Ambulation for enhanced recovery in thoracic surgery: how far can we walk?

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Enhanced recovery after surgery (ERAS) is a multidisciplinary, goal-directed program aimed to decrease perioperative stress, improve pain management and mobilization and minimize post-operative complications. This can lead to hastened patient recovery and reduced time in hospital (1).

Khandhar *et al.* (2) reported the results of a study on 304 patients submitted to video-assisted thoracoscopic surgery lobectomy with an early ambulation protocol called thoracic ERAS (T-ERAS). The ambulation target of 250 feet within 1 hour from extubation was achieved by 61.5% of patients and 91.1% ambulated 250 feet at any time in the post-operative ambulatory care unit. The median length of stay was 1 day compared to 2 days of the pre-T-ERAS period P<0.001). There were low rates of pneumonia and atrial fibrillation and no post-operative mortalities for T-ERAS. Particularly, the target goal was achieved at a greater rate in the late (72%) versus early (37%) T-ERAS cohort. The authors concluded that: early post-operative ambulation was feasible and it can be considered a key point in achieving low morbidity after video-assisted thoracoscopic surgery lobectomy; adoption of T-ERAS improved over time.

The major focus of this issue is early ambulation. Firstly, the patient should be led to surgery at the top of his functional status. He should be intensively prepared, on both psychological and physical aspects, as for a sports competition. Secondly, the 'out of bed' strategy, with ambulation, immediately after surgery is aimed to augment the pleural lymphatic drainage (3), cutting fluid loss from drainages. It is known that ambulation also increases pulmonary ventilation and reduces risk of post-operative atelectasis and pneumonia (4-6). This last complication indeed was very rarely described in ERAS group, compared to controls (3% versus 7.2%, P=0.16).

Another positive point is family support and participation: in this issue, Khandhar and colleagues suggest a goal-oriented approach in which the patient and family are equally engaged and cooperate with the clinical staff, from smoking cessation prior to surgery, to reaching the ambulation target in post-operative ambulatory care unit. ERAS has its own foundation in assistance by home carers or relatives.

Compared to other specialties, T-ERAS literature is of a lower statistical quality. A review conducted by Fiore and colleagues (7) pointed out that so far literature on T-ERAS has counted for the most part on non-randomized studies, with a high risk of selection, detection and performance biases. Fiore proved that length of stay was shorter only in non-randomized studies, therefore it cannot be excluded some kind of selection, for ERAS pathway, of patients more prone to fast track. In this non-randomized study, two different periods, pre and post-T-ERAS, are compared, without thoroughly excluding a kind of surgical and/or perioperative skill improvement of the authors' group over time. In essence, the comparison is made versus a previously treated patient group, leaving the possibility of biases due to the learning curve and to the ERAS protocol adherence over time.

Furthermore, there were no differences between groups in overall complications and mortality rates. So we can state that to date, it has not yet been shown that T-ERAS is irrefutably better, but in most part of available, statistically powerful studies, it is at least comparable to conventional protocols.

In the study from Khandhar *et al.*, a point of discussion emerge from a notable improvement in the ambulation speed and performance in the late T-ERAS cohort compared to the early T-ERAS cohort, although there was no clear difference in clinical outcomes. The target goal of ambulation within 1 h of extubation was achieved in only 37% of the early cohort compared to 72% in the late cohort (P<0.001). This means that how fast can the patient recover depends also by health operators' courage and experience. The high cardiopulmonary impact of lung resection and the severe level of pain elicited by thoracic procedures make hard for thoracic surgeons to adhere to intensive ERAS protocols. It might be thought that an early mobilization could induce a stress-related response with hypotension, tachyarrhythmia, ischemic heart and/or cerebrovascular disorders, even though no cases have been reported neither in literature nor in this issue. We can state that surgeons' fears about patients' risk of falls or injuries could limit post-operative recovery, but no one can say how much can we dare with acceptable safety for the patient.

In conclusion, ambulation was proved to be a key point of T-ERAS pathway. The establishment of homogeneous protocols is needed in order to evaluate, in future studies, the statistical impact of each ERAS pathway issue on the patient clinical outcome. Some efforts have been made (1,8), with the obvious difficulties related to the local health policies and the administrative and hospital staff collaboration. ERAS needs many more health workers and resources, against a gain in hospital costs that have not yet been quantified (7). Further studies are needed to define adoptability of T-ERAS at other sites and validate the impact of improving outcomes.

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