

Impact of squamous cell carcinoma recurrence on anterolateral thigh free flap volume and attenuation

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Introduction

- Current research estimates flap atrophy at around 40%
- Free flap atrophy in head and neck reconstruction can lead to impaired speech, swallowing, and unfavorable aesthetic outcomes
- The recurrence of cancer in the head and neck further complicates free flap reconstruction and longevity of the flap
- This study compares anterolateral thigh (ALT) free flap volume and attenuation between patients with and without squamous cell carcinoma recurrence

Methods

- **Retrospective analysis**
 - Chart review comparing one patient who underwent ALT free flap surgery and one patient with recurrence of squamous cell carcinoma of the neck and oral cavity
- CT scans were segmented in Picture Archiving and Communication System (PACS)
- **Measurements**
 - Attenuation in Hounsfield units (HU) to determine tissue density
 - Cross-sectional area in cm² followed by the addition of all sections to get total flap volume in cm³

Figure 1. CT neck soft tissue with contrast 225 days post ALT free flap reconstruction

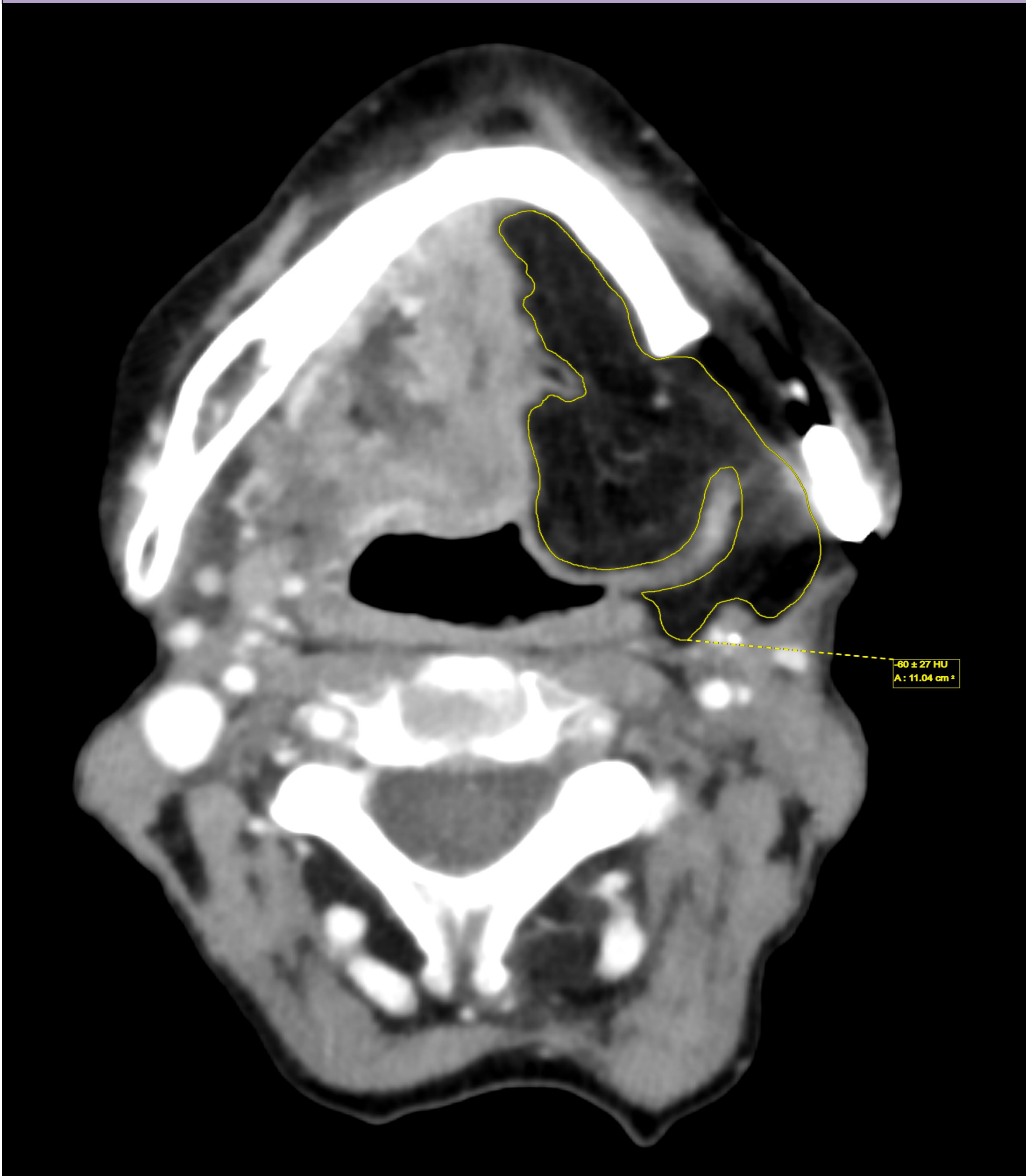
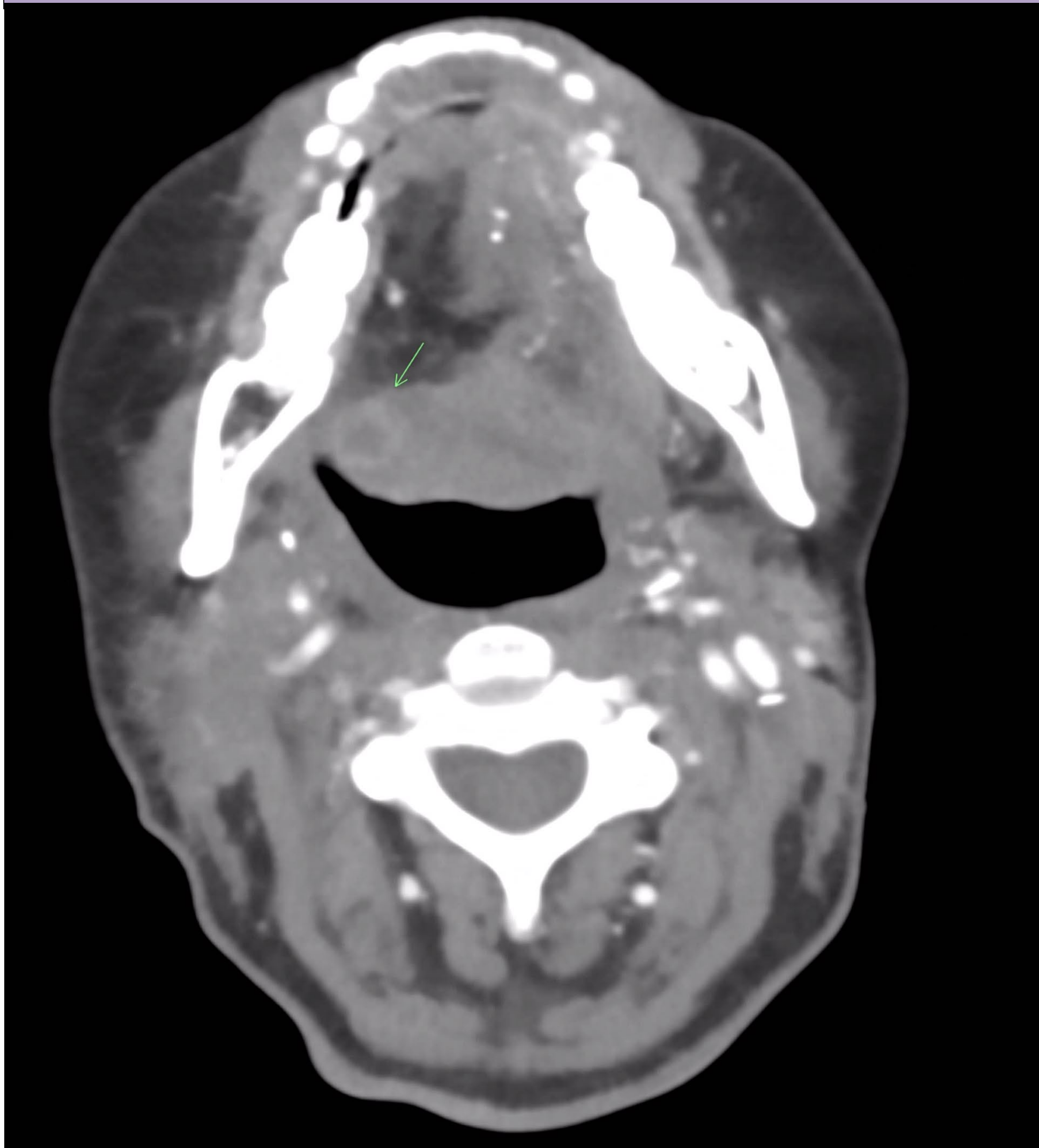
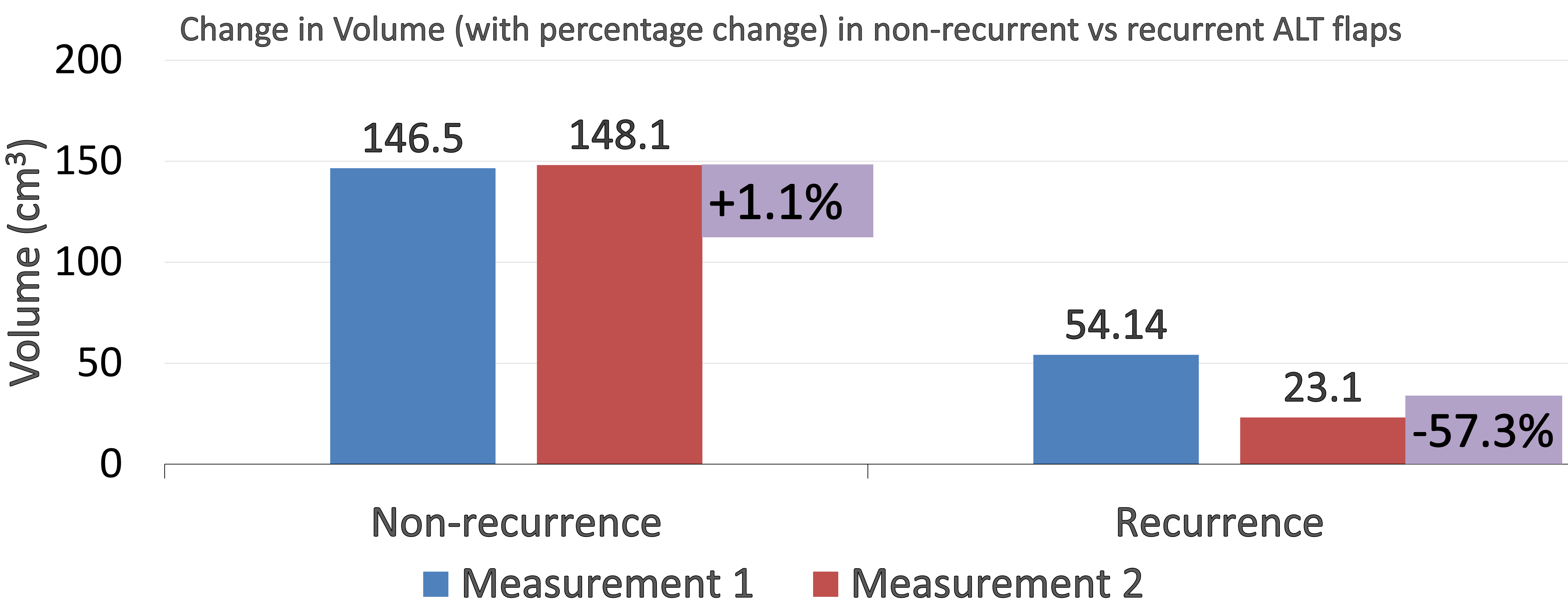
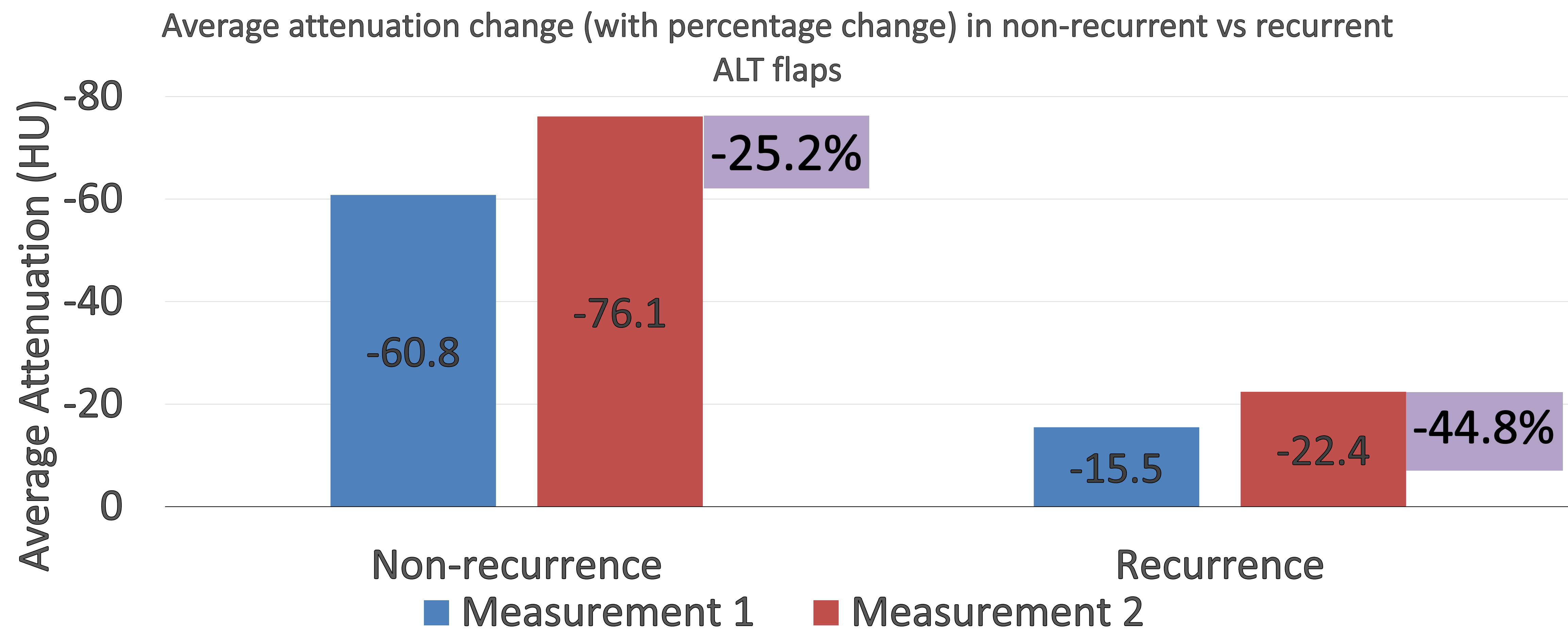


Figure 2. CT neck soft tissue with contrast 195 days post squamous cell carcinoma resection and ALT free flap reconstruction



Results



Conclusion

- Minimal reduction in flap volume over 183 days for the non-recurrent case suggests differing rates of change between flap volume and tissue density
- Squamous cell carcinoma recurrence significantly reduces ALT free flap attenuation and total flap volume compared to non-recurrence
- Further investigation should be performed to analyze flaps immediately after surgery and long-term post-operation