Cleft lip and palate are the most common of the craniofacial anomalies, with an incidence of approximately 1 in 800 live births. Twenty-five percent of cases of cleft lip are bilateral, and 85% of these are associated with cleft palate. In recent years there has been a move towards earlier surgical repair of both cleft lip and palate, with cleft lip repair being performed in the neonatal period in some centres. The presence of other associated congenital anomalies, including cardiac and renal anomalies, should always be borne in mind, particularly in children with isolated cleft palate. Over 150 syndromes have been described in association with cleft lip/palate, but fortunately all are rare. Some, however, have considerable anaesthetic implications, and many involve potential airway problems. The most well-known of these are the Pierre Robin, Treacher Collins and Goldenhar syndromes. Other, such as the Klippel-Feil syndrome, may include abnormalities of the cervical spine.

Airway problems in children with cleft lip and palate were recognized by Magill more than 70 yr ago [1], and since then many methods of managing the child with the difficult airway have been described. Some, such as the use of firm pressure over the larynx to aid laryngoscopy with a bougie as a guide to tracheal intubation, are relatively simple to perform by any competent anaesthetist and are successful in most cases. Digitally assisted tracheal intubation is used rarely, but also requires no special equipment [2]. Other more sophisticated methods, such as those involving fiberoptic techniques, require special equipment, training and experience [3, 4]. The laryngeal mask has been recommended as a guide to fiberoptic intubation in children [5] and has been used successfully in Pierre Robin [6–8] Treacher Collin [9] and Goldenhar syndromes [10]. It has been used for cleft palate repair in a baby with Pierre Robin syndrome when intubation proved impossible [11]. Specially designed light wands and laryngoscopes are available for difficult intubation in children [12–14], but these are either expensive or not readily available in most anaesthetic departments. Retrograde techniques have been described in infancy [15], but their success rate is much lower than in older children or adults. Even when a guide wire or bougie is manipulated successfully into the trachea, it may prove impossible to pass a tracheal tube over it. Threading the guidewire through the Murphy eye of the tracheal tube instead of the end hole allows an extra length of tube to pass into the trachea before withdrawal of the guidewire and this technique was used successfully in a 5-month-old infant with Goldenhar syndrome [16].

Assessment of the degree of difficulty of intubation before operation is not always possible in these children, as methods of assessment used in adults which require patient co-operation are not easy to apply in young infants. Radiological assessment of the paediatric airway has been described based on measurement of the maxillo-pharyngeal angle on lateral x-ray. This angle is normally greater than 100°, and angles less than 90° suggest that it will be impossible to see the larynx at laryngoscopy [17]. Awake fiberoptic intubation via a laryngeal mask has been described in an infant [10], but most anaesthetists perform laryngoscopic assessment of the airway during general anaesthesia. Anaesthesia is commonly induced with halothane, although sevoflurane may become the agent of choice in the future. Application of increased airway pressure with a well fitting face mask minimizes the risk of airway obstruction during induction. Neuromuscular blockers are contraindicated before intubation whenever the ability to inflate the lungs is in doubt. The applicability of adult gradings of the laryngoscopic view to children has not been evaluated widely, and the child with a difficult airway at induction will not necessarily have an airway that is difficult to intubate. Fiberoptic evaluation of the paediatric airway through an endoscopic face mask has been advocated recently [18], but is unnecessary in most cases.

In this issue, Gunawardana [19] reports the findings of a 10-yr prospective study of 800 consecutive patients presenting for cleft lip or palate surgery in whom an attempt was made to correlate the Cormack and Lehane gradings found at laryngoscopy [20] with the degree of difficulty experienced at intubation. All children were ASA I, and none was apparently suffering from any of the syndromes associated with cleft lip or palate. In 59 cases, however, the cleft lip was bilateral, and 52 children demonstrated retrognathia. Cormack and Lehane grading of III or IV, assessed after application of external laryngeal pressure, was associated with difficult intubation in 86% of cases, and a lower grading in only 2%. The degree of laryngoscopic difficulty decreased with increasing age, with no difficult laryngoscopies occurring in children aged 5 yr or more. This contrasts strikingly with conditions such as Goldenhar syndrome, where intubation often becomes more difficult with increasing age. Virtually all difficult laryngoscopies occurred in children with bilateral clefts or retrognathia. This finding is particularly encouraging, as both of these situations are readily assessed at the preoperative visit. The importance of carefully studying the child’s profile at this time cannot therefore be emphasized too strongly. In infants with severe upper airway problems there is also usually a history of significant feeding difficulties.

Despite the laryngoscopic findings, failure to intubate occurred in only 1% of patients in Gunawardana’s series, all of whom were less than 6 months of age. There were no significant episodes of hypoxaemia. Heart rate decreased to less than 80 beat min	extsuperscript{-1} in nine children, but the clinical significance of this is impossible to assess without knowing their ages and resting heart rates.
The presence of retrognathia or other congenital anomaly involving the upper airway may cause respiratory problems in the immediate postoperative period and extubation should be delayed until the child is awake. Provision of adequate postoperative analgesia is made more difficult because of the potential for respiratory depression which most analgesic drugs possess. Infraorbital nerve block offers an attractive alternative method of pain relief after cleft lip repair [22, 23].

D. J. Hatch
Portex Department of Anaesthesia
Institute of Child Health
30 Guilford Street
London WC1N 1EH

References