	Pre-GBP	1 Month Post-GBP	2 Year Post-GBP
Total	4.34±3.62	3.21±2.38	6.26±5.78
Primary	2.88±3.34	1.95±1.71	4.06±4.49
Secondary	1.46±0.60	1.26±0.76	2.20±1.40
Conjugated	3.16±3.83	2.62±2.41	4.12±5.29
Unconjugated	1.18±0.52	0.59±0.29*	2.13±3.06†
Glycine-conjugated	2.87±3.54	2.23±2.09	3.65±4.77
Taurine-conjugated	0.29±0.29	0.39±0.34	0.48±0.56
Primary conjugated	2.30±3.40	1.70±1.69	2.86±4.86
Primary unconjugated	0.58±0.37	0.25±0.29*	1.21±2.37†
Secondary conjugated	0.86±0.54	0.92±0.74	1.27±1.26
Secondary unconjugated	0.60±0.34	0.34±0.19*	0.93±0.76†
12α-OH	1.42±1.05	1.25±0.98	2.78±2.16
Non12α-OH	2.91±2.73	1.97±1.44	3.48±3.90
Primary:Secondary (Ratio)	2.10±2.01	1.69±1.77	1.54±0.73
Conjugated:Unconjugated (Ratio)	4.25±7.50	5.53±6.23	3.94±4.81
12α-OH:Non 12α-OH (Ratio)	0.58±0.28	0.64±0.21	0.95±0.37*†
CA	0.12±0.08	0.07±0.05	0.46±1.08
GCA	0.48±0.85	0.37±0.40	0.65±0.91
CDCA	0.46±0.27	0.18±0.24*	0.74±1.30†
GCDCA	1.74±3.00	1.21±1.20	2.06±3.09
TCDCA	0.08±0.03	0.12±0.10	0.14±0.12
DCA	0.35±0.30	0.22±0.15	0.76±0.74†
GDCA	0.28±0.31	0.36±0.39	0.60±0.51
TDCA	0.19±0.34	0.24±0.23	0.30±0.47
LCA	0.07±0.03	0.07±0.03	0.08±0.04
GLCA	0.08±0.03	0.09±0.01	0.09±0.04
TLCA	0.03±0.01	0.03±0.01	0.03±0.01
UDCA	0.17±0.11	0.05±0.04*	0.09±0.09
GUDCA	0.28±0.18	0.21±0.18	0.24±0.53

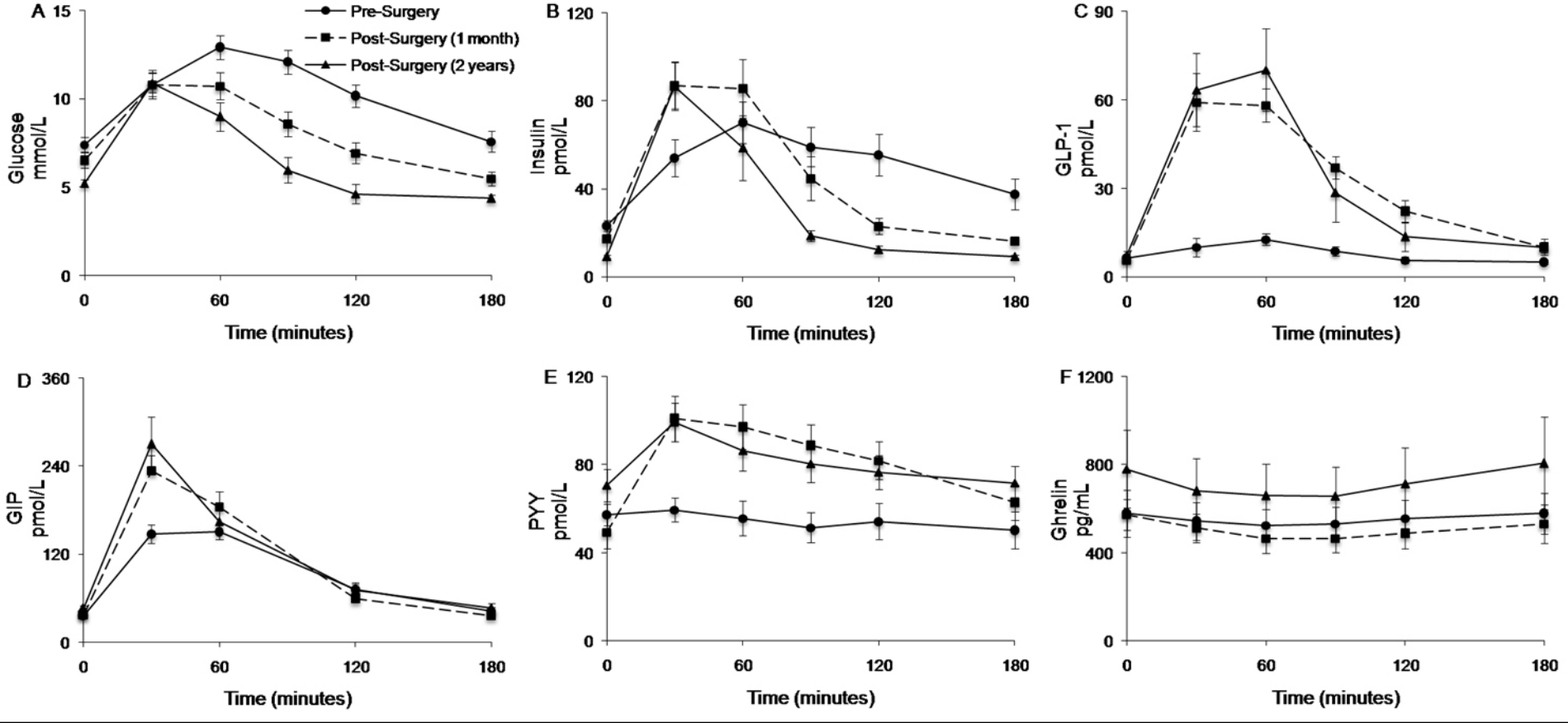
Supplementary Table 1. Fasting composite and individual plasma bile acids.
Data are mean±SD. All bile acids are presented in concentrations of μM.
* $P < 0.05$ vs. Pre-GBP, †$P < 0.05$ vs. 1 month Post-GBP.
CA, Cholic Acid; CDCA, Chenodeoxycholic acid; DCA, Deoxycholic acid; LCA, Lithocholic acid; UDCA, Ursodeoxycholic acid. G- or T- indicates glycine or taurine conjugation.

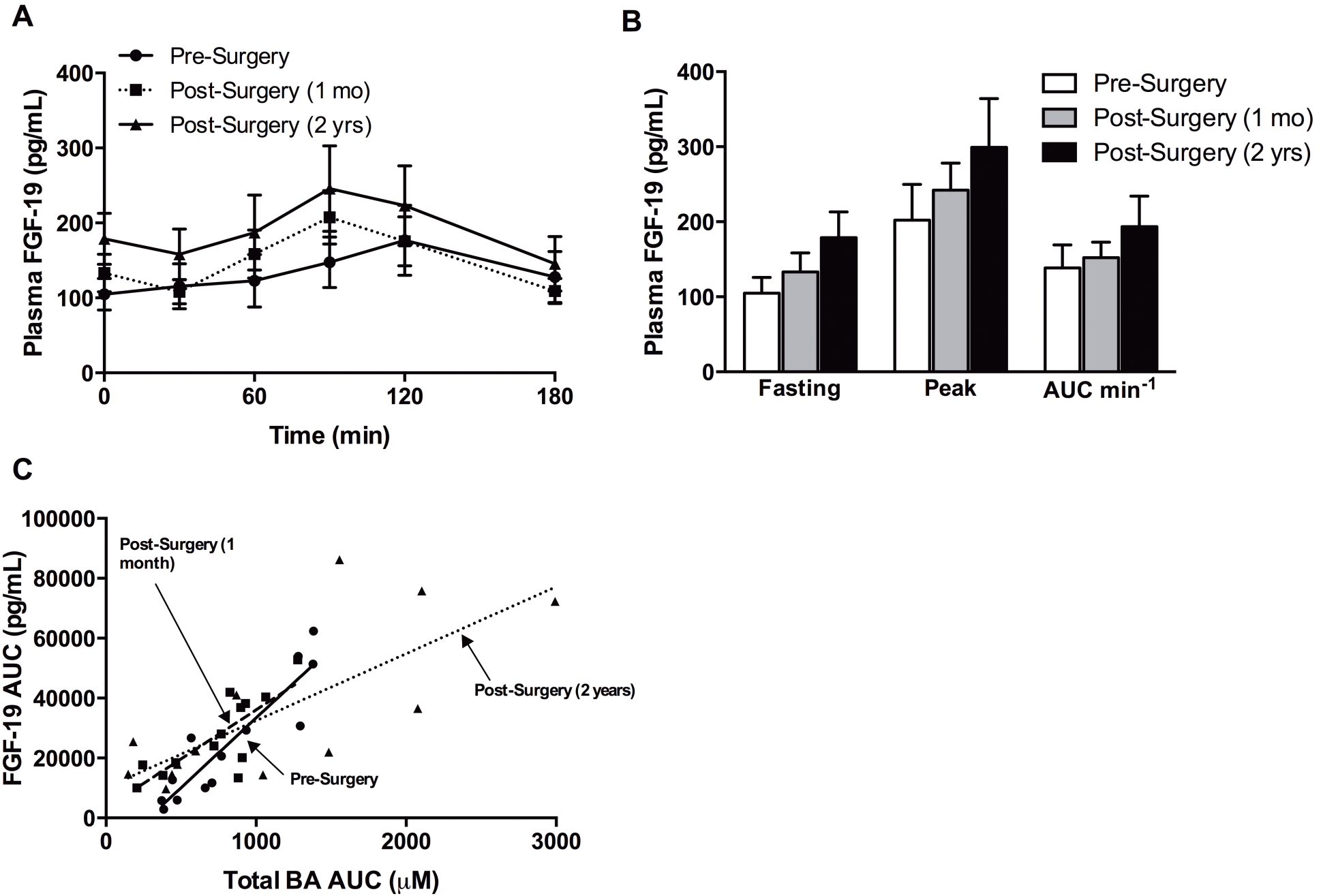
	Δ 30 MINUTES			Δ AUC (0-60MIN)		
	1 month	2 years	P value	1 month	2 years	P value
Total	0.5±5.1	6.2±11.7	.07	-10.2±224.3	207.6±448.7	.07
Primary	0.03±3.3	3.9±7.9	.07	-25.1±163.2	125.5±323.0	.08
Secondary	0.5±2.1	2.3±4.2	.08	14.9±86.8	82.1±153.5	.08
Conjugated	-0.2±2.1	1.4±4.9	NS	-13.8±78.4	71.6±251.7	NS
Unconjugated	0.7±4.9	4.8±11.2	NS	3.6±230.6	136.0±425.3	NS
Glycine-conjugated	0.3±3.9	4.1±9.4	NS	-11.9±197.3	116.1±363.5	NS
Taurine-conjugated	0.4±1.0	0.6±1.8	NS	15.4±40.8	19.9±65.7	NS
12α-OH	0.8±2.5	4.0±5.8	<.05	25.0±100.8	152.1±219.2	<.05
Non 12α-OH	-0.3±2.8	2.2±6.4	NS	-35.2±140.7	55.5±258.8	NS

Supplementary Table 2. Change in postprandial composite plasma bile acid levels 1 month and 2 years after surgery.
Data are mean±SD. All bile acids are presented in concentrations of μM.

	Pre-Surgery	1 month	2 years
Total	818.8±391.2	735.5±322.5	1105.3±879.4
Primary	527.4±337.8	424.2±190.6	689.3±646.8
Secondary	291.4±115.3	311.2±154.9	416.0±256.7
Conjugated	593.5±395.5	526.4±274.2	742.8±595.7
Unconjugated	225.3±96.2	209.0±140.5	362.5±525.7
Glycine-conjugated	533.5±368.8	443.4±231	655.3±506.6
Taurine-conjugated	60.0±33.6	83.1±55.8	87.5±101.4
12α-OH	295.7±166.0	318.7±170.8	545.5±463.6
Non 12α-OH	523.1±265.2	416.7±161.3	559.8±448.1

Supplementary Table 3. Postprandial composite plasma bile acid levels (180 min AUC) 1 month and 2 years after surgery.
Data are mean±SD. All bile acids are presented in concentrations of μM.


A
Pre-Surgery
Post-Surgery (1 month)
Post-Surgery (2 years)
Glucose mmol/L
15
10
5
0
0
60
120
180
Time (minutes)
B
Insulin pmol/L
120
80
40
0
0
60
120
180
Time (minutes)
C
GLP-1 pmol/L
90
60
30
0
0
60
120
180
Time (minutes)
D
GIP pmol/L
360
240
120
0
0
60
120
180
Time (minutes)
E
PYY pmol/L
120
80
40
0
0
60
120
180
Time (minutes)
F
Ghrelin pg/mL
1200
800
400
0
0
60
120
180
Time (minutes)


A
Pre-Surgery
Post-Surgery (1 mo)
Post-Surgery (2 yrs)
Plasma FGF-19 (pg/mL)
400
300
200
100
0
0
60
120
180
Time (min)
B
Pre-Surgery
Post-Surgery (1 mo)
Post-Surgery (2 yrs)
Plasma FGF-19 (pg/mL)
400
300
200
100
0
Fasting
Peak
AUC min-1
C
Post-Surgery (1 month)
Post-Surgery (2 years)
Pre-Surgery
FGF-19 AUC (pg/mL)
100000
80000
60000
40000
20000
0
0
1000
2000
3000
Total BA AUC (μM)

SUPPLEMENTARY FIGURE 1. Effect of GBP on glucose, insulin and gut hormone levels. **(A)** Glucose AUC was significantly lower 1 month and 2 years post-surgery vs. pre-surgery ($p<.05$). **(B)** Insulin AUC was significantly lower 2 years post-surgery vs. pre-surgery ($p<.05$). **(C,E)** GLP-1 and PYY AUC and peak levels were significantly higher 1 month and 2 years post-surgery vs. pre-surgery ($p<.05$). **(D)** GIP peak but not AUC was significantly higher 1 month and 2 years post-surgery vs. pre-surgery. **(F)** Ghrelin AUC and nadir levels tended to be higher 2 years post-surgery vs. pre-surgery, however this did not reach significance.

SUPPLEMENTARY FIGURE 2. Effect of GBP on circulating FGF-19 levels and the relationship between bile acids and FGF-19. (A-B) Fasting, peak and postprandial AUC FGF-19 levels progressively increased after GBP, however this did not reach significance. **(C)** During the oral glucose load, FGF-19 levels were significantly correlated with total bile acid levels ($p<.001$).