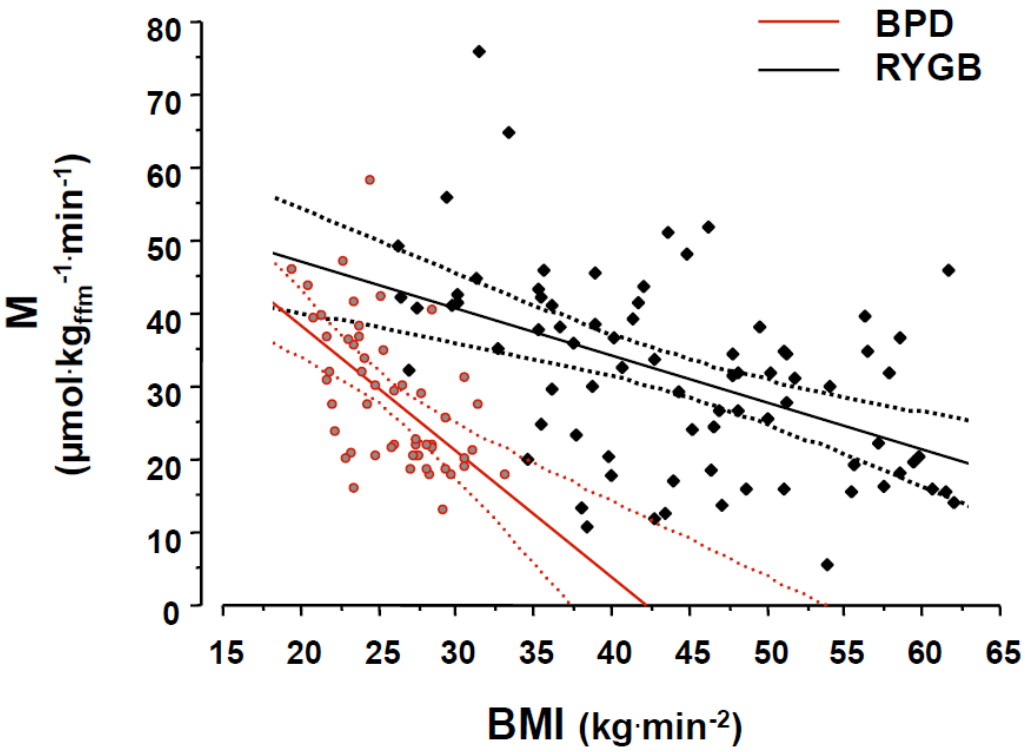
SUPPLEMENTARY DATA

**Supplementary Figure 1.** Reciprocal relationship between M value and BMI in the two surgical groups. Full lines are best fit, dotted lines are 95% confidence intervals. The slope of the BPD group is significantly ($p<0.02$) steeper than that of the RYGB group.

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SUPPLEMENTARY DATA

**Supplementary Table 1. Fasting plasma bile acids and precursors (median [interquartile range]).**

| | RYGB-NGT | | | RYGB-T2D | | | BPD-T2D | | |
|---|---|---|---|---|---|---|---|---|---|
| **Visit #** | **1** | **2** | **3** | **1** | **2** | **3** | **1** | **2** | **3** |
| **N** | 16 | 9 | 16 | 22 | 12 | 20 | 15 | 15 | 15 |
| **GCA (µM)** | 0.13 [0.20] | 0.27 [0.17] | 0.29 [0.60] | 0.14 [0.11] | 0.17 [0.30] | 0.17 [0.47] | 0.12 [0.21] | 0.24 [0.35] | 0.25 [0.32] |
| **TCA (µM)** | 0.03 [0.04] | 0.09 [0.06] | 0.07 [0.14] | 0.04 [0.03] | 0.07 [0.06] | 0.03 [0.04] | 0.03 [0.03] | 0.03 [0.04] | 0.02 [0.02] |
| **GDCA (µM)** | 0.11 [0.13] | 0.86 [0.78] | 0.44 [0.64] | 0.24 [0.33] | 0.27 [0.24] | 0.30 [0.51] | 0.23 [0.26] | 0.30 [0.77] | 0.18 [0.21] |
| **TDCA (µM)** | 0.02 [0.03] | 0.09 [0.07] | 0.06 [0.17] | 0.02 [0.03] | 0.09 [0.09] | 0.03 [0.04] | 0.04 [0.03] | 0.02 [0.02] | 0.02 [0.01] |
| **CA (µM)** | 0.04 [0.15] | 0.04 [0.03] | 0.08 [0.39] | 0.07 [0.25] | 0.03 [0.06] | 0.12 [0.25] | 0.03 [0.09] | 1.48 [1.53] | 0.50 [1.01] |
| **DCA (µM)** | 0.31 [0.34] | 0.41 [0.23] | 0.28 [0.27] | 0.30 [0.48] | 0.14 [0.28] | 0.46 [0.62] | 0.38 [0.33] | 0.96 [2.30] | 0.84 [2.31] |
| **CDCA (µM)** | 0.15 [0.66] | 0.12 [0.21] | 0.49 [1.60] | 0.91 [0.91] | 0.25 [0.54] | 0.35 [1.25] | 0.08 [0.15] | 2.72 [4.81] | 1.66 [2.04] |
| **UDCA (µM)** | 0.02 [0.11] | 0.03 [0.04] | 0.02 [0.07] | 0.06 [0.11] | 0.02 [0.07] | 0.04 [0.06] | 0.02 [0.07] | 0.26 [0.70] | 0.11 [0.78] |
| **HDCA (µM)** | 0.03 [0.03] | 0.03 [0.05] | 0.04 [0.03] | 0.02 [0.03] | 0.01 [0.02] | 0.05 [0.04] | 0.05 [0.05] | 0.04 [0.04] | 0.03 [0.05] |
| **LCA (µM)** | 0.01 [0.02] | 0.01 [0.01] | 0.01 [0.01] | 0.01 [0.01] | 0.00 [0.01] | 0.01 [0.02] | 0.01 [0.01] | 0.02 [0.03] | 0.01 [0.01] |
| **TCDCA (µM)** | 0.04 [0.08] | 0.20 [0.23] | 0.23 [0.42] | 0.06 [0.08] | 0.17 [0.33] | 0.07 [0.20] | 0.06 [0.05] | 0.05 [0.05] | 0.03 [0.02] |
| **GCDCA (µM)** | 0.30 [0.69] | 1.59 [1.10] | 1.31 [3.80] | 0.67 [0.63] | 0.82 [1.52] | 0.94 [1.65] | 0.52 [0.43] | 0.75 [0.61] | 0.91 [0.99] |
| **TLCA (µM)** | 0.01 [0.00] | 0.01 [0.00] | 0.01 [0.00] | 0.01 [0.00] | 0.01 [0.00] | 0.01 [0.00] | 0.01 [0.00] | 0.01 [0.00] | 0.01 [0.00] |
| **Total BA (µM)** | 2.28 [2.33] | 4.12 [3.70] | 4.95 [9.45] | 2.89 [2.61] | 2.11 [4.48] | 4.74 [4.73] | 1.65 [1.53] | 9.35 [11.47] | 6.47 [6.66] |
| **12α BA (µM)** | 0.73 [1.38] | 2.05 [0.82] | 2.69 [2.69] | 1.17 [1.17] | 0.80 [0.86] | 1.62 [1.94] | 0.92 [0.80] | 3.70 [4.37] | 2.31 [2.87] |
| **Non-12α BA(µM)** | 1.26 [1.37] | 2.28 [2.05] | 3.31 [6.51] | 1.79 [1.10] | 1.31 [3.00] | 2.61 [3.03] | 0.76 [0.77] | 4.46 [5.09] | 3.61 [4.74] |
| **12α /non-12α** | 0.78 [0.87] | 0.90 [0.42] | 0.56 [0.50] | 0.69 [0.41] | 0.55 [0.43] | 0.69 [0.47] | 1.04 [0.39] | 0.75 [0.85] | 0.64 [1.62] |
| **Primary BA (µM)** | 1.59 [1.54] | 2.77 [2.23] | 3.75 [7.60] | 2.15 [1.62] | 1.42 [3.56] | 3.38 [3.62] | 0.82 [1.05] | 6.32 [7.25] | 4.10 [4.98] |
| **Secondary BA (µM)** | 0.62 [0.40] | 1.46 [1.06] | 0.94 [1.82] | 0.68 [0.83] | 0.59 [0.90] | 1.09 [1.41] | 0.80 [0.65] | 1.90 [4.28] | 1.78 [2.10] |
| **Primary/Secondary** | 1.60 [2.79] | 1.85 [5.75] | 3.59 [8.66] | 2.28 [3.98] | 4.98 [6.42] | 2.50 [2.54] | 1.27 [1.13] | 2.41 [4.03] | 2.06 [3.22] |
| **Unconjugated** | 1.06 [1.56] | 0.68 [0.91] | 1.46 [2.67] | 1.42 [1.19] | 0.62 [0.85] | 1.00 [1.99] | 0.54 [0.68] | 6.43 [10.69] | 4.15 [6.14] |
| **Conjugated** | 0.72 [1.21] | 2.85 [0.84] | 3.41 [7.08] | 1.17 [0.86] | 1.64 [2.05] | 1.53 [2.97] | 0.94 [1.05] | 1.35 [2.29] | 1.35 [0.92] |
| **Unconj/conj** | 1.06 [0.96] | 0.17 [0.32] | 0.52 [0.87] | 1.35 [1.62] | 0.32 [0.37] | 0.61 [1.85] | 0.68 [0.66] | 4.58 [7.86] | 2.51 [4.24] |
| **7,12-diHCO (ng/mL)** | 0.78 [0.67] | 0.42 [0.76] | 0.81 [0.86] | 1.01 [1.52] | 0.44 [0.45] | 0.48 [0.59] | 0.92 [0.45] | 1.75 [2.46] | 2.14 [4.34] |
| **7,12-diHCO/chol(ng/mg)*** | 0.49 [0.65] | 0.33 [0.65] | 0.67 [0.54] | 0.85 [1.25] | 0.30 [0.65]° | 0.50 [0.50]° | 0.46 [0.35] | 1.36 [2.16]°° | 1.73 [4.70]°° |
| **7-HCO (ng/mL)** | 14.84 [6.56] | 7.48 [5.95] | 15.67 [11.0] | 12.93 [22.4] | 7.04 [6.90] | 9.51 [16.98] | 12.99 [7.40] | 23.80 [28.76] | 27.02 [58.17] |
| **7-HCO/chol (ng/mg)*** | 9.34 [6.99] | 4.28 [7.03] | 12.54 [8.07] | 12.78 [16.1] | 5.10 [8.60]°° | 8.93 [10.64]° | 6.7 [5.5] | 18.5 [22.7]°° | 22.2 [49.5]°° |
| **7,12-diHCO/7-HCO** | 0.05 [0.03] | 0.06 [0.02] | 0.05 [0.04] | 0.08 [0.04] | 0.06 [0.02] | 0.05 [0.02] | 0.07 [0.02] | 0.09 [0.03] | 0.08 [0.03] |

* ratio to total cholesterol

° $0.01<p\leq0.05$

°° $p\leq0.01$

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