

Indwelling pleural catheter for malignant pleural effusion - Are we ready?

“We cannot change the outcome but we can affect the journey” – Ann Richardson

Malignant pleural effusion (MPE) is a common and disabling complication of cancer and is associated with significant morbidity and mortality. Life expectancy in such patients is dismal and, depending on the primary tumour, the median survival ranges from 3 to 12 months.^[1] With 1 in 8 men and 1 in 10 women developing cancer globally, overall cancer incidence has shown an ascending trend and hence it is only expected that the burden of MPE will rise in the future.^[2] There is also a significant healthcare burden with MPE accounting for more than 125000 hospital admissions in the USA in 2012 and an estimated expense of more than 5 billion dollars per year.^[3] There is a paucity of Indian data on MPE.

MPE represents an advanced stage of cancer and in the large majority, treatment remains palliative based on symptom relief and preventing recurrence via early and successful pleural symphysis. Options include repeated thoracentesis, chest drain followed by chemical pleurodesis and indwelling pleural catheter (IPC). Pleurodesis and IPC offer ‘definitive’ management and are the widely favoured procedures. Both have their pros and cons and their adoption into clinical practice is based on numerous factors. While pleurodesis requires hospitalisation and has an approximately 50% failure rate at six months,^[4] it remains the first procedure of choice in our country mainly due to the ease of administration, patient preference and its favourable economics. Talc remains the pleurodesis agent of choice with slurry being as effective as poudrage.^[5,6] Cheaper and safe alternative like povidone iodine, with an efficacy rate of 89%, remains an attractive option in our part of the world.^[7]

IPC, introduced in late 1990s, is a 15.5 F fenestrated catheter with a proprietary one-way valve and polyester cuff which gets embedded in the tunneled subcutaneous tissue giving it the indwelling property for longer periods. Single-use pre-vacuum bottle is attached to drain fluid in a controlled manner. Inserted as a day-care procedure, IPC offers ambulatory advantage, effective symptom control, shorter hospital stays, reduced number of subsequent pleural interventions and minimal and tolerable complication rate.^[8-10] An added and unexplained benefit of IPC is the phenomenon of auto pleurodesis seen in 11-24% patients at the end of three months.^[11-13] In the last decade, a number of well conducted patient-centric randomised control trials (RCTs) on IPC have resulted in

it being positioned as the first-line therapy for MPE in most parts of the western world.^[10-13] Novel strategies like aggressive versus symptom-based drainage (ASAP and AMPLE 2) and IPC followed by talc pleurodesis (IPC-PLUS) have facilitated early pleural symphysis and catheter removal.^[11-13] Impregnating indwelling catheters with silver nitrate, however, failed to show superiority over standard IPC in pleurodesis efficacy (SWIFT).^[14]

MPE IN INDIA

The projected incidence of cancer in India among males is 679,421 (94.1 per 100,000) and in females 712,758 (103.6 per 100,000) for the year 2020.^[15] If one in six cancer patients go on to develop MPE, this would leave a substantial number of patients to be treated by our health personnel.^[16] Managing this large group of patients will require judicious decision making based on patient selection, their preferences, available skills, resources and cost.

IPC was introduced in India six years back but has yet to establish a strong foothold. Technical expertise, cost, erratic supplies, recurring expenditure, and skepticism on homecare failures are some deterrents to its widespread use. Increased risk of empyema remains a perceived rather than evident concern for the rates of infection, as experienced by the authors and other colleagues, is no worse than the ~ 5% as seen in other parts of the world (17, personal communication).^[17] There is a pressing need for workers across the country to establish an IPC registry and share their experiences. In the current issue, Shrinath *et al.*^[18] have made a small beginning in this direction by sharing their preliminary results in a research letter. Their observations on a very small number of patients conforms to available literature while excluding what would have been significant information on IPC in the Indian context, namely, the cost analysis and details of home care – two vital issues that need attention in our part of the world. IPC holds advantage over pleurodesis in the reduction of hospital visits and handing over the care and control to patients themselves. By bringing in all patients daily for the first week and thereafter three-weekly for drainage and inspection for complications defeats this purpose. Compulsions such as absence of healthcare inputs at home from trained nurse or family physician may have been a possible cause and herein lies the anticipated main contraindication of IPC in India which is the inability for the patient, family or healthcare services to manage

home drainage. Unless efforts are made to institute and reinforce training for IPC home care, we may be in danger of causing more harm than benefit.

Many centres in the country have larger experience of IPC insertions and follow-up of their patients and a wealth of information can be obtained if they publish their data. This will help to ideally position this procedure in the MPE management algorithm in our country which has a unique and complex healthcare system characterised by mixed ownership pattern, sociocultural differences, different types of providers and systems of medicine – all of which mandate that we may not always be successful in replicating the Western model of health care. We need to invent our indigenous pathways to manage MPE. This should include low-cost drainage systems, engaging our vast community and hospital-based health workers to provide home support to IPC patients and most importantly, keeping the overall cost affordable. It is incumbent on the manufacturers to consider an economical business model suited to the healthcare practices of our country if we want to expand the role of IPC beyond the trapped lung and failed pleurodesis scenario. Finally, we believe that an RCT is needed in India, comparing tube thoracostomy and pleurodesis with IPC, where the primary outcomes are infection rate and cost analysis.

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