



N99 Neck Masks for Neck Breathers

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My opinion

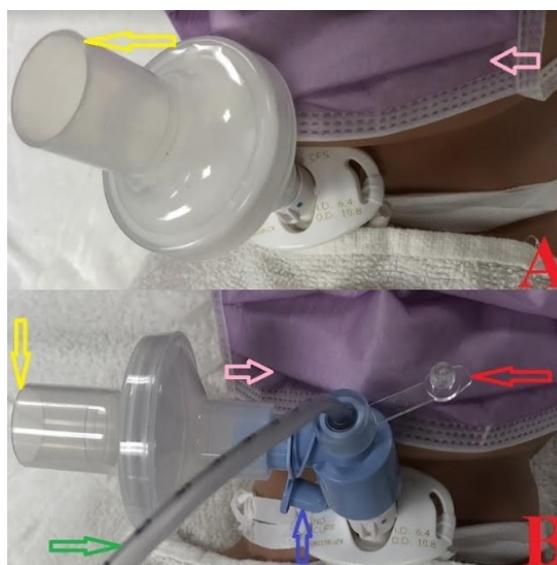
Neck breathers may have air movement across tracheoesophageal puncture/fistula or laryngopharynx during vocalization leading to aerosols exiting via nasopharynx and oropharynx [1]. Therefore, neck breathers wear facemasks during COVID-19 pandemic as depicted by masked mannequin (Figure 1: pink arrowheads). However, neck mask is also needed for neck breathers to contain aerosols exiting via neck tracheal access. If the Kelley Circuit is unavailable [2], hospitalized neck breathers should be offered N99 neck masks with N99 bacterial/viral filter's 15mmID attachment to tracheal access cannula (Figure 1: A) or fiber-optic bronchoscope swivel adapter plus N99 bacterial/viral filter combo allowing almost-closed suctioning of tracheal secretions (Figure 1: B) via flexible diaphragm-sealed cap (Figure 1: red arrowhead) snugly fitting tracheal suction catheter (Figure 1: green arrowhead) [3]. The oxygen supplementation via tracheostomy mask or T-piece and self-inflating bag-valve resuscitation can be performed across N99 bacterial/viral filter's 22mmID (Figure 1: yellow arrowheads). The additional benefit of attaching swivel adapter is that, to avoid barotrauma by clogged N99 bacterial/viral filter, hard-plug (Figure 1: blue arrowhead) or soft-cap (Figure 1: red arrowhead) can be emergently unplugged or uncapped while inadvertently tight-fitted N99 bacterial/viral filter is being replaced. Few considerations regarding these N99 neck masks are that (a) with them, cuffless tracheal access may get a little less aerosol-containment than cuffed tracheal access; (b) to contain accidental tracheal decannulation, patients must themselves be able to snug-fit (not too tight-fit) and detach them easily, as-and-when needed; and (c) to contain the costs, it must be investigated whether they can have extended use or limited reuse at home if they are allowed to dry in regular sunlight or be sanitized with ultraviolet-C sanitizers.

In the interim, as schematically demonstrated in Supplementary video file (Video 1), spontaneously breathing and even mechanically ventilated neck breathers can be "masked" in perioperative areas so that, during suctioning of airway secretions, there is less spill into atmosphere and, in the absence of suctioning needs, neck breathers can

have their own N99 masks during their perioperative stay. For cost-efficiency, the same N99 bacterial/viral filters used intraoperatively within anesthesia circuits for neck breathers can be carried over to recovery areas for postoperative use as well. It is not clear if thicker heat and moisture exchanger filters will have more resistance for spontaneously breathing neck breathers as compared to thinner N99 bacterial/viral filters demonstrated in Figure 1 and Video 1 [4-5]. If perioperative teams find it logistically difficult to use N99 masks in perioperative areas, they can alternately use non-N99 medical grade or non-medical grade masks/cloth coverings among spontaneously breathing neck breathers by dual-masking them with face-mask plus neck-mask.

In summary, neck masks among neck breathers are for here to stay even after when COVID-19 pandemic will be over.

"Bacterial/Viral Filter Based (A) N99 Trach Mask With (B) Almost-Closed Suction Catheter Assembly"



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