

Table S1. Changes in echocardiographic markers of myocardial structure and diastolic function, among bariatric surgery patients with histologically-defined NAFLD¹ (n=47) compared to subjects with normal hepatic histology (n=18).

Echocardiographic measure	Adjusted* β^1 [SE]	p-value
Left ventricular systolic function		
• LVEF	-0.93 [1.29]	0.044
Left ventricular diastolic function		
• E-wave	-0.07 [0.04]	0.035
• E:A ratio	-2.20 [2.07]	0.051
• Lateral E'	-0.63 [0.50]	0.024
• Septal E'	-0.47 [0.52]	0.040
• Deceleration time	-6.98 [7.13]	0.027
Myocardial structure		
• LV mass index		
○ LV mass / BSA, g/m ²	2.65 [2.90]	0.053
○ LV mass / height, g/cm	4.39 [3.26]	0.032
• LA size index		
○ LA size / BSA, mm/m ²	1.24 [1.]	0.033
○ LA size / height, mm/cm	0.08 [0.09]	0.049
• LA volume index		
○ LA volume / BSA, ml/m ²	2.08 [1.08]	0.001
○ LA volume / height, ml/cm	0.15 [0.12]	0.037
• Interventricular septum	0.52 [0.87]	0.062
• LVIDS	-0.39 [0.62]	0.045

Abbreviations: NAFLD, nonalcoholic fatty liver disease (NAFLD); SE, standard error; LVEF, left ventricular ejection fraction; LV, left ventricle; LA, left atrium; BSA, body surface area; IVS, interventricular septum; LVIDS, left ventricular diameter, systole

¹NAFLD was defined by the presence of any one of the following: hepatic steatosis, defined by grade ≥ 1 steatosis without ballooning or lobular inflammation, steatohepatitis (NASH), defined by grade ≥ 1 steatosis, lobular inflammation and hepatocyte ballooning, or hepatic fibrosis score ≥ 1 .

*Multivariable linear regression model, adjusted for age, sex, diabetes, body mass index (BMI) and hypertension. For echocardiographic measurements indexed for body surface area (BSA), BMI was not included as a covariate.

Table S2. Changes in echocardiographic markers of myocardial structure and diastolic function, among bariatric surgery patients with histologically-defined NASH¹ (n=14), compared to those with hepatic steatosis² (n=33)

Echocardiographic measure	Adjusted* β^1 [SE]	p-value
Left ventricular systolic function		
• LVEF	-1.26 [1.12]	0.020
Left ventricular diastolic function		
• E-wave	-0.21 [0.06]	0.002
• E:A ratio	-3.43 [2.84]	0.037
• Lateral E'	-1.01 [0.73]	0.040
• Septal E'	-0.96 [0.5]	0.044
• Deceleration time	-6.41 [5.90]	0.051
Myocardial structure		
• LV mass index		
○ LV mass / BSA, g/m ²	5.42 [3.13]	0.001
○ LV mass / height, g/cm	6.49 [5.24]	0.001
• LA size index		
○ LA size / BSA, mm/m ²	2.98 [1.35]	0.023
○ LA size / height, mm/cm	0.13 [0.09]	0.036
• LA volume index		
○ LA volume / BSA, ml/m ²	4.27 [2.81]	0.024
○ LA volume / height, ml/cm	0.16 [0.06]	0.001
• Interventricular septum	0.4 [0.20]	0.033
• LVIDS	-0.59 [0.22]	0.009

Abbreviations: NASH, nonalcoholic steatohepatitis; SE, standard error; LVEF, left ventricular ejection fraction; LV, left ventricle; LA, left atrium; BSA, body surface area; IVS, interventricular septum; LVIDS, left ventricular diameter, systole

¹NASH was defined by grade ≥ 1 steatosis, lobular inflammation and hepatocyte ballooning, with or without fibrosis

²Hepatic steatosis was defined by grade ≥ 1 steatosis without ballooning or lobular inflammation

*Multivariable linear regression model, adjusted for age, sex, diabetes, body mass index (BMI) and hypertension. For echocardiographic measurements indexed for body surface area (BSA), BMI was not included as a covariate.

Table S3. Comparison of histological findings in included analysis cohort (N=65) to the total cohort of bariatric surgery patients with available hepatic histology, from January 1, 2005 to August 1, 2016 (N=332).

	Analysis cohort (N=65)	NASH patients ¹ (N=14)	Total biopsied cohort* (N=332)
NAS score	3.1 (2.0)	4.6 (1.4)	3.0 (2.0)
Fibrosis stage	0.63 (0.96)	0.94 (0.60)	0.57 (1.08)
Ballooning score	0.89 (0.88)	1.02 (0.90)	0.85 (0.86)
Lobular inflammation score	1.07 (0.86)	2.05 (0.74)	1.04 (0.85)
Steatosis score	1.50 (0.84)	2.07 (0.86)	1.48 (0.85)

All values represented as mean (standard deviation)

Abbreviations: NAS, NAFLD activity score; NASH, nonalcoholic steatohepatitis

¹NASH was defined by grade ≥ 1 steatosis, lobular inflammation and hepatocyte ballooning, with or without fibrosis

*Total biopsied cohort from Massachusetts General Hospital