Introduction:
Sonographic assessment of diaphragmatic excursion and muscle thickening fraction have been suggested to evaluate diaphragm function during weaning trial [1]. The purpose of this study is to compare these two parameters to predict extubation success.

Methods:
This prospective study was carried out during 9 months from March to November 2017. We enrolled patients who were mechanically ventilated for more than 48h and met all criteria for extubation. The non inclusion criteria were: age < 18 years, history of neuromuscular disease or severe chronic respiratory failure. We excluded subjects who needed reintubation for upper airway obstruction, neurological or hemodynamic alteration. The US exam was performed during spontaneous breathing test or pressure support trial, measuring both diaphragm excursion (DE) and diaphragmatic thickening fraction (DTF) within 24 hours before extubation.

Results:
Among 36 enrolled patients, four were excluded and 78.1% were successfully extubated, whereas 21.9% needed reintubation or noninvasive ventilation within 48h from extubation. The median degree of DE was higher in patients with extubation success than those with failure (17.8 mm vs. 11.9 mm, p=0.01). Patients with extubation success had a greater DTF (41.7% vs. 29.7%, p = 0.007). The area under the ROC for DE was 0.800, 95% CI [0.578-1], while it was 0.717 for DTF 95% CI [0.453-0.981], p=0.001. Cut off values associated with successful extubation were 12 mm for DE and 31% for DTF giving respectively 84% and 96% of sensibility, 71% and 57% of specificity, 7.6 and 9.7 of likelihood ratio. Combining both parameters decreased sensibility to 79% but increased specificity to 100%.

Conclusion:
US may be a valuable tool in the evaluation of diaphragm dysfunction. The diaphragm excursion seems more accurate than the diaphragm thickening fraction to predict extubation success.

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