

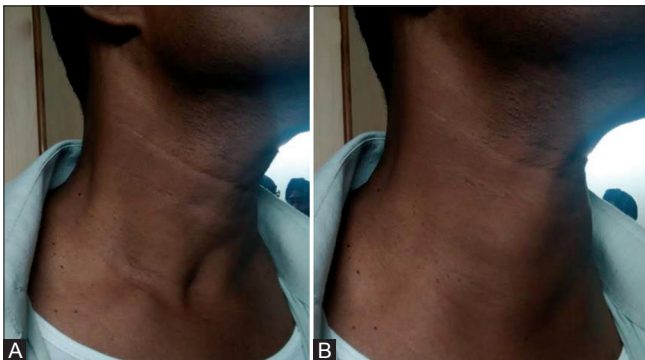
# Adult cervical lung herniation: Importance of valsalva manoeuvre in imaging

Sir,

A 52-year-old male presented at our outpatient department for evaluation for thyroid nodule in the right lobe. He incidentally noticed swelling on the lower neck on coughing or forceful expiration for last 2 months. He was a nonsmoker and had no history of long standing cough or any hernia at other sites. On examination, a swelling was confirmed in the right lower neck when the Valsalva manoeuvre was performed [Figure 1 clinical photograph at rest and with Valsalva,]. In addition, pulsatility was seen on the left neck supraclavicular region due to displaced subclavian artery pulsations. Computed tomographic (CT) evaluation with Valsalva manoeuvre was performed keeping a differential diagnosis of laryngocele. Cervical lung herniation was excellently depicted with Valsalva CT acquisition [Figure 2; coronal panels D and sagittal, panel E images] in comparison to images without Valsalva [Figure 2; coronal images, panels A and C]. In addition, CT depicted bilateral cervical ribs (arrows) and arthrosis of the left cervical rib with exostosis from the superior surface of the first rib. Laboratory investigations revealed euthyroid state, and other investigations including routine chest X-ray were within normal limits. Fine needle aspiration cytology (FNAC) of thyroid nodule done under ultrasound guidance confirmed its benign nature. Patient is on conservative treatment.

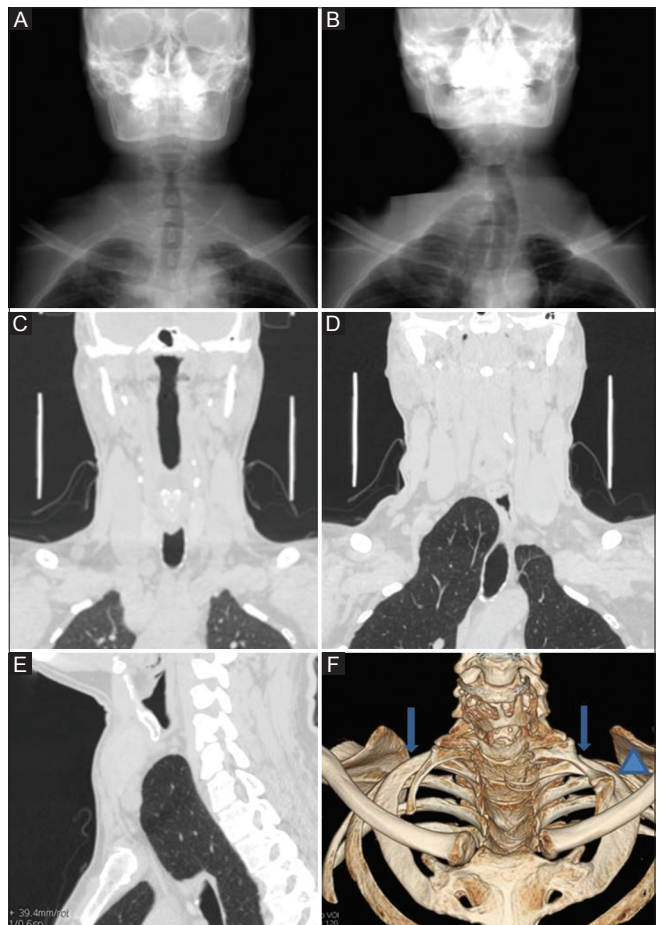
## Discussion

Spontaneous herniation of the lung, a congenital defect, is extremely uncommon and is defined as protrusion of the lung beyond the confines of the thoracic cavity. Apical lung herniation is a very unusual cause of lower neck swelling.



**Figure 1 (A and B):** (A) Photograph of the patient at rest. (B) Photograph of the patient with Valsalva

Normally, apex of the lung is confined at the thoracic inlet by adiaaphragm-like thick deep cervical fascia, also known as Sibson's fascia or suprapleural membrane. This fascia originates from the transverse process of the seventh cervical vertebrae and inserts along the inner border of the first rib and costal cartilage blending into endothoracic fascia and parietal pleura along the periphery. It is reinforced by the scalenus minimus muscle and three superficial bands arising from prevertebral fascia (vertebromembranous with a C7 and T1 origin, the transversomembranous with a C7 origin, and



**Figure 2 (A-F):** Cervical lung herniation was excellently depicted with Valsalva CT acquisition on Ray sum projection neck and upper chest without and with valsalva (A and B) CT coronal reformat without and with valsalva (C and D), sagittal reformat with valsalva (E). Volume rendered image (F) depicting bilateral cervical ribs (arrows) and arthrosis of left cervical rib with exostosis from superior surface of first rib (arrow head)

costomembranous with an origin at the neck of the first rib). All three insert on the first rib. Sibson's fascia extends posteriorly and laterally to vertebral column, first rib, levator scapulae, and scalenus medius muscle; medially, the superior mediastinal structures and anteriorly upto scalenus anterior and sternocleidomastoid muscles.<sup>[1]</sup>

Lung hernias are classified according to the location as cervical, chest wall (intercostal), or diaphragmatic. Etiologically, each type may be congenital, spontaneous, traumatic, or pathological.<sup>[2]</sup>

Spontaneous herniation, usually reported in infants, is caused by a defect in Sibson's fascia and increased intrathoracic pressure. Cervical lung herniation in adults is mainly caused by trauma. Apical herniation also may result from lifting heavy weights, playing wind instruments, chronic cough, and emphysema where the deep cervical fascia becomes weak.<sup>[1,3,4]</sup> These patients have higher chances of complications if procedures such as tracheostomy, subclavian line placement, or thoracic interventions are done, hence adequate caution must be exercised.<sup>[5]</sup>

Our patient was a middle-aged adult without any history of trauma, predisposing factors to account for any acquired defect, or connective tissue disorders. The presence of cervical rib points to congenital defective anatomical organization in region.

#### Financial support and sponsorship

Nil.

#### Conflicts of interest

There are no conflicts of interest.

**Rupinder Singh, Ramanjeet Kaur<sup>1</sup>**

Department of Radiodiagnosis, Sri Balaji Medical Institute,  
<sup>1</sup>Department of Gynaecology, Kasturba Hospital,  
 New Delhi, India  
 E-mail: rupinder.dr@gmail.com

## References

1. Jones JG. Cervical hernia of the lung. *J Pediatr* 1970;76:122-5.
2. Grunehauni M, Griscom NT. Protrusion of the lung apex through Sibson's fascia in infancy. *Thorax* 1978;33:290-4.
3. Bidstrup P, Nordentoft JM, Petersen B. Hernia of the lung: Brief survey and report of two cases. *Acta Radiol* 1966;4:490-6.
4. Evans AS, Nassif RG, Ah-See KW. Spontaneous apical lung herniation presenting as a neck lump in a patient with Ehlers-Danlos syndrome. *Surgeon* 2005;1:49-51.
5. McAdams HP, Gordon DS, White CS. Apical lung hernia: Radiologic findings in six cases. *AJR Am J Roentgenol* 1996;167:927.

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

Access this article online	
<b>Quick Response Code:</b>	<b>Website:</b> www.ijri.org
	<b>DOI:</b> 10.4103/ijri.IJRI_282_17

**Cite this article as:** Singh R, Kaur R. Adult cervical lung herniation: Importance of valsalva manoeuvre in imaging. *Indian J Radiol Imaging* 2018;28:134-5.

© 2018 Indian Journal of Radiology and Imaging | Published by Wolters Kluwer - Medknow