



# **IN THE MEGA-OBESE WEIGHT LOSS, BMI AND RESOLUTION OF WEIGHT-RELATED MEDICAL PROBLEMS VARY BY RACE: AN ANALYSIS OF 1,673 BOLD DATABASE PATIENTS**

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- Unfortunately we have no financial conflicts of interest to disclose

- Biliopancreatic bypass/duodenal switch (DS) is the bariatric surgery option for many of the most extremely obese patients.
- Duodenal Switch results for weight loss and resolution of obesity co-morbidities among the mega-obese are known.
- Variation by race in pre-operative weight, BMI, and the frequencies of obesity co-morbidities in patients presenting for duodenal switch have been reported.
- However, whether or not treatment responses to DS differ according to racial categories has not been investigated.

- To identify racial variations following Duodenal Switch in weight, weight loss, and BMI, and the resolution of obesity co-morbidities.

- Data from the Surgical Review Corporation's BOLD database on 1,673 patients who underwent DS was analyzed retrospectively in four groups:
  1. African-American (AA; n=131)
  2. Caucasian (C; n=1,380)
  3. Hispanic (H; n=48)
  4. Other (O; Pacific Islanders, Native Americans, or >1 race recorded; n=108)

- Weight, BMI, and incidence of obesity-related co-morbidities were tabulated in each of the four racial groups pre-operatively at 2, 6, 12, 18, 24, and 36 months following DS surgery.
- Outcomes analysis used General Linear Models that included baseline and post-operative data, and were modified for binomial distribution of dichotomous variables.
- Pair-wise comparisons of results for the African-American, Caucasian, Hispanic and Other groups versus each other were made at each interval.
- Decreasing numbers of African-American, Hispanic, and Other patients precluded valid statistical analysis beyond 18 months.

- Obesity Related Co-morbidities included along with weight, weight loss and BMI:
  - Cardiopulmonary
    - HTN
    - CHF
    - Obstructive sleep apnea
    - Pulmonary Hypertension
    - Angina
    - Obesity Hypoventilation Syndrome
    - Asthma
    - Hyperlipidemia
    - PVD
  - Abdominal
    - GERD
    - Liver disease
    - Cholelithiasis
    - Panniculitis
    - Stress/Urinary incontinence
    - Abdominal hernia
  - Endocrine
    - Diabetes Mellitus
    - Polycystic Ovarian Syndrome
  - Somatic
    - Pseudotumor cerebri
    - Lower extremity edema
    - Musculoskeletal pain
    - Back pain
    - Gout
  - Behavioral
    - Mental health disease
    - Psychological impairment
    - Tobacco abuse
    - ETOH abuse
    - Substance abuse
    - Support Group Attendance

# African American

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- Weight and weight loss were greatest at 12 months but weight was highest pre-operatively ( $p < 0.01$ ). BMI at 6 months was also highest ( $p < 0.05$ ).
- At 6 month asthma, stress urinary incontinence, diabetes, back pain, lower extremity edema, and musculoskeletal pain were lowest ( $p < 0.05$ ), as was 12 month dyslipidemia ( $p < 0.05$ ).

Highest	Lowest
<ul style="list-style-type: none"><li>• BMI</li></ul>	<ul style="list-style-type: none"><li>• Asthma</li><li>• Stress/Urinary Incontinence</li><li>• Diabetes</li><li>• Back Pain</li><li>• Musculoskeletal Pain</li><li>• Lower Ext Edema</li><li>• Dyslipidemia</li></ul>

# Caucasian

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- Hypertension at 6 months was lowest ( $p < 0.01$ ), but 6 month liver disease and musculoskeletal pain were highest ( $p < 0.05$ ), as was 12 month cholelithiasis ( $p < 0.01$ ).

Highest	Lowest
<ul style="list-style-type: none"><li>• Liver Disease</li><li>• Musculoskeletal Pain</li><li>• Cholelithiasis</li></ul>	<ul style="list-style-type: none"><li>• HTN</li></ul>

# Hispanic

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- Diabetes, dyslipidemia, and lower extremity edema were highest among Hispanics at 6 months ( $p < 0.05$ ) as was 12 month abdominal skin problems/panniculitis ( $p < 0.05$ ).
- Following duodenal switch, among Hispanic patients the incidence of GERD, stress urinary incontinence, lower extremity edema, depression, and alcohol use all increased.
- The frequency of diabetes nearly doubled, and pulmonary hypertension tripled from baseline, while these parameters declined in the other racial groups.

Highest	Lowest
<ul style="list-style-type: none"><li>• Diabetes</li><li>• Dyslipidemia</li><li>• Lower Ext. Edema</li><li>• Panniculitis</li></ul>	<ul style="list-style-type: none"><li>• None</li></ul>

# Other Racial Groups

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- Stress urinary incontinence, asthma, and back pain were highest among the Other group ( $p < 0.01$ ) and dyslipidemia was second only to Hispanics.
- Liver disease was lowest among Other patients, compared to African American, Hispanic and Caucasian ( $p < 0.05$ ).

Highest	Lowest
<ul style="list-style-type: none"><li>• Stress/Urinary Incontinence</li><li>• Asthma</li><li>• Back Pain</li></ul>	<ul style="list-style-type: none"><li>• Liver Disease</li></ul>

# Results

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- Liver disease increased from the pre-operative percentages in African-Americans, Caucasians, and Hispanics but decreased in Other patients.
- Early 2 month depression was highest in Caucasians and lowest in the Other group.
- Outcomes for angina, congestive heart failure, peripheral vascular disease, pulmonary hypertension, obstructive sleep apnea, obesity hypoventilation syndrome, abdominal hernia, GERD, gout, polycystic ovarian disease, pseudotumor cerebri, psychological impairment, alcohol use, substance abuse, tobacco use, and support group attendance did not vary by race.

# Results Review

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## ■ Highest Incidence

African American	Caucasian	Hispanic	Other
<ul style="list-style-type: none"><li>• BMI</li></ul>	<ul style="list-style-type: none"><li>• Liver Disease</li><li>• Musculoskeletal Pain</li><li>• Cholelithiasis</li></ul>	<ul style="list-style-type: none"><li>• Diabetes</li><li>• Dyslipidemia</li><li>• Lower Ext. Edema</li><li>• Panniculitis</li></ul>	<ul style="list-style-type: none"><li>• Stress/Urinary Incontinence</li><li>• Asthma</li><li>• Back Pain</li></ul>

# Results Review

1/4/2017  
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## ■ Lowest Incidence

African American	Caucasian	Hispanic	Other
<ul style="list-style-type: none"><li>• Asthma</li><li>• Stress/Urinary Incontinence</li><li>• Diabetes</li><li>• Back Pain</li><li>• Musculoskeletal Pain</li><li>• Lower Ext Edema</li><li>• Dyslipidemia</li></ul>	<ul style="list-style-type: none"><li>• HTN</li></ul>	<ul style="list-style-type: none"><li>• None</li></ul>	<ul style="list-style-type: none"><li>• Liver Disease</li></ul>

# Results Review

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- African-Americans lose the most weight, but remain heavier than other racial groups, possibly related to higher pre-operative body mass. Nevertheless, African-Americans experienced the greatest resolution of seven obesity comorbidities.
- Caucasians resolved hypertension well, but musculoskeletal and hepato-biliary conditions persisted.
- Hispanic patients benefited less from Duodenal Switch than did the other racial categories.
- The Other grouped nationalities benefited less for stress urinary incontinence, asthma, back pain and dyslipidemia, but did well with obesity-related liver disease.

# Study Limitations

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- Retrospective Study of BOLD Database
- Six Asian Duodenal Switch patients in BOLD were too few for statistical analysis
- Poor Follow Up after 18 months
- Require larger populations among racial groups for longer term outcomes after Duodenal Switch

- In the first 12 months after surgery, weight, weight loss, BMI and the resolution/persistence of weight-related co-morbidities vary significantly by race among the mega-obese patients who choose to undergo Duodenal Switch.
- Knowing these racial variations in Duodenal Switch outcomes pre-operatively may help to optimize the management of mega-obese patients.



**THANK YOU!**