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## Editorial: Size matters—but comfort matters more in malignant pleural effusion

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Malignant pleural effusion (MPE) remains one of the most frequent and challenging problems faced by physicians. While the underlying disease is often incurable, the goal of care is unequivocal: durable symptom control with the least possible burden to the patient. In this context, the study by Raghad Arif<sup>[1]</sup> provides timely and clinically relevant insight into a deceptively simple but persistently debated question “does chest tube size truly influence outcomes, or does it primarily shape patient experience?”

From a thoracic surgeon’s perspective, this question is not trivial. For decades, large-bore chest tubes were considered the default approach, grounded more in surgical tradition than in robust evidence. The assumption was intuitive: larger tubes drain more effectively, more quickly, and more reliably. However, as minimally invasive techniques and patient-centered care have evolved, this paradigm has been increasingly challenged.

This prospective comparative study contributes meaningfully to that shift. The

findings are clear and consistent with what many of us observe in daily practice.

- Large-bore tubes deliver faster and higher-volume drainage,
- Small-bore catheters significantly improve patient comfort,
- Most importantly, pleurodesis success and overall efficacy are comparable.

This last point is the most critical. If the ultimate therapeutic goal—successful pleurodesis—is not compromised, then the justification for routinely using larger, more painful tubes becomes difficult to defend.

Pain scores reported in this study are not merely numerical differences; they represent real, measurable impacts on already vulnerable and moribund patients, many of whom are in a palliative phase of their disease. The consistent and significantly higher pain associated with large-bore tubes reinforces what clinicians have long suspected but perhaps have underestimated it in their decision-making.

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In this regard, the study aligns with the growing body of evidence and the current guidelines suggesting that smaller, less invasive interventions can achieve equivalent clinical outcomes with superior tolerability.<sup>[2]</sup>

### Interpreting drainage efficiency: Does faster mean better?

One of the traditional arguments in favor of large-bore tubes is their superior drainage performance. This study confirms that larger tubes result in:

- Greater total drainage volume,
- Shorter time to complete drainage.

However, the key question is whether these differences are clinically meaningful. In most MPE cases, drainage is a means to an end, not the end itself. The objective is to achieve lung re-expansion followed by effective pleurodesis. If small-bore catheters can reliably achieve this—albeit slightly more slowly—the clinical advantage of faster drainage becomes less compelling, particularly when weighed against increased pain and longer procedure times.

That said, the authors appropriately highlight scenarios where large-bore tubes remain valuable:

- Massive effusions,
- Acute respiratory compromise,
- Situations requiring rapid decompression.

Thus, the message is not to abandon large-bore tubes, but to use them selectively rather than routinely.

As thoracic surgeons, we must also critically appraise the methodology. The non-randomized design introduces an inherent risk of selection bias. It is entirely plausible that patients with larger or more symptomatic effusions were preferentially assigned to large-bore tubes, which may partially explain the observed differences in drainage parameters. As the historic TIME2 study has shown patients with malignant pleural effusion and no previous pleurodesis, there was no significant difference between indwelling pleural catheters and talc pleurodesis with large chest tube at relieving patient-reported dyspnea.<sup>[3]</sup>

Nevertheless, the consistency of patient comfort outcomes, combined with comparable efficacy, strengthens the study's conclusions. Even in the presence of potential bias, the signal favoring small-bore catheters remains robust.

### Does this study influence the current practice?

This study reinforces a practical, patient-centered algorithm:

- Small-bore catheters (i.e., ≤14 Fr):
  - First-line in most MPE patients,
  - Particularly appropriate in palliative settings,
  - Preferred when comfort and outpatient feasibility are priorities.
- Large-bore tubes (i.e., ≥20 Fr):
  - Reserved for selected indications,
  - Massive or rapidly accumulating effusions,
  - Situations requiring rapid drainage.

Importantly, this approach aligns with the increasing use of indwelling pleural catheter, which further extend the principle of minimally invasive, patient-friendly care. The study highlights an important reality: despite decades of experience, the “optimal” chest tube size remains unresolved, largely because the definition of “optimal” has evolved. It is no longer solely about fluid dynamics—it is about balancing efficacy, safety, and patients' quality of life.

Future research should aim to incorporate randomized design, include longer follow-up for pleurodesis durability and to compare chest tube strategies with indwelling pleural catheter as well as to integrate patient-reported outcomes as primary endpoints

This study adds to the growing evidence that, in MPE management, larger is not necessarily better. From a thoracic surgeon's standpoint, the findings support a clear and increasingly compelling principle: small-bore catheters are appropriate in the majority of cases. Large-bore tubes still have a role—but no longer the default one.

In the modern era of thoracic oncology, success is not measured solely by what we achieve in the pleural space, but by how we achieve it and how our patients experience it.

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