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Incident heart failure risk after bariatric surgery: the role of epicardial fat

Gijs van Woerden ^{1*}, Sophie L. van Veldhuisen ², and Michiel Rienstra ¹

¹Department of Cardiology, University Medical Center Groningen, University of Groningen, Hanzeplein 1, PO Box 30.001, 9700 RB, Groningen, the Netherlands; and
²Department of Bariatric Surgery, Rijnstate Hospital, Postal number 1190, 6800 TA Arnhem, the Netherlands

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This commentary refers to ‘Surgical obesity treatment and the risk of heart failure’, by S. Jamaly et al., 2019;40:2131–2138.

With interest we read the study by Jamaly et al.,¹ in which important new evidence is shown that significant weight loss following bariatric surgery is associated with a 35% lower risk of developing new-onset heart failure (HF) during a follow-up time of 22 years. Although clinically very relevant, it remains difficult to elucidate the mechanisms by which HF risk is reduced, as bariatric surgery improves HF risk factors such as hypertension, diabetes, and dyslipidaemia. In the discussion, the authors considered the potential underlying systemic mechanisms but local mechanisms were not discussed.

Patients included into the study were required to have a body mass index (BMI) of ≥ 34 kg/m². While BMI is an easy and non-invasive tool, regarding adipose tissue, location is probably more important. Indeed, only visceral fat was found to be associated with incident HF, while subcutaneous fat was not.² With regard to new-onset HF, the visceral adipose tissue surrounding the heart, epicardial fat, is important to consider since it is contiguous with the underlying myocardium, thereby possibly facilitating direct interaction between these tissues. Epicardial fat is a source of pro-inflammatory mediators, which are thought to negatively impact the myocardium locally. In addition, epicardial fat and myocardial lipid content are positively related, which suggests that epicardial fat may actually infiltrate the myocardium.³

Interestingly, following bariatric surgery, epicardial fat volume is decreased in severely obese patients.⁴ In the light of the anatomical and biochemical properties of epicardial fat, it may therefore be speculated that the risk reduction of incident HF after bariatric surgery, could be due to a local decrease in epicardial fat volume. This is especially interesting for patients with HF with preserved ejection fraction, as epicardial fat volume in these patients has been shown to be increased compared to controls.⁵ In this discussion on potential mechanisms by which weight loss may reduce HF risk, we feel that the potential role for epicardial fat should be taken into account.

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* Corresponding author. Tel: +31 0503612355, Fax: +31 0503618062, Email: g.van.woerden@umcg.nl

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