Estimation of Vital Capacity Without Patient Cooperation

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Two useful measures in predicting respiratory performance following a period of mechanical ventilation are maximum inspiratory pressure (MIP) and vital capacity (VC). MIP is useful in determining the patient's ability to maintain an unobstructed airway. We measure it routinely at the end of anesthesia prior to tracheal extubation, especially if neuromuscular blockers have been used. VC is a determinant of ability to ventilate adequately, and sometimes its measurement is crucial in patients with borderline respiratory ability.

MIP is obtained without patient cooperation. However, it is not always possible to obtain VC because the patient may be anesthetized, have central nervous system deterioration, or be simply obstinate. The following procedure has been developed to overcome this problem. An inspiratory pressure meter (commonly called, incorrectly, "inspiratory force meter") is connected to the tracheal tube. An anemometer such as the Wright Respirometer is attached to this. At end-expiration the flow of air is obstructed and MIP is measured during a few attempted breaths, for a period of time compatible with the patient's condition (see fig. 1). Then the obstruction is removed and the volume of the first breath (either inspiratory or expiratory)

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