

## Supplementary Information

### **Identification of novel clinical factors associated with hepatic fat accumulation in extreme obesity.**

Gerhard, et al.

The Supplemental materials have the following sections in order:

1. Table S1. Clinical variables used in regression analysis (n=204 variables).
2. Table S2. Summary of 22 available published reports on 4274 patients with extreme obesity undergoing bariatric surgery and liver biopsy.
3. References for Table S2.

**Table 1:** Clinical variables used in regression analysis (n=204 variables).

<p><b>Baseline information and demographics</b></p> <ul style="list-style-type: none"> <li>• Gender</li> <li>• Ethnic group</li> <li>• Age</li> <li>• Height</li> <li>• Weight at baseline</li> <li>• BMI at baseline</li> <li>• Waist circumference</li> <li>• Waist-height ratio</li> <li>• REE</li> <li>• VO2max</li> <li>• Alcohol use</li> <li>• Smoking history</li> <li>• Weight loss during pre-op program</li> <li>• Time in pre-op program</li> <li>• Surgical approach (open versus lap)</li> <li>• Number of comorbidities during pre-op period</li> <li>• Number of medications during pre-op period</li> </ul> <p><b>Comorbidities on problem list from baseline to surgery using 3-digit ICD9, requiring 2% of population</b></p> <ul style="list-style-type: none"> <li>• ICD_401</li> <li>• ICD_272</li> <li>• ICD_250</li> <li>• ICD_780</li> <li>• ICD_530</li> <li>• ICD_311</li> <li>• ICD_715</li> <li>• ICD_244</li> <li>• ICD_493</li> <li>• ICD_724</li> <li>• ICD_722</li> <li>• ICD_300</li> <li>• ICD_477</li> <li>• ICD_346</li> <li>• ICD_251</li> <li>• ICD_305</li> <li>• ICD_327</li> <li>• ICD_296</li> <li>• ICD_786</li> <li>• ICD_729</li> <li>• ICD_782</li> <li>• ICD_309</li> <li>• ICD_790</li> <li>• ICD_719</li> <li>• ICD_564</li> <li>• ICD_256</li> <li>• ICD_414</li> <li>• ICD_553</li> </ul>	<ul style="list-style-type: none"> <li>• ICD_354</li> <li>• ICD_789</li> <li>• ICD_726</li> <li>• ICD_784</li> <li>• ICD_269</li> <li>• ICD_592</li> <li>• ICD_427</li> <li>• ICD_626</li> <li>• ICD_787</li> <li>• ICD_268</li> <li>• ICD_627</li> <li>• ICD_429</li> <li>• ICD_625</li> <li>• ICD_276</li> <li>• ICD_794</li> <li>• ICD_274</li> <li>• ICD_728</li> <li>• ICD_357</li> <li>• ICD_785</li> <li>• ICD_307</li> <li>• ICD_796</li> <li>• ICD_428</li> </ul> <p><b>Medications on reconciliation list from baseline to 1 month prior to surgery using subclass, requiring 2% of population</b></p> <ul style="list-style-type: none"> <li>• Biguanides</li> <li>• NSAID</li> <li>• PPI</li> <li>• SSRI</li> <li>• Statins</li> <li>• OpioidAgonist</li> <li>• OpioidCombo</li> <li>• OilSolVit</li> <li>• ACE</li> <li>• Salicylates</li> <li>• Sympath</li> <li>• BBCS</li> <li>• H2</li> <li>• LoopDiur</li> <li>• ThyroidHorm</li> <li>• AnalgOther</li> <li>• MultiVit</li> <li>• Insulin</li> <li>• AntihistNonsed</li> <li>• Calcium</li> <li>• Thiazides</li> <li>• Benzod</li> <li>• MuscleRelax</li> <li>• AntiHTNcomb</li> <li>• NasalSteroids</li> <li>• AnticonvMisc</li> <li>• SNRI</li> <li>• Sulfonylureas</li> <li>• InsSensAgents</li> </ul>	<ul style="list-style-type: none"> <li>• CCB</li> <li>• Potassium</li> <li>• Glucocort</li> <li>• ARB</li> <li>• Cough_Cold_AllComb</li> <li>• AnorexNonAmph</li> <li>• AntidepressMisc</li> <li>• MultiVitMinerals</li> <li>• CorticTopical</li> <li>• WaterSolubleVitamins</li> <li>• Heparin</li> <li>• Azithromycin</li> <li>• Aminopenicillins</li> <li>• NonBarbitHypnotics</li> <li>• SteroidInhalants</li> <li>• LeukotrieneModulators</li> <li>• Tricyclic</li> <li>• AntifungalsTopical</li> <li>• Iron</li> <li>• SmokingDeterrents</li> <li>• ComboContraceptOral</li> <li>• FibricAcid</li> <li>• Fluoroquinolones</li> <li>• Nitrates</li> <li>• SerotoninAgonists</li> <li>• AntiInfectiveMiscCombo</li> <li>• Cephalosporins1stGen</li> <li>• UrinaryAntispasmodics</li> <li>• ModifiedCyclics</li> <li>• PenicillinCombo</li> <li>• DiureticCombo</li> <li>• Tetracyclines</li> <li>• AntiemetAnticholinergic</li> <li>• AnticonvulsantsBenzod</li> <li>• PlateAggrInhibitors</li> <li>• Coumarin</li> <li>• AntihyperlipidCombo</li> <li>• PotSparingDiuretics</li> <li>• AntiObesityAgents</li> <li>• SurfactantLaxatives</li> <li>• AntianxietyAgentsMisc</li> <li>• ImidazoleRelAntifungal</li> <li>• GoutAgents</li> <li>• AntiparkinDopaminergic</li> <li>• Cobalamins</li> <li>• Dibenzapines</li> <li>• Progestins</li> <li>• IntesCholAbsorptionInhib</li> <li>• Antitussives</li> <li>• AntihistPhenothiazines</li> <li>• Clarithromycin</li> <li>• UlcerTherapyCombo</li> <li>• Estrogens</li> <li>• ProgestContraInjectable</li> <li>• FolicAcidFolates</li> <li>• BronchoAnticholinergics</li> <li>• BulkLaxatives</li> </ul>	<ul style="list-style-type: none"> <li>• AntiInfectiveAgentsMisc</li> <li>• AntiadrenergicAntiHTN</li> <li>• BBNS</li> <li>• GastrointestlStimulants</li> <li>• AnalgesicCombo</li> <li>• IncretinMimetAgGLP1</li> </ul> <p><b>Labs prior to surgery found in &gt;50% of population</b></p> <ul style="list-style-type: none"> <li>• glucose</li> <li>• insulin</li> <li>• hba1c</li> <li>• bun</li> <li>• sodium</li> <li>• potassium</li> <li>• CHLORIDE</li> <li>• CO2</li> <li>• creat</li> <li>• calcium</li> <li>• GFR</li> <li>• WBC</li> <li>• RBC</li> <li>• HEMOGLOBIN</li> <li>• HCT</li> <li>• MCV</li> <li>• MCH</li> <li>• MCHC</li> <li>• RDW</li> <li>• PLATELET</li> <li>• TSH</li> <li>• TRIG</li> <li>• CHOL</li> <li>• HDL</li> <li>• LDL</li> <li>• CholHDLRat</li> <li>• ALT</li> <li>• AST</li> <li>• AlkPhos</li> <li>• TotBili</li> <li>• MPV</li> <li>• AnionGap</li> <li>• Ferritin</li> <li>• Iron</li> <li>• IBC</li> <li>• TransSat</li> <li>• PTH</li> <li>• FolicAcid</li> <li>• Vitamin D 25 OH D2</li> <li>• Vitamin D 25 OH D3</li> <li>• Vitamin D 25 TOTAL</li> <li>• Creatinine, RD Urine</li> <li>• Protein, RD Urine</li> <li>• Prot/Creat Ratio</li> <li>• Zinc level</li> </ul>
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Reference	Year	Sample size	% Female	Age (years +/- SD)	BMI (KG/M2 +/- SD)	Normal (%)	Steatosis (%)
(1)	1998	528	81	36 ± 11	43 ± 7	21%	74%
(2)	1999	551	80	36 ± 9	47 ± 9	14%	86%
(3)	2004	105	78	41 ± 11	47 ± 7	4%	71%
(4)	2002	35	74	33 ± 10	44 ± 8	9%	-
(5)	2003	48	69	42 ± 10	59.9 ± 12	15%	85%
(6)	2003	48	84	-	51 ± 2	12%	58%
(7)	2004	195	88	41 ± 9	48 ± 7	33%	67%
(8)	2005	212	80	42 ± 10	48 ± 9	7%	93%
(9)	2005	125	62	40 ± 11	42 ± 6	37%	63%
(10)	2005	112	74	36 ± 10	49 ± 8	1%	99%
(11)	2005	51	-	-	53 ± 1	2%	98%
(12)	2007	135	80	46 ± 10	50 ± 8	14%	59%
(13)	2007	137	-	-	-	4%	92%
(14)	2009	142	79	49 ± 10	48 ± 7	30%	70%
(15)	2009	238	75	42 ± 9	56 ± 10	11%	89%
(16)	2010	129	81	-	-	-	26%

(17)	2010	679	80	43	48 ± 8	16%	77%
(18)	2011	437	78	48 ± 11	49 ± 9	22%	78%
(19)	2012	21	62	30 ± 8	-	10%	90%
(20)	2012	26	-	-	49 ± 5	-	-
(21)	2013	24	88	38 ± 7	51 ± 11	-	33%
(22)	2014	296	61	47 ± 9	44 ± 9	-	42%

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