

Early dislodgement of Indwelling Pleural Catheter (IPC): a balancing act

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Introduction

Malignant pleural effusion (MPE) causes significant dyspnea in 1 million patients per year worldwide [1]. Both indwelling pleural catheter (IPC) and talc pleurodesis are effective therapies in managing the condition. In a recent *JAMA* trial, IPC has been shown to have no difference when compared with talc pleurodesis in relieving dyspnea arising from MPE at the expense of excess adverse events [2]. We report a case of IPC dislodgement at 26 h post-insertion and hypothesize potential mechanisms behind this rare adverse event.

Case Report

A 63-year-old male, nonsmoker, with right MPE from lung adenocarcinoma derived symptomatic benefit following drainage of his effusion. He had IPC (Rocket IPC, Rocket Medical, Washington, UK) placement 2 weeks following failure of talc pleurodesis to prevent fluid re-accumulation. After insertion of IPC, only 400 mL of blood-stained fluid was drained within 1 h into an Underwater Sealed Drain bottle (Ocean, Hudson, New Hampshire, Atrium, USA),

Abstract

A 63-year-old nonsmoker with right malignant pleural effusion derived symptomatic benefit following drainage of his effusion. Following insertion of indwelling pleural catheter (IPC), 1.3 L of blood-stained fluid was drained into underwater sealed bottle (Atrium®), but the IPC dislodged 26 h after continuous connection. We believe that the weight of the drainage bottle (including the un-emptied fluid) and the prolonged connection time contributed to this uncommon event reported in the literature. There was no recurrence when his second IPC was connected to a drainage bag which was emptied at every 500 mL, capped at 2 h each time. An anchoring stitch should also be considered when drainage devices heavier than the manufacturer bottles are used to drain IPC.

and the IPC was left connected to the Atrium to observe the drainage amount. At 26 h post-insertion, the IPC became dislodged with 1.3 L of fluid in the Underwater Sealed Drain bottle when the patient was turning in bed without intentional pulling (Figure 1).

Discussion

We made the following recommendations from the dislodgement of IPC in our case:

1. The weight of the fluid plus the bottle provided substantial pulling force and it remained the main culprit. This was particularly important when the subcutaneous tunnel was not given adequate time to generate inflammation and adhesions to anchor the IPC. The manufacturer of IPC (Rocket IPC) recommended the use of 600 mL of drainage bottles only and to change bottles when more drainages are needed, but in our case 1.3 L of fluid was allowed to accumulate in the drainage device.
2. Emptying the accumulated fluid in the drainage bottle once 600 mL is reached may potentially solve the problem especially when larger, nonmanufacturer bottles are used



Figure 1. Dislodged indwelling pleural catheter.

to drain fluid. This also has healthcare cost implications as IPC drainage bottles are expensive (\$HK200 each) and single use only, meaning \$HK400 for each 1.2 L drainage.

3. Avoiding prolonged connection time for more than a few hours would be helpful.
4. Securing the IPC with an anchoring stitch is practiced in some centers only but not in our case. This should be strongly considered when drainage systems heavier than manufacturer bottles are applied to drain fluid. The caveat would be the timing of stitch removal is not well defined, and care must be exercised to avoid stitch-related wound infection.

5. The use of omental tag style bandaging may offer extra security but may cause inconvenience to patients.
6. Provision of cartoon style information to patients and carers is also useful, highlighting the avoidance of excessive force or pulling of IPC in the immediate period following its implantation.

Overall, dislodgement of IPC is rare. Fysh *et al.* reported a rate of 2.7% (1/37) [3], while several studies [4] and a meta-analysis [5] reported no cases of IPC dislodgement. While using manufacturers' bottles would practically eliminate early IPC dislodgement, the weight of the fluid in bottle and connection time must be closely monitored if cheaper bottles are to be used – a “balancing act” that clinicians should be aware to prevent similar events in the future.

Disclosure Statements

No conflict of interest declared.

Appropriate written informed consent was obtained for publication of this case report and accompanying images.

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