

# A Systematic Review and Meta-Analysis of the Impacts of Bariatric Surgery on Intima Media Thickness

Matthew Wilson\*

Department of Cardiology, University of Western Ontario, 1151 Richmond St, London, ON N6A 3K7, Canada

## Introduction

Almost all countries are experiencing a pandemic of overweight and obesity, which is having a devastating effect, as evidenced by the fact that obesity has nearly tripled since 1975. More than 1.9 billion adults aged 18 and older were overweight in 2016 and 3% of the global population, or more than 650 million people, were obese, with an increasing prevalence. Obesity rates are much higher in most developed countries, with more than 40% of adults in the United States being obese. Obesity, as a global health issue, is well known to be an important risk factor for many diseases, including atherosclerotic cardiovascular disease (ACVD) and it is linked to increased ACVD morbidity and mortality.

This is primarily explained by obesity's systemic low-grade inflammatory state, which is a risk factor not only for ACVD but also for metabolic syndrome (MetSy), type 2 diabetes mellitus (T2DM), nonalcoholic fatty liver disease (NAFLD), nonalcoholic steatohepatitis (NASH), chronic kidney disease, various types of cancers and other inflammatory diseases such as pancreatitis, psoriasis, atopic Obesity is also associated with oxidative stress, which may promote the development of vascular wall lesions that cause endothelial dysfunction, predisposing the arterial wall to morphological and functional damage that leads to atherosclerosis.

## Description

Weight loss, regardless of method, reduces the risk of ACVD, cardiovascular events and cardiovascular and total mortality. Bariatric surgery is a surgical treatment that is primarily used to help patients who are severely obese lose weight. Sleeve gastrectomy (SG), laparoscopic adjustable gastric band (LAGB), Roux-en-Y gastric bypass (RYGB), biliopancreatic diversion/duodenal switch (BPD/DS) and one anastomosis gastric bypass/mini gastric bypass (OAGB/MGB) are the different types of bariatric surgery. There is evidence that bariatric surgery has a positive impact on several cardiometabolic indicators.

According to some reports, bariatric surgery may prevent or slow atherogenesis in its early stages by breaking the vicious circle between inflammation and endothelial dysfunction. Ultrasonography is used to measure intima-media thickness (IMT), particularly carotid IMT (CIMT), which is thought to be a surrogate marker of early atherosclerotic changes in the arteries. Because of the positive correlation between increased IMT and atherosclerotic changes in coronary arteries, i.e., with coronary heart disease, this could aid in the prediction of cardiovascular events in various arterial territories (CHD). As

a result, IMT is used to predict CHD and improve cardiovascular risk prediction models.

Although some studies have suggested that bariatric surgery has a beneficial effect and may reduce IMT, other studies have found no change in IMT in obese patients following bariatric surgery. Several cardiovascular-related risk factors, including insulin resistance, type 2 diabetes, hypertension and hyperlipidemia, can be improved following bariatric surgery; however, it is important to note that these improvements are not the only effect of weight loss. Because obesity creates an inflammatory environment, bariatric surgery appears to reduce cytokines involved in this process, particularly CRP and IL-6, according to a recent meta-analysis. A sex difference in IMT in obese subjects is an important question that could theoretically influence the results of this meta-analysis [1-5].

## Conclusion

However, a recent study revealed that IMT was significantly higher in men than in women, but this difference vanished after controlling for covariables such as waist circumference, age, HDL-cholesterol and mean arterial blood pressure. It has also been demonstrated that bariatric surgery resulted in a significant reduction in IMT in subjects with obesity of all ages; however, the beneficial effects were more pronounced in younger individuals, which is understandable and easily explicable. As previously stated, obesity has been linked to thicker arterial walls, i.e., increased IMT, which appears to be independent of other cardiovascular risk factors. Obesity has also been linked to T2DM and other CHD risk factors such as dyslipidemia. Patients with severe dyslipidemia, such as familial hypercholesterolemia (FH), on the other hand, have higher IMT when compared to controls.

## Acknowledgement

None.

## Conflict of Interest

Authors declare no conflict of interest.

## References

1. Morris, Jeremiah N., D. G. Clayton, M. G. Everitt and A. M. Semmence, et al. "Exercise in leisure time: Coronary attack and death rates." *Br Heart J* 63 (1990): 325-334.
2. Garcia-Palmieri, Mario R., Raul Costas Jr, Mercedes Cruz-Vidal and Paul D. Sorlie, et al. "Increased physical activity: A protective factor against heart attacks in Puerto Rico." *Am J Card* 50 (1982): 749-755.
3. Wolbink, Gert Jan, Mieke C. Brouwer, Saskia Buysmann and I. J. Ten Berge, et al. "CRP-mediated activation of complement *in vivo*: Assessment by measuring circulating complement-C-reactive protein complexes." *J Immunol* 157 (1996): 473-479.
4. Folsom, Aaron R., Donna K. Arnett, Richard G. Hutchinson and Fangzi Liao, et al. "Physical activity and incidence of coronary heart disease in middle-aged women and men." *Med Sci Sports Exerc* 29 (1997): 901-909.
5. Hertzman, Alrick B. and John B. Dillon. "Applications of photoelectric plethysmography in peripheral vascular disease." *Am Heart J* 20 (1940): 750-761.

\*Address for Correspondence: Matthew Wilson, Department of Cardiology, University of Western Ontario, 1151 Richmond St, London, ON N6A 3K7, Canada, E-mail: MatthewWilson3@gmail.com

Copyright: © 2022 Wilson M. 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.

Date of Submission: 07 July, 2022, Manuscript No. jchd-22-81982; Editor assigned: 09 July, 2022, Pre QC No. P-81982; Reviewed: 23 July, 2022, QC No. Q-81982; Revised: 28 July, 2022, Manuscript No. R-81982; Published: 02 August, 2022, DOI: 10.37421/2684-6020.2022.6.150

**How to cite this article:** Wilson, Matthew. "A Systematic Review and Meta-Analysis of the Impacts of Bariatric Surgery on Intima Media Thickness." J Coron Heart Dis 6 (2022):150.