

World Journal of *Clinical Cases*

World J Clin Cases 2020 July 26; 8(14): 2893-3135



Contents

Semimonthly Volume 8 Number 14 July 26, 2020

EXPERT RECOMMENDATIONS

- 2893 Recommendations for perinatal and neonatal surgical management during the COVID-19 pandemic
Ma LS, Zhao YL, Wei YD, Liu C

MINIREVIEWS

- 2902 Clinical applicability of gastroscopy with narrow-band imaging for the diagnosis of *Helicobacter pylori* gastritis, precancerous gastric lesion, and neoplasia
Cho JH, Jeon SR, Jin SY

ORIGINAL ARTICLE

Clinical and Translational Research

- 2917 Identification of APEX2 as an oncogene in liver cancer
Zheng R, Zhu HL, Hu BR, Ruan XJ, Cai HJ

Retrospective Cohort Study

- 2930 Restenosis after recanalization for Budd-Chiari syndrome: Management and long-term results of 60 patients
Zhang W, Tian YL, Wang QZ, Chen XW, Li QY, Han JH, Chen XD, Xu K

Retrospective Study

- 2942 Comparison of microendoscopic discectomy and open discectomy for single-segment lumbar disc herniation
Pang JY, Tan F, Chen WW, Li CH, Dou SP, Guo JR, Zhao LY
- 2950 Clinical characteristics of patients with COVID-19 presenting with gastrointestinal symptoms as initial symptoms: Retrospective case series
Yang TY, Li YC, Wang SC, Dai QQ, Jiang XS, Zuo S, Jia L, Zheng JB, Wang HL

Observational Study

- 2959 Effects of policies and containment measures on control of COVID-19 epidemic in Chongqing
Liang XH, Tang X, Luo YT, Zhang M, Feng ZP
- 2977 Role of shear wave elastography in the evaluation of the treatment and prognosis of supraspinatus tendinitis
Zhou J, Yang DB, Wang J, Li HZ, Wang YC
- 2988 Endoscopic retrograde cholangiopancreatography in elderly patients: Difficult cannulation and adverse events
Tabak F, Wang HS, Li QP, Ge XX, Wang F, Ji GZ, Miao L

- 3000** Diagnostic value of orbicularis oculi muscle electromyography in functional epiphora

Lu H, Liu PD, Yao X, Wang ZF, Gao LF, Wang SP

META-ANALYSIS

- 3006** Diagnostic value of liquid-based cytology and smear cytology in pancreatic endoscopic ultrasound-guided fine needle aspiration: A meta-analysis

Pan HH, Zhou XX, Zhao F, Chen HY, Zhang Y

SCIENTOMETRICS

- 3021** Bibliometric analysis of randomized controlled trials of colorectal cancer over the last decade

Wang CY, Zhou SC, Li XW, Li BH, Zhang JJ, Ge Z, Zhang Q, Hu JH

CASE REPORT

- 3031** Spontaneous pneumothorax in a single lung transplant recipient-a blessing in disguise: A case report

Deshwal H, Ghosh S, Hogan K, Akindipe O, Lane CR, Mehta AC

- 3039** Endoscopic third ventriculostomy in obstructive hydrocephalus: A case report and analysis of operative technique

Munda M, Spazzapan P, Bosnjak R, Velnar T

- 3050** Underwater endoscopic mucosal resection for neoplasms in the pyloric ring of the stomach: Four case reports

Kim DH, Park SY, Park CH, Kim HS, Choi SK

- 3057** Successful treatment of basaloid squamous cell carcinoma in the rectosigmoid colon: A case report and review of literature

Lee TG, Yoon SM, Kim MJ

- 3064** Synchronous sporadic bilateral multiple chromophobe renal cell carcinoma accompanied by a clear cell carcinoma and a cyst: A case report

Yang F, Zhao ZC, Hu AJ, Sun PF, Zhang B, Yu MC, Wang J

- 3074** Intra-abdominal hemorrhage during pregnancy: Four case reports

Yang L, Liu N, Long Y

- 3082** Pulmonary benign metastasizing leiomyoma: A case report and review of the literature

Dai HY, Guo SL, Shen J, Yang L

- 3090** Mucoepidermoid carcinoma in the infratemporal fossa: A case report

Zhang HY, Yang HY

- 3097** Intra-abdominal inflammatory pseudotumor-like follicular dendritic cell sarcoma associated with paraneoplastic pemphigus: A case report and review of the literature

Zhuang JY, Zhang FF, Li QW, Chen YF

- 3108** Multiple recurrent cystic echinococcosis with abdominal aortic involvement: A case report
Taxifulati N, Yang XA, Zhang XF, Aini A, Abulizi A, Ma X, Abulati A, Wang F, Xu K, Aji T, Shao YM, Ahan A
- 3114** Dental focal infection-induced ventricular and spinal canal empyema: A case report
Xue H, Wang XH, Shi L, Wei Q, Zhang YM, Yang HF
- 3122** Effect of chidamide on treating hepatosplenic T-cell lymphoma: A case report
Wang XT, Guo W, Sun M, Han W, Du ZH, Wang XX, Du BB, Bai O
- 3130** Acute esophageal obstruction caused by reverse migration of gastric bezoars: A case report
Zhang FH, Ding XP, Zhang JH, Miao LS, Bai LY, Ge HL, Zhou YN

ABOUT COVER

Editorial Board Member of *World Journal of Clinical Cases*, Dr. Iva Brčić finished medical studies at the Medical University of Graz and received her MD degree in 2003. She received her doctoral degree in 2006 at the same institution. In 2007, she enrolled in the pathology residency program at the University Hospital Center Zagreb. In 2012, she passed her board exam and, until 2015, worked as a staff pathologist at the University Hospital Center Zagreb. From 2015, she is working as the University Assistant at the Medical University of Graz. At the end of 2017, she joined the bone and soft tissue team and spent 4-mo observership at the University of Miami, FL, USA. Her ongoing research interests include bone and soft tissue neoplasms.

AIMS AND SCOPE

The primary aim of *World Journal of Clinical Cases* (*WJCC*, *World J Clin Cases*) is to provide scholars and readers from various fields of clinical medicine with a platform to publish high-quality clinical research articles and communicate their research findings online.

WJCC mainly publishes articles reporting research results and findings obtained in the field of clinical medicine and covering a wide range of topics, including case control studies, retrospective cohort studies, retrospective studies, clinical trials studies, observational studies, prospective studies, randomized controlled trials, randomized clinical trials, systematic reviews, meta-analysis, and case reports.

INDEXING/ABSTRACTING

The *WJCC* is now indexed in Science Citation Index Expanded (also known as SciSearch®), Journal Citation Reports/Science Edition, PubMed, and PubMed Central. The 2020 Edition of Journal Citation Reports® cites the 2019 impact factor (IF) for *WJCC* as 1.013; IF without journal self cites: 0.991; Ranking: 120 among 165 journals in medicine, general and internal; and Quartile category: Q3.

RESPONSIBLE EDITORS FOR THIS ISSUE

Electronic Editor: Ji-Hong Liu, Production Department Director: Xiang Li, Editorial Office Director: Jin-Lai Wang.

NAME OF JOURNAL

World Journal of Clinical Cases

ISSN

ISSN 2307-8960 (online)

LAUNCH DATE

April 16, 2013

FREQUENCY

Semimonthly

EDITORS-IN-CHIEF

Dennis A Bloomfield, Sandro Vento, Bao-Gan Peng

EDITORIAL BOARD MEMBERS

<https://www.wjgnet.com/2307-8960/editorialboard.htm>

PUBLICATION DATE

July 26, 2020

COPYRIGHT

© 2020 Baishideng Publishing Group Inc

INSTRUCTIONS TO AUTHORS

<https://www.wjgnet.com/bpg/gerinfo/204>

GUIDELINES FOR ETHICS DOCUMENTS

<https://www.wjgnet.com/bpg/GerInfo/287>

GUIDELINES FOR NON-NATIVE SPEAKERS OF ENGLISH

<https://www.wjgnet.com/bpg/gerinfo/240>

PUBLICATION ETHICS

<https://www.wjgnet.com/bpg/GerInfo/288>

PUBLICATION MISCONDUCT

<https://www.wjgnet.com/bpg/gerinfo/208>

ARTICLE PROCESSING CHARGE

<https://www.wjgnet.com/bpg/gerinfo/242>

STEPS FOR SUBMITTING MANUSCRIPTS

<https://www.wjgnet.com/bpg/GerInfo/239>

ONLINE SUBMISSION

<https://www.f6publishing.com>



Spontaneous pneumothorax in a single lung transplant recipient-a blessing in disguise: A case report

Himanshu Deshwal, Subha Ghosh, Kathleen Hogan, Olufemi Akindipe, Charles Randall Lane, Atul C Mehta

ORCID number: Himanshu Deshwal 0000-0003-2086-1281; Subha Ghosh 0000-0003-2278-7476; Kathleen Hogan 0000-0001-9025-5864; Olufemi Akindipe 0000-0001 6048-6813; Charles Randall Lane 0000-0002-0889-6409; Atul C Mehta 0000-0001-5423-2147.

Author contributions: Deshwal H and Mehta AC reviewed the literature and drafted the manuscript; Ghosh S interpreted the imaging findings and drafted the manuscript; Hogan K obtained patient consent and reviewed the manuscript; Akindipe O and Lane CR reviewed and edited the manuscript; Deshwal H, Ghosh S and Mehta AC were responsible for the revision of the manuscript for important intellectual content; all authors issued final approval for the version to be submitted.

Informed consent statement: Informed written consent was obtained from the patient for publication of this report and any accompanying images.

Conflict-of-interest statement: The authors declare that they have no conflict of interest.

CARE Checklist (2016) statement: The authors have read the CARE Checklist (2016), and the manuscript was prepared and revised according to the CARE

Himanshu Deshwal, Division of Pulmonary, Critical Care and Sleep Medicine, New York University Grossman School of Medicine, New York, NY 10016, United States

Subha Ghosh, Imaging Institute, Section of Thoracic Imaging, Cleveland Clinic, Cleveland, OH 44195, United States

Kathleen Hogan, Olufemi Akindipe, Charles Randall Lane, Atul C Mehta, Respiratory Institute, Cleveland Clinic, Cleveland, OH 44195, United States

Corresponding author: Subha Ghosh, MD, MBA; Assistant Professor, Staff Physician, Imaging Institute, Section of Thoracic Imaging, Cleveland Clinic, 9500 Euclid Avenue, L/10, Cleveland, OH 44195, United States. ghoshs2@ccf.org

Abstract

BACKGROUND

End-stage chronic obstructive pulmonary disease (COPD) is one of the common lung diseases referred for lung transplantation. According to the international society of heart and lung transplantation, 30% of all lung transplantations are carried out for COPD alone. When compared to bilateral lung transplant, single-lung transplant (SLT) has similar short-term and medium-term results for COPD. For patients with severe upper lobe predominant emphysema, lung volume reduction surgery is an excellent alternative which results in improvement in functional status and long-term mortality. In 2018, endobronchial valves were approved by the Food and Drug Administration for severe upper lobe predominant emphysema as they demonstrated improvement in lung function, exercise capacity, and quality of life. However, the role of endobronchial valves in native lung emphysema in SLT patients has not been studied.

CASE SUMMARY

We describe an unusual case of severe emphysema who underwent a successful SLT 15 years ago and had gradual worsening of lung function suggestive of chronic lung allograft dysfunction. However, her lung function improved significantly after a spontaneous pneumothorax of the native lung resulting in auto-deflation of large bullae.

CONCLUSION

This case highlights the clinical significance of native lung hyperinflation in single lung transplant recipient and how spontaneous decompression due to

Checklist (2016).

Open-Access: This article is an open-access article that was selected by an in-house editor and fully peer-reviewed by external reviewers. It is distributed in accordance with the Creative Commons Attribution NonCommercial (CC BY-NC 4.0) license, which permits others to distribute, remix, adapt, build upon this work non-commercially, and license their derivative works on different terms, provided the original work is properly cited and the use is non-commercial. See: <http://creativecommons.org/licenses/by-nc/4.0/>

Manuscript source: Invited manuscript

Received: March 19, 2020

Peer-review started: March 19, 2020

First decision: April 22, 2020

Revised: May 25, 2020

Accepted: July 16, 2020

Article in press: July 16, 2020

Published online: July 26, 2020

P-Reviewer: Zhang WB

S-Editor: Zhang L

L-Editor: A

E-Editor: Li JH



pneumothorax led to clinical improvement in our patient.

Key words: Native lung hyperinflation; Single lung transplant; Pneumothorax; Bronchoscopic lung volume reduction; Endobronchial valve; Case report

©The Author(s) 2020. Published by Baishideng Publishing Group Inc. All rights reserved.

Core tip: Native lung hyperinflation can lead to significant transplanted lung dysfunction and worsening of clinical symptoms. While lung volume reduction surgery has been identified as an approach to improve quality of life in patient with severe upper-lobe predominant emphysema, its benefits in single lung transplant patient is limited to case reports and small retrospective studies. No prior case has been described of an auto-lung volume reduction of native lung in single lung transplant patient. In our patient, a spontaneous pneumothorax in the emphysematous native lung led to automatic lung volume reduction and significant clinical improvement. This case highlights the importance of identifying appropriate patient selection for lung volume reduction surgery when chronic lung allograft dysfunction has been ruled out in transplanted lung and patient has significant symptom burden and evidence of native lung hyperinflation.

Citation: Deshwal H, Ghosh S, Hogan K, Akindipe O, Lane CR, Mehta AC. Spontaneous pneumothorax in a single lung transplant recipient-a blessing in disguise: A case report. *World J Clin Cases* 2020; 8(14): 3031-3038

URL: <https://www.wjgnet.com/2307-8960/full/v8/i14/3031.htm>

DOI: <https://dx.doi.org/10.12998/wjcc.v8.i14.3031>

INTRODUCTION

End-stage chronic obstructive pulmonary disease (COPD) is one of the common lung diseases referred for lung transplantation^[1]. Indications for a lung transplant in COPD include poor functional status (BODE index of 7-10), severely reduced lung function (forced expiratory volume 1 < 20% of predicted), hypercapnia (PaCO₂ ≥ 55 mm Hg) and hypoxemia with decreased diffusion capacity (DLCO < 20%)^[2]. According to the International Society of Heart and Lung Transplantation, 30.6% (18233/6400) of all adult lung transplants have been carried out for COPD alone^[3]. When compared to bilateral lung transplant (BLT), single-lung transplant (SLT) has similar short-term and medium-term results for COPD patients^[1].

For patients with severe upper lobe predominant emphysema, lung volume reduction surgery (LVRS) is an excellent alternative, which results in an improvement in functional status and long term mortality^[4]. In 2018, endobronchial valves were approved by the Food and Drug Administration for severe upper lobe predominant emphysema as they demonstrated improvement in lung function, exercise capacity, and quality of life^[5]. However, the role of endobronchial valves in native lung emphysema in SLT patients has not been studied.

We describe an unusual case of severe emphysema who underwent a successful SLT 15 years ago and had a gradual worsening of lung function suggestive of chronic lung allograft dysfunction. However, her lung function improved significantly after a spontaneous pneumothorax of the native lung resulting in the auto-deflation of large bullae.

CASE PRESENTATION

Chief complaints

A 74-year-old female presented to the hospital with acute left-sided chest pain, neck swelling and shortness of breath for one hour. In the emergency department, she appeared in respiratory distress and was placed on supplemental oxygen.

History of present illness

She was in her usual state of health, when she developed acute onset left-sided severe

chest pain that was sharp in nature and non-radiating. It was worse with inspiration and had no relieving factors. It was associated with significant shortness of breath and neck swelling that prompted her to seek medical attention.

History of past illness

She had a past medical history of End-Stage COPD (FEV1-15%) with severe diffuse emphysema and underwent a successful single right lung transplant in July 2004 (Figure 1). Her medications included tacrolimus, mycophenolate mofetil, and prednisone for immunosuppression and sulfamethoxazole-trimethoprim, valganciclovir and itraconazole for *Pneumocystis*, cytomegalovirus and fungal infections prophylaxis respectively. Her peak FEV1 on post-operative follow up was 65%. She had no evidence of acute rejection on early surveillance bronchoscopies.

Unfortunately, in 2015, eleven years following the transplantation, she developed acute complicated diverticulitis requiring urgent right hemicolectomy and ileostomy. Her postoperative course was complicated by frequent episodes of dehydration and acute kidney injury. She also had two bouts of lower lobe pneumonia involving the allograft and acute tubular necrosis that eventually progressed to chronic kidney disease. On subsequent follow-ups, she complained of worsening dyspnea and cough. Her spirometry revealed a gradual decline in FEV1 from a peak of 65% of predicted to a nadir of 51% (Figure 2). In November 2018, she presented with worsening renal function, volume overload, and recurrent left-sided pleural effusions (Figure 3). Hemodialysis was initiated, and therapeutic thoracentesis was performed with 1200 cc transudative fluid removal. Despite the optimization of her volume status, she continued to have worsening dyspnea and lung function along with recurrent left-sided pleural effusions. We excluded ongoing acute cellular rejection by transbronchial biopsies, and a diagnosis of chronic lung allograft dysfunction prompted replacing mycophenolate with sirolimus. She also had a tunneled pleural catheter placed in left pleural space for recurrent effusions. She was placed on inhaled corticosteroids and long-acting bronchodilators with minimal improvement. By December 2018, she was on supplemental oxygen at 4 L/min by nasal cannula for chronic hypoxemic respiratory failure.

Personal and family history

She had no significant family history. Prior to lung transplantation she was a lifelong smoker with 40 pack year smoking history and subsequently quit in 2003. She denied any illicit drug use or alcohol use.

Physical examination upon admission

Her blood pressure was 90/60 mmHg and pulse was 100/min and oxygen saturation was 86% on 4 liters of oxygen *via* nasal cannula. On inspection she was using accessory respiratory muscles and appeared in respiratory distress. She had significant subcutaneous emphysema with crepitus extending up to the neck. On auscultation of the chest, there were absent breath sounds on the left hemithorax.

Laboratory examinations

Initial laboratory examination was largely insignificant with normal hemoglobin, white blood cell count, platelets, liver function and electrolytes. She had history of chronic kidney disease and her blood urea nitrogen and creatinine were 48 mg/dL and 2.3 mg/dL respectively.

Imaging examinations

A chest radiograph revealed a large left hydropneumothorax with an indwelling pigtail drainage catheter in the left pleural space. The native left lung was partially collapsed. There was subcutaneous emphysema in the left chest wall (Figure 4).

FINAL DIAGNOSIS

She was promptly diagnosed with a spontaneous pneumothorax due to rupture of a large bullae in her native emphysematous lung.

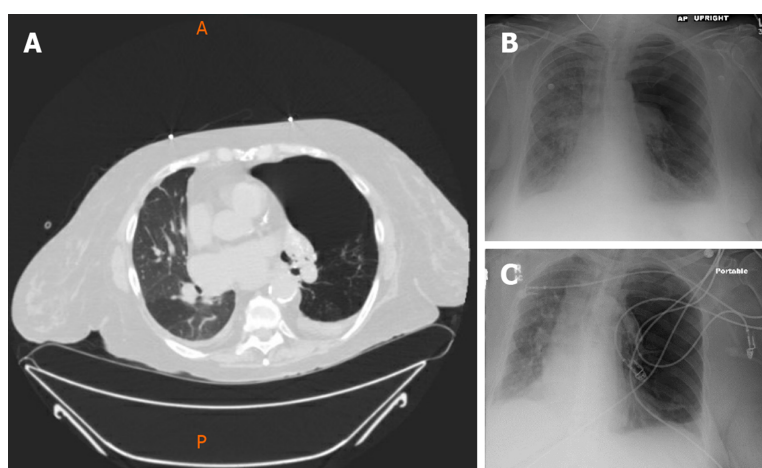


Figure 1 Computed tomography (prone position) of the chest (A) and chest radiographs AP upright (B) and portable (C), show native left lung and transplanted right lung. There is a large bulla in the left upper lobe. Note subtle mosaicism of the transplanted right lung allograft on computed tomography.

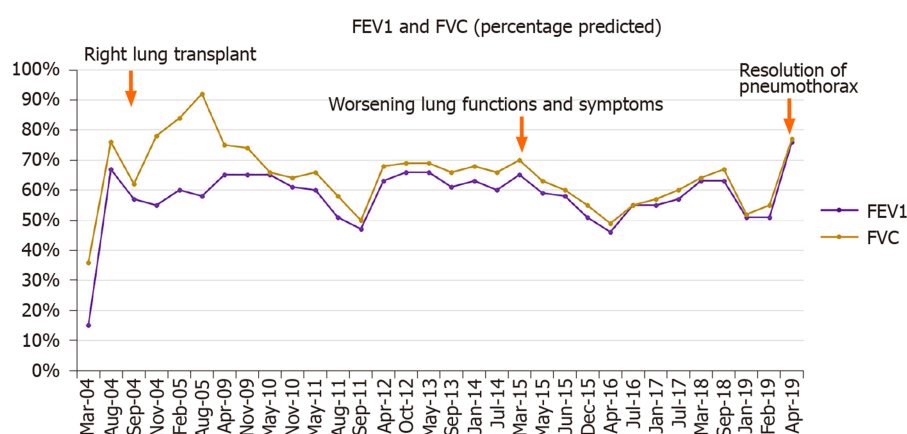


Figure 2 Linear graph demonstrating the FEV1 and FVC (percentage predicted) for the patient on follow-ups. Note improvement in lung functions after right lung transplantation (Aug 2004) and subsequent decline in 2015 followed by improvement in 2019 on the resolution of pneumothorax.

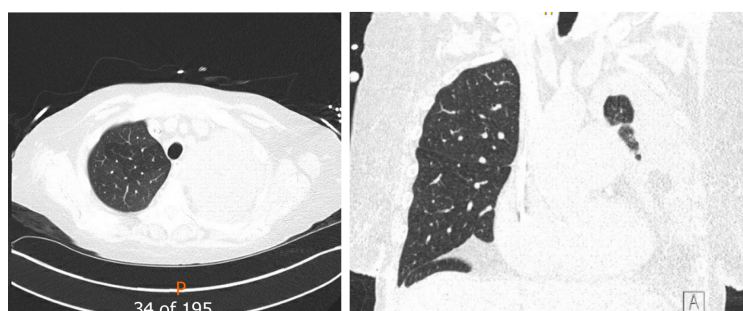


Figure 3 Computed tomography chest (Axial and coronal reformatted images) show a large left pleural effusion with near-complete opacification of the left lung parenchyma.

TREATMENT

We placed her pre-existing tunneled pleural catheter to suction with subsequent improvement in her symptoms. She further needed an additional pigtail pleural catheter placement in the left pleural space for a persistent hydropneumothorax. However, she became extremely dyspneic when taken off suction, prompting the

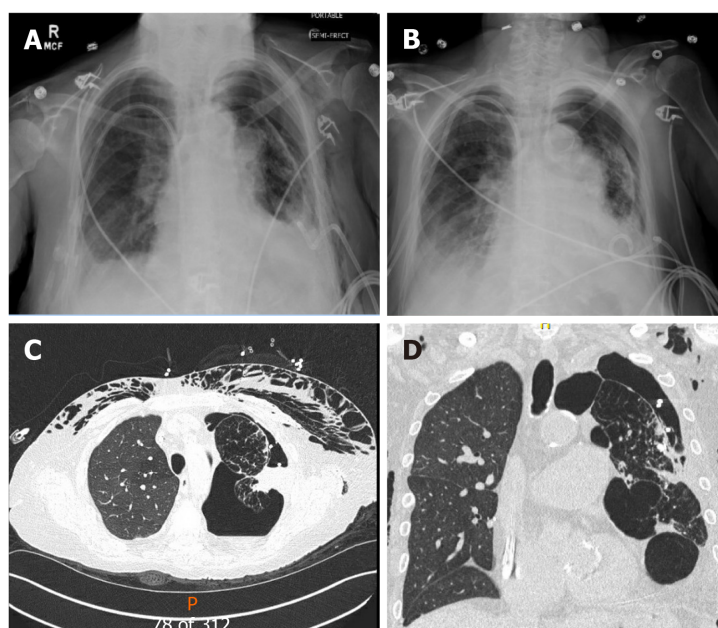


Figure 4 The native left lung is partially collapsed, there is subcutaneous emphysema in the left chest wall. A and B: Portable chest radiographs; C and D: Computed tomography chest (axial and coronal reformation) images reveal a large left hydropneumothorax with an indwelling pigtail drainage catheter in the left pleural space.

placement of a Heimlich valve to the pleural catheter. Repeat chest x-ray demonstrated improvement in hydropneumothorax, and both pigtail and pleural catheters were clamped (Figure 5). Just before discharge, she again experienced respiratory distress, and both catheters were placed back on suction. This time, her symptoms improved significantly, and the indwelling tunneled pleural catheter was removed. She was discharged home with the pigtail catheter in-situ. Remarkably, on her way to a follow-up appointment, her pigtail catheter fell out of the pleural space, with no clinical consequences.

OUTCOME AND FOLLOW-UP

On a follow-up visit in April 2019, she reported a marked improvement in her dyspnea and no longer required supplemental oxygen. At the same time, she demonstrated a 25% improvement in her FEV1 (51% to 76%) (Figure 2), and the chest x-ray revealed the expansion of the right allograft as a result of marked deflation of large bullae in the left lung (Figure 6).

DISCUSSION

COPD is one of the common indications for lung transplantation. Over 18233 transplants have been carried out for COPD alone^[3]. A single lung transplant may be considered for COPD as it offers shorter waitlist time, shorter surgical time, and technical ease. Single lung transplant for COPD has similar short-term and medium-term outcomes compared to BLT. However, long term outcomes are better with BLT^[3]. Several factors may play a role in this difference, with a critical factor being the diseased native lung.

Native lung complications can develop in up to 13.8% of patients with SLT and are associated with worse prognosis^[6]. Infections and malignancy may lead to alterations in the immunosuppressive regimen, and as a result, put the transplanted lung at risk of rejection. The emphysematous native lung can also compress the allograft and lead to its decreased perfusion, subsequently leading to graft dysfunction^[7].

King *et al*^[6] studied the role of native lung pneumonectomy in SLT patients with native lung complications^[6]. They found a trend towards improved survival in patients undergoing pneumonectomy compared to those managed non-surgically (4.3 years *vs* 2.4 years, respectively). However, the result did not reach statistical significance ($P =$

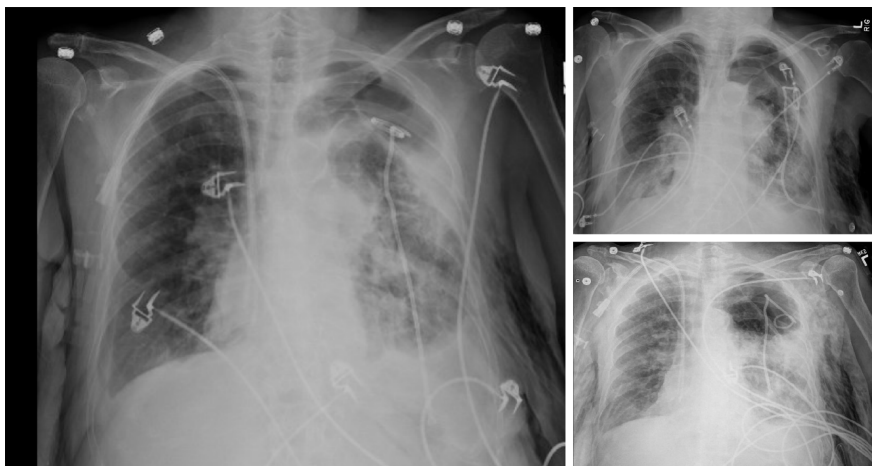


Figure 5 Serial portable chest radiographs show replacement of a left pleural drain within a large left hydropneumothorax with compressive atelectasis of portions of the native left lung. Subcutaneous emphysema is again noted within the left chest wall. The transplanted right lung remains well inflated.



Figure 6 Chest radiographs (PA and lateral views) demonstrate auto-deflation of large left upper lobe bulla resulting in subsequent re-expansion of the previously atelectatic left lung as well as improved aeration of the transplanted right lung.

0.128)^[6]. Native lung hyperinflation may lead to impairment of gas exchange and worsen respiratory function among recipients of SLTx for emphysema. Several cases have been described with improvement in lung function, exercise capacity, and symptoms after lung volume reduction surgery, bullectomy, or pneumonectomy of the native lung^[8,9].

While the role of LVRS is well established in patients with severe upper lobe predominant emphysema, some case reports and retrospective studies highlight the benefit of LVR in severe emphysema of native lung in SLT patients^[4,10,11]. However, LVRS is associated with significant morbidity (20% to 29.8% pulmonary and cardiac morbidity respectively), and operative mortality (5.5%) and careful patient selection is warranted^[12].

Less invasive approaches have since been described for lung volume reduction in severe emphysema. The use of bronchoscopic LVR has also demonstrated efficacy in improving lung function, exercise capacity, and quality of life. The use of endobronchial one-way valve placement has led to significant improvement in exercise capacity and lung function^[13,14]. A meta-analysis conducted by Iftikhar *et al*^[15] demonstrated the non-inferiority of Bronchoscopic LVR compared to LVRS^[15]. In 2018, the Food and Drug Administration approved the endobronchial valve Zephyr (Pulmonx, Inc., Palo Alto, CA, United States) for Bronchoscopic LVR in severe emphysema^[16]. Other novel techniques such as lung volume reduction coils, bronchial thermal vapor, and installation of bio-degradable gel or polymers have also demonstrated efficacy in severe diffuse emphysema, yet, they remain experimental in the United States^[17-19]. Perch *et al*^[20] conducted a case series of 14 patients with native

lung hyperinflation in SLT patients and demonstrated significant improvement in lung function and symptoms with endobronchial valves^[20]. The study demonstrated the feasibility of endoscopic treatment for native lung hyperinflation in SLT patients, but prospective trials are required to assess its real efficacy. Our case highlights a phenomenon of auto-deflation of a large bulla leading to spontaneous lung volume reduction of the native lung and subsequent improvement in allograft lung function, thus highlighting the importance of considering LVR in SLT patients. While native lung hyperinflation was considered a possibility for her clinical decline, this phenomenon occurred even before considering her for LVR. Surgical lung volume reduction may be challenging in these patients due to co-morbid conditions and prior thoracic surgery (SLT), but bronchoscopic LVR is an attractive alternative. The real challenge lies in patient selection and identifying which patient will benefit most from it. Pulmonary function tests alone are unable to distinguish CLAD from native lung hyperinflation as a cause of a drop in lung function. The presence of CLAD in allograft would also reduce the likelihood that the graft will expand and improve function after native lung LVR. From our experience, certain clinical features can assist in patient selection for LVR in SLT patients. The patient should have apical predominant severe emphysema in the native lung. A SPECT scan can help identify areas with perfusion and poor ventilation that can be targeted for LVR. It is imperative to rule out CLAD in the transplanted lung before considering LVR.

Like any other intervention, bronchoscopic LVR is associated with certain complications that include valve migration, post-obstructive pneumonia, pneumothorax, and bleeding^[20]. It is thus imperative to discuss risks and benefit with the patient in detail.

CONCLUSION

Native lung pathology can impede the function of the allograft and lead to an erroneous diagnosis of allograft rejection or chronic lung allograft dysfunction. Spontaneous pneumothorax involving the native lung is yet another sequela of SLT. In our patient, hyperinflation and air trapping in the native emphysematous lung led to chronic respiratory failure following SLT. Incidentally, the patient developed a spontaneous pneumothorax with a natural volume reduction of the native lung leading to improvement in overall lung function. Among symptomatic recipients of SLT, the contribution of native lung hyperinflation and air trapping should prompt consideration of endobronchial valve therapy albeit with appropriate patient selection criteria.

REFERENCES

- 1 Aziz F, Penupolu S, Xu X, He J. Lung transplant in end-staged chronic obstructive pulmonary disease (COPD) patients: a concise review. *J Thorac Dis* 2010; **2**: 111-116 [PMID: 22263028 DOI: 10.3978/j.issn.2072-1439.2010.02.002]
- 2 Orens JB, Estenne M, Arcasoy S, Conte JV, Corris P, Egan JJ, Egan T, Keshavjee S, Knoop C, Kotloff R, Martinez FJ, Nathan S, Palmer S, Patterson A, Singer L, Snell G, Studer S, Vachiery JL, Glanville AR; Pulmonary Scientific Council of the International Society for Heart and Lung Transplantation. International guidelines for the selection of lung transplant candidates: 2006 update--a consensus report from the Pulmonary Scientific Council of the International Society for Heart and Lung Transplantation. *J Heart Lung Transplant* 2006; **25**: 745-755 [PMID: 16818116 DOI: 10.1016/j.healun.2006.03.011]
- 3 Chambers DC, Cherikh WS, Goldfarb SB, Hayes D Jr, Kucheryavaya AY, Toll AE, Khush KK, Levvey BJ, Meiser B, Rossano JW, Stehlik J; International Society for Heart and Lung Transplantation. The International Thoracic Organ Transplant Registry of the International Society for Heart and Lung Transplantation: Thirty-fifth adult lung and heart-lung transplant report-2018; Focus theme: Multiorgan Transplantation. *J Heart Lung Transplant* 2018; **37**: 1169-1183 [PMID: 30293613 DOI: 10.1016/j.healun.2018.07.020]
- 4 van Agteren JE, Carson KV, Tiong LU, Smith BJ. Lung volume reduction surgery for diffuse emphysema. *Cochrane Database Syst Rev* 2016; **10**: CD001001 [PMID: 27739074 DOI: 10.1002/14651858.CD001001.pub3]
- 5 Valipour A. Valve therapy in patients with emphysematous type of chronic obstructive pulmonary disease (COPD): from randomized trials to patient selection in clinical practice. *J Thorac Dis* 2018; **10**: S2780-S2796 [PMID: 30210832 DOI: 10.21037/jtd.2018.08.86]
- 6 King CS, Khandhar S, Burton N, Shlobin OA, Ahmad S, Lefrak E, Barnett SD, Nathan SD. Native lung complications in single-lung transplant recipients and the role of pneumonectomy. *J Heart Lung Transplant* 2009; **28**: 851-856 [PMID: 19632585 DOI: 10.1016/j.healun.2009.04.023]
- 7 Malchow SC, McAdams HP, Palmer SM, Tapson VF, Putman CE. Does hyperexpansion of the native lung adversely affect outcome after single lung transplantation for emphysema? Preliminary findings. *Acad Radiol* 1998; **5**: 688-693 [PMID: 9787839 DOI: 10.1016/s1076-6332(98)80563-1]

- 8 **Novick RJ**, Menkis AH, Sandler D, Garg A, Ahmad D, Williams S, McKenzie FN. Contralateral pneumonectomy after single-lung transplantation for emphysema. *Ann Thorac Surg* 1991; **52**: 1317-1319 [PMID: 1755688 DOI: [10.1016/0003-4975\(91\)90021-h](https://doi.org/10.1016/0003-4975(91)90021-h)]
- 9 **Le Pimpec-Barthes F**, Debrosse D, Cuenod CA, Gandjbakhch I, Riquet M. Late contralateral lobectomy after single-lung transplantation for emphysema. *Ann Thorac Surg* 1996; **61**: 231-234 [PMID: 8561569 DOI: [10.1016/0003-4975\(95\)00909-4](https://doi.org/10.1016/0003-4975(95)00909-4)]
- 10 **Destors M**, Aniwidyansih W, Jankowski A, Pison C. Endoscopic volume reduction before or after lung transplantation. *Eur J Cardiothorac Surg* 2012; **42**: 897-898 [PMID: 22700589 DOI: [10.1093/ejcts/ezs352](https://doi.org/10.1093/ejcts/ezs352)]
- 11 **Pato O**, Rama P, Allegue M, Fernández R, González D, Borro JM. Bronchoscopic lung volume reduction in a single-lung transplant recipient with natal lung hyperinflation: a case report. *Transplant Proc* 2010; **42**: 1979-1981 [PMID: 20620561 DOI: [10.1016/j.transproceed.2009.12.071](https://doi.org/10.1016/j.transproceed.2009.12.071)]
- 12 **Naunheim KS**, Wood DE, Krasna MJ, DeCamp MM Jr, Ginsburg ME, McKenna RJ Jr, Criner GJ, Hoffman EA, Sternberg AL, Deschamps C; National Emphysema Treatment Trial Research Group. Predictors of operative mortality and cardiopulmonary morbidity in the National Emphysema Treatment Trial. *J Thorac Cardiovasc Surg* 2006; **131**: 43-53 [PMID: 16399293 DOI: [10.1016/j.jtcvs.2005.09.006](https://doi.org/10.1016/j.jtcvs.2005.09.006)]
- 13 **Valipour A**, Burghuber OC. An update on the efficacy of endobronchial valve therapy in the management of hyperinflation in patients with chronic obstructive pulmonary disease. *Ther Adv Respir Dis* 2015; **9**: 294-301 [PMID: 26294417 DOI: [10.1177/1753465815599693](https://doi.org/10.1177/1753465815599693)]
- 14 **Valipour A**, Slebos DJ, Herth F, Darwiche K, Wagner M, Ficker JH, Petermann C, Hubner RH, Stanzel F, Eberhardt R; IMPACT Study Team. Endobronchial Valve Therapy in Patients with Homogeneous Emphysema. Results from the IMPACT Study. *Am J Respir Crit Care Med* 2016; **194**: 1073-1082 [PMID: 27580428 DOI: [10.1164/rccm.201607-1383OC](https://doi.org/10.1164/rccm.201607-1383OC)]
- 15 **Iftikhar IH**, McGuire FR, Musani AI. Efficacy of bronchoscopic lung volume reduction: a meta-analysis. *Int J Chron Obstruct Pulmon Dis* 2014; **9**: 481-491 [PMID: 24868153 DOI: [10.2147/COPD.S63378](https://doi.org/10.2147/COPD.S63378)]
- 16 Zephyr® Endobronchial Valve System - P180002. 2018. Available from: <https://www.fda.gov/medical-devices/recently-approved-devices/zephyr-endobronchial-valve-system-p180002/>
- 17 **Deslee G**, Klooster K, Hetzel M, Stanzel F, Kessler R, Marquette CH, Witt C, Blaas S, Gesierich W, Herth FJ, Hetzel J, van Rikxoort EM, Slebos DJ. Lung volume reduction coil treatment for patients with severe emphysema: a European multicentre trial. *Thorax* 2014; **69**: 980-986 [PMID: 24891327 DOI: [10.1136/thoraxjnl-2014-205221](https://doi.org/10.1136/thoraxjnl-2014-205221)]
- 18 **Snell G**, Herth FJ, Hopkins P, Baker KM, Witt C, Gotfried MH, Valipour A, Wagner M, Stanzel F, Egan JJ, Kesten S, Ernst A. Bronchoscopic thermal vapour ablation therapy in the management of heterogeneous emphysema. *Eur Respir J* 2012; **39**: 1326-1333 [PMID: 22075481 DOI: [10.1183/09031936.00092411](https://doi.org/10.1183/09031936.00092411)]
- 19 **Milenkovic B**, Janjic SD, Popevic S. Review of lung sealant technologies for lung volume reduction in pulmonary disease. *Med Devices (Auckl)* 2018; **11**: 225-231 [PMID: 29983599 DOI: [10.2147/MDER.S127136](https://doi.org/10.2147/MDER.S127136)]
- 20 **Perch M**, Riise GC, Hogarth K, Musani AI, Springmeyer SC, Gonzalez X, Iversen M. Endoscopic treatment of native lung hyperinflation using endobronchial valves in single-lung transplant patients: a multinational experience. *Clin Respir J* 2015; **9**: 104-110 [PMID: 24506317 DOI: [10.1111/crj.12116](https://doi.org/10.1111/crj.12116)]



Published by **Baishideng Publishing Group Inc**
7041 Koll Center Parkway, Suite 160, Pleasanton, CA 94566, USA

Telephone: +1-925-3991568

E-mail: bpgoffice@wjgnet.com

Help Desk: <https://www.f6publishing.com/helpdesk>

<https://www.wjgnet.com>

