

## Remission of polypharmacy in patients with diabetes after obesity surgery

Joana Dias <sup>1</sup>, Paulo Cardoso <sup>2,3</sup>, Mercedes Sanchez <sup>3</sup>, João Maia-Teixeira <sup>3</sup>, Ana Luísa De Sousa-Coelho <sup>1,5\*</sup>

<sup>1</sup> Escola Superior de Saúde, Universidade do Algarve (ESSUAIG), [essualg@ualg.pt](mailto:essualg@ualg.pt), Campus Gambelas 8005-139, Faro, Portugal

<sup>2</sup> Faculdade de Medicina e Ciências Biomédicas, Universidade do Algarve (FMCB-UAIG), Campus Gambelas 8005-139, Faro, Portugal

<sup>3</sup> Centro Hospitalar Universitário do Algarve (CHUA), Rua Leão Penedo 8000-356, Faro, Portugal

<sup>5</sup> Algarve Biomedical Center Research Institute (ABC-RI), Universidade do Algarve, Campus Gambelas 8005-139, Faro, Portugal

\* [alcoelho@ualg.pt](mailto:alcoelho@ualg.pt)

**Introduction:** Obesity contributes to increased risk of developing comorbidities that require polypharmacy (taking  $\geq 5$  medicines) [1], namely type 2 diabetes (T2D) [2], increasing the risk of drug-related problems. Bariatric surgery (BS) has emerged as the most effective treatment for obesity and T2D remission [3–5]. **Objective:** The goal of this study was to evaluate the impact of BS in the remission of polypharmacy in patients with T2D. **Methods:** A retrospective study included collecting clinical data and medication in use from patients with T2D before surgery (m0) and follow-up visits after BS. Obesity remission was considered when body mass index (BMI)  $< 30 \text{ Kg/m}^2$ . T2D remission was when no antidiabetic drugs were administered plus HbA1c  $< 6.5\%$  and/or fasting plasma glucose (FPG)  $< 126 \text{ mg/dL}$ . **Results:** The sample included 78 patients (83.3% female; age:  $51.5 \pm 9.8$  years old). At baseline, mean body weight (BW) was  $107.4 \pm 17.5 \text{ Kg}$  and BMI  $41.7 \pm 5.3 \text{ Kg/m}^2$ . Average HbA1c was  $7.0 \pm 1.6\%$ , FPG was  $133.7 \pm 54.4 \text{ mg/dL}$ , and around 2/3 were polymedicated (average use of  $6.7 \pm 3$  medicines, 1.7 for T2D). Individuals in polypharmacy were older ( $p=0.0055$ ), had higher BW ( $p=0.02$ ), and were taking more medicines for T2D ( $1.8 \pm 0.8$ ,  $p=0.009$ ) than non-polymedicated individuals. One year after BS (m12), BW, BMI, HbA1c and FPG were decreased compared to m0 ( $p < 0.0001$ ). At m12, obesity and T2D remission was 52.6% and 53.8%, respectively. The mean number of overall medicines taken decreased ( $1.9 \pm 3.1$ ,  $p < 0.0001$ ), including the number of antidiabetic medicines ( $0.2 \pm 0.5$ ,  $p < 0.0001$ ), representing that only 10.3% of the patients were polymedicated at m12. A decrease of patients taking medication for hypertension (85.9% m0 vs. 26.9% m12), lipid disorders (57.7% m0 vs. 14.1% m12) and depression/anxiety (30.8% m0 vs. 11.5% m12) was also observed. **Conclusion:** Changes after BS contemplated a reduction in the number of medicines taken, reducing the risk of drug-related problems, which suggests that BS is a suitable strategy for polypharmacy remission.

**Keywords:** Bariatric Surgery; diabetes; obesity; polypharmacy; remission;

### Acknowledgements

We acknowledge all the patients and staff from the unit of surgical treatment of obesity. This research did not receive external funding.

### References:

- [1] Lopez-Jimenez, F; Almahmeed, W; Bays, H; Cuevas, A; Di Angelantonio, E; Roux, CW; et al. Obesity and cardiovascular disease: mechanistic insights and management strategies. A joint position paper by the World Heart Federation and World Obesity Federation. *Eur J Prev Cardiol* **2022**, 29, 2218–2237.
- [2] Wastesson, J; Morin, L; Tan, E; Johnell, K. An update on the clinical consequences of polypharmacy in older adults: a narrative review. *Expert Opin Drug Saf* **2018**, 17, 1185–1196.
- [3] Affinati, AH; Esfandiari, NH; Oral, EA; Kraftson, AT. Bariatric Surgery in the Treatment of Type 2 Diabetes. *Curr. Diabetes Rep* **2019**, 19, 156.
- [4] Courcoulas, AP; Gallagher, JW; Neiberg, RH; Eagleton, EB; Delany, JP; Lang, W; et al. Bariatric Surgery vs Lifestyle Intervention for Diabetes Treatment: 5-Year Outcomes from a Randomized Trial. *J Clin Endocrinol Metab* **2020**, 105, 866–876.
- [5] Frchetti, KJ; Goldfine, AB. Bariatric surgery for diabetes management. *Curr Opin Endocrinol Diabetes Obes* **2009**, 16, 119–124.