

## Bronchoscopy II

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# A DETECTION OF ENDOBRONCHIAL OBSTRUCTION USING A NEW VIBRATION RESPONSE IMAGING (VRI) TECHNOLOGY

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**PURPOSE:** The Vibration Response Imaging (VRI) is a novel technology providing a dynamic image of the lung by a detection of vibrations produced by airflow during the respiration cycle. The image of vibrations is affected by structure and function of airway. Therefore, the endobronchial obstruction may create an abnormal vibration by airflow through a narrowed airway. This study was conducted to know the vibration pattern in patients with partial endobronchial obstruction.

**METHODS:** Three patients with partial endobronchial obstruction, which was confirmed by bronchoscopy, were underwent VRI procedure. Their age was 66, 71, 79 years old and their lung disease was bronchogenic carcinoma. The vibration energy was collected by 36 sensors that were adhered to the subjects back and an image was assembled from frames of 0.17 seconds of energy. Analysis included the dynamics and peak image of VRI, as compared with the normal vibration pattern from 20 persons who have normal spirogram, chest PA, and no respiratory symptoms.

**RESULTS:** All patients had partial (30-50%) obstruction of orifice of right lower basal lung on bronchoscopy. The vibration of all patients showed symmetrical expansion. The dynamic images of all three patients showed abrupt increased vibration energy on right lower lung and the energy of this vibration maintained during the inspiration cycle. These dynamics are totally different to normal pattern which show slowly incremental vibration on upper or middle lung area and slowly diminished with inspiration.

**CONCLUSION:** The VRI image in patients with endobronchial obstruction of right lower lung shows a very typical pattern.

**CLINICAL IMPLICATIONS:** The VRI can be a useful modality in follow up of endobronchial obstruction after treatment and in identifying an endobronchial obstruction in health screening. However, further studies should be done in terms of increasing the number of patients and evaluating the pattern depend on the location of endobronchial obstruction.

**DISCLOSURE:** Soo-Taek Uh, None.