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Epigottopexy: A modification using additional hyoid suspension

by

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Introduction

The operation of epiglottopexy is now a well-established procedure in achieving airway protection and allowing phonation in the treatment of severe laryngeal incompetence due to bulbar palsies (Brookes and McKelvie, 1983). This case with severe laryngeal incompetence is presented because, in addition to an epiglottopexy and cricopharyngeal mycotomy, a laryngeal suspension was performed with the aim of additional laryngeal protection, thus obviating the need for a long-term tracheostomy.

Case report

A 71-year-old Caucasian male presented with a sudden onset of dysphagia and choking in June 1984. He was admitted to a local hospital and initial investigations including a direct laryngoscopy, pharyngoscopy and oesophagoscopy revealed no structural or pathological abnormality. All haemotological, biochemical and lumbar puncture investigations were normal, as was a C.T. brain scan.

The patient rapidly developed an aspiration pneumonia with a collapsed left lower lobe which subsequently developed into a large empyema. He responded well to drainage and combined treatment with Gentamicin and Piperacillin. A temporary tracheostomy was performed with a cuffed Portex tube, but despite this he continued to aspirate and lose weight. Nasogastric feeding was therefore commenced.

By September 1984 his general and nutritional state had improved and his neurological status had remained stable. In view of the persistent aspiration he was therefore considered suitable for an epiglottopexy and was transferred to Charing Cross Hospital for surgery.

On admission he was found to have marked tracheal overspill, and an indirect laryngoscopy revealed excessive salivary pooling due to cricopharyngeal dysfunction. There were no other signs of lower cranial nerve involvement and in particular there was no velopharyngeal incompetence or loss of tongue function. A pre-operative cineradiographic swallow study was performed which confirmed gross tracheal overspill (Fig. 1).

An epiglottopexy and cricopharyngeal myotomy were performed under general anaesthetic, as advocated by Brookes and McKelvie (1983). A lateral pharyngotomy approach was used and the pharynx was opened behind the posterior aspect of the thyroid cartilage. The mucosa overlying the aryepiglottic fold was dissected away and excised, and the epiglottis was then fixed in a retroverted position. A small residual opening was left in the posterior laryngeal inlet to preserve the airway and phonation. A cricopharyngeal myotomy was then performed and a nasogastric tube inserted. Finally a laryngeal suspension was performed using a carbon fibre implant. A drill hole was made

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FIG. 1

A pre-operative cine-radiographic swallow showing gross tracheal overspill.

through the mental protuberance of the mandible. The carbon implant was then slung round the hyoid body and suspended through the mandibular drill hole. The pharyngeal wall was closed with an inverting Vicryl suture and the wound was closed in layers with suction drainage.

He made a gradual but satisfactory recovery and nasogastric feeding was continued for ten days. With intensive swallowing therapy supervised by our speech therapist, swallowing slowly improved and in one month following surgery the tracheostomy tube was removed. A cine-radiographic swallow six weeks after surgery showed a significant reduction in tracheal overspill (Fig. 2).

Discussion

Severe laryngeal incompetence may lead to considerable morbidity and can be fatal due to ensuing aspiration pneumonia with abscess formation. It is said that Hippocrates first described the condition of aspiration John Hunter in 1781 was the first to scientifically investigate it and the classic study is credited to Mendelson in 1946 (Bartlett and Gorbach, 1975).

In the past a total laryngectomy was regularly performed for persistent laryngeal incompetence (Tucker, 1979), but more recently alternative measures have been developed. Experience with an arytenoid-epiglottic flap procedure has been described (Habel and Murray, 1972) in which the laryngeal inlet is closed off. Other theoretically reversible techniques for surgical closure of the larynx include glottic closure by suturing the vocal cords together (Montgomery 1975, Sasaki *et al.*, 1980) and separation of the trachea and larynx (Lindeman, 1975; Lindeman *et al.*, 1976; Barron and Dedo, 1980).

Brookes and McKelvie (1983) reported on five cases of severe laryngeal incompetence who underwent their new surgical technique of epiglottopexy. In their paper they state that, as well as laryngeal protection, phonation is preserved and it allows the possibility of an adequate airway. They mention disadvantages of other alternatives and include the following: 1) The anterior approach through the vallecula (Habel and Murray, 1972) endangers the superior laryngeal nerves which may further impair laryngeal rehabilitation; 2) The anterior approach in many of these procedures does not allow a cricopharyngeal myotomy to be performed at the same time and they emphasise the importance of this procedure, as cricopharyngeal hypertonicity often significantly contributes

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FIG. 2
A post-operative cine-radiographic swallow showing reduction in tracheal overspill.

to laryngeal incompetence; 3) They all sacrifice phonation; 4) They all require a long-term tracheostomy. Advantages of an epiglottopexy are also discussed which include preservation of phonation and ease of reversibility in cases where functional improvement occurs due to normal compensatory mechanisms.

In addition to this new procedure the case presented suggests that laryngeal suspension using carbon fibre implants is a useful adjunct in providing additional laryngeal protection, thus obviating the need for a long-term tracheostomy. Recent successes have been achieved with carbon fibre implants in orthopoedic reconstructive procedures (Jenkins and McKibbon, 1980). It has been found that they were very well tolerated in living tissues with virtually no adverse reaction, and their success and strength depended on the infiltration of new collagenous tissue.

Summary

A case of non-progressive severe laryngeal

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incompetence is described in which, in addition to the already established operation of epiglottopexy and cricopharyngeal myotomy, a laryngeal suspension using a carbon fibre implant is performed. This provides additional protection to the laryngeal inlet, thus obviating the need for a long-term tracheostomy.

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