

## CASE REPORT: TREATMENT EXPERIENCE OF A RECURRENT PRIMARY SPONTANEOUS PNEUMOTHORAX

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**Key words:** primary spontaneous pneumothorax, chemical pleurodesis.

**The aim of this study** was to present a case report of our experience in treating 4 recurrences of PSP.

### Summary

Primary spontaneous pneumothorax (PSP) is a condition characterized as accumulation of air in the pleural cavity without the cause of underlying lung disease. The symptoms of this pathology range from asymptomatic to severe hemodynamic disorders. Though the pathogenesis of PSP has been gradually uncovered, there is still a lack of consensus in the diagnostic approach and treatment strategies for this disorder. Different authors offer a broad variety of treatment recommendations, that could still result in reoccurrence of PSP.

We present a case report of our experience in treating a 4 time PSP recurrence.

### Introduction

Primary spontaneous pneumothorax (PSP) is a condition characterized as accumulation of air in the pleural cavity without the cause of underlying lung disease. The reported incidence rate varies between 6 to 18 per 100 000 in general population [1,2] and 3,4 per 100 000 in pediatric population [3,4], predominantly affecting tall, thin and young males [5]. Though the pathogenesis of PSP has been gradually uncovered, there is still a lack of consensus in the diagnostic approach and treatment strategies for this disorder [5]. Different authors offer a broad variety of treatment recommendations, that could still result in reoccurrence of PSP. It spans from 23 % to 50 % after the initial episode and reaches 60 % after the second. [7] In addition to evacuating air from the pleural space by simple aspiration or chest tube drainage, the management of spontaneous pneumothorax also focused on ceasing air leakage and preventing recurrences by surgical intervention or chemical pleurodesis [8]. This suggests implementing new treatment methods in stopping PSP recurrence.

### Case report

A 9 year old girl with a persistent air leak, that continued for one month, was unsuccessfully treated in a different institution with a chest tube catheter and eventually was sent to our hospital. On the day of admission the patient felt tension in her chest, no history of lung disease was recorded, her parents only noted that she was born prematurely. Radiographic imaging showed bilateral pneumothorax (Fig. 1). She underwent a successful video-assisted thoracoscopy (VATS) procedure. Bullectomy of the right lung was performed, post-operative course was uneventful. The patient was discharged after chest X-ray showed expanded lungs and no signs of air in the pleural cavity.

4 months after the initial episode, during follow-up, chest X-ray detected air on both sides of the pleural cavity. Recurrent primary spontaneous pneumothorax was suspected and the patient was treated with chest tube catheter for 10 days until there were no irregular signs on radiographic imaging.

2 months after the second episode, our patient suddenly felt shortness of breath with chest compression and rushed to the emergency department. X-ray showed bilateral pneumothorax. It was decided to appoint a CT – scan to get a better view of the thoracic cavity and exclude secondary causes that were possibly missed on the initial check up. CT imaging showed pleural adhesions and multiple bullae on both lungs. It was decided to redo VATS, during which bullae and pleural adhesion coagulation were performed. Also lung biopsy was taken, that later showed no signs of illness. The patient was discharged after an uneventful post-operative period.

3 months later pneumothorax reoccurred. Spaces of air were seen on X-ray imaging (Fig 2), during follow – up evaluation and it was decided for the patient to undergo chemical pleurodesis. 4% povidone-iodine diluted with saline solution

at a dose of 2 ml/kg, was injected to the pleural space threw a chest catheter. The chest tube was clamped for 4 hours and the patient was constantly monitored. The procedure was successful. X-ray showed no signs of pneumothorax and the patient was sent home.

1 year after povidone-iodine installation, small air accumulation was spotted on follow up X-ray. The patients condition spontaneously got better after conservative treatment consisting of supplemental oxygen and antiinflammatory drugs.

### Discussion

Although a common clinical entity, PSP is considered a great challenge for surgeons. This is observed in the absence of agreement regarding initial PSP management in published guidelines, not to mention its recurrence [9;10]. Furthermore, published guidelines diverge from actual clinical practice and this is observed internationally [11]. Initially or eventually patients undergo surgery in proposed treatment strategies. Surgical intervention, whether by VATS or thoracotomy accompanied with pleurodesis, has the lowest rate of recurrence [12]. But still many surgeons would prefer choosing a less invasive treatment method, like observation or pleural drainage [12]. Moreover, a less invasive method presented to the family, seems a more welcome approach, even if it has a more frequent treatment failure rate. And in our case, these factors had a significantly higher impact,

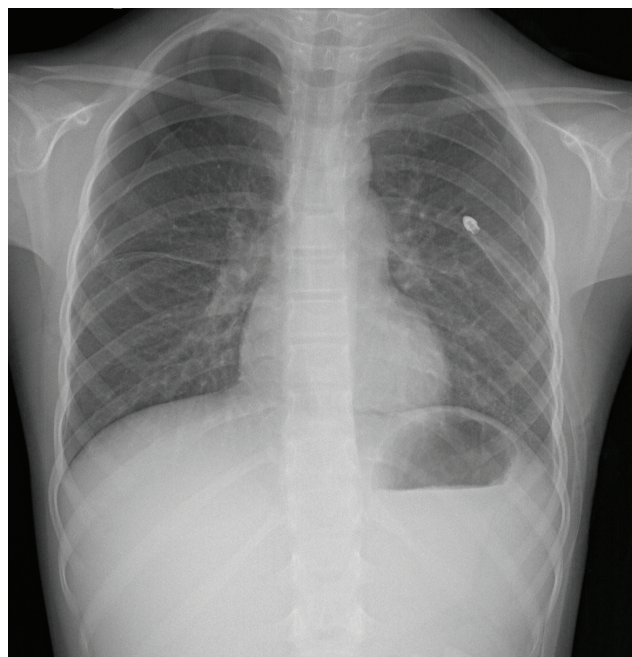
having in mind that the patient underwent two unsuccessful operations. Although, chemical pleurodesis alongside surgical intervention has the best chance for success, it can be performed alone to patients that are unwilling or incapable to go through surgery [13]. Agarwal et al. demonstrated that povidone-iodine can be used to achieve pleurodesis [14]. And Federico et al. shared their experience of treating refractory chylothorax in newborns by administering this adhesive agent via chest tube [15]. There is little information on using povidone-iodine for chemical pleurodesis in pediatric patients and larger scale studies are required. We hope to add some knowledge to the subject by sharing our experience of using this adhesive agent.

### Conclusion

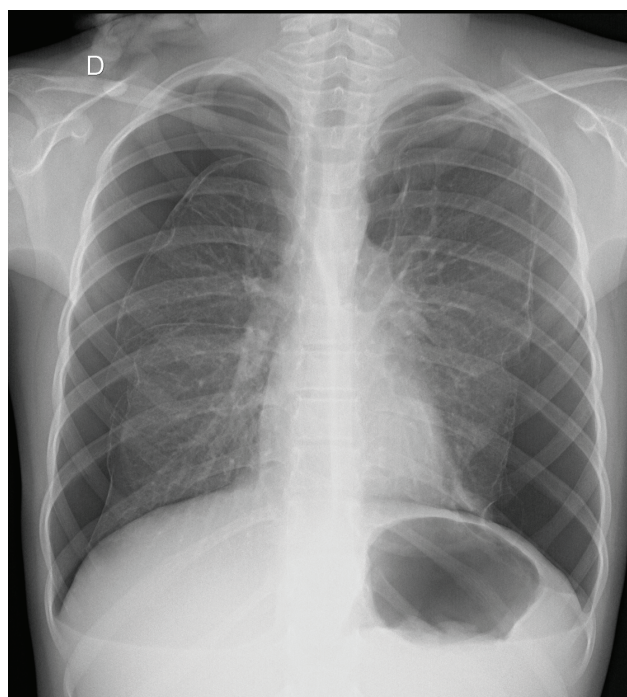
Primary spontaneous pneumothorax has a high risk of recurrence. Pleurodesis can be performed to reduce the possibility of recurrent primary spontaneous pneumothorax. Povidone-iodine is a safe and effective agent for chemical pleurodesis.

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**Fig 1.** Radiographic imaging showing showing air accumulation in the upper parts of the pleural cavity



**Fig 2.** Radiographic imaging showing large spaces of air on both sides of the pleural cavity

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**PASIKARTOJANČIO PIRMINIO SPONTANINIO  
PNEUMOTORAKSO GYDYMO PATIRTIS:  
ATVEJO PRISTATYMAS**

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Raktažodžiai: pirminis spontaninis pneumotoraksas, cheminė pleurodezė.

Santrauka

Pirminis spontaninis pneumotoraksas (PSP) yra būklė, apibūdinama kaip oro kaupimasis pleuros ertmėje, nesant pagrindinės plaučių ligos priežasties. Šios patologijos simptomai – nuo asimptominių atvejų iki sunkių hemodinamikos sutrikimų. Nors PSP patogenezė buvo laipsniškai atskleidžiama, vis dar trūksta sutarimo dėl šio sutrikimo diagnostikos ir gydymo strategijos. Įvairūs autoriai siūlo plačią gydymo rekomendacijų įvairovę, tačiau vis tiek galimas PSP pasikartojimas. Straipsnyje pateikiama atvejo ataskaita iš mūsų patirties, gydant 4 kartus pasikartojusį PSP.

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