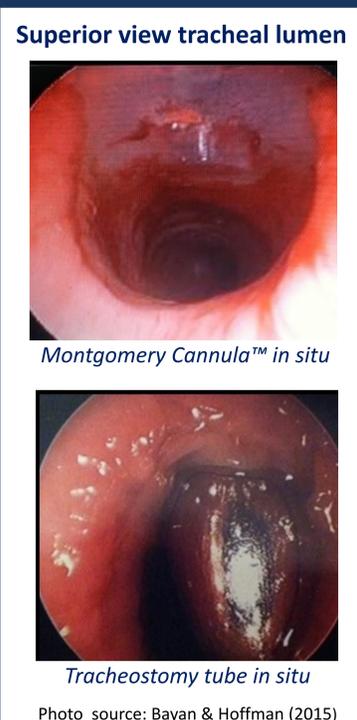
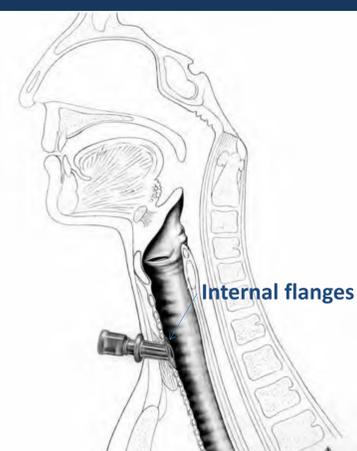


Use of the Montgomery Long-term Cannula™ as an Interim Step in High Risk Tracheostomy Decannulation

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Introduction

The Montgomery Long-term Cannula™ (MC)* was designed for treatment of obstructive sleep apnoea (OSA). It is a hollow silicon tube that sits securely in the tracheostoma maintaining patency without impinging on the tracheal lumen. The cannula can act as an airway or to provide an emergency port for suction. It can be occluded using the external plug-ring set. The MC allows evaluation of decannulation tolerance; maintenance of stoma patency and allows prompt and non-traumatic tracheostomy reinsertion if required.

Design, Setting and Participants

A case series of eight patients who received a MC from March 2013-February 2016 under the care of the Tracheostomy Review and Management Service (TRAMS) at a quaternary healthcare center in Melbourne, Australia. The patients involved were seen across the continuum of care; from the Intensive Care Unit (ICU) through to the community.

Table 1. Indication for Montgomery Long-term Cannula™

| Indication | n |
|--------------------------------------|---|
| Uncertain airway patency | 2 |
| Risk of sputum retention | 4 |
| Medically unstable | 1 |
| Persistent tracheo-cutaneous fistula | 1 |

Table 2. Outcomes: Montgomery Long-term Cannula™ Trial

| Outcomes | n |
|-----------------------------------------------|---|
| MC removed post stabilisation | 5 |
| MC in situ for ongoing airway evaluation | 1 |
| MC permanent for fistula seal | 1 |
| Unsuccessful trial of MC (patient pulled out) | 1 |

Adverse Events

- One patient removed the MC. The patient had a history of agitation and had previously pulled out his tracheostomy tube.
- One of the community patients dislodged the MC whilst taking his shirt off over his head. He presented to a local emergency department and had the MC re-introduced without issue. His airway was not at risk as he used the MC for occlusion of a persistent tracheo-cutaneous fistula.

Note: Some clients with Montgomery Long Term Cannulas (for OSA management) routinely remove, clean and reintroduce their own MC. This client was unable to insert the MC secondary to poor hand function.



Patient with Montgomery Long-term Cannula™

Table 3. Comparison of Montgomery Long-term Cannula™ and Tracheostomy Tube

| Montgomery Long-term Cannula™ | Tracheostomy Tube |
|----------------------------------------------------------------|---------------------------------------------------------------|
| Occupies only the tracheostoma | Occupies the tracheostoma and extends into the tracheal lumen |
| Does not require tracheal tapes to secure device | Tracheal tapes required for securing tube |
| Unsuitable for use as a suctioning port except in an emergency | Suitable for use as a suctioning port |
| Not suitable for the delivery of ventilation | Can be used for the delivery of invasive ventilation |
| Does not significantly impede neck range of movement | Can impede neck range of movement |
| Does not irritate the tracheal lumen | Can irritate the tracheal lumen |

Safety Considerations

- The MC is secured within the tracheostoma by the soft silicone flanges on the distal end of the device and the plug-ring set externally. The flanges anchor the MC to the anterior tracheal wall to prevent the MC from being dislodged, the plug-ring set attaches externally to avoid migration into the trachea.
 - It is possible to knock the cannula out when taking clothes on/off
 - In confused or agitated patients the MC is easier to dislodge than a tracheostomy tube as there are no ties securing it in place
 - Vigilance is required in patients with a compromised upper airway or identified as a difficult reintubation to ensure the MC remains in situ
 - As the MC is an infrequently used device, TRAMS provide a high degree of support and training to staff involved in direct patient care
 - TRAMS provides a resource manual to the patient with product specific instructions including illustrations explaining the rationale for use and emergency management
 - An emergency management kit must accompany the patient including forceps and equipment required for tracheostomy reinsertion

Patient and Family testimonials

- “The plug (MC) is the only way I could leave hospital and go home” *Patient*
- “This (MC) is much better than the tracheostomy tube. It’s more comfortable. I used to hate the tracheostomy tapes and the hot humidification” *Patient*
- “Another attempt to take out the tube scared me. He got so sick last time but I knew he hated the tube and really wanted to try. Using the (MC) meant he was able to try without the risk. I didn’t need to worry knowing that a tracheostomy could be put back in really easily if he needed it” *Family member*

Conclusion

The MC was a useful interim step in cases where there was doubt over a patient’s ability to safely tolerate decannulation for reasons of sputum retention, medical instability or uncertain airway patency. Five patients were able to be safely decannulated sooner by using the MC facilitating greater neck range of movement and ease of speech and swallowing. In comparison to a tracheostomy tube which is secured in the stoma with ties, the MC proved unsuitable for use in an agitated patient. The MC also provided a novel solution for a patient with a large persistent tracheo-cutaneous fistula.

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*Conflicts of interest: None to declare.

Montgomery Long-term Cannula TM
 Manufactured by Boston Medical Products, Inc.
 Distributed in Australia by ATOS Medical AB