

## Morphological variations of the lung fissure and lobes: A case study of a Kenyan female cadaver

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### Abstract

Incidences of variations in the number of lung fissures and lobes have been documented. However, this case presents with a unique course and termination of the fissure of the left lung leading to changes in the morphology of bronchopulmonary segments. Any changes in the standard text book description of vital organs must be reported in view of the significant effects these variations may have during medical intervention.

**Keywords:** Lungs, Variation, Fissure

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### INTRODUCTION

The lungs are essential organs of respiration playing important role in gaseous exchange. Each lung is held into position by their corresponding primary bronchi within the thoracic cage. The right lung has more lobes and bronchopulmonary segments than the left[1]. In addition, the lungs are heavier in males than in females. Each lung is divided into conspicuous lobes by different fissures (Figure 1).

Clinically, the fissures play important roles in radiography as they can show the location or extent of spread of a disease. In normal anatomy, the left lung has only one fissure called interlobular fissure. This fissure divides the left lung into two lobes[2]. The right

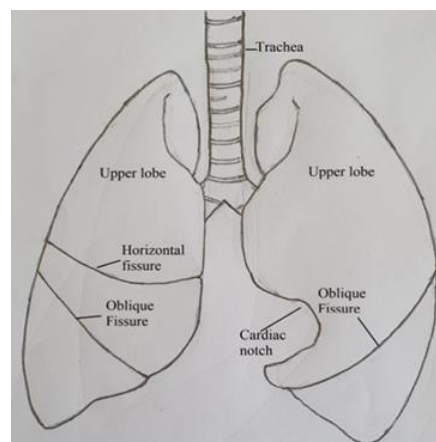


Figure 1: illustration of the normal lung fissure lung however, is divided into superior, middle and inferior lobes by an oblique and a horizontal fissure. The oblique fissure is related to the 6th costal cartilage anteriorly and runs upwards to terminate 6 cm below

the apex[3]. The Horizontal fissure runs horizontally across the costal surface at the level of the 4th costal cartilage to meet the oblique fissure in the midaxillary line[3]. The upper, oblique fissure separates the inferior from the middle and upper lobes. The short horizontal fissure separates the superior and middle lobes. The left lung only has one fissure, the oblique fissure which divides it into a superior and inferior lobe. This is the standard anatomical text book description of the fissures[4]. However, several cases and incidence of variation in the number of fissures and lobes of lungs have been reported.

Documentation of this incidences are essential in understanding the variations during surgery or other medical procedures.

### THE CASE

This case study aims to present the unique variations in the morphology of lung fissures and lobes observed during a routine dissection. This might serve to generate some data regarding lung lobes and fissures which can be made available to cardio thoracic surgeons to help in the appropriate planning of surgery because the identification of the completeness of the fissures is important prior to lobectomy, because individuals with incomplete fissures are more prone to develop post-operative air leaks and may require further procedures such as stapling and pericardial sleeves.

During routine dissection of the thoracic region at the Human Anatomy Department of in one of the medical schools in Kenya, it was noted that the female cadaver being dissected had a variation in the number of lobes and fissure in the right lung (Figure 2).

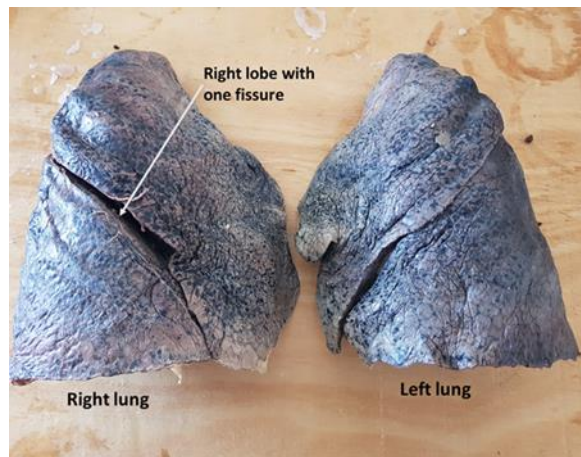


Figure 2: The right and left lung only have oblique fissure

In this case, the right lung presented with only one fissure dividing the lung into a very large upper lobe and a smaller lower lobe, the fissure extended from the 2<sup>nd</sup> intercostal space midclavicular line running obliquely to the 7<sup>th</sup> costal cartilage next to the sternum.

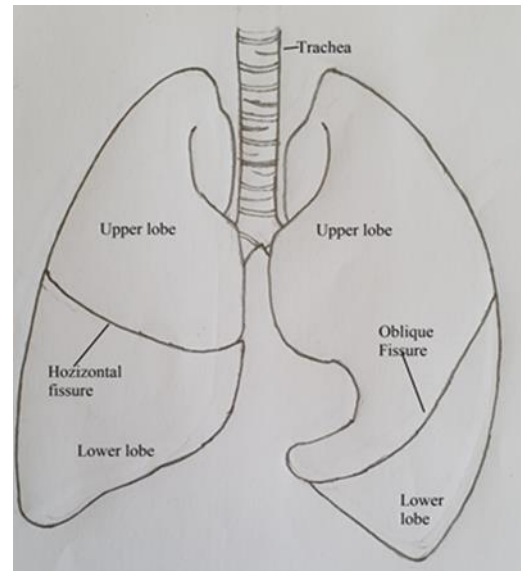


Figure 3: Illustration of the abnormal lung right lung division presenting with only one fissure.

The left lung was of normal anatomy, having two lobes and one oblique fissure (Figure 3)

The cadaver is of about 30-40 years of age. Appears well built for age; however, no further information is known about the cadaver.



Figure 3: Illustration of the abnormal lung right lung division presenting with only one fissure.

## DISCUSSION

Several cases of variations in lung lobes and fissure have been reported during normal dissections[5-7] 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[8]. Absence or incomplete oblique or horizontal fissures could be due to obliteration of these fissures either completely or partially[9]. There have been reported cases on anatomical variations in the world. In Africa there are reported cases in Ethiopia and in Nigeria[10]. We are reporting a case from Kenya. Our case is of a female cadaver whose medical and personal history is unknown. In this cadaver the right lung has 2 lobes instead of the normal 3 lobes and the cadaver that 2 lobes [upper and lower lobe] instead of 3 lobes [upper, middle and lower lobe]. Has only 1 oblique fissure instead of having 2 fissures. 1 horizontal and 1 oblique. Variations of the lung lobes and fissure are important to cardiothoracic surgeons when preparing patients for surgery. It is known that each bronchopulmonary segment of the lung has its own blood supply.

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### How to cite

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