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INSPIRATORY MUSCLE TRAINING (IMT) PAVING THE WAY FOR THE FUTURE OF CARDIAC SURGERY PULMONARY REHABILITATION

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Introduction

The purpose of this study is to explore the benefits of preoperative inspiratory muscle training (IMT) to improve the diaphragmatic thickness (DT), which would influence the recovery (shorter cardiothoracic intensive care unit stay, length of hospital admission and early mobilization) of the patients undergoing elective Coronary Artery Bypass Graft (CABG) in our center, in accordance to Early Recovery After Surgery (ERAS) Protocol.

Methodology

A quasi-experimental pilot study was carried out over a period of 15 months comparing the DT in patients undergoing IMT versus conventional incentive spirometry. The number of the study population was 22. Patients were recruited during outpatient cardiothoracic surgery clinic combined with the rehabilitation team and were taught the usage of IMT and incentive spirometry respectively.

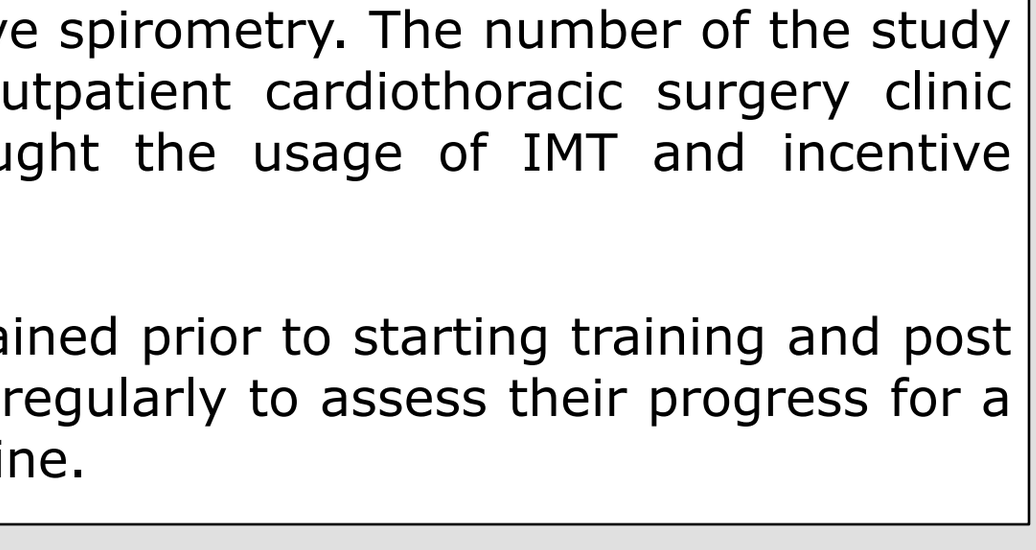
A baseline ultrasound measurement of the DT was obtained prior to starting training and post training. The patients were monitored and followed up regularly to assess their progress for a period of 6–8 weeks via in person as well as tele-medicine.

Results

The primary outcome has shown statistically significant difference with p value < 0.05 in the DT on the right side during inspiratory phase and the left side during expiratory phase. The secondary outcome shown no significant difference.

Primary Outcome

Ultrasound assessment of Diaphragmatic Thickness	IMT (n=11) Median, (IQR)	Spirometry (n=11) Median, (IQR)	P value
Right inspiratory difference	0.112 (0.880, 0.173)	0.075 (0.600, 0.087)	0.005
Right expiratory difference	0.117 (0.023, 0.204)	0.061 (0.036, 0.090)	0.478
Left Inspiratory differecne	0.098 (0.030, 0.138)	0.053 (0.041, 0.073)	0.132
Left expiratory difference	0.112 (0.080, 0.165)	0.051 (0.034, 0.062)	0.006



Conclusion

IMT showed significant improvement in terms of preoperative DT, and does not negatively impact secondary outcomes such as length of CICU admission, hospital stay or early mobilization when compared with conventional incentive spirometry. Therefore there are promising prospects on the horizon as we move forward to continue this study to explore the benefits of IMT in elective cardiac surgery.

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