

Autologous blood patch pleurodesis for secondary spontaneous pneumothorax: a narrative review, a retrospective case series and state of play in the United Kingdom

Sufyan Shakir¹, Brian Choo-Kang PhD², Clare Ross³, Kevin Conroy⁴, Richard Thorley MBBS MRCP⁵, Steven Walker PhD⁶, Rahul Bhatnagar PhD FRCP⁶, Avinash Aujayeb MBBS MRCP¹

1 - Department of Respiratory Medicine, Northumbria Healthcare NHS Trust, Northumbria Way, Cramlington, NE23 6NZ, United Kingdom

2 - Department of Respiratory Medicine, Glasgow Royal Infirmary, 84 Castle Street, Glasgow, United Kingdom G4 0SF, United Kingdom

3 – Imperial College NHS Trust, Exhibition Rd, South Kensington, London SW7 2BX, , United Kingdom

4 - North Tees and Hartlepool NHS Foundation Trust, University Hospital of North Tees, Hardwick Road, Stockton on Tees, Cleveland, TS19 8PE, United Kingdom

5 - Departement of Respiratory Medicine, North Devon District Hospital, Raleigh Heights, Barnstaple, EX31 4JB, United Kingdom

6-Academic Respiratory Unit, 2nd Floor, Learning and Research, Southmead Hospital, Westbury-on-Trym, Bristol BS10 5NB, United Kingdom

Corresponding author: Dr Avinash Aujayeb
Northumbria Healthcare NHS Foundation Trust
Northumbria Way, Cramlington
Northumberland
NE23 6NZ
Email: avinash.aujayeb@nhct.nhs.uk
Tel: 07703343329

Title page for appendix

Page 1: Blood pleurodesis survey - Google Forms

Page 3: Assessment Tool from Health Research Authority and Number of cases per unit

Page 3 and 4: How to perform the procedure

Page 5: CARE checklist of information

Page 6: Variables collected in case record form

Page 7: Cover page with title, authors, corresponding author and word count

Blood pleurodesis survey

At the recent Winter BTS, a case series of blood pleurodesis was presented, and it was hinted at there is wide variance in practice and no real handle on how many are or have been done. The purpose of this survey is to try address some of these issues

*Required

1. What NHS Trust do you work in?

2. Has your service/NHS trust ever performed blood pleurodesis for air leaks? *

Mark only one oval.

Yes

No

3. If yes, when was the most recent blood pleurodesis performed?

Mark only one oval.

0-6 months ago

6-12 months ago More

than 12 months ago

- 4.

Mark only one oval.

Option 1

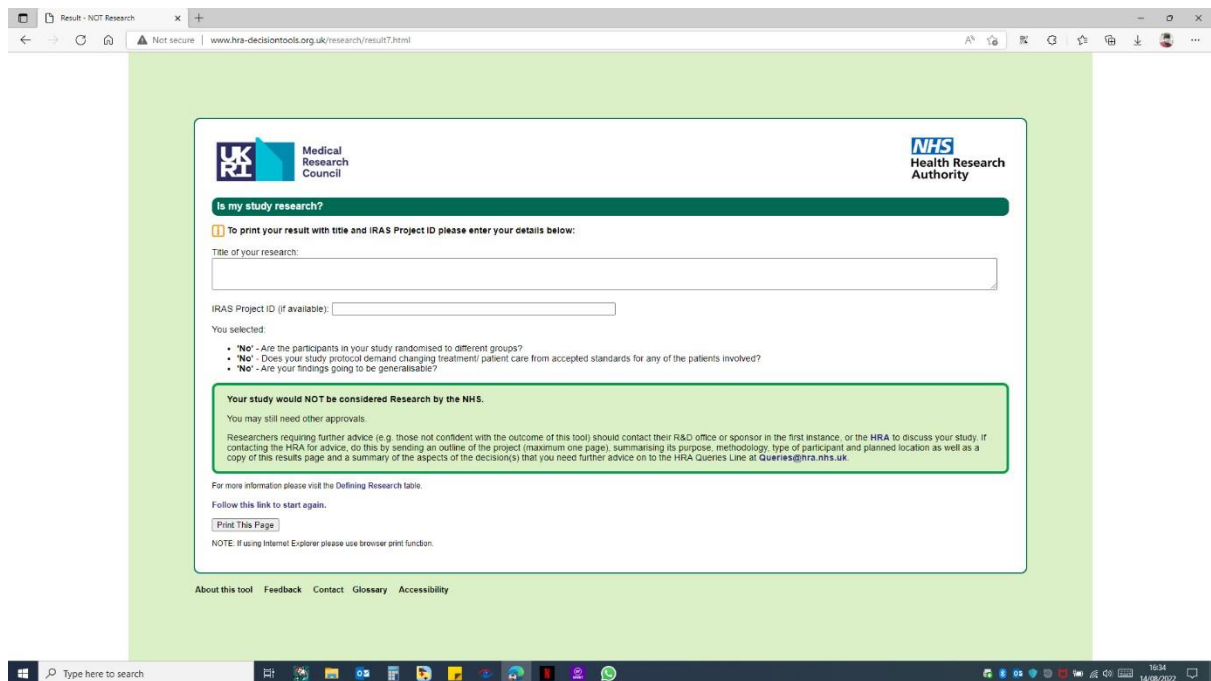
5. Do you have a protocol for blood pleurodesis? Or if you have done one, what guidance did you follow? (free text)
6. If you have done any blood pleurodeses, could you contribute to an anonymised retrospective database? Please leave your contact email address below

7. Feel free to leave any comments about the above potential work

This content is neither created nor endorsed by Google.

Google Forms

Figure 1 below showing the assessment tool from the Health Research Authority in the United Kingdom <http://www.hra-decisiontools.org.uk/research/>



Number of cases per unit

Northumbria Healthcare NHS Foundation Trust (1)

North Bristol NHS Trust (1)

Imperial College Healthcare NHS Trust (5)

North Tees and Hartlepool Hospitals NHS Foundation Trust (2)

University Hospitals Bristol and Weston NHS Foundation Trust (1)

Glasgow Royal Infirmary (2)

How to perform the procedure

The patient will be carefully selected and have had a prolonged air leak due to a secondary pneumothorax, deemed unfit for surgical or bronchoscopic intervention, probably not have pleural apposition and/or failed talc pleurodesis. Small bore drains are used initially in pneumothorax and replaced by large bore drains when air leak continues. The small change in tube radius can have large increases in air flow as described by Poiseuille's Law. A widely accepted protocol was described by Rinaldi et al in 2009 [26]. We propose the following steps, based on updated evidence, our own practice and thus our collective experience.

The procedure can be done by the patient's bedside. Verbal or written consent should be obtained, listing complications as bleeding, failure to achieve cessation of air leak, potential need for further procedures, pleural space infection and pneumonia. Equipment set up should include 2 sterile 50 millilitres (mls) syringes, phlebotomy and/or venesection equipment, dressing packs with sterile gloves and gown, 0.2% chlorhexidine spray for chest drain tubing, drip stand, large saline flush, spare chest drains, underwater seal bottle and tubing.

Procedural steps are:

1. Withdraw 1 ml/kilogram (kg) of patient's blood, (50-100mls of blood are common volumes), aseptically.
2. Disconnect the tubing from the drain and inject the withdrawn blood into the drain, into the patient's pleural space and flush blood through drain with sterile saline
3. Loop drainage tube over a drip stand for 4 hours (to allow ongoing passage of air out) [Looped tubing is still connected to an underwater seal]
4. Re-connect to underwater seal and assess for bubbling (either visually or with digital devices such as Thopaz™ - Medela or Rocket Medical PSU™)
5. If no bubbling, repeat chest radiograph and consider removal of chest drain if pneumothorax resolved or cessation of air leak is thought to have occurred.
6. If ongoing bubbling, the above steps can be repeated, in the next 24 to 48 hours, provided consent is not withdrawn.



CARE Checklist of information to include when writing a case report

Topic	Item	Checklist item description	Reported on Line
-------	------	----------------------------	------------------

Title	1	The diagnosis or intervention of primary focus followed by the words "case report" _____
Key Words	2	2 to 5 key words that identify diagnoses or interventions in this case report, including "case report" _____
Abstract (no references)	3a	Introduction: What is unique about this case and what does it add to the scientific literature? _____
	3b	Main symptoms and/or important clinical findings _____
	3c	The main diagnoses, therapeutic interventions, and outcomes _____
	3d	Conclusion—What is the main "take-away" lesson(s) from this case? _____
Introduction	4	One or two paragraphs summarizing why this case is unique (may include references) _____
Patient Information	5a	De-identified patient specific information _____
	5b	Primary concerns and symptoms of the patient _____
	5c	Medical, family, and psycho-social history including relevant genetic information _____ Relevant past
	5d	interventions with outcomes _____
Clinical Findings	6	Describe significant physical examination (PE) and important clinical findings _____
Timeline	7	Historical and current information from this episode of care organized as a timeline _____ Diagnostic testing (such
Diagnostic Assessment	8a	as PE, laboratory testing, imaging, surveys). _____
	8b	Diagnostic challenges (such as access to testing, financial, or cultural) _____
	8c	Diagnosis (including other diagnoses considered) _____
	8d	Prognosis (such as staging in oncology) where applicable _____
Therapeutic Intervention	9a	Types of therapeutic intervention (such as pharmacologic, surgical, preventive, self-care) _____
	9b	Administration of therapeutic intervention (such as dosage, strength, duration) _____
	9c	Changes in therapeutic intervention (with rationale) _____
Follow-up and Outcomes	10a	Clinician and patient-assessed outcomes (if available) _____
	10b	Important follow-up diagnostic and other test results _____
	10c	Intervention adherence and tolerability (How was this assessed?) _____ Adverse and
	10d	unanticipated events _____
Discussion	11a	A scientific discussion of the strengths AND limitations associated with this case report _____
	11b	Discussion of the relevant medical literature with references _____
	11c	The scientific rationale for any conclusions (including assessment of possible causes) _____
	11d	The primary "take-away" lessons of this case report (without references) in a one paragraph conclusion _____ The patient
Patient Perspective Informed Consent	12	should share their perspective in one to two paragraphs on the treatment(s) they received _____
	13	Did the patient give informed consent? Please provide if requested _____ No <input type="checkbox"/> Yes <input type="checkbox"/>

No

Yes

Auditor Date of admission

Date of discharge/death

Co-morbidities

Side of ptx L/R/B

Days IP Sex

Ht (cm) Wt (kgs)

BMI Age (years)

PSP (Y/N) SSP (Y/N)

Smoking (Y/N/U/Ex) Cannabis (Y/N/U/Ex) FHx ptx

Causative diagnosis

1st ptx? Y/N Conservative Rx? Y/N Aspiration Y/N? Drain

Drain size - drain 1 Drain size - drain 2 Drain size - drain 3 Suction used? Y/N

Surgery at time of ptx? Y/N Talc instillation Y/N How many times talc instilled

Any other pleurodesis agents before blood

How much blood instilled? Pleural apposition at the time? Y/N PAL at the time? Y/N

Duration of PAL pre-blood patch

Degree of leak: 1. only on cough; 2. gentle bubbling with respiration/talking; 3. vigorous bubbling

How many times blood patch done? Did leak cease? Y/N Number of days to leak cessation

Death due to ptx? Y/N

Months to recurrence of ptx (if less than 1, just say 1)

Complications

Any comments