

Original Paper
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A Retrospective Observational Study to Compare Efficacy of Pleuroscopic Pleurodesis (Talc Poudrage) and Conventional Pleurodesis via Tube Thoracostomy (Talc Slurry) In Patients with Pleural Disorders

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Abstract

The objectives of the study were to measure success rate of Pleurodesis & find better treatment option and to identify any complication & evaluate suffering related to pleuroscopic Pleurodesis.

This was a retrospective Observational Study to compare efficacy of Pleuroscopic Chemical Pleurodesis and pleurodesis by tube thoracostomy (ICD) in Case of Pleural Pathology was carried out at Pulmonology Department in Sparsh Hospital, Ahmedabad over a period of 4 months starting from December 2016 to March 2017. This study was aimed to compare the effect of the two treatment modalities which include pleurodesis through pleuroscopy and through Inter-costal drainage. All the patients with pneumothorax and rapidly refilling pleural effusion were included who visited site from January 2014 to December 2016. Data were collected of the patients who underwent either of the two procedures. Data was also collected of the follow up visit to identify any complication.

In our study the success rate of pleuroscopic pleurodesis (Talc poudrage) in patients with pleural effusion was found to be 73.17% and pneumothorax was 84.61% whereas the success rate of pleurodesis by tube thoracostomy (Talc slurry) in patients with pleural effusion was 63.63%

and pneumothorax was 78.57%. It was found that the p value is 0.692 which is not significant, that means there is not much significant difference in the success rate of pleurodesis by Pleuroscopy and ICD.

Introduction

Pleuroscopy is a percutaneous endoscopic procedure performed by pulmonologist to visualize pleural space under local anesthesia. It is used for both diagnostic and therapeutic indications like recurrent pleural effusion, pneumothorax, empyema etc. .^[1&2]

It is also a less invasive procedure and maintains clear optical field, obtaining specimen for biopsy from regions that are not easily accessible.^[2] In the past decades Pleuroscopy has been found to be almost 100% accurate for malignant and tuberculous effusions, safe and effective with very low complication rate (morbidity of 2-5% and mortality < 0.1%).^[1]

In the year 1910, Jacobaeus described rigid endoscope instruments made up of stainless steel. In the late 1990s Semi-rigid pleuroscope replaced rigid pleuroscope because of its greater advantage over the rigid pleuroscope. It allows physician to overcome a limited view by manoeuvring its flexible tip in different directions. It can be rotated 180 degrees anterior and 130 degrees posterior.^[1 & 3] Pleurodesis is the instillation of an irritant into the pleural space to cause inflammatory changes between the visceral and parietal pleural surfaces, effectively obliterating the potential pleural space. Various agents are used like tetracycline derivatives, erythromycin, talc, silver nitrate, iodoprovidone, sodium hydroxide, quinacrine etc. Among them Talc pleurodesis is a specific form of chemical pleurodesis which gives better results comparatively. Talc has shown various advantage over other chemicals and is considered the most effective sclerosant available for pleurodesis in malignant non malignant pleural effusion^[4]

The chest tube drainage also called as pleural drain, is the procedure in which the trocar and cannula are inserted into the pleural space through the incision made in the chest wall. This procedure is carried out to drain blood, air, bile, pus or any other fluid. As this is the invasive procedure it should be carried out using aseptic techniques to avoid any chances of instillation of infection in the pleural cavity. The procedure is done under local anesthesia. The placement of a ICD tube allows for continuous, large volume drainage of fluid or air until the underlying pathology which can be addressed properly.^[1]

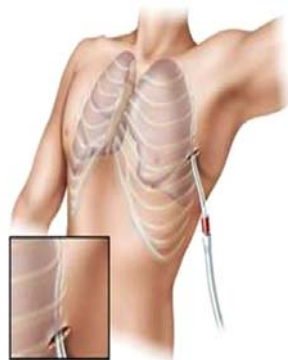


Figure1.1 ICD



Figure 1.2 Pleuroscope

A Retrospective Observational Study to compare efficacy of Pleuroscopic Chemical Pleurodesis and Blind Procedure (ICD) in Care of Pleural Pathology was carried at Pulmonology Department in Sparsh Hospital, Ahmedabad over a period of 4 months starting from December 2016 to March 2017.

➤ The two treatment modalities which included pleurodesis through pleuroscopy and through Inter-costal drainage. All the patient with Pneumothorax and rapidly refilling Pleural Effusion were included who visited site from January 2014 to December 2016. Data were collected of the patients who underwent either of the two procedures. Data was collected of the follow up visit to identify any complication. The follow up Visit of patients was conducted 1 month after the procedure. All the patients with pleural pathology, recurrent Pneumothorax, secondary Pneumothorax and rapidly refilling Pleural effusion of age 18 years and above were selected from the database. For analysis the follow up of patients was taken telephonically and their 1 month follow up X-ray were received. Other Data was collected from hospital database and patient's medical records.

➤ Study Population

All the patient with Pneumothorax and rapidly refilling Pleural Effusion were included who visited site from January 2014 to December 2016.

Recruitment Procedure

- Gender: Both
- Age : 18 and above
- Patients were included in the study on the basis of Inclusion and Exclusion Criteria.
- Inclusion Criteria
 - Recurrent Pneumothorax (PSP) and in Secondary Pneumothorax
 - Rapidly refilling Pleural Effusion
- Exclusion Criteria
 - Patient who could not tolerate procedure were excluded from the study like patients with cardiac disorders and haemodynamically unstable patients

Statistical Analysis

- The data was collected from hospital database and medical records of the patient in the CRF and then entered into the excel sheet for analysis. The analysis was done using SPSS 20.0 software
- Analysis was done with Chi square test. P value was obtained to determine P Value.

Results & Discussion

All the patient with Pleural Pathology and rapidly refilling Pleural Effusion were included who visited site from January 2014 to December 2016. Total number of patients was 79.

1.

Gender	Gender	N	%
	Female	23	29.11
	Male	56	70.89
	Total	79	100.00

Table 1 Gender

Table 1 shows that the total number female patients who underwent either of the procedure that is Pleuroscopy or ICD are 23 and total number of male patients are 56.

1. Pleuroscopic findings

Sr. no	Findings	No of patients
1	Sago grain, multiple necrotic nodules (patient with recurrent pleural effusion)	10
2	Polypoidal mass lesion , Multiple pinkish nodules	20
3	Plaque	8
4	Bullae/ Bleb/Normal	16

Table 2 Pleuroscopic findings

The Table 2 shows various Pleuroscopic findings. E.g Sago grain, multiple necrotic nodules (patient with recurrent pleural effusion), Polypoidal mass lesion, Plaque, Bullae/ Bleb etc. Pleuroscopy helps to diagnose the underlying cause of the disease and then to address accordingly.

1. Habits

Habits	Yes	%	No	%
Smoking	30	37.97%	49	62.03%
Alcohol	5	6.33%	74	93.67%

Table 3 Habits

Table 3 shows that 37.97% patients presenting with disease were smokers and 62.03% of patients were non smokers. And the percentage of patients taking alcohol is 6.33%.

1. Follow up X-ray of patients with Pneumothorax

Follow up (Pneumothorax)					
Group	success	%	Failure	%	p value
Pleuroscopy	11	84.61	2	15.39	0.692
ICD	11	78.57	3	21.43	

Table 4 Follow up X-ray (Pneumothorax)

The table 4 shows that in patients with pneumothorax who underwent Pleuroscopicpleurodesis success rate is 84.61% and in ICD success rate is 78.57%. As per p value there is no significant difference in both the treatments.

1. Follow up X-ray of patients with Pleural Effusion

Follow up (PE)					
Group	success	%	Failure	%	p value
Pluroscopy	30	73.17	11	26.83	0.708
ICD	7	63.63	4	36.36	

Table 5 Follow up (PE)

In table 5 it shows that the success rate of patients with Pleural Effusion who underwent pleuroscopicPleurodesis is 73.17% while in ICD success rate is found to be 63.63%. As per the p value there is not much significant difference in both the treatments.

1. Malignancy and non-malignancy

Indication	Procedure	MPE / NMPE	Success Rate
Pleural Effusion	Pleuroscopy	Malignant	72%
		Non-malignant	63.63%
	ICD	Malignant	100%
		Non-malignant	57%

Table 6 Efficacy of Pleuroscopy& ICD in Malignant and non-malignant PE

The Table 6 shows that the success rate in Pleuroscopicpleurodesis in patients with malignant and non-malignant is 72% and 63.63% respectively and in pleurodesis via Pleuroscopic via ICD is 100% and 57% respectively.

1. Primary Spontaneous & Secondary Spontaneous (Pneumothorax)

Indication	Procedure	PS/SS	Success Rate
	Pleuroscopy	Primary Spontaneous	100%
		Secondary Spontaneous	66.67%
Pneumothorax	ICD	Primary Spontaneous	100%
		Secondary Spontaneous	62.5%

Table 7 Efficacy of Pleuroscopy& ICD in PS and SS Pneumothorax

The Table 7 shows that the success rate in PleuroscopicPleurodesis in patients with primary and secondary pneumothorax is 100% and 66.6% respectively and in pleurodesis via ICD success rate in primary andsecondary pneumothorax is 100% and 62.5% respectively. Complication was seen in 3.70% of patients who underwent pleuroscopy it included visceral pleura injury, subcutaneous emphysema whereas in patients with ICD the complication was found to be 12% (e.g bleeding, subcutaneous emphysema, lung injury. Mean age in females was found to be 53 and in males it was 57.

Conclusion

Pleuroscopy and ICD both are effective procedures for Pleurodesis with minimum complication

rate. As per the p value, both the treatments, that is, ICD and Pleuroscopy are equally effective in the patients with Pleural Effusion and Pneumothorax, but Pleuroscopy is better option for diagnostic purpose.

ICD procedure is used by many practitioners since many decades and can be done bedside, similarly Pleuroscopy is also becoming procedure of choice among the professionals as it is less invasive when compared to open thoracotomy and can be done in minor OT under short sedation and local anaesthesia. At the same time it gives more insight about the disease as pleural cavity is directly visible. Semi-flexible Pleuroscope has more advantages over Rigid because of its flexibility of handling.

In terms of cost, ICD can be considered better option and is found to be affordable by any population, but Pleuroscopy can be considered to have additional benefit for taking the biopsy as it allows visual field and desired tissue can be taken which helps to investigate further. So advantageous in patients with malignancy

Complication was seen in 3.70% of patients who underwent pleuroscopy it included visceral pleura injury, subcutaneous emphysema whereas in patients with ICD the complication was found to be 12% (e.g bleeding, subcutaneous emphysema, lung injury).

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