

A Pilot Study of a Dedicated Ballooned Intercostal Drain

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Introduction

A common complication of intercostal drains is accidental drain removal, usually resulting from inadequate securing techniques, occurring in up to 21% of cases^{1,2}. This increases the need for further pleural procedures, including drain re-siting, in 13% of cases¹. Additional procedures pose an additional risk to the patient and an increase in health care costs. One suggested method to reduce the frequency of premature drain removal is to use intercostal drains with dedicated ballooned tips. This provides a relatively atraumatic physical obstruction to the thoracostomy site, whilst being easy to use as suturing and/or extensive taping should not be required.

Methods

A study (n=20) of a 16Fr ballooned intercostal drain (Rocket Medical, Watford, England; *Figure 1*) to assess safety and feasibility, and indicate whether reduction in premature drain removal could be achieved. All drains were inserted under ultrasound guidance, skin sutures were not applied. Pain scores were collected from a subset of 11 patients using a visual analogue scale (VAS) from 0 (no pain) to 10 (worst pain imaginable) to ensure pleural irritation was not prohibitive.

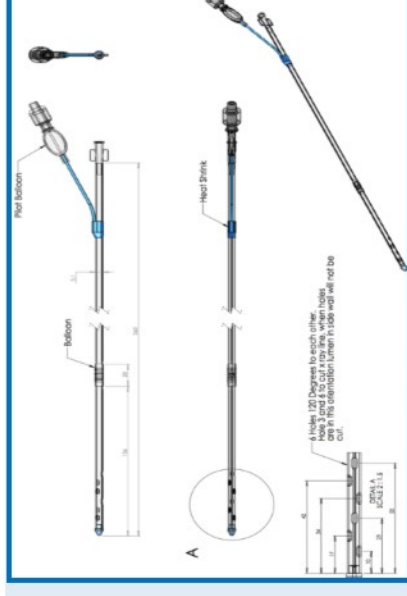


Figure 1: Schematic of study drain

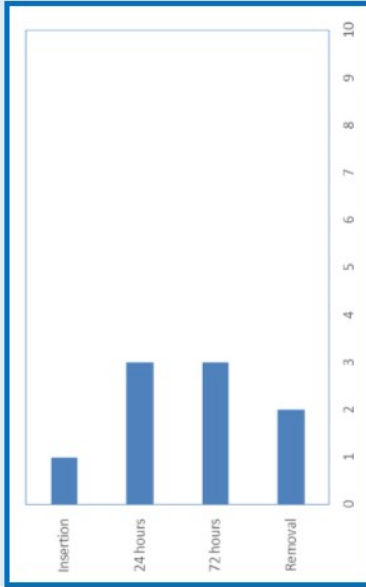


Figure 2: Pain score (Visual Analogue Scale) over time

Results

Twenty patients requiring intercostal drainage of pleural effusion were recruited from a single hospital site. 1 in 20 (5%) was prematurely dislodged, comparing favourably with the literature. In this isolated case, there was partial detachment of the balloon from the drain causing deflation. No patient required further pleural procedures and no other drain-related adverse events were recorded. The drains were generally well tolerated (*Figure 2*), with median (range) pain scores at insertion, 24 hours, 72 hours, and removal of 1(0-7), 3(0-5) and 2(0-7) respectively.

Conclusion

A ballooned intercostal drain is both safe and feasible. It does not appear to be associated with increase in discomfort compared to conventional intercostal drainage. This study suggested there may be a reduction in the frequency of premature drain removal compared to conventional intercostal drainage and there appeared to be fewer subsequent pleural procedures. A larger randomised trial is planned.

References

1. Davies HE, Merchant S, McGown A. A study of the complications of small bore "seldinger" intercostal chest drains. *Respirology*. 2008 **13**: 603–607.
2. Horsley A, Jones L, White J, Henry M. Efficacy and complications of small-bore, wire-guided chest drains. *Chest*. 2006 **130**: 1857–1863.

Dr Henry Ali will receive royalties from the sale of any devices.