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Post-operative airway management of cervical spine surgery at Charlotte Maxeke Johannesburg Academic Hospital

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Title of Project: Post-operative airway management of Cervical Spine Surgery at Charlotte Maxeke Johannesburg Academic Hospital.

Abstract

INTRODUCTION

Cervical spine surgery is performed by both orthopaedic and neurosurgeons. The common procedure done for cervical spine pathologies is Anterior Cervical Discectomy and Fusion (ACDF) which has good and predictable outcomes, lower complication rates compared to the posterior approach. Despite satisfactory outcomes associated with ACDF, there are potential rare complications that can ensue. Although these complications are rare, they may be fatal. Risk factors associated with post-operative airway complications are well documented in the literature but guidelines on post-operative airway management are sparse. The anaesthetic practice at our health institution is for these patients to be admitted in an Intensive care unit (ICU) post-operatively.

METHODS

Our hypothesis was that, not all patients undergoing cervical spine surgery require ICU admission post-operatively. These was a retrospective hospital based case series over a 10-year period (01 January 2007 – 31 December 2017) of patients who underwent cervical spine surgery at Charlotte Maxeke Johannesburg Academic Hospital (CMJAH). The socio-demographic data, the risk factors and outcome measures were analysed. The association between the risk factors and the outcome measures were also analysed.

RESULTS

Majority of these patients (67.3%) were extubated immediately post-operatively, and 61.54% spend only one day in ICU/High care area (HCA) (overnight) and our re-intubation and tracheostomy rate was 7.79% and 1.92%, respectively. Mortality rate in our study was 13.46%. Overall, post-operative airway complication rate was 9.61%, slightly higher than what is reported in the literature. Risk factors that had statistical significant association with the outcome measures are summarised below. Operation time was associated only with increased

risk of re-intubation (OR = 41.6, 95% CI = 1.4 – 1220.31, *p*-value = 0.031). Blood loss was associated with both increased number of days spend in ICU (*p*-value = 0.006) and delayed extubation (OR = 4.2, 95% CI = 1.09 – 16.24, *p*-value = 0.038). Bad neurological status was associated with both mortality rate (OR = 0.1, 95% CI = 0.02-0.60, *p*-value = 0.012) and delayed extubation (OR = 6.75, 95% CI = 1.76 – 25.85, *p*-value = 0.005). Increased anaesthetic time was only associated with increased risk of re-intubation (*p*-value = 0.020).

Further analysis of neurological state after re-categorisation revealed statistical significant association with mortality rate (OR = 15.6, 95% CI = 1.60 – 151.26, *p*-value = 0.018) increased number of days spend in ICU (*p*-value = 0.002) and delayed extubation (OR = 6.9, 95% CI =1.68 – 28.41, *p*-value = 0.007)

CONCLUSSION

Majority of the patients were extubated immediately post-operatively and only spend one day in ICU, and the study also showed overall low complication rate. Therefore, we conclude that not all patients undergoing cervical spine surgery should be admitted in ICU post-operatively. Stratification according to the risk profile of the patient should be performed and management of airway post-operatively should be individualised, and evidence based logical stepwise decision-making process based on the protocol/algorithm should be followed.