Use of the Bonfils intubating fibrescope in a baby with a severely compromised airway

Introduction
We report the case of an infant presenting with severe airway obstruction due to massive macroglossia and extensive cervical and lingual lymphangiomata successfully intubated with a 2mm paediatric Bonfils Fibre scope.

Case Report
A male infant presented to the emergency department at five weeks corrected gestation age with a 5cm anterior neck mass. He was noted to have mild tachycardia and tachypnoea and massive macroglossia resulting in partial airway obstruction when agitated. He was treated with prophylactic intravenous Co-amoxiclav and Dexamethasone and nebulised Adrenaline. Following a CT scan, the infant was admitted to the Paediatric Intensive Care Unit for observation pending micro laryngobronchoscopy (MLB) and MRI of the head and neck. The following day, induction was performed with Sevoflurane in 100% Oxygen. Anaesthesia was maintained with Sevoflurane and a Remifentanil infusion. Spontaneous respiration was maintained throughout and direct laryngoscopy revealed a grade 4 view of the larynx. A 2mm Bonfils fibrescope was inserted using a midline approach and produced a grade 1 view of the larynx. A 3.5mm uncuffed endotracheal tube (ETT) was easily railroaded through the vocal cords without any complications. MLB revealed tracheal deviation to the right with minimal compression. MRI demonstrated extensive anterior neck veno-lymphatic malformation extending to the tongue musculature with evidence of recent haemorrhage. The infant underwent an elective tracheostomy the following day and was subsequently discharged to the ward awaiting transfer to a regional centre for staged excision.

Discussion
The Bonfils intubating fibrescope is a reusable, metallic stylet-type endoscope with a fixed forty degree distal curvature. The adult fibrescope has been in use for over twenty years and has demonstrated its effectiveness in elective as well as emergency situations. A meta-analysis of rigid fibreoptic devices reported the Bonfils fibrescope outperformed other intubation videoscopes in difficult airway management (1). Devices such as the Airtraq and Glidescope were excluded in our case due to limited intra-oral space.

The paediatric scopes have been introduced more recently but reports are conflicting. A study of 55 children with normal airways undergoing elective surgery reported a longer time to intubation and a high failure rate (2). Mucous secretions were the main implicating factor.

A manikin based study simulating a difficult infant airway reported improved views using the Bonfils scope but this did not translate to easier tracheal intubation (3). In contrast, isolated case reports have reported successful intubation of difficult paediatric airways. In one case a small for gestation age newborn with mandibular hypoplasia and macroglossia was successfully intubated after several failed direct laryngoscopies (4). A second case described a child with Hurlers syndrome and known grade 3 larynx successfully intubated on the first attempt with the paediatric Bonfils Fibre scope (5).

Conclusions
There is a paucity of literature pertaining to the use of the Bonfils fibrescope as a rescue device for intubation in the difficult paediatric airway. In our experience, it enabled timely rescue intubation of a compromised grade 4 larynx in a patient with limited intraoral space and anticipated difficult surgical airway. The Bonfils fibrescope may be a useful tool for the difficult paediatric airway. However, further large-scale studies are required to evaluate its clinical efficacy when compared to other paediatric airway devices.

References