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Three-Lobed Donor Left Lungs: Imaging and Clinical Implication in Thoracic Transplantation

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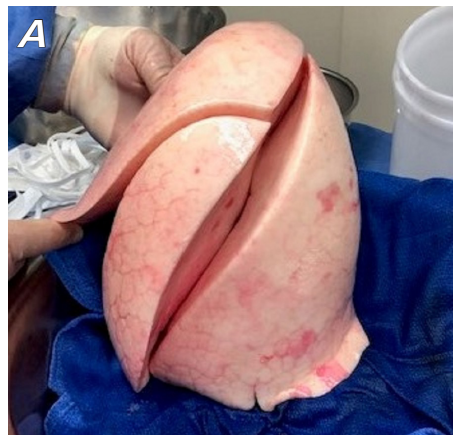
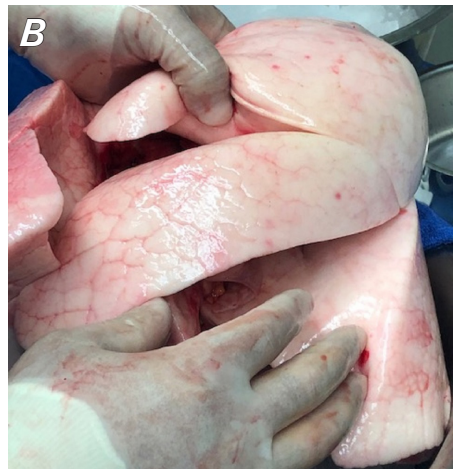
Nearly 45% to 50% of lungs deviate from standard anatomy described for the fissures, lobes, bronchi, and arteries. Anatomical variations are more common in the right lung (68.7%) than in the left lung (21.4%),[1] and in the left lung, the presence of an accessory horizontal fissure and 3-lobed left lung is very rare and limited to cadaveric studies.[2] The team recently published a report on the first successful case of a donor-derived trilobed left lung transplant.[3] This paper reports the imaging and clinical pictures of a 3-lobed left lung (Fig. 1). The presence of 3 lobes in the left lung could be overlooked on preoperative imaging. However, at the time of procurement and before transplantation, a left trilobed lung should be confirmed by the hilar anatomy and anatomical relationships between the pulmonary arteries, pulmonary vein cuff, and bronchus consistent with the left lung.





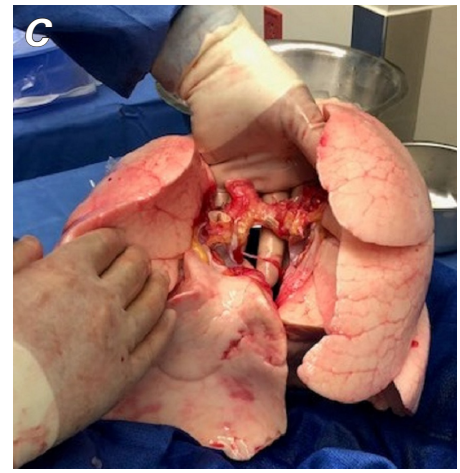


Fig. 1 *Trilobed left lung can be appreciated in all the pictures:* ***A****) lateral view of left lung,* ***B****) complete separation of the fissure,* ***C****) view of both lungs.*

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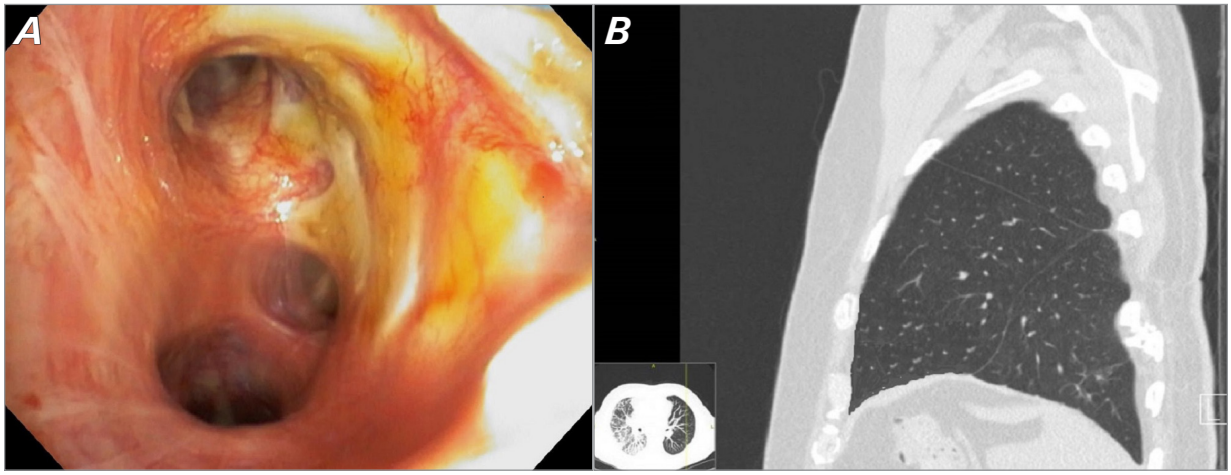

Fig. 2 *Shown are* ***A****) postoperative bronchoscopy and* ***B****) posttransplant computed tomographic image.*

It is important for the surgeon, transplant pulmonologist, and radiologist to be aware of this anatomical variation, and it should be clearly documented in the patient's operative note as well as bronchoscopic report, as such an anatomic variation may cause significant confusion if the recipient is followed by a physician who is unaware of the variation. Pulmonologists will see 3 ends of bronchi on bronchoscopy (Fig. 2A), and radiologists may read the presence of fluid at the site of additional fissure as pneumonia or consolidation (Fig. 2B). During procurement, surgeons may confuse 3 left lobes in the left lung with the right lung. However, proper labeling of the sidedness, especially when labeling and packing lungs that are meant to be separated and transplanted into 2 recipients, and confirmation of the hilar anatomy obviates any potential confusion. Otherwise, the anastomotic technique remains the same. The team's experience has been that the presence of an additional lobe in the left lung did not increase the left lung's volume, which may be an important concern for patients undergoing lung transplant because of limited space in the left chest cavity. However, if lung reduction is necessary owing to a recipient's small chest, then lobectomy could be performed instead of a wedge resection.

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