

[OA1988] Ribcage kinematics during exercise justifies thoracoscopic over thoracotomy lobectomy prompt recovery

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Video-assisted thoracic surgery (VATS) approach is encouraged over thoracotomy (*open*) for lobectomy in lung cancer. We compare the ribcage kinematics during exercise before and after both procedures, assuming that VATS, being minimally invasive, could better preserve ribcage expansion. Age-matched (74.1±18.8 yrs) lung cancer patients who underwent lobectomy by means of VATS (n=20) or *open* (n=11) were compared before (T₀) and 1 week after (T₁) the procedure during incremental exercise. For each step, the ventilatory pattern, chest wall (V_{CW}), ribcage (V_{RC}) and abdominal (V_{AB}) volume variations were assessed. V_{CW}, V_{RC} and V_{AB} of the treated (T) and untreated (U) side were also considered. Compared to T₀, at T₁ respiratory rate increased (p<0.01) with exercise progression in both groups whereas ventilation increased (p<0.01) only in VATS and not in *open*. Tidal volume (V_T) decreased in *open* because V_{RC} expanded less due to a reduced contribution of T-V_{RC}. On the contrary, in VATS V_T and V_{RC} contribution did not change, although T-V_{RC} was lower, because U-V_{RC} expanded more at T₁ (figure). No changes found in V_{AB}. *Open* approach restricts the whole ribcage at higher ventilatory demands, whereas VATS affects only T-V_{RC} with U-V_{RC} compensation that guarantees normal V_T. VATS has been shown to have a reduced impact on ribcage expansion being a possible mechanism that comes into play in the early postoperative period.

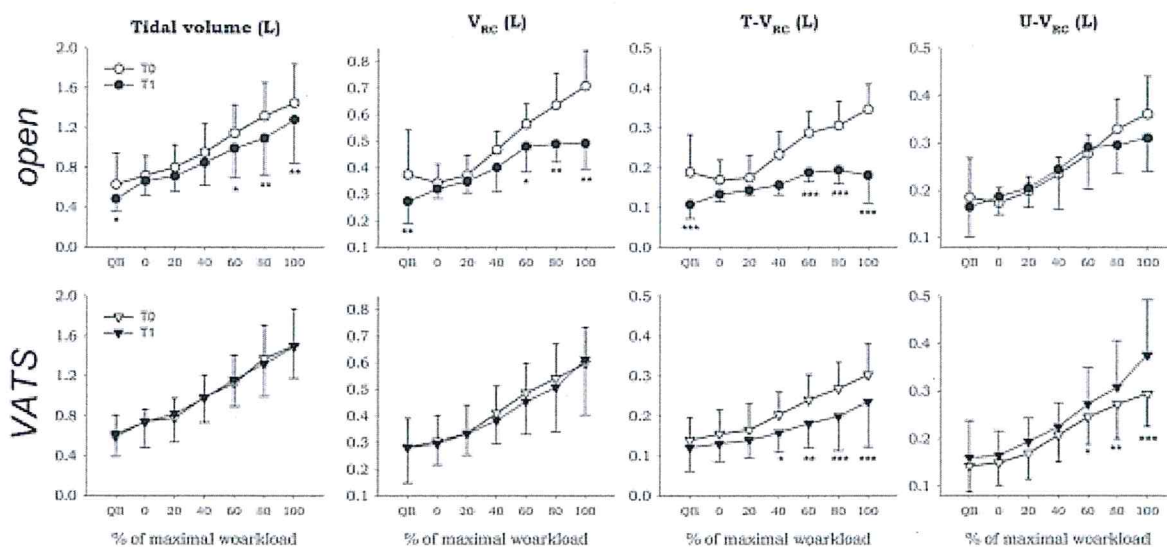


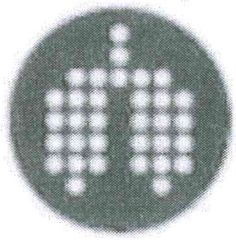
Figure: Tidal volume and expansion of the ribcage as a whole (V_{RC}), of its treated side (T-V_{RC}) and of its untreated side (U-V_{RC}) in patients who underwent lobectomy by means of thoracotomy (upper panels, *open*) and of video-assisted thoracic surgery (lower panels, VATS) before (white symbols, T₀) and after (black symbols, T₁) surgery at rest (QB) and during different percentage of maximal workload. *, **, ***: p< 0.05, 0.01, 0.001 T₀ vs T₁

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