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Title: Bronchial balloon occlusion in children with complex pulmonary air leaks

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Body: Background: Pulmonary air leaks in children are most commonly due to infection or barotrauma. While cases of severe barotrauma are falling due to advances in neonatal care, the incidence of necrotising pneumonia is rising. The majority of air leaks can be managed conservatively but more severe cases pose a significant challenge to the clinician. The use of occlusive endobronchial balloons is an established anaesthetic technique for a number of indications, but is not widely used in children. Methods: We conducted a review over 12 years & report 6 cases of complex air leaks in which balloon occlusion was used. Results: Balloon occlusion was successful in both cases of bronchopleural fistulae (secondary to severe necrotising pneumonia) & half the cases with intra-pulmonary air leaks. In the other two cases (due to barotrauma & filamin A deficiency), it was transiently effective. No serious adverse effects or complications were encountered. Conclusions: In selected cases, endobronchial balloons are a useful adjunct in the management of life-threatening bronchopleural fistulae and cystic lung disease. The procedure is non-operative, minimally invasive and reversible. With the increasing incidence of bronchopleural fistulae, this may become an increasingly important therapy.

Serial radiographs from case 1. Left: RUL pneumonia, pneumothorax, pneumomediastinum, subcutaneous emphysema. Middle: balloon inflated in RUL bronchus. Right: follow-up film.