

# Long-term Effects of Bariatric Surgery on Cardiovascular Risk Factors

Vignesh Chowdary\*

Department of Neurology, University College Hospital, London, UK

## Introduction

Bariatric surgery, a collection of procedures designed to induce weight loss by altering the digestive system, represents a pivotal intervention in the management of severe obesity. While primarily aimed at weight reduction, the effects of bariatric surgery extend beyond mere body mass index (BMI) reduction. Of particular interest are the profound and enduring impacts on cardiovascular risk factors, which are pivotal in shaping the long-term health outcomes of patients undergoing these procedures. Obesity, characterized by excessive adipose tissue accumulation, is a well-established risk factor for cardiovascular disease (CVD) [1]. The intricate interplay between obesity and CVD involves multiple pathways, including dyslipidemia, insulin resistance, hypertension and systemic inflammation. Bariatric surgery, by promoting significant weight loss and altering metabolic dynamics, exerts a transformative influence on these interconnected risk factors.

One of the hallmark changes following bariatric surgery is the rapid and sustained reduction in excess body weight. Procedures such as gastric bypass, sleeve gastrectomy and adjustable gastric banding achieve varying degrees of weight loss through different mechanisms, including restriction of food intake, malabsorption of nutrients, or a combination of both. Post-surgery, patients often experience substantial improvements in lipid profiles, characterized by decreased levels of total cholesterol, low-density lipoprotein (LDL) cholesterol and triglycerides, along with an increase in high-density lipoprotein (HDL) cholesterol levels [2]. These favorable alterations in lipid metabolism contribute significantly to reducing the risk of atherosclerosis and cardiovascular events over the long term.

Insulin resistance, a hallmark of obesity-related metabolic dysfunction, also undergoes profound changes post-bariatric surgery. Insulin sensitivity typically improves following surgery, leading to better glycemic control and reduced risk of type 2 diabetes mellitus. The mechanisms driving this improvement are multifaceted and include enhanced insulin signaling, alterations in gut hormone secretion (such as increased glucagon-like peptide-1 secretion) and changes in adipose tissue metabolism. By addressing insulin resistance, bariatric surgery not only mitigates diabetes risk but also attenuates the associated cardiovascular complications, thereby offering a dual benefit in cardiovascular risk management.

Hypertension, another common comorbidity of obesity, frequently shows improvement after bariatric surgery. Reductions in blood pressure can be attributed to several factors, including weight loss-induced decreases in sympathetic nervous system activity, alterations in renal sodium handling and changes in vascular function [3]. These improvements in blood pressure control contribute significantly to reducing the risk of stroke, coronary artery

disease and heart failure, underscoring the cardiovascular protective effects of bariatric surgery.

## Description

Beyond these metabolic changes, bariatric surgery exerts broader systemic effects that influence cardiovascular risk factors. For instance, systemic inflammation, a key mediator in the pathogenesis of atherosclerosis, often decreases following significant weight loss. Adipose tissue, particularly visceral fat, is a significant source of pro-inflammatory cytokines and adipokines. Reductions in adipose tissue mass and alterations in adipokine secretion patterns following surgery contribute to attenuating systemic inflammation, thereby mitigating the inflammatory burden on the cardiovascular system.

The benefits of bariatric surgery on cardiovascular risk factors are not merely transient but persist over the long term, provided that patients adhere to post-operative lifestyle modifications and medical management. Studies have demonstrated that these improvements are sustainable for many years post-surgery, highlighting the enduring nature of the cardiovascular benefits associated with significant weight loss [4]. Longitudinal studies tracking patients for extended periods have consistently shown reductions in cardiovascular morbidity and mortality rates among individuals who undergo bariatric surgery compared to those managed conservatively with lifestyle interventions alone.

It is essential to acknowledge that while bariatric surgery offers substantial benefits in terms of cardiovascular risk reduction, it is not without potential risks and complications. Surgical complications, nutritional deficiencies and the need for lifelong monitoring and adherence to dietary and lifestyle modifications represent significant considerations for patients and healthcare providers alike. Comprehensive preoperative assessment, perioperative care and long-term multidisciplinary follow-up are crucial to optimizing outcomes and minimizing risks associated with these procedures [5]. Moreover, the effects of bariatric surgery on cardiovascular risk factors are influenced by numerous variables, including the type of procedure performed, baseline patient characteristics, presence of comorbidities and adherence to postoperative recommendations. Individualized patient counseling and tailored management strategies are therefore paramount to maximizing the cardiovascular benefits of surgery while minimizing potential risks.

## Conclusion

In conclusion, bariatric surgery stands as a transformative intervention in the management of severe obesity, exerting profound and enduring effects on cardiovascular risk factors. Through mechanisms such as weight loss-induced improvements in lipid profiles, insulin sensitivity, blood pressure control and systemic inflammation, bariatric surgery significantly reduces the overall cardiovascular risk burden in affected individuals. Longitudinal studies underscore the sustained nature of these benefits, emphasizing the role of surgery not only in achieving weight loss but also in promoting cardiovascular health over the long term. As our understanding of obesity-related cardiovascular risk continues to evolve, ongoing research and clinical efforts will further elucidate the mechanisms underlying these beneficial effects and optimize the management of patients undergoing bariatric surgery for long-term cardiovascular health.

\*Address for Correspondence: Vignesh Chowdary, Department of Neurology, University College Hospital, London, UK, E-mail: Chowdary.neurol@gmail.com

Copyright: © 2024 Chowdary V. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.

Received: 03 June, 2024, Manuscript No. cmcr-24-141892; Editor assigned: 04 June, 2024, Pre QC No. P-141892; Reviewed: 17 June, 2024, QC No. Q-141892; Revised: 22 June, 2024, Manuscript No. R-141892; Published: 29 June, 2024, DOI: 10.37421/2684-4915.2024.8.319

## References

1. Lambert, Gavin W., Markus P. Schlaich, Nina Eikelis and Elisabeth A. Lambert. "Sympathetic activity in obesity: a brief review of methods and supportive data." *Ann N Y Acad Sci* 1454 (2019): 56-67.
2. Ng, Arnold CT, Victoria Delgado, Barry A. Borlaug and Jeroen J. Bax. "Diabesity: the combined burden of obesity and diabetes on heart disease and the role of imaging." *Nat Rev Cardiol* 18 (2021): 291-304.
3. Kim, Julie, Dan Eisenberg, Dan Azagury and Ann Rogers, et al. "American Society for Metabolic and Bariatric Surgery position statement on long-term survival benefit after metabolic and bariatric surgery." *Surg Obes Relat Dis Off J Am Soc Bariatr Surg* 12 (2016): 453-459.
4. Angrisani, L., Antonella Santonicola, Paola Iovino and A. Vitiello, et al. "Bariatric surgery and endoluminal procedures: IFSO worldwide survey 2014." *Obes Surg* 27 (2017): 2279-2289.
5. Mahawar, Kamal K., Kuldeepak Singh Kular, Chetan Parmar and Michael Van den Bossche, et al. "Perioperative practices concerning one anastomosis (mini) gastric bypass: a survey of 210 surgeons." *Obes Surg* 28 (2018): 204-211.

**How to cite this article:** Chowdary, Vignesh. "Long-term Effects of Bariatric Surgery on Cardiovascular Risk Factors." *Clin Med Case Rep* 8 (2024): 319.