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A Comparison of Functional Outcomes on Total Knee Arthroplasty Patients with Different Body Mass Index

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Introduction

Knee osteoarthritis is a common chronic degenerative disease. Total knee arthroplasty (TKA) is an effective procedure to alleviate pain and reduce associated disability. In 2015, the number of TKA performed in public hospitals was increased by 104% as compared to 2011. People with overweight/obesity commonly develop disabling knee osteoarthritis and require TKA. Previous reports showed that obesity may undermine the rehabilitation outcomes. Though the relationship between obese and functional performance after TKA has been investigated, however, only few investigations focused on Asian population and the results were inconclusive.

Objectives

To compare the rehabilitation outcomes for patients with normal weight, overweight and obesity after TKA

Methodology

A retrospective review was employed for patients who underwent unilateral TKA for primary knee osteoarthritis and completed the physiotherapy rehabilitation in the Joint Rehabilitation Centre of the Hong Kong Buddhist Hospital in the period of May 2014 to January 2016. Patients were stratified into three groups according to their Body Mass Index (BMI), namely normal weight group (18.5-22.9 kg/m²), overweight group (23.0-24.9 kg/m²), and obesity group (≥ 25.0 kg/m²). Rehabilitation outcomes on Numeric Pain Rating Scale (NPRS) and Functional Gait Assessment (FGA) were compared. Repeated measures ANOVA and Kruskal–Wallis test were used to evaluate the within-group differences across the three time points (baseline, 2nd and 12th week post-TKA) and between-group difference.

Result

A total of 133 patients were reviewed. For NPRS, there was reduction for all three groups when comparing baseline to 12th week post-TKA, but the differences were not significant ($p>0.05$). For FGA, the percentage improvements from baseline to 12th week post-TKA were 90%, 56% and 69% for normal, overweight and obese group respectively. All three groups were significantly improved in FGA across the three time points ($p<0.05$). Post hoc analysis using Bonferroni correction revealed that FGA score was significantly higher in normal weight group ($p<0.05$) and overweight group ($p<0.05$) than obese group at 2nd week and 12th week post-TKA.

To conclude, people with normal weight after TKA demonstrate the greatest improvement in functional gait performance among the three groups after physiotherapy training. As such, pre-operative weight reduction program may be beneficial to improve the rehabilitation outcome after TKA.