

Strap Tension Adjusting Device for Non-Invasive Positive Pressure Ventilation Mask Fitting

Authors : Yoshie Asahara, Hidekuni Takao

Abstract : Non-invasive positive pressure ventilation (NPPV), a type of ventilation therapy, is a treatment in which a mask is attached to the patient's face and delivers gas into the mask to support breathing. The NPPV mask uses a strap, which is necessary to attach and secure the mask in the appropriate facial position, but the tensile strength of the strap is adjusted by the sensation of the hands. The strap uniformity and fine-tuning strap tension are judged by the skill of the operator and the amount felt by the finger. In the future, additional strap operation and adjustment methods will be required to meet the needs for reducing the burden on the patient's face. In this study, we fabricated a mechanism that can measure, adjust and fix the tension of the straps. A small amount of strap tension can be adjusted by rotating the shaft. This makes it possible to control the slight strap tension that is difficult to grasp with the sense of the operator's hand. In addition, this mechanism allows the operator to control the strap while controlling the movement of the mask body. This leads to the establishment of a suitable mask fitting method for each patient. The developed mechanism enables the operation and fine reproducible adjustment of the strap tension and the mask balance, reducing the burden on the face.

Keywords : balance of the mask strap, fine adjustment, film sensor, mask fitting technique, mask strap tension

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