

EFFECT OF BARIATRIC SURGERY ON REPRODUCTIVE HORMONES AND SEMEN QUALITY

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INTRODUCTION

In recent decades global prevalence of obesity has reached pandemic levels. In parallel, an increase in male infertility consultations has been detected; presumably, and both events could be strongly related. The effect on the hypothalamus-pituitary-gonadal axis of these adipokines could result in an impairment in reproductive hormones and sperm quality. Specifically, excess adipose tissue would cause increased conversion of testosterone into estradiol, leading to secondary hypogonadism with possible impact on spermatogenesis.

OBJECTIVE: To evaluate the reproductive hormones and seminal quality of young obese patients that have undergone bariatric surgery.

RESULTS

As expected, bariatric surgery resulted in massive decreased in BMI 45.4 (8.1) vs 29.0 (5.4) kg/m², p=0.003

Variation in semen quality before and after bariatric surgery

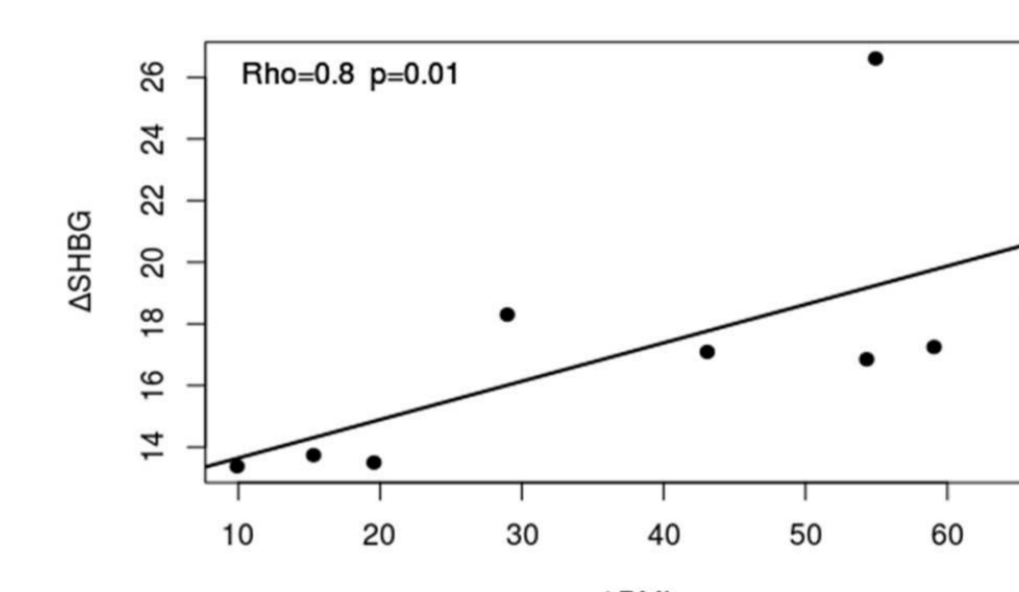
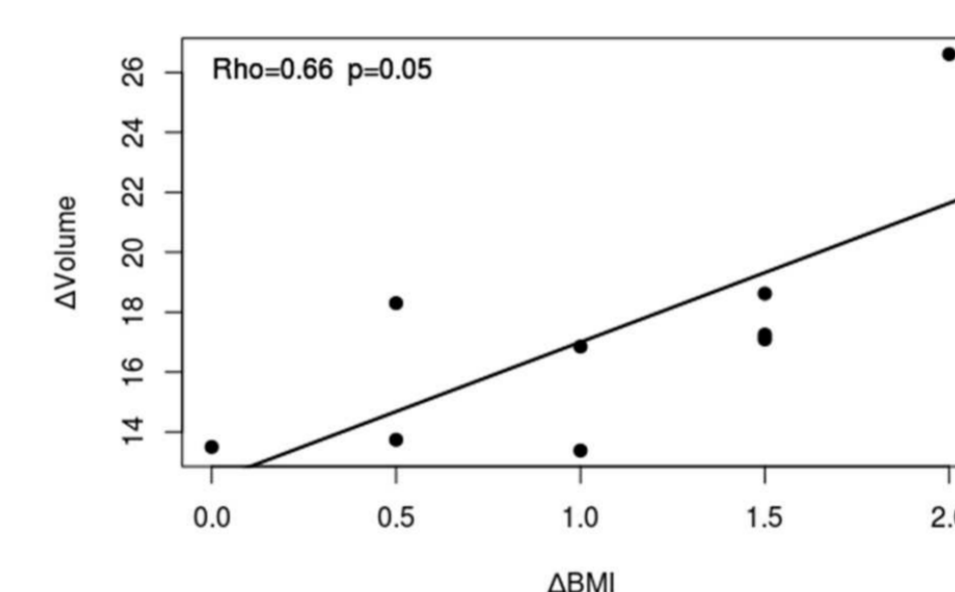
Variable	Baseline	Post-surgery	P-value
Volume (mL)	3.5 (0.5)	3.0 (1.5)	0.04 *
Concentration (x 10 ⁶ /mL)	53 (64)	28 (58)	0.1
Total sperm count (x 10 ⁶)	218 (186)	74 (170)	0.02*
progressive motility (%)	81.1(36.1)	67.5(29.2)	0.07*
normal forms (%)	6(5)	6(5)	0.9
TZI	1.3(0.1)	1.4(0.2)	0.6
FI (%)	19(9)	9(7)	0.3
MI (%)	12(6)	14(18)	0.6
Vitality (%)	95(6)	90(3)	0.1
VAP(um/s)	40.7(3.8)	39.1(12.1)	0.1
VCL (um/s)	58.7(6.8)	55.0 (16.4)	0.02*
VSL(um/s)	31.2 (4.8)	33.0(9.3)	0.3
ALH (um)	3.1 (0.3)	3.0 (0.8)	0.01*
BCF (Hz)	9,0 (0,8)	9,4 (1,8)	0.9
LIN (%)	53.1(6.9)	55.2(10.1)	0.2
STR (%)	76,7 (9,0)	79,3 (6,2)	0.2

Values are expressed as media (interquartile range). TZI: teratozoospermic index, FI: fragmentation index, MI: maturity index VAP : average velocity, VSL: straight line velocity, VCL: curvilinear velocities, ALH: amplitude of lateral head displacement, BCF: beat cross frequency, LIN: linearity, STR: straightness. N=9, * p<0.05 was considered significant.

Variation in testicular hormonal profile before and after bariatric surgery

Hormone	Baseline	Post-surgery	P-value
FSH(mUI/mL)	2.7 (1.3)	3.3 (1.6)	0.02*
LH(mUI/ml)	4.30(1.0)	4.49(0.8)	0.4
TT(ng/ml)	4.5 (1.32)	4.6(0.2)	0.7
FT(pg/ml)	98.1 (13.3)	80.4 (23.7)	0.1
BT(ng/ml)	2.5 (0.2)	2.0 (0.69)	0.7
SHBG (nmol/l)	27.4 (20.0)	69.4 (58.7)	0.007*
E2(pg/ml)	59,6 (16,7)	49,9 (22,4)	0.07

Values are expressed as media (interquartile range). FSH: follicle-stimulating hormone, LH: luteinizing hormone, TT: total testosterone, FT: free-testosterone, BT: bioavailable testosterone, SHBG: sex hormone-binding globulin, E2: Estradiol. N=9, * p<0.05 was considered significant



Δ BMI correlates with: Δ semen volume and Δ SHBG

CONCLUSION

Semen quality may not be improved after bariatric surgery despite successful weight loss and the improvement in reproductive hormones. Further studies are required to discard possible nutritional deficiencies and/or very near post surgery evaluation as causing the effects observed on spermatogenesis

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ACKNOWLEDGEMENTS

This work was funded by the Secretary of Technological Linkage and Productive Development. National University of Rosario, Resolution CS 573/2018
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