Respiratory and functional resilience following prehabilitation in a colorectal cancer patient with post-operative microleak: A case study

Mazatulfazura Salim[1], Muhammad Syamil Shah Jehan[1], Hizami Amin-Tai[2]

[1]Department of Rehabilitation Medicine, Faculty of Medicine And Health Sciences, Universiti Putra Malaysia, 43400, Serdang, Selangor, Malaysia, [2]Department of Surgery, Faculty of Medicine and Health Sciences, Universiti Putra Malaysia, 43400, Serdang, Selangor, Malaysia

Track: Medical Professionals
Theme: Prevention

ABSTRACT

Introduction: Prehabilitation programs are increasingly implemented prior to colorectal cancer surgery, but their role in managing post-operative complications remains underexplored. This case study describes outcomes of a comprehensive prehabilitation program in a patient who developed an anastomotic microleak. **Case Presentation:** A 66-year-old Malaysian male with diabetes mellitus and dyslipidemia was diagnosed with hepatic flexure tumor (Stage T2N1A). The patient underwent a structured prehabilitation program focusing on cardiorespiratory endurance exercises, breathing exercises, and abdominal, core, and limb strengthening exercises prior to laparoscopic right hemicolectomy. Pre-operative assessments included respiratory function (Peak Expiratory Flow Rate, PEFR), functional capacity (Timed Up and Go test, TUG; one-minute sit-to-stand; six-minute walk test, 6MWT), and independence measures (Modified Barthel Index, MBI). Post-operatively, patient develop an anastomotic microleak requiring antibiotics. Despite this complication, his PEFR improved from 450 to 470 L/min, and his maintained his MBI score (100/100). The TUG increased from 10.48 to 7.01seconds. The 6MWT initially decreased from 400 to 369 metres in the immediate post operative period but improved significantly to 500 metres at 3 month follow up, surpassing his baseline by 25%. This improvement occured despite the anastomotic complication. Hospital stay was limited to 5 days. **Conclusion:** This case suggest that comprehensive prehabilitation with targeted exercises may confer resilience when surgical complications occur, potentially through creating physiological reserve that support recovery. The substantial improvement in exercise capacity at 3 month follow up indicates potential protective effects of prehabilitation. Larger prospective studies are needed to explore structured exercise prehabilitation program including optimal dosage and duration protocols, as a strategy to improve recovery when complications occur, particularly focusing on long term functional outcomes.

Keywords: Prehabilitation, exercise therapy, colorectal cancer