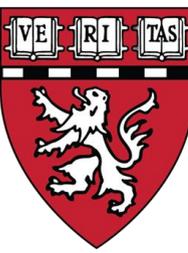# Sleeve gastrectomy alters adipose tissue B cell biology through weight independent and dependent mechanisms

Renuka Subramaniam, James Luo, Tammy Lo, Brian Hou, Ali Tavakkoli, Eric G Sheu

Laboratory for Surgical and Metabolic Research
BRIGHAM AND WOMEN'S HOSPITAL

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Introduction

Sleeve gastrectomy (SG) improves glucose homeostasis independent of weight loss.

SG increases glucose uptake in the visceral adipose tissue (VAT) and upregulates adipose B lymphocyte chemotaxis and function.

Hypothesis : SG induces changes in B cell function that mediate adipose tissue metabolic remodeling.

This study characterizes weight dependent and independent impacts of SG on adipose B cell phenotype and function.

Methods

Lean : C57BL/6J mice (n=7-8/gp)

Obese : C57BL/6J DIO mice(n=7-8/gp)

Sham surgery | Sleeve gastrectomy | Sham surgery | Sleeve gastrectomy

2 weeks | 6 weeks

Weight loss and Glucose tolerance

Visceral adipose tissue (VAT) harvest

- Flow cytometry -10 color B cell panel
- Total visceral adipose immune cell isolation
- Invitro stimulation of total immune cell with LPS
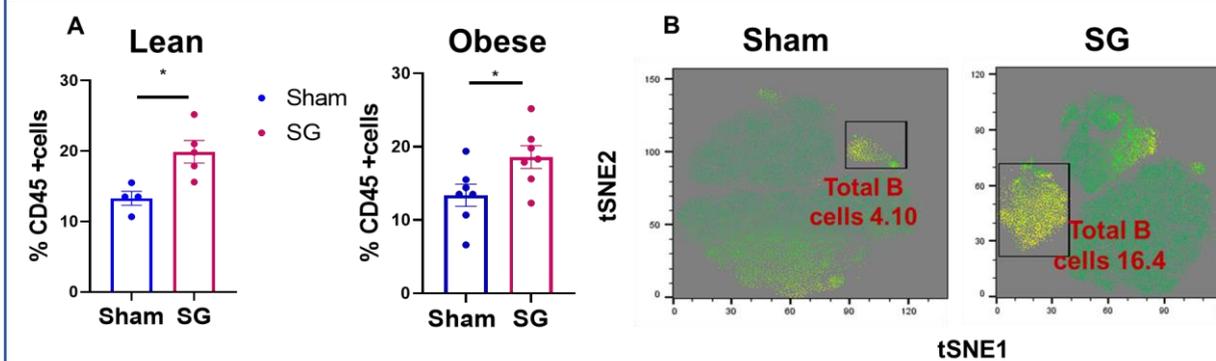- Immunoglobulins and cytokines measured by ELISA in culture supernatant

Results

Fig 1: A.SG increases CD19+ve total B cells in VAT of lean and obese mice. B. Representative tSNE analysis of CD45+ve cells in obese mice (p<0.05)
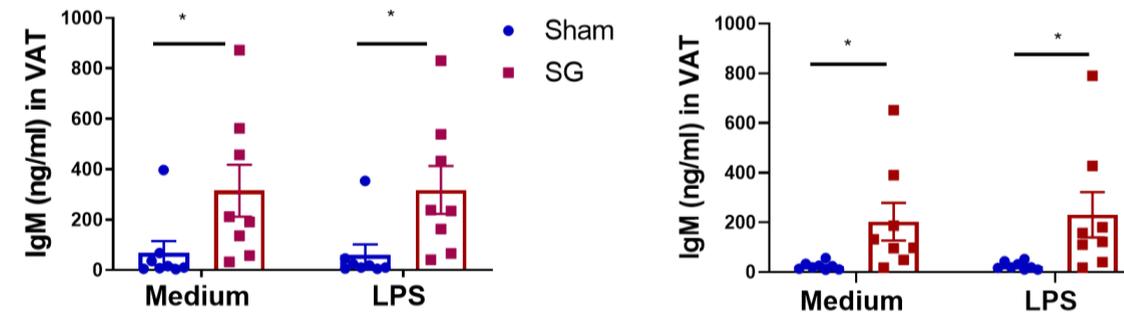

Fig 2: SG increases natural IgM levels in VAT of lean and obese mice p<0.05)

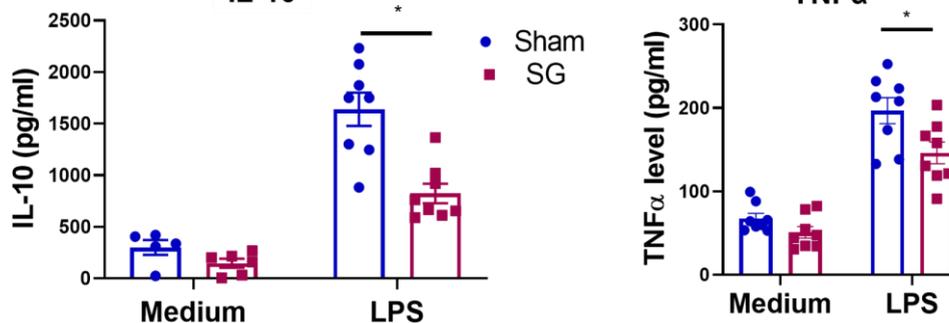**Fig 3:** SG attenuates IL-10 and TNFα levels in VAT of obese mice (p<0.05)

- ❖ Total adipose B cells significantly increased in lean and HFD mice following SG

- ❖ SG significantly increased natural IgM antibody secretion >8 fold in lean and obese mice independent of weight loss

- ❖ SG also significantly reduced IL-10 and TNFα secretion in obese mice

- ❖ SG did not affect IL-6, IgG and IgE secretion in obese mice.

Conclusion

- ❖ SG changes adipose B cell phenotype and function independent of weight loss which likely contribute to diabetes resolution after SG.