| Author Year Country Research Design Score Sample Size | Methods | Outcome |
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| Kim et al. 2017a<br>Korea<br>Case series<br>Level 4<br>N = 62 | **Population:** 62 patients with cervical SCI who had received invasive acute phase respiratory management and succeed in either decannulation or extubation, mean (SD) duration from TOT to decannulation 7.0 (± 14.5) months); 55 males and 7 females; mean (SD) onset age 47.6 (± 15.8) years; ASIA A (n = 49) and ASIA B (n = 13); neurological level C- (n = 1), C1 (n = 3), C2 (n = 9), C3 (n = 23), C4 (n = 20), C5 (n = 2), C6 (n = 2), C7 (n = 0), and C8 (n = 2).<br>**Intervention**: Invasive acute phase respiratory management (including mechanically assisted coughing and NIV) for patients with TOT (n = 60) and endotracheal intubation (n = 2).<br>**Outcome Measures:** Medical charts (including discharge summaries), imaging studies, and detailed pulmonary function test results (FVC in sitting and supine position, MIP, MEP, and unassisted and assisted PCF assessed just before each patient's decannulation) were collected before initial admission and after the intervention (mean (SD) follow-up period 21.3 (± 29.8) months). | 1. Of the 62 patients:<br>a. 25/62 achieved transition to NIV after extubation/decannulation.<br>b. 16/62 achieved ventilator weaning after extubation / decannulation.<br>c. 2/62 were TOT MV with re-tracheostomy after decannulation.<br>d. 12/62 had simple decannulation without applying long-term MV.<br>e. 7/62 were applied of NIV after decannulation.<br>2. For those who switched to NIV (n = 31), hours of daily need for ventilatory support gradually decreased to 5.7 ± 5.7 h at final discharge. |
| Kang et al. 2016<br>Korea<br>Pre – post<br>Level 4<br>N = 16 | **Population:** 16 patients with neuromuscular diseases (n = 11) and SCI (n = 5) who were tracheostomized and did not satisfy the criterion for decannulation (an assisted peak cough flow [APCF] of 160L/min). | 1. Before decannulation, APCF with an external control device was 207 L/min, which was higher than APCF without the device in all patients. |

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| | Patients with comprised 5 males, mean age 45 years, ASIA A (n = 3) and ASIA C (n = 2).<br>**Intervention:** Unassisted peak cough flow (UPCF) and APCF were measured with and without an external glottic control device. Among patients whose APCF without the device was <160L/min, if their APCF with the device was measured as ≥160L/min, they were decannulated.<br>**Outcome measures:** APCF with and without an external glottic control device as well as UPCF and APCF after decannulation. | 2. None of patients suffered from respiratory complications or rehospitalization during the research period.<br>3. After decannulation, 2 of 4 patients who had required additional ventilator support during waking hours used the ventilator during sleep time only and 1 patient required less time for using the ventilator after decannulation.<br>4. In all patients, APCF was > 160 L/min after decannulation, and the average APCF was 302 L/min; which was significantly higher than the average APCF with an external control device before decannulation (P = 0.002).<br>5. An external control device substituting for glottic function is beneficial for determining TOT decannulation because it provides an objective and accurate measurement of APCF. Therefore, this device is helpful, particularly in patients whose APCF is ≥160L/min while using the device, even if APCF is <160L/min without this device. |

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| Ross & White 2003<br>Australia<br>Case series<br>Level 4<br>N = 4 | **Population:** tetraplegia (n=3) and paraplegia (n=1), level: C5-T9, AIS A (n=3) & B(n=1), age: 20-71 yrs.<br>**Treatment:** Interdisciplinary evaluation and assessment.<br>**Outcome Measures:** Successful decannulation. | 1. 4 participants who had evidence of aspiration were successfully decannulated after assessment by a multidisciplinary team.<br>2. None experienced respiratory deterioration. |