Effectiveness of a protocol guided pre-weaning programme for tracheostomy removal in a rehabilitation hospital

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Introduction
Introduction: Safe removal of tracheostomy tube after Neurosurgery is crucial in rehabilitation to restore speech and swallowing function. It speeds up patient’s rehabilitation, improves patient’s comfort and appearance, facilitates re-integration to community, reduces length of stay and hospital cost. A quality improvement programme was developed to improve respiratory function, screen suitable tracheostomized patients for decannulation with multidisciplinary task force, thereby improving patient safety and the rate of successful decannulation.

Objectives
Objectives: The study aimed to evaluate the effectiveness of the clinical protocol and the prediction value of the screening tool to guide tracheostomy decannulation.

Methodology
Methodology: It was a retrospective documentary review study in the Neurosurgical ward of Shatin Hospital. Discharged tracheostomized patients from August 2004 to December 2014 were reviewed. The primary outcome measurement was successful decannulation. The programme involved collaborative effort among various professionals in stabilization of chest infection, excluding upper airway obstruction, tracheostomy downsizing, improving bronchial hygiene and coughing effort. Patients meeting the predefined decannulation criteria underwent a 3-day progressive tracheostomy capping trial performed by chest physiotherapist to evaluate readiness for decannulation. Patients were transferred back to Prince of Wales Hospital for decannulation, if they passed the capping trial uneventfully. Before, during and after
tracheostomy capping the patient's respiratory problem was timely assessed and managed.

**Result**

Result: One hundred and fifty tracheostomized patients with neurological disease were reviewed. Following the protocol, the tracheostomy tubes were successfully removed in 133 patients, having a high successful rate of 89%. Only one patient died from cardiac arrest within 24-hour after decannulation, resulting in a failure rate of 0.8%. The screening tool had high sensitivity (98%) and positive predictive value (99%) for successful decannulation. Conclusion: The protocol guided pre-weaning programme facilitated rehabilitation of tracheostomized patients, assisted in predicting both successful and failed tracheostomy removal. It was a safe, efficient, and objective bedside tool to determine decannulation decision.