

## **Supplemental Information**

Criteria used to clinically evaluate the birth weight of newborns. Two sets of criteria were used in this study. [1, 2] One birth weight guideline focused solely on the absolute weight of the baby, without reference to the gestational age when birth occurred. These criteria identified macrosomia, also referred to as high birth weight (HBW), as greater than 4000 grams (eight pounds 13 ounces). Low birth weight (LBW) was defined as less than 2500 grams (five pounds eight ounces). Normal birth weight for infants was, therefore, defined as a birth weight between 2500 and 4000 grams (five pounds eight ounces to eight pounds 13 ounces). The second criteria for birth weight status related the infants birth weight to gestational age (weeks) at birth. These criteria were sex dependent and included three categories: large for gestational age (LGA), which was a birth weight greater than the 90<sup>th</sup> percentile of birth weight for a given gestational age; appropriate for gestational age (AGA) indicated by a birth weight between the 10<sup>th</sup> and 90<sup>th</sup> percentile in relation to gestational age; and small for gestational age (SGA), less than the 10<sup>th</sup> percentile of birth weight in relation to gestational age. For additional clinical analysis, gestational age at birth < 37 weeks was classified as pre-term, 37 to 41 weeks as normal term, and > 41 weeks as extended term.

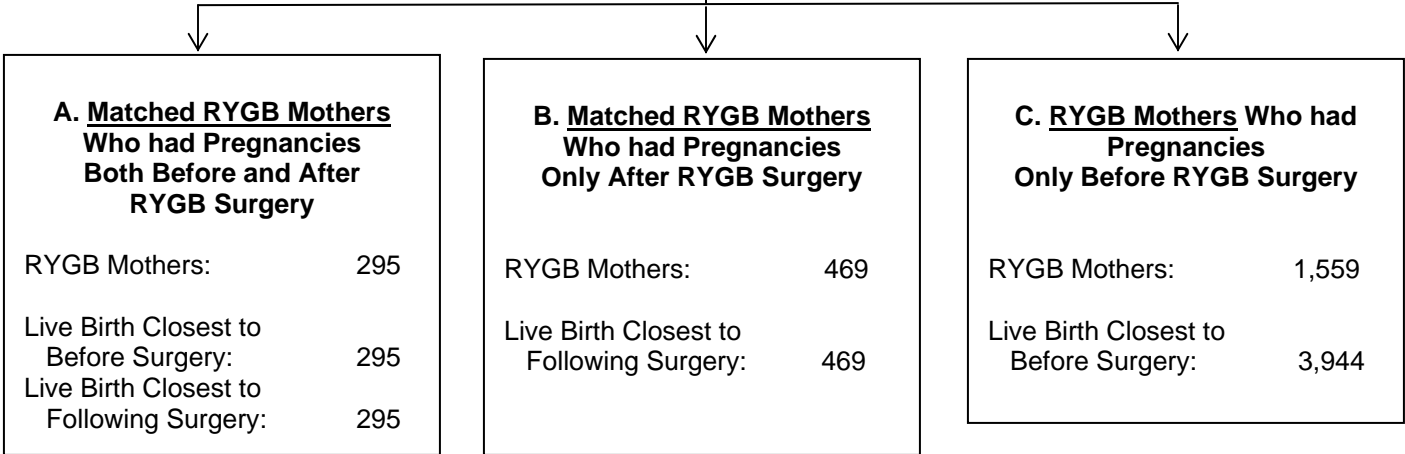
Neonatal complications and fetal deaths. Neonatal complications and fetal deaths for the first pregnancy of mothers following RYGB compared to matched pregnancies of the non-surgery mothers for Group 1 are detailed in Supplementary Table 1. There were no significant differences in neonates born between these groups, although the numbers of complications were small. Although not detailed in tabular form, the change in fetal deaths (before and following RYGB) among the RYGB and non-surgery groups for Group 1 did not differ. Prior to RYGB , there were 2 and 3 fetal deaths among the RYGB and non-operated groups, respectively, and following RYGB , there were 1 and 2 fetal deaths among the RYGB and non-operated groups, respectively.

Possible hypothesis for increased SGA live births following RYGB. Although not tested in this study, the following hypothesis related to the increased number of SGA births among the RYGB group compared to the non-operated group may be considered. First, assume an obese non-operated woman gets pregnant and her child does not develop and a spontaneous abortion results. Further assume that a similar non-operated obese pregnant woman does give birth, but that child is more likely to be healthy given that the child goes on to be born, (though some births will be SGA). Second, assume if another obese pregnant mother who has had RYGB she; (1) would have given birth anyway irrespective of the surgery similar to the 2<sup>nd</sup> example above, or (2) she would not have given birth like the first woman above but because of the RYGB she does give birth – that is, the child is born (and otherwise would not have been) given the surgery but may be SGA because of the intervention. The non-surgical counterpart, lacking the surgery, would have been far less likely to have been born at all. Thus, following this logic, in the end the potential SGA birth in the non-surgical group is less common because these infants are not born; for the surgical group, these same susceptible kids are ‘protected’ and go on to be born albeit as SGA.

## References

1. Yerushalmy, J., *The classification of newborn infants by birth weight and gestational age.* J of Pediatrics, 1967. **71**(2): p. 164-73.
2. Battaglia, F.C. and L.O. Lubchenco, *A practical classification of newborn infants by weight and gestational age.* J of Pediatrics, 1967. **71**(2).

Total RYGB Mothers and Total Pregnancies	
RYGB Mothers:	5,819
Total Live Births:	13,112



**Group 1**

(see Figure 2, Group 2a)

A. Matched Non-Surgery Mothers and their Pregnancies Matched to the RYGB Mother's Closest Pregnancy Before Surgery and to First Pregnancy Following RYGB surgery	
Non-surgery Mothers:	295 <sup>a</sup>
Live Birth Matched to Surgery Mother's Live Birth Closest to Before Surgery:	295
Live Birth Matched to Surgery Mother's Live Birth Closest to Following Surgery	295 <sup>c</sup>

B. Matched Non-Surgery Mothers and their Pregnancy Matched to the RYGB Mother's Closest Pregnancy Following RYGB Surgery	
Non-surgery Mothers:	469 <sup>b</sup>
First Live Birth of Non-Surgery Mother (matched to first live birth of surgery mother following surgery):	469 <sup>d</sup>

D. Unmatched RYGB Mothers Who had Pregnancies Before and/or After RYGB Surgery	
RYGB Mothers:	3,496
Live Births Before Surgery:	5,954
Live Births After Surgery:	1,312
<b>Additional Unmatched Live Births of RYGB Mothers from Groups 1 and 2</b> (i.e. only the closest pregnancy before surgery and/or closest pregnancy following surgery were part of live birth matching in A and B – all other unmatched live births from A and B mothers are accounted for below)	
Unmatched Births Before Surgery:	254
Unmatched Births Following Surgery:	589



**Group 2 (see Figure 2, Groups 2a and 1)**

Total Matched Non-Surgery Mothers and Their Pregnancies	
Non-surgery Mothers:	764 (a+b)
Total Live Births:	764 (c+d)

Total Unmatched Non-Surgery Mothers and Their Pregnancies	
Non-surgery Mothers:	525,653
Total Live Births:	1,071,767

**Supplementary Table 1. Group 1: Number of Neonatal Complications for the First Pregnancy of Mothers Following RYGB Surgery Compared with the Matched Pregnancy of Non-Surgery Mother.**

Complications	Pregnancies After RYGB		
	RYGB N=295	Non-Operated N=295	P Value*
Respiratory complications	0	1	--
Sepsis/Infection	5	4	0.739
Congenital Anomalies	15	12	0.532
Birth Injury	3	1	0.317
Jaundice	5	7	0.527
Feeding difficulties	0	2	--
Fetal Deaths	1	2	--