

Flexible Splinting Approach for Patients With Neck Burns and Tracheostomies

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Critically ill patients with burns often require long term ventilatory support with tracheostomy placement. When these patients also have neck burns the therapist must go beyond the typical approaches to neck splinting. In their 2007 study, Sharp et al identified tracheostomy presence as a limiting factor in early positioning and application of pressure devices (p. 454).



References:

This splint was designed to meet an identified need for our patients. We were aware of the fact that early neck positioning was critical for this patient population. The need to position patients with tracheostomies led to the need for a positioning device that was sturdy enough to benefit the patient while also being easily accessible for respiratory treatments and trach care and in case of emergencies. This device was developed with input from Respiratory Therapy and was presented, in poster format, at the 2008 Southern Medical Association Burn Conference.

Description of splint: A technique was developed using suction tubing sewn together in rings with a cut out for tracheostomy tube passage. The cut-out allows for suctioning and basic tracheostomy care techniques as well as emergency access, without requiring removal of the splint.

Materials used/needed:

- * Suction Tubing (3/16" inner diameter)
- * Cover Roll Tape (or soft cloth tape)
- * Scissors
- * Heavy Duty Sewing Machine
- * 8-10 inches of 3/16" PolyCord (optional)
- * Velcro (Sticky Back) & Hook
- * Strapping Material

Fabrication instructions:



1. The patient's neck circumference and anterior height are measured. The tubing is cut in lengths one inch shorter than the circumference.



2. Tubing "rings" are stacked on top of each other to achieve the desired width (based on neck height). Tape the rings together to hold in place for sewing. CoverRoll tape is used at our facility.



3. Using an industrial sewing machine, sew rings together over taped areas. Velcro is sewn onto both ends of the splint.



4. Tracheostomy location is marked on the splint.



5. Cut-out is made to allow for passage of the trach.



6. (Optional) Use PolyCord to seal ends of tubing - this keeps inside of tubes clean and free of drainage and allows for easier cleaning.



7.

Straps are applied to provide closure of the splint.

The splint is worn at all times and is removed daily by the therapist to check for pressure areas and for cleaning.

Advantages:

- Made from material commonly found in Burn Centers.
- Allows for trach care and respiratory treatment without removal of the device.
- Additional “rings” can be added as patient progresses with treatment and obtains additional neck range of motion.
- Improved comfort compared to thermoplastic neck conformers.

Disadvantages:

- Requires fabrication (including sewing)
- Like any orthosis, can cause pressure areas if not properly applied and maintained.
- Does not provide the same support as a rigid thermoplastic brace.

Indications:

- Patients with a tracheostomy with neck burns, with or without grafting
- Patients with a tracheostomy, without neck burns, to prevent positional contractures from developing.
- Patients with neck scarring with or without contractures.

Precautions/Contraindications:

- Device should not be placed directly on burned or grafted skin. Should be placed over primary dressings.

Supporting references:

Nakamura, D., Costa, B., Mann, R. et al. Silipos neck wraps. [Electronic version] (1998). *Journal of Burn Care & Research* 19(2):181-182.

Sharp, P., Dougherty, M., & Kagan, R. (2007). The effect of positioning devices and pressure therapy on outcome after full-thickness burns of the neck. [Electronic version]. *Journal of Burn Care & Research*, 28(3):451-459.

Level of Therapist Skill / Specialization Required:

Therapist with splint fabrication and orthosis construction experience, able to use sewing machine.

Total Time Required Fabricating Splint / Device: One therapist, 30-45 minutes

Outcome Measure:

- Patients report improved comfort compared to patients with traditional thermoplastic splints.
- Respiratory therapists/nurses happy with ease of trach care/access.
- Improved patient compliance with device wear compared to patient compliance with hard orthosis

If you have any questions or comments on this device, please email Mandy directly at yelvingtonml@archildrens.org