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Pre-operative Training Programme (P-POT) for Patients undergoing Esophagectomy – A Preliminary Report

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Introduction

Esophagectomy for patients suffering from esophageal cancer is an ultra-major surgery and is frequently accompanied with high risk of morbidity and mortality. Recent studies showed significant reduction in risk of developing post-operative complications (PPCs) and length of hospital stay (LOS) when pre-operative cardiopulmonary and inspiratory muscle training were provided.

Therefore, a 4-week preoperative training programme has been formulated in February 2016 to improve the pre-operative cardiopulmonary fitness for targeted clients.

Objectives

1. To investigate the effect of the P-POT on the incident of PPCs, ICU and hospital LOS
2. To investigate the effect of the P-POT on the cardiopulmonary fitness and inspiratory muscle strength

Methodology

In this study, patients underwent esophagectomy in year 2015 served as the control group. They had attended pre-operative education session on post-operative care. The intervention group included the patients planned for operation in year 2016 and completed neoadjuvant chemotherapy. They received a 4-week pre-operative training (twice sessions per week) which consisted of aerobic exercise, inspiratory muscle strengthening and individualised home exercise.

Data on the incident rate of PPCs, LOS in ICU and the total LOS were collected. The

cardiopulmonary fitness was assessed by the 6-minute walk test (6MWT) and the incremental shuttle walk test (ISWT) while the inspiratory muscle strength was assessed by the maximal inspiratory pressure (MIP).

Result

The intervention group consisted of 7 patients while 13 in the control group. The mean age of the intervention and control group were 67.71 year and 61.69 year respectively.

There was no significant difference in PPCs incident rate (intervention group: 3 out of 12 patients, control group: 2 out of 7 patients) between two groups. Although the mean ICU LOS (intervention group: 3.29 days, control group: 3.62 days) and total LOS (intervention group: 20.1 days, control group: 28.3 days) were shorter in the intervention group, it failed to demonstrate any statistical differences.

The positive training effect of the P-POT was revealed by the increase in MIP from 49.2 ± 5.82 cmH₂O to 71.8 ± 8.28 cmH₂O ($p=0.03$) and increase in the 6MWT from 393 ± 39.36 m to 450 ± 41.79 m ($p=0.01$) while no difference was found in ISWT.

Conclusion

P-POT enhanced the cardiopulmonary fitness and inspiratory muscle strength. However, due to the small sample size, it failed to demonstrate as significant reduction in PPCs and LOS despite of the improving trend. Further research, including a randomised controlled trial in larger sample size is warrant.