

## Head elevation beyond sniffing position – An aid to airway management

Direct laryngoscopy and tracheal intubation is one of the basic and the most important skills in anesthetic practice. This requires proper positioning of head and neck to adequately visualize the glottis and easily negotiate the tracheal tube through the glottic opening. The position traditionally recommended and taught to all learners of airway management is the “sniffing position” (SP). This involves neck flexion (head elevation) by putting a pillow under the head and then extending the head at atlanto-occipital joint. The SP is thought to help by allowing the line of vision to fall straight on the laryngeal inlet by aligning oral, pharyngeal, and laryngeal axes. This is the three-axes alignment theory (TAAT) that describes alignment of pharyngeal and laryngeal axes by flexion of neck and alignment of oral axis with the other two axes by extension of the head.<sup>[1]</sup>

After more than 50 years of formulation and acceptance of the TAAT theory, concerns regarding its correctness were raised by Adnet *et al.*<sup>[2]</sup> This started a debate on the usefulness of SP and various workers began exploring alternative positions for laryngoscopy and tracheal intubation. It was argued that SP does not bring the three axes into alignment.<sup>[2]</sup> However, this argument was opposed by others who suggested that SP brings these axes as close to each other as possible and then laryngoscopy does the rest of the job, completing the alignment.<sup>[3]</sup>

In search of a better alternative to SP, many studies have been conducted comparing SP with simple head extension (without head elevation). Most of these studies have confirmed the superiority of SP over simple head extension.<sup>[4,5]</sup> Thus, it has become clear that head elevation or neck flexion improves the glottic view. However, how much elevation of head provides the best view is not yet clear. So there has been a surge of interest in exploring the role of further head elevation, beyond that required for SP, in improving the laryngoscopic view.<sup>[6-8]</sup>

Most of the studies have reported better views with further head elevation beyond SP. Recently, Orbany *et al.* examined the laryngeal view in three different positions using inflatable pillows.<sup>[8]</sup> The positions studied were head extension with no head elevation, 6 cm head elevation (sniffing position), and 10 cm head elevation (elevated sniffing position). They found decrease in the incidence of difficult laryngoscopy from 8.38% without head elevation to 2.39% in SP and 1.19% in elevated SP. Thus, SP improved the laryngoscopic view but elevated SP further improved the view in most cases. Elevated SP did not worsen the view in any patient. Head elevation is thought to help by moving the glottis posteriorly, thus compensating for its anterior displacement during head extension; and probably resulting in better alignment of the three axes.<sup>[9]</sup> Moreover, head elevation allows more extension at atlanto-occipital joint by increasing range of motion.<sup>[10]</sup>

In the previous issue of JOACP, Gudivada *et al.* have compared the glottic view as well as intubating conditions with SP and further head elevation.<sup>[11]</sup> Their results are encouraging as they have demonstrated further head elevation position to be better than standard SP with respect to both these parameters. The strengths of this study are assessment of intubating conditions in addition to laryngoscopic view and ensuring appropriate SP. The SP was confirmed by bringing external auditory meatus and sternal notch at the same horizontal level and a 1.5-inch cushion was added to achieve further head elevation. Although glottic view improved in many patients, one patient in this study showed worsening of Cormack-Lehane grade by 1. Moreover, patients with difficult airways were excluded. Hence the results may not be applicable to these patients.

Thus, the study by Gudivada *et al.* adds to the limited evidence available in the literature on the role of head elevation beyond the standard SP in airway management. However, further research is indicated to confirm the advantages of this position in patients with anticipated difficult laryngoscopy and intubation. It would also be interesting to know the degree of alignment of oral, pharyngeal, and laryngeal axes with head elevation beyond SP using radiographic imaging.

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