
BACKGROUND
The purpose is to investigate the clinical significance of body morphomics changes in stage III-IV oropharyngeal cancer patients during concurrent chemoradiotherapy (CRT).

METHODS
Fifty patients who underwent CRT were selected for body composition analyses by either availability of pre/post treatment DEXA scans or a novel CT-based approach of body morphomics analysis (BMA). BMA changes (lean psoas and total psoas area) were compared to total lean body mass changes by DEXA scans using two-sample t tests. Pearson correlation was used to compare the BMA measures to head and neck specific quality of life outcomes. Cox hazards model was used to predict mortality and tumor recurrence.

RESULTS
Clinically significant declines in total psoas area and lean body mass of similar magnitude were observed in both BMA and DEXA cohorts after CRT. Loss of psoas area (P < 0.05) was associated with greater frailty and mobility issues (3 out of 15 UWQ)L domains). Total psoas area is more sensitive for local recurrence than weight changes and T-stage on multivariate analyses.

CONCLUSIONS
BMA specifically evaluating psoas area appears to correlate with head and neck cancer quality of life physical domains. Pre- and post-treatment total psoas area at L4 appears prognostic for tumor recurrence.