

## Characterizing Fat in the Superficial and Intermediate Layers of the Neck: Analyzing Variations with Age using Volumetric Computed Tomography

Susan Orra, MD; Kashyap Tadisina, MD; Adeeb Derakhshan, BS; Sandra Halliburton, PhD; Gaby Doumit, MD, MSc; James Zins, MD

**Disclosure/Financial Support:** Authors have no disclosures.

**INTRODUCTION:** Fat compartment distribution plays an important role in the aging process of the neck, yet the specifics of this process are largely unknown. This study utilizes volumetric computed tomography in live patients to characterize the fat compartments of the neck and examine how they change with respect to age.

**MATERIALS AND METHODS:** Neck CT angiography was obtained for 20 “young” (age 20-35 years old) and 20 “elderly” (age 65 – 89 years old) females. The volume of neck fat in the supra and subplatysmal planes were quantified. Distribution of fat volume was assessed by dividing each supra and sub platysmal compartments into upper, middle, and lower thirds.

**RESULTS:** Total supraplatysmal fat volume was significantly greater than subplatysmal volume within both the “young” and “elderly”; however, “young” had significantly more total supraplatysmal fat than “elderly” ( $p < 0.0001$ ). There was no significant difference in fat volume between each third of the neck in the supraplatysmal compartment in “young”. The middle third of the supra-platysmal fat volume in the “elderly” ( $28.58 \pm 20.01 \text{ cm}^3$ ) was significantly greater than the upper ( $18.93 \pm 10.35 \text{ cm}^3$ ) and lower thirds ( $15.46 \pm 11.55 \text{ cm}^3$ ) respectively ( $p < 0.01$ ). There was no significant difference between the total sub-platysmal fat volume between the young and the elderly groups ( $p > 0.05$ ).

**CONCLUSION:** We demonstrate that total supra-platysmal fat volume significantly decreases with age. In addition, the elderly have significantly more fat volume in upper and middle thirds of the supra-platysmal neck, whereas young females have more evenly distributed fat volume between the three regions of the neck. This seems to be consistent with the observation of the elderly experiencing fat volume loss and subsequent “deflation” of the skin, causing skin laxity and vertical bands of the neck.