

# The use of routine CT imaging to assess sarcopenia in patients undergoing chemo-radiotherapy for rectal cancer

Presentations from the 7th Scalpel Undergraduate Surgical Conference, 24 October 2015

**S. Young**

*Manchester Medical School, University of Manchester  
sean.young@student.manchester.ac.uk*

**Background** Long-course chemoradiotherapy (LCRT) followed by surgery is utilised in patients with locally advanced rectal cancer, but associated with reductions in physical activity, the effects of which are poorly characterised, and increase postoperative complication rates and delay recovery. In previous studies muscle area has been used to measure muscularity; this is the first study measuring muscle volume in addition to area.

**Objectives** We aimed to determine differences in muscularity between demographic groups prior to LCRT, assess how LCRT affects muscularity and determine if the technique to measure volume is replicable.

**Methods** Using routine CT images, muscle was differentiated using density measurements, with volume and area calculated by Osirix®. Volume was measured 120 mm above the L5–S1 intervertebral disc, and area at the L3 level. Intra- and inter-observer variability was assessed using six patients, with two patients from each tertile.

**Results** 38 patients were assessed. Demographic factors affected muscularity (area, volume) prior to therapy, including N stage ( $p = 0.019$ ,  $p = 0.011$ ), gender ( $p = 0.0001$ ,  $p = 0.0001$ ) and age ( $p = 0.002$ ,  $p = 0.0001$ ). Assessment of pre- and post- LCRT scans showed treatment has no effect on muscularity. The technique employed is replicable (concordance correlation coefficient  $0.98<$ ).



**Conclusions** There are significant differences in muscularity between demographic groups prior to therapy, although LCRT was shown to have no effect on muscularity. We also confirmed that the technique employed is replicable and could be used to assess how muscularity impacts on surgical outcomes.