

# EFFECTS OF BARIATRIC SURGERY ON BLOOD PRESSURE OF NON-HYPERTENSIVE OBESE PATIENTS

João Sérgio Neves<sup>1</sup>, Sofia Castro Oliveira<sup>1,2</sup>, Pedro Souteiro<sup>1,2</sup>, Rita Bettencourt-Silva<sup>1,2</sup>, Daniela Magalhães<sup>1,2</sup>, Maria Manuel Costa<sup>1,2</sup>, Ana Saavedra<sup>1,2</sup>, Joana Oliveira<sup>1,2</sup>, Filipe Cunha<sup>1,2</sup>, Eva Lau<sup>1,2</sup>, César Esteves<sup>1,2</sup>, Sandra Belo<sup>1,2</sup>, Ana Cristina Santos<sup>4</sup>, Paula Freitas<sup>1,2,3</sup>, Joana Queirós<sup>1,3</sup>, Ana Varela<sup>1,3</sup>, Flora Correia<sup>3,5</sup>, Davide Carvalho<sup>1,2</sup> & Grupo AMTCO<sup>3</sup>

<sup>1</sup>Department of Endocrinology, Diabetes and Metabolism, São João Hospital Center, Faculty of Medicine of the University of Porto, Porto, Portugal; <sup>2</sup>Instituto de Investigação e Inovação em Saúde, University of Porto, Porto, Portugal; <sup>3</sup>Multidisciplinary Group for Surgical Treatment of Obesity, São João Hospital Center, Porto, Portugal; <sup>4</sup>Clinical Epidemiology, Predictive Medicine and Public Health Department of FMUP, Porto, Portugal; <sup>5</sup>Faculty of Nutrition and Food Sciences of University of Porto, Porto, Portugal.



SÃO JOÃO

## INTRODUCTION

Increased blood pressure (BP) above >115/75 mmHg presents an independent association with cardiovascular events. Although there is a clear benefit of bariatric surgery on BP of hypertensive patients, the impact in non-hypertensive patients remains largely unknown. Therefore, the aim of our work was to evaluate the impact of bariatric surgery on BP of non-hypertensive obese patients.

## METHODS AND RESULTS

### METHODS

- We evaluated a cohort of 224 non-hypertensive obese patients that were submitted to bariatric surgery.
- We evaluated the variation of systolic BP (SBP) and diastolic BP (DBP) 12 months after surgery.
- The statistical analysis was done with Student's t-Test, Pearson correlation and Multiple regression.
- A P value of <0.05 was considered statistically significant.

- We evaluated the impact of:

- Age
- Gender
- Body mass index (BMI)
- Waist-to-hip ratio
- Systolic BP (SBP)
- Diastolic BP (DBP)
- Diabetes
- Dyslipidemia
- Smoking
- C-Reactive Protein
- Glomerular Filtration Rate (GFR)
- Type of surgery (gastric band, gastric bypass or sleeve gastrectomy)
- Weight loss after surgery (12 months)

### RESULTS

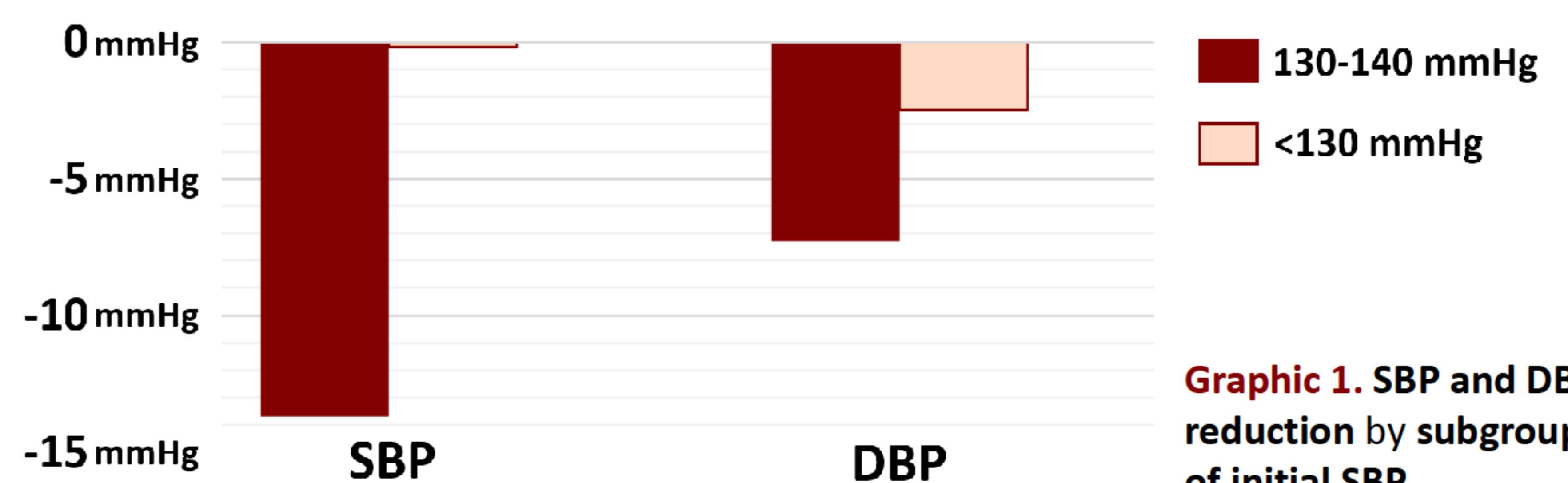
Table 1. Population characteristics

Age, years	41.8±9.3
Gender	
Men, %	9.2%
Women, %	90.8%
Type of surgery	
Gastric band	21.9%
Gastric bypass	65.6%
Sleeve gastrectomy	12.5%
BMI, kg/m <sup>2</sup>	43.5±4.6
Waist-to-hip ratio	0.92±0.81
SBP, mmHg	122.4±10.9
DBP, mmHg	77.4±8.4
Diabetes, %	11.3%
Smoking, %	14.2%
GFR, mL/min/1,73m <sup>2</sup>	95.7±24.1
Weight loss at 12m, kg	33.9±13.0

Table 2. Models of Multiple Linear Regression

	Coefficient (β)	Standard Error	P
<b>SBP Reduction</b>			
Initial SBP, mmHg	0,202	0,107	<0,001
Initial DBP, mmHg	-0,331	0,136	0,015
Weight loss, kg	0,975	0,098	<0,001
Age, years	-0,249	0,114	0,030
Initial BMI, kg/m <sup>2</sup>	-0,549	0,252	0,030
<b>DBP Reduction</b>			
Initial DBP, mmHg	0,769	0,070	<0,001
Age, years	-0,135	0,067	0,044
Initial BMI, kg/m <sup>2</sup>	-0,335	0,144	0,021

The other variables evaluated did not present statistically significant effects



Graphic 1. SBP and DBP reduction by subgroups of initial SBP

### CONCLUSIONS

Bariatric surgery contributes to a significant reduction of BP in non-hypertensive obese patients. The benefit appears to be more directly related to weight loss than to type of surgery. The impact of the procedure is greater in patients with higher initial SBP, and smaller in older patients and those with higher BMI.

References: Zalesin KC, et al. Med Clin N Am. 2011; Straznicky N, et al. J Hypertens. 2010.