to 6 months. Alcohol use increased in Self-Pay at 18 months. No other comorbidities varied.

**DISCUSSION:** The results of this study indicate that ORYGB outcomes vary by health insurance. Weight and BMI were lowest among Private patients through six months, but did not vary significantly by insurance thereafter. Hypertension was lowest in Self-Pay up to 18 months, with Medicaid persisting at highest rates, and Medicaid/Private intermediate. Early (6 months) Obstructive sleep apnea resolved best for Self-Pay, followed closely by Private, but long-term post-ORYGB resolution did not vary further by insurance. Obesity hypoventilation syndrome varied only to six months, nearly disappeared in Medicaid, Private, and Self-Pay, but persisted at nearly 50% of pre-operative rates in Medicare. Cholelithiasis increased in Medicaid and Medicare but did not change post-operatively in Private and Self-Pay ( $p < 0.05$  24 months). Abdominal hernia resulted most frequently in Medicaid through 24 months at rates nearly double the other three groups. Abdominal panniculitis increased in Self-Pay patients to levels more than double the other groups by 24 months (44.4% versus Medicaid 19.5%, Medicare

18%, and Private 10.3%  $p < 0.01$ ). GERD decreased in all insurance groups, but remained higher in Medicaid and Medicare patients versus Private through 24 months ( $p < 0.05$ ).

Private and Self-Pay patients benefitted more from ORYGB than did Medicaid or Medicare. Post-operatively, Private patients had the lowest rates of five weight-related co-morbidities and highest in none. Self-Pay were highest in three co-morbidities, but resolved 24 others to the lowest levels. Medicaid and Medicare were highest in 16 and 11 co-morbidities, respectively. Medicare was lowest in abdominal hernia, Medicaid was lowest in none.

**CONCLUSIONS:** Our review of the literature reveals that these variations in outcomes following ORYGB have not been reported previously[4, 5, 6], and are significant findings of this study. This advance knowledge can provide surgeons with awareness of possible results and post-ORYGB problems that may facilitate optimal management of these fragile patients.

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