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Absence of Oblique Fissure in Left Lung a Case Report

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Abstract: *Anatomical variations of lungs including number, fissure and lobes are important for clinicians. The human lungs are divided by fissures into lobes. The right lung commonly has two fissures, namely oblique and transverse fissure dividing it into superior middle and inferior lobes. The left is commonly divided by oblique fissure into upper and lower lobes. We are presenting a case of absent oblique fissure in left lung of 50-year old female cadaver which was identified during routine dissection of thorax for MBBS students. The segmentation of pulmonary lobes is challenging because of anatomical variations and incomplete fissures. With the development of radiological and endoscopic techniques and the advancement of pulmonary surgery, the knowledge of morphological variations of lung fissures is of utmost importance to clinicians to correctly locate the bronchopulmonary segment during pulmonary lobectomy, and for radiologists to correctly interpret X-rays and CT scans.*

Keywords: *Lobes; Lung; Oblique fissure;*

I. Introduction

The lungs are the essential organs of respiration. The human lungs are sub divided into five lobes, that are separated by visceral pleura called pulmonary fissures, there are two lobes in left lung and three lobes in right lung. We are presenting a case of absent oblique fissure in left lung during routine dissection of thorax for medical students. The oblique fissure cuts the vertebral border of both the lungs at the level of 4th or 5th thoracic spine. Traced downwards on the medial surface it ends above the hilum; traced downwards on the costal surface it continues across the diaphragmatic surface and turns upward on to the medial surface to end just below the lower end of the hilum. Rosse and Gaddum-Rosse[1]. During the development, as the lung grows, the spaces or fissures that separate individual bronchopulmonary buds/segments become obliterated except along two planes, evident in the fully developed lungs as oblique or horizontal fissures. The fissures may be complete, when the lobes remain held together only at the hilum by the bronchi and pulmonary vessels, or they may be incomplete when there are areas of parenchymal fusion between the lobes, or, they may be absent altogether Meenakshi[2] et al.. Absence or incomplete oblique or horizontal fissures could be due to obliteration of these fissures either completely or partially. Knowledge of their position is necessary for the appreciation of lobar anatomy and thus for locating the bronchopulmonary segments which is significant both anatomically and clinically.

II. Case Report

During routine dissection classes of thorax for the undergraduate students, a left lung of a 50-year old female cadaver was found without oblique fissure, which is a rare anomaly. The specimen was photographed and compared with the normal .The costal surface [FIG 1] is convex and smooth without oblique fissure. Normally the oblique fissure runs downwards and forwards coinciding with the 5th intercostals space in the midaxillary line on the costal surface. On the medial surface [FIG 2] structures within the hilum are in normal position and all the impressions over the medial surface are normal except absence of oblique fissure above and behind the hilum, and along the lower anterior part of the hilum. The posterior border of the lung is thick and rounded without any fissure. Normally the posterior border of lung should be cut by oblique fissure about 2.5cm lateral to junction f T3and T4.Usually the oblique fissure cuts the inferior border of the lung at 6 th costochondral junction about 7.5 cm lateral to the midline. In this case the inferior border of the lung is also devoid of the fissure. All other anatomical features of left lung in this case are normal.

III. Figures

Figure 1

Figure 2

IV. Discussion

The fissures facilitate the movement of the lobes in relation to one another, which accommodates the greater distention and movement of the lower lobes during respiration. Thus, they help in a more uniform expansion of the whole lung (Rosse & Gaddum-Rosse[1], 1997). Findings from live subjects (through CT scans) and specimens dissected from cadavers have frequently shown varying percentage of incomplete fissures, both oblique and horizontal, and also the presence of accessory fissures. In this case absence of the oblique fissure on left lung was observed which is a rare anomaly.Medlar[3] in his examination of 1200 pairs of lungs found incomplete oblique fissure in 10.6% in left lung, oblique fissures were absent in 7.3% of the left-sided In another study of 100 fixed and inflated lung specimens (50 of each side), Incomplete oblique fissure was present in 21% of left-sided lungs. On the basis of CT scans, Otsuji[4] et al. (1993) made an analysis of both lungs in 154 patients, including seven cadavers, and came to the conclusion that the frequency of the incomplete inter-lobar fissure was high in right sided lungs(83.1%), when compared to the left lungs (50%.). Craig and Walker[5] (1997) have proposed a fissural classification based on both the degree of completeness of the fissures and the location of the pulmonary artery at the base of the oblique fissure. Four stages have been described. Grade I – complete fissure with entirely separate lobes; Grade II – complete visceral cleft but parenchymal fusion at the base of the fissure; Grade III – visceral cleft evident for a part of the fissure; and Grade IV – complete fusion of lobes with no evident fissural line, Present case falls under Grade IV.

V. Conclusion

Even though incomplete and accessory fissures are common lung variations, knowledge of absent fissure is also important for planning of lobar resection because there is a higher prevalence of air leak in lobar fusion Hayashi [6] et al. Absent fissure may alter the usual patterns of collapse seen in patients with endobronchial lesions and may also give rise to atypical type of pleural effusion. Lobar pneumonias usually confined to particular lobe may spread to entire lung in case of absent fissure. The knowledge of anatomy of fissures of lung may help to clarify confusing radiographic findings like extension of fluid into an incomplete major fissure or spread of various diseases through different pathways Dandy WE Jr[7]. So, clinicians and, surgeons should keep in mind regarding absent fissure while treating and assessing prognosis of lung diseases.

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