A Dedicated Pleural Clinic Improves the Management of Intrapleural Catheters

The clinical question

Does implementation of a dedicated pleural clinic affect the outcomes of patients who undergo intrapleural catheter placement?

AABIP take home message

A dedicated pleural clinic can lead to improved patient outcomes including fewer procedures and admissions prior to IPC placement, and increased rates of pleurodesis with subsequent catheter removal.

Background

Recurrent pleural effusions are a major source of morbidity with a high symptom burden. Indwelling pleural catheters (IPC) allow for intermittent drainage of the pleural fluid in the outpatient setting and have been increasingly used for both malignant and non-malignant pleural effusions. However, post-catheter placement follow-up remains variable as there is limited data to provide robust evidence-based guidelines.

Study Design

Type of trial: Single-center, retrospective observational cohort study; n = 371.

Study groups:
Patients who underwent intrapleural catheter placement managed by pleural clinic (PC cohort) versus non-pleural clinic (non-PC cohort). A subgroup of the non-PC cohort was identified as pre-pleural clinic (pre-PC cohort) pertaining to patients whose IPCs were managed prior to implementation of the pleural clinic.

Settings: Single academic center in U.S.A.

Enrollment and Follow-up: January 2015 through January 2021.
Treatment period: N/A

Primary outcome:
Time to pleurodesis*
Rate of pleurodesis after intrapleural catheter placement

*Pleurodesis was identified by documented catheter removal (excluding removal for alternative indications such as infection, catheter malfunction or patient request)

Population

Inclusion criteria:
Adult patients who underwent intrapleural catheter placement between January 2015 to January 2021.

Exclusion criteria:
A subsequent intrapleural catheter placement in a patient who had already been included in the cohort.

Baseline Characteristics:
Both group characteristics were comparable except for mean age.

PC (n =103) versus non-PC (n=268)
Age (mean): 64.7±15.3 (68.2±14.5 vs 63.3±15.4, p=<0.01)
Male: 202 (54.5%)
Female: 169 (45.6%)
BMI: 24.2±5.5
Charlson Comorbidity Index: 8.8±3.6
Malignant pleural fluid cytology: 158 (42.6%)
Confirmed extrapleural malignancy: 312 (84.1%)
Benign effusion: 57 (15.4%)

Interventions

PC cohort: Patients were managed with post-catheter placement protocol which included a scheduled IPC teaching by ambulatory staff within a few days of procedure. Initial follow-up was scheduled at 2 weeks after IPC placement for needs assessment and suture removal. Additional visit was scheduled after 4 months to assess ongoing drainage requirements.

Non-PC cohort: Usual care at the discretion of provider.

Outcomes

Primary outcomes:
The Fine and Gray competing risks model (accounting for death) indicated higher likelihood of development of pleurodesis in the PC group than in non-PC group (adjusted sub-hazard ratio 3.8, 95% CI: 2.5-5.87; p<0.001).

Pleurodesis was achieved in 40 (38.8%) patients in PC cohort versus 41 (15.3%) in non-PC cohort (p-value <0.001). Even after excluding patients who underwent talc poudrage, the rate of pleurodesis is still higher in PC cohort (35.7% vs 14.3%).

Secondary outcomes:
The median time to death in the PC group was 108 days vs 34 days in the non-PC group, however had a hazard ratio of 1.01, 95% CI (0.74-1.37).

Comparison of procedures and admissions in PC vs non-PC cohort:

- Fewer thoracenteses per patient before IPC placement in PC cohort (2.7 ± 2.5 vs 4±5.1, p<0.01).
- More IPC placement in ambulatory setting in PC cohort (67%
- [69/103] vs. 21.6% [58/268]; P<0.001).
- No difference in admissions or ED visits between PC and non-PC cohort.

Comparison of procedures and admissions in PC vs pre-PC cohort:

- Fewer thoracenteses per patient before IPC placement in PC cohort (2.7 ± 2.5 vs 4.5 ± 6.1, p<0.01)
- Fewer admissions prior to IPC placement in PC cohort: (17.5% [18/103] vs 32.3% [43/133], p<0.01)
- More IPCs placement by PC cohort in ambulatory setting: (67% [63/103] vs 21.6% [58/268], p<0.001)

Adverse events:
Of the patients who underwent IPC placement, 13/371 (3.5%) summarized below had their catheter removed for reasons other than pleurodesis.

- Confirmed or suspected infection: 6 patients (1.6%)
- Significant pain requiring removal of catheter: 3 patients (0.8%)
- Frequent clotting: 2 patients (0.5%)
- Removal for patient safety related concerns: 1 patient (0.2%)
- Temporary intraoperative placement: 1 patient (0.2%)

Commentary

Study Strengths

- Relatively large cohort of patients with both malignant and non-malignant pleural effusions with IPC.
- The heterogeneity of the non-PC as well as pre-PC cohorts (which likely included general pulmonologists, interventional radiologists as well as interventional pulmonologists) allowed for a comparative analysis with specific point in time when intervention was implemented. The study was able to demonstrate a significant positive outcome in patients with the implementation of the pleural clinic.
- The authors provided a logical clinical explanation to their findings of the increased rate and shorter time to pleurodesis as well as the longer median survival in the PC cohort.

Study Limitations

- Single-center limits external validity and generalizability to other populations.
- Retrospective study and lack of randomization can lead to selection bias.

Conclusion

A dedicated pleural clinic with early involvement of interventional pulmonologists and a regimented follow-up protocol was shown to positively impact pleural-related outcomes with lower rates of admissions and procedures before IPC placement, as well as higher rates of pleurodesis and subsequent catheter removal alleviating both the catheter care and cost burden to patients. Additionally, earlier placement of IPC in the disease course may benefit patients in early palliation of symptoms and improved quality of life, and perhaps consequently improved longevity.

Funding

None.

Suggested Reading

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Article citation

Malcolm KB, Seeley EJ, Gesthalter YB. Impact of a Dedicated Pleural Clinic on Indwelling Pleural Catheter Related Outcomes: A Retrospective Single Center Experience. J Bronchology Interv Pulmonol. 2023 Apr 1;30(2):114-121. doi: 10.1097/LBR.0000000000000901. PMID: 36192832.

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