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RESEARCH ARTICLE

BLOOD PATCH PLEURODESIS IS EFFECTIVE OR NOT?

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ABSTRACT

Background: One third of patients diagnosed with spontaneous pneumothorax may need surgery.^{1,2} There patients with significant comorbidities who cannot afford operation, blood patch pleurodesis (patients' blood in thoracic cavity) may resolve the problem. Was noticed that can resolve also small air leaks post procedures in thoracic surgery like lobectomies, decortication.³ **Methods:** During the years 2017 -2021, seventeen patients, underwent blood patch pleurodesis at the Thoracic Surgery Department, General Hospital of Nicaea, Greece. **Results:** During the years 2017 -2021, seventeen patients (only one female) underwent blood patch pleurodesis, age 32- 84 mean age 67 years. An 82 year old male with significant comorbidities like heart failure very emphysematous lungs underwent blood patch pleurodesis 20ml the first time and a day after another 20 ml uneventfully. Another 83 year old male with significant respiratory failure and very emphysematous lungs, underwent blood patch pleurodesis 20ml autologous blood for three days successfully. He was discharged home with a valve and in a week time the chest drain was removed successfully with no recurrence. Three patients post surgery for spontaneous secondary pneumothorax (post pneumonia emphysematous lungs and heavy smokers) underwent successfully blood patch pleurodesis 30ml by the first time. There was another 32 old male operated for pneumothorax and post procedure he developed Covid 19. He underwent twice blood patch pleurodesis 20mls each day. He was discharged home with valve in quarantine for a week. Within a week post discharge he was negative and his left lung was fully expanded and the thoracic drain was removed. Blood patch also was used successfully for five male patients who underwent decortication for mesothelioma and discharged home the sixth postoperative day. Another 73 year old male post decortication for empyema. Pleurodesis with blood was efficient for another five patients post lobectomy. Reduced the hospital stay at 6, 5, 4, 5 and 5 days for each patient. All above patients temperature was 37,5 and 38 C nocte and only once. **Conclusion:** Pleurodesis with blood is very useful for spontaneous pneumothorax treatment. Also is very helpful for small air leaks post thoracic surgery like lobectomies, decortication. Considered as alternative solution.

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INTRODUCTION

Spontaneous pneumothorax is air in pleural cavity and may be primary or secondary.¹ Spontaneous primary pneumothorax occurs mostly in young people.

It is more common in men than women in a 6:1 ratio.¹ Spontaneous secondary pneumothorax can be as a result of emphysema – chronic obstructive pulmonary disease (COPD) and other causes^{1,2,3}.

Smoking considered significant risk factor.¹

BACKGROUND

One third of patients diagnosed with spontaneous pneumothorax may need surgery.^{1,2,3} There patients with significant comorbidities who cannot afford operation. Blood patch pleurodesis (patients' blood in thoracic cavity) may resolve the problem. Was noticed can resolve small air leaks post procedures in thoracic surgery like lobectomies, decortication.³ Aim of this study to analyze the use and effectiveness of this alternative treatment.

METHODS

During the years 2017 -2021, eleven patients underwent blood patch pleurodesis at the Thoracic Surgery Department, General Hospital of Nicaea, Greece.

RESULTS

During the years 2017 -2021, seventeen patients only one female underwent blood patch pleurodesis, age 32- 84 mean age 67 years. An 82 year old male with significant comorbidities like heart failure very emphysematous lungs underwent blood patch pleurodesis 20ml the first time and a day after another 20 ml uneventfully. Another 83 year old male with significant respiratory failure and very emphysematous lungs, underwent blood patch pleurodesis 20ml autologous blood for three days successfully.

Table 1. Classification

PRIMARY
• Rupture of subpleural bullae /blebs
SECONDARY
• Emphysema – Chronic Obstructive Pulmonary Disease (COPD)
• Cystic fibrosis
• Spontaneous rupture of the esophagus
• Marfan's syndrome
• Eosinophilic granuloma
• Pneumocystis carinii, especially in patients affected from AIDS
• Metastatic cancer, especially Sarcoma
• Pulmonitis with pulmonary abscess
• Menstruation
• Asthma
• Lung Cancer
• Lenphangioliomyomatosis
• NEONATAL

Table 2. Management

• Conservative
• Needle Aspiration
• Chest drain tube/pleural cath connected to a Büllau dispositive Heimlich valve
• Thoracostomy Tube connected to a Büllau dispositive ® Heimlich valve
• Thoracostomy Tube connected to an equipment that generate continuous infusion of material who can provoke pleurodesis
• Thoracoscopy (VATS = Video Assisted Thoracic Surgery)
• Thoracotomy

He was discharged home with a valve and in a week time the chest drain was removed successfully with no recurrence.

Table 3. Indication for surgery

• Insistent Air Leak
• Recurrent Pneumothorax
• First Episode to Patients with Previous Pneumectomy
• First Episode to Patients with a High Professional Risk (miners, aviators, divers)



Image 1. Chest Drains



Image 2. Autologous Blood Administration Through Chest Drain

Three patients post surgery for spontaneous secondary pneumothorax (post pneumonia emphysematous lungs and heavy smokers) underwent successfully blood patch pleurodesis 30ml by the first time. There was another 32 old male operated for pneumothorax and post procedure he developed Covid 19.

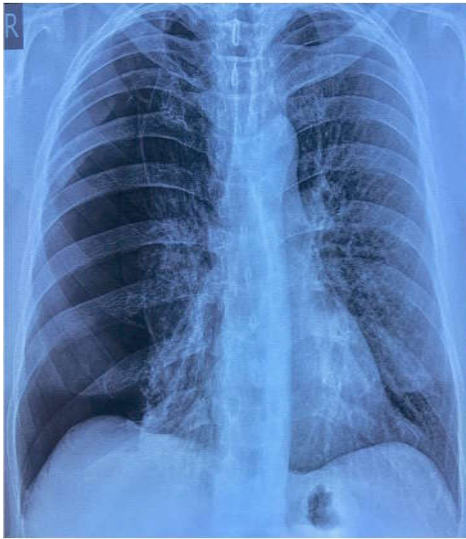


Image 3. Large Pneumothorax on The Right

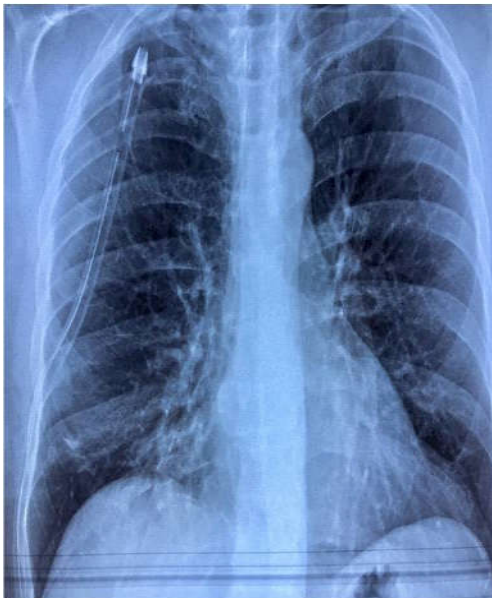


Image 4. Chest drain for large pneumothorax on the right

He underwent twice blood patch pleurodesis 20mls each day. He was discharged home with valve in quarantine for a week. Within a week post discharge he was negative and his left lung was fully expanded and the thoracic drain was removed. Blood patch was used successfully for five male patients who underwent decortication for mesothelioma and discharged home the sixth postoperative day. Another 73 year old male post decortication for empyema. Pleurodesis with blood was efficient for another five patients post lobectomy. Reduced the hospital stay at 6, 5, 4, 5 and 5 days for each patient. All above patients temperature was 37,5 and 38 C nocte and only once.

DISCUSSION

Spontaneous pneumothorax may be primary or secondary (see table 1).^{1,2,3,4} Spontaneous primary pneumothorax occurs mostly in young people. It is more common in men than women in a 6:1 ratio.¹ Spontaneous secondary pneumothorax can be as a result of emphysema – chronic obstructive pulmonary disease (COPD) mostly and other causes as well as Lung Cancer, Cystic Fibrosis, Marfan's syndrome (see table 1). The treatment for Spontaneous

pneumothorax could be, Conservative, Chest drain insertion, surgery (VATS, thoracotomy) for bullectomy, pleurectomy, and pleurodesis (see table 2).^{1,2,3,4} Indication for surgery considered, Insistent Air Leak, Recurrent Pneumothorax First Episode to Patients with Previous Pneumonectomy, First Episode to Patients with a High Professional Risk (miners, aviators, divers) (see table 3).

Blood patch is autologous blood of the patients in thoracic cavity was first described by Robinson in 1987, for the treatment of prolong air leak. Using aseptic condition taking venous blood and immediate administration through the chest drain. Holding the drain in a high position to avoid air but not the blood returning back keep the patient on the bed for at least ten minutes. Repeat the procedure once more with another 20mls of autologous blood and repositioning the patient on the bed. Can be repeated also for three days. Some writers supported 100mls administration.^{5,6,7} A systemic response, with fever and raised inflammatory markers, is often seen following pleurodesis. No fever was noticed in the population study.^{5,6,7} Considered as an effective but underused method by De Andrade *et al.*⁸ From the economic point of view blood patch procedure offers less hospitalization stay for the patients.^{9,10,11} Was noticed also that blood patch is useful post lobectomies and decortication for air leak improvement.¹² This was first described by Dumire in 1992 where a air leak of 5 weeks failed to resolve after tetracycline pleurodesis but ceased within 2 h of blood pleurodesis. Most of the subsequent literature consists of small case series.

CONCLUSION

Pleurodesis with blood is very useful for spontaneous pneumothorax treatment. Also is very helpful for small air leaks post thoracic surgery like lobectomies, decortication. Reduced patients hospital stay Considered as alternative solution.

REFERENCES

1. Metaxas, E.K., N.Condilis, N.Tzatzadakis, Ath. Dervisoglou, Kal.Athanassiadi, M.I.Gerazounis. Spontaneous Pneumothorax. When and how to treat. *Annali Italiani Di Chirurgia* 2007 Jan –Feb ;78:17-20.
2. Efstathios. K. Metaxas, Stelios Zaragkas, Nicolas Condilis *et al.* Pneumothorax – Questionnaire. *Surg. Chron* 2014; 19(4): 187-189.
3. Efstathios. K. Metaxas, Dimitrios Lioumpas, Ioannis Stamatatos *et al.* Spontaneous Pneumothorax. A twenty seven year experience. *European Respiratory Journal* November 2019.
4. Andrew MacDuff, Anthony Arnold, John Harvey. Management of spontaneous pneumothorax: British Thoracic Society pleural disease guideline 2010.
5. Rinaldi, S T Felton, A Bentley. Blood pleurodesis for the medical management of pneumothorax. *Thorax* 2009; 64:258–260.
6. Aghajanzadeh M, Hemati H, Moghaddamnia MR *et al.* Autologous blood pleurodesis for treatment of prolonged air leak in secondary spontaneous pneumothorax. *Indian J Thorac Cardiovasc Surg.* 2009; 25:188–91.
7. Pathak V, Quinn C, Zhou C, Wadie G. Use of Autologous blood patch for prolonged air leak in spontaneous pneumothoraxes in the adolescent population. *Lung India.* 2018; 35:328–31.

8. Filipe Moreira De Andrade, Marcelo Reis Pereira, Renan Liboreiro Killesse *et al.* Autologous blood patch pleurodesis: An effective but underused method. *Lung India* 2018 Jul-Aug; 35(4): 341-342
9. Evman S, Alpay L, Metin S *et al.* The efficacy and economical benefits of blood patch pleurodesis in secondary spontaneous pneumothorax patients. *Kardiochir Torakochirurgia Pol*, 2016; 13:21–5.
10. Ozpolat B. Autologous blood patch pleurodesis in the management of prolonged air leak. *Thorac Cardiovasc Surg.* 2010; 58:52–4.
11. Chambers A, Routledge T, Billè A, Scarci M. Is blood pleurodesis effective for determining the cessation of persistent air leak? *Interact Cardiovasc Thorac Surg.* 2010; 11:468–72.
12. Lang-Lazdunski L, Coonar AS. A prospective study of autologous 'blood patch' pleurodesis for persistent air leak after pulmonary resection. *Eur J Cardiothorac Surg.* 2004; 26:897–900.
