Large volume fat transfer to the gluteal region has become increasingly popular due, in part, to more efficient liposuction and fat grafting techniques as well as changing aesthetic ideals. Unfortunately, catastrophic complications from fat grafting to the buttock continue to be reported, with death rates estimated to be as high as 1 in 2351. Autopsies have shown that these deaths were likely caused by gluteal vein injury during intramuscular fat graft placement and subsequent macroscopic fat embolism. Although the exact mechanism of these venous injuries has not been completely elucidated, the critical paucity of detailed anatomic studies on the location and caliber of these same gluteal veins is concerning. Moreover, there is dubious utility of cadaver studies in this setting because the caliber of the vulnerable vessels will perforce change with the necessary postural changes during live gluteal fat grafting and dynamic vessel filling.

### Introduction

Large volume fat transfer to the gluteal region has become increasingly popular due, in part, to more efficient liposuction and fat grafting techniques as well as changing aesthetic ideals. Unfortunately, catastrophic complications from fat grafting to the buttock continue to be reported, with death rates estimated to be as high as 1 in 2351. Autopsies have shown that these deaths were likely caused by gluteal vein injury during intramuscular fat graft placement and subsequent macroscopic fat embolism. Although the exact mechanism of these venous injuries has not been completely elucidated, the critical paucity of detailed anatomic studies on the location and caliber of these same gluteal veins is concerning. Moreover, there is dubious utility of cadaver studies in this setting because the caliber of the vulnerable vessels will perforce change with the necessary postural changes during live gluteal fat grafting and dynamic vessel filling.

### Methods

**FIRST In-vivo investigation**
- 16 hemi-buttocks
- Average age – 30 years (range 22.75 to 39.67)
- Average BMI – 24 (range 18.80 to 29.50)
- Average height – 162 cm (range 154.94 to 177.80)
- MRI Venogram of the pelvis in 5 positions
- 1 contrast injection – novel use of Iron-based contrast media (Feraheme)
- all imaging obtained in a single session
  - Supine
  - Prone
  - Left and Right Lateral Decubitus
  - Jackknife – prone with bump under hips

**Bibliography**

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https://academic.oup.com/asj/article/40/6/642/5580042

### Conclusions

**Conclusions:** The SGV and IGV are immediately deep to gluteus maximus approximately 6 cm deep with a caliber on the order of 6 mm in the prone position. The distribution of these vessels suggests there is no “safe zone” in the intramuscular or submuscular planes. The jackknife or lateral decubitus positions can decrease vein caliber by up to 27%, possibly reducing the risk of injury due to either traction or direct cannula impact.

- There is no safe zone
- Inferior Gluteal Vein is 6 cm deep to surface on average
- There may be a safe depth

### Thank You

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### Bibliography

Gluteal Vein Anatomy: Location, Caliber, Impact of Patient Positioning, and Implications for Fat Grafting

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