

# Cardiac Functional changes after bariatric surgery at KAMC

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## ABSTRACT

### BACKGROUND

Bariatric surgery is an effective way for long-term weight loss success. Recent studies have found that weight loss is significantly associated with improved metabolic parameters in addition to overall decrease in cardiovascular morbidity and mortality. Conversely, some studies have observed the development of unexplained sinus bradycardia after significant weight loss.

We conducted a retrospective study to evaluate the electrical and functional cardiac changes on morbidly obese patients who underwent bariatric surgery and to demonstrate the incidence of arrhythmia.

### OBJECTIVE

### METHODS

A retrospective chart review of all patients who underwent bariatric surgery at King Abdullah Medical City (KAMC) to evaluate changes in echocardiographs and ECG. Myocardial performance index (MPI), automated left ventricular ejection fraction (EF) using QLAB, left ventricular end diastolic volume (LVEDV), global longitudinal strain (GLS), and pericardial fat, heart rate, RP, QRS, QT, QTc, BMI, total cholesterol, LDL, HDL, triglycerides and glycated hemoglobin (HgA1c) were

compared before and after at least one year postoperatively.

### RESULTS

800 consecutive patients were identified, 99 had ECG and Echo e and post operatively.

There was significant decrease in BMI, 49 vs 33,  $p < 0.0001$  total cholesterol 198 vs 185  $p < 0.001$  Triglyceride 134 vs 92;  $P < 0.001$ , HgA1c 6.5 vs 5.6 ;  $P < 0.001$ , heart rate 78 vs 70;  $P < 0.001$ .

Pericardial fat improved from 0.64 to 0.42  $P < 0.05$ ; LVEDV decreased from 112.3 to 93.7;  $P < 0.05$ . MPI improved from 0.64 to 0.47  $P = 0.007$  EF increased from 48 % to 61%  $P < 0.005$  and GLS showed tendency for improved from 17.2% to 21.3%  $P > 0.05$ .

### CONCLUSION

Bariatric surgery offers significant improvement in cardiac risk factors. Furthermore, our data shows significant improvement in cardiac structure and function. These findings underscore the role of bariatric surgery on heart health over and above weight loss.

### KEYWORDS

Bariatric surgery; Cardiac function; Obesity; arrhythmia; bradycardia.