



Clinically important predictors of pleurodesis success in MPE

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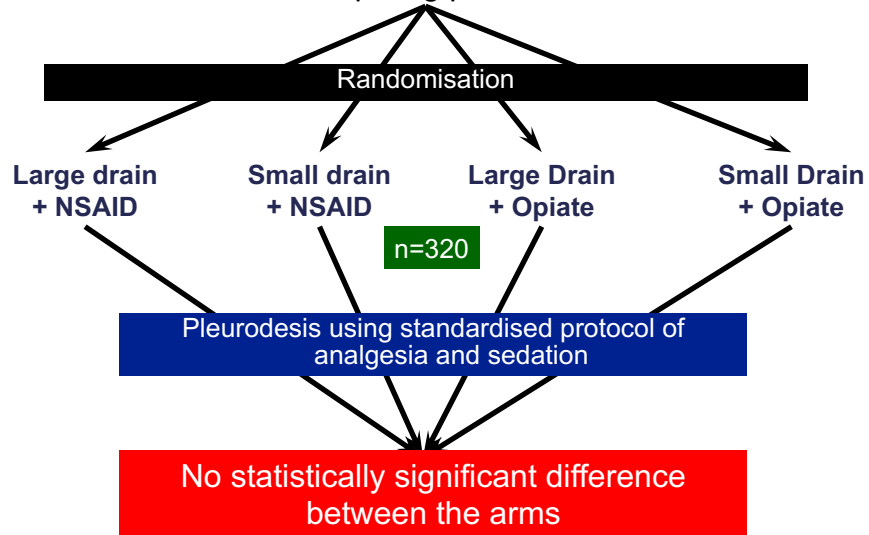


Pleurodesis



Success or failure:

- Meta analysis reports success rate of between 76% - 82%
- Via talc slurry or poudrage
- Reasons for failure unclear
- Predicting success using baseline characteristics would be useful.



Predictors of pleurodesis success:

- Pain
- Increased inflammatory response
-
-

Unbiased evidence
needed

Trapped lung:

- Multiple aspirations increase the rate of trapped lung

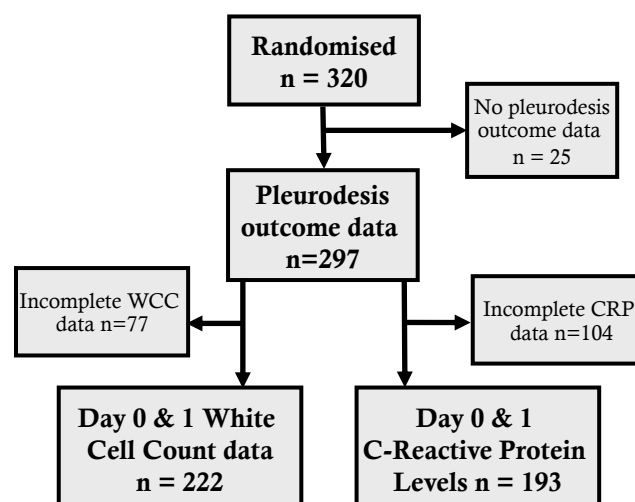
Hypothesis:

- Objective pleurodesis success/failure definitions and data from the TIME 1 trial
- Research questions generated from dictums

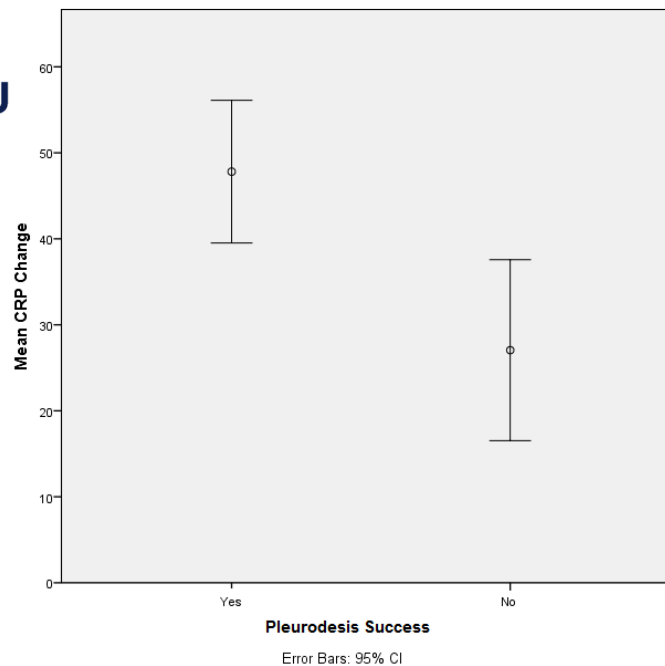
Analysis:

- Normal data – independent t tests
- Non-normal data – mann whitney u
- Binary data – chi squared tests
- No adjustments for drain size or analgesia type

Inflammation



	Pleurodesis Success	Pleurodesis Failure	Significance (P value)
C-Reactive Protein			
	n = 154	n = 39	
Day 0	33.50 (IQR 11.75 – 81.0)	38.00 (IQR 11.00 – 79.00)	0.925
Day 1	93.00 (IQR 59.00 – 145.25)	76.00 (IQR 46.00 – 107.00)	0.034
Change (mean)	47.81 (SD 52.08)	27.05 (SD 32.47)	0.003
White Cell Count			
	n = 182	n = 40	
Day 0	8.20 (IQR 6.68 – 10.10)	8.65 (IQR 10.40 – 11.00)	0.183
Day 1	10.43 (IQR 8.48 – 13.47)	10.92 (IQR 8.71 – 12.56)	0.828
Change (mean)	2.28 (SD 3.07)	1.55 (SD 2.82)	0.152



	CRP rise <30	CRP rise ≥30	Significance
Pleurodesis Success	54/75 (72%)	100/118 (84.7%)	chi ² = 4.62, 1df, P = 0.043 (2 sided)

- Statistical significance but limited clinical applicability.

	n	Pleurodesis Success	Pleurodesis Failure	Significance
		Mean rank		P value
Average VAS 0-24 hours*	260	132.26	122.53	0.422
Average VAS 24 – 48 hours*	240	120.27	121.57	0.912
No. of rescue analgesia doses [†]	276	140.68	129.12	0.266

*VAS – Visual Analogue score for pain, scale 1-100mm. All values taken after instillation of talc

[†] Rescue doses from first 4 days after pleurodesis

No evidence of correlation between pain and successful pleurodesis



Fluid and pleurodesis



	n	Pleurodesis Success	Pleurodesis Failure	Significance
		Median (Interquartile Range)		P value
Length of time MPE present (days)	293	30 (16.25 – 56)	30 (20 – 60)	0.636
Fluid drained at thoracoscopy (mls)	193	1675 (1000 – 3000)	2100 (1362.5 – 3200)	0.256
Fluid drained via chest drain pre pleurodesis (mls)	88	2020 (1420 – 3040)	2380 (1700 – 4000)	0.209
Time to drain fluid completely (hours)	88	69 (34 – 96)	48 (24 – 96)	0.217



Intercostal drain patients



- On average talc was instilled after 82 hours (3 days).
- 17/113 (15%) did not receive sterile talc.
- In 6/13 (46%) the drain needed resiting, removal or replacement



Mesothelioma



	Mesothelioma	Other	Significance (P value)
Pleurodesis Success	77/107 (72.0%)	142/173 (82.1%)	P =0.046 chi ² = 3.97, 1df
Trapped lung	19/91 (20.9%)	26/177 (14.7%)	P=0.199 chi ² = 1.65, 1df
Mean change in CRP (SD)	57.86 (SD 42.58)	30.71 (SD 50.12)	P=<0.001
Mean change in WCC (SD)	2.53 (SD 2.84)	1.89 (SD 3.32)	P=0.13
Enrolment pain VAS, median (IQR)	4 (IQR 6)	5 (IQR 15)	P=0.016

SD = standard deviation, IQR = interquartile range



Trapped Lung



	n	Trapped	Non trapped	Significance P Value
No. previous ipsilateral aspirations	278	Mean Rank		0.015
		163.92	134.78	

No. previous ipsilateral aspirations	Trapped	Not Trapped
0	13/125 (10.4%)	112/125 (89.6%)
1	22/112 (19.6%)	90/112 (80.4%)
2	9/34 (26.5%)	25/34 (73.5%)
3	1/5 (20%)	4/5 (80%)
6	0/2 (0%)	2/2 (100%)



Pleurodesis Success



- Increased levels of inflammation correlate with pleurodesis success.
- CRP is a better measure than WCC
- No evidence that pain predicts pleurodesis success.
- No evidence that fluid volume, duration of pleural effusion or time to drain affects pleurodesis success.



Mesothelioma



- Higher rate of pleurodesis failure
- Rate of trapped lung not higher
- More significant levels of inflammatory response.
- Statistically but not clinical difference in pain scores.
- Further work needed



Trapped Lung



- Patients with zero previous aspirations show a prevalence of 10.4%
- This rate increases with number of aspirations performed.
- Clinically patients often have 1-2 aspirations before definitive treatment



Future Directions



- Clinical use of inflammatory response to pleurodesis
- Mechanisms for pleurodesis failure in mesothelioma patient
- Prospective study regarding number of pleural aspirations



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