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**ABSTRACT**  
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A CASE OF PULMONARY ARTERIO-VEINUS FISTULA

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A case with the abnormal shadow in the right upper field of the lung was suspected of the arterio-venous fistula by the plane chest film and confirmed by the pulmonary angiography. Right upper lobectomy was performed because the lesion reached to the right hilar region. Preoperative shunt ratio, 31%, decreased to 7% after operation. The post operative course was well.

A review of the literatures was also discussed and the following conclusion was made.

- (1) This disorder is the congenital anomaly of the vessels in the lung.
- (2) Clinical symptoms become progressively worse.
- (3) The segmental resection or the lobectomy is the best method of its treatment, as soon as it is diagnosed.

## PHYSIOLOGICAL STUDIES ON FORCED VITAL CAPACITY MANEUVER

### PART I; A STUDY ON THE SITE OF AIRWAYS COLLAPSE

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The dynamic compression in various levels of bronchial tree during forced vital capacity maneuver in chronic obstructive lung disease (COLD) patients was observed using dynamic bronchography under serial exposure.

We introduced a small catheter into the lower lobe bronchus in either lung of normal subjects and COLD patients and following instillation of small amount of radioopaque material, the subjects were instructed to spit out the material as possible so that relief bronchogram could be obtained.

During the forced vital capacity maneuver on supine position, series of relief bronchogram were taken using serial exposure X ray apparatus (6 exposures per sec.).

Simultaneously, flow, volume and transpulmonary pressure using esophageal balloon was continuously measured and flow-volume curve was recorded on X Y recorder.

The results showed that bronchi with 3-6 mm diameter which correspond to segmental or subsegmental level collapsed most strikingly during forced vital capacity maneuver, reaching as far as 30% of initial size on maximal inspiration.

No upstream airways peripheral to these levels were substantially subject to dynamic compression and no difference in collapsibility between normal and COLD group was observed as far as peripheral airways were concerned.

The collapse of trachea was not so marked compared with that of segmental or subsegmental bronchi.

The time course of dynamic compression and change of transpulmonary pressure during forced vital capacity maneuver was quite different between normal and COLD group.

While the airways collapse and increment of transpulmonary pressure occurred almost instantaneously in COLD group, these occurred rather slowly in normal group.

The upward concavity of descending limbs in flow-volume curve observed in COLD patients could be explained by this sequence of dynamic compression at segmental or subsegmental bronchus.

In conclusion, expiratory obstruction observed in COLD patients during forced vital capacity maneuver is caused by airways collapse at the level of segmental or subsegmental bronchi which give rise to flow limitation.