Introduction:
Ultrasonography is a valid diagnostic tool, used to measure changes of muscle mass. The aim of this study was to investigate the clinical value of ultrasound-assessed muscle mass, in patients undergoing cardiothoracic surgery that present muscle weakness postoperatively.

Methods:
For this study, 221 consecutive patients were enrolled, following their admission in the Cardiac Surgery Intensive Care Unit (ICU) within 24 hours of cardiac surgery. Ultrasound scans, for the assessment of quadriceps muscle thickness, were performed every 48 hours for 7 days. Muscle strength was also evaluated in parallel, using the Medical Research Council (MRC) scale.

Results:
Of the 221 patients enrolled, ultrasound scans and muscle strength assessment were performed in 165 patients. The muscle thickness of rectus femoris (RF), was slightly decreased by 2.18% ([95%CI: -0.21; 0.15], n=9; p=0.729) and the combined muscle thickness of the vastus intermedius (VI) and RF decreased by 3.5% ([95% CI: -0.4; 0.22], n=9; p=0.530). Patients whose combined VI and RF muscle thickness was below the recorded median values (2.5cm) on day 1 (n=78), stayed longer in the ICU (47 ± 74 vs 28 ± 45 hours, p = 0.015). Patients with MRC score ≤ 48 on day 3 (n=7), required prolonged mechanical ventilation support compared to patients with MRC score ≥ 49 (n=33), (44 ± 14 vs 19 ± 9 hours, p = 0.006).

Conclusion:
The use of muscle ultrasound seems to be a valuable tool in assessing skeletal muscle mass in critically ill patients after cardiothoracic surgery. Moreover, the results of this pilot study showed that muscle wasting of patients after cardiothoracic surgery is of clinical importance, affecting their stay in ICU.