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Title: Chest drain fixation: How can we prevent drains from falling out? Lessons from an audit

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Body: Introduction and objectives Chest drain displacement/ falling out is the most common complication of small bore drains inserted by the Seldinger technique. This often necessitates repeat drain insertion, with resulting morbidity, delay in further procedures such as pleurodesis, and prolongs hospital stay. Varying techniques of securing chest drains have been described but limited data is available on which method is optimal. We compared two common types of drain fixation techniques which are currently in practice at our district general hospital: sutures, and sutureless dressing. Method A retrospective case note audit was performed of patients requiring chest drain insertion over a 12-month period in 2010. Seventy one small bore chest drains were evaluated according to the rate of displacement of those secured by sutures versus those with dressing alone. A prospective re-audit was then performed in 2011 over a period of 8 months, following recommendations to change practice to fixation with sutures. Fifty-four drains were evaluated, with sutures as the method of fixation in the majority. Results In the 2010 audit, the majority of drains were secured with dressing alone (47 v 24). Accidental displacement was observed in 37 of the total 71 drains (52%). Of those with dressing fixation only, 75% were displaced, compared to 4% of drains which were sutured in place. Twenty one patients required repeat drain insertion. During the 2011 re-audit, sutures were used in 48 out of 54 (89%). Only 6 drains were accidentally displaced (11%). Conclusion The results of this audit suggest that securing a chest drain with a suture, as compared to dressing alone, is more effective in preventing accidental displacement.