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Treatment of submucous cleft palate by pharyngeal flap as a primary procedure

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Submucous cleft;
Velopharyngeal incompetence;
Hypernasality;
Pharyngeal flap

Summary

Objective: (a) Palatal repair is the standard surgical method for correction of velopharyngeal incompetence due to submucous cleft, but some patients may need further narrowing of velopharynx by pharyngeal flap. (b) The purpose of this study is to evaluate the efficacy of a pharyngeal flap as a single surgical procedure in the treatment of symptomatic cases.
Methods: Nine cases of symptomatic submucous cleft palate were subjected to treatment by pharyngeal flap only as a primary and single procedure after failure of speech therapy. Preoperative flexible nasopharyngoscopy was carried out for all children to determine the width of the velopharyngeal gap; the results were recorded on videotape and reviewed in the operating theatre for determination of the width of the pharyngeal flap. Postoperative follow-up by flexible nasopharyngoscopy and parent's questionnaire were used to assess the success rate.
Results: Follow-up flexible nasopharyngoscopy showed complete closure of the lateral ports in eight cases (89%) while one case (11%) showed incompetence. Hypernasality was improved in all cases witnessed by parent's questionnaire and this improvement was satisfactory in seven cases (78%) but not satisfactory in two cases (22%). One of the last two cases reached to satisfactory level after speech therapy, while the other case showed no further improvement.
Conclusions: Speech therapy alone cannot correct hypernasality in presence of anatomical defect. Pharyngeal flap is a useful procedure monitored by flexible nasopharyngoscopy. When pharyngeal flap is used, the need for adjunctive procedure is absent.

1. Introduction

The term submucous cleft palate is used to describe the condition which consists of a bifid uvula, translucent zona pellucida caused by deficient muscular

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structure in the midline of the soft palate and notched posterior border of the hard palate [1,2]. However this definition was denied before by Crikelair et al. in 1970, as all cases of overt cleft palate should leave zone that can truly be called a submucous defect after palatoplasty, if the hard palate is involved because only mucous membrane is closed over this area of the defect [3].

The incidence of this deformity has been reported to be 0.02—0.08%. In the larger of these series, the incidence of velopharyngeal insufficiency among patients identified to have submucous cleft palate was 1—9 [4]. Submucous cleft may occur sporadically or it may be present in association with other craniofacial abnormalities [3].

The structural presentation of submucous cleft palate indicates that the levator palati muscles have been shifted from their normal transverse orientation to a longitudinal position. The muscles, presumably important for normal speech, insert aberrantly on the bony free edge of the hard palate instead of forming a complete muscular sling leading to inability of the posterior margin of the soft palate to fully contact the pharyngeal wall [5].

About 50% of cases with submucous cleft palate will have speech disorders but this study was conducted in tertiary referral cleft clinics; thus the actual frequency of symptomatic patients may be lower [6].

The degree of velopharyngeal insufficiency that can exist is based on the anterior displacement of the muscles. However submucous clefts may be overlooked in neonates because they may be asymptomatic. Early manifestations include nasal reflux of liquids or food. Later, as speech develops, hypernasal speech or nasal emission may result [7].

Controversy exists regarding whether the incidence of otitis media with effusion is increased in children with submucous clefts. Studies have revealed an improvement in effusions following repair of a submucous cleft. However, more recent studies have revealed no improved resolution of the effusion after surgery [3,6].

Techniques for closure of submucous clefts are the same as those used for closure of overt cleft which are usually palatal push back or Furlow Z-plasty. Alternatively, the surgeon can use a pharyngeal flap technique or a pharyngoplasty. Pharyngeal flaps are usually superiorly based pedicle flaps of mucosa and underlying constrictor muscle. The overall goal is to create lateral ports that can easily close. Use of a pharyngeal flap is best when a sagittal closure pattern exists (i.e., when the greatest contribution to velopharyngeal closure is lateral wall movement). A sagittal closure pattern most commonly occurs with a cleft palate.

The aim of this study is to evaluate the efficiency of a pharyngeal flap as a single and primary surgical method for treatment of velopharyngeal insufficiency caused by submucous cleft without the need for reconstruction of palatal muscles, which when used primarily, may need secondary pharyngeal flap.

2. Methods

This study was conducted on nine cases with submucous cleft palate. Their ages ranged between 5 and 10 years. Five were males and four were females. All cases were collected from the ENT outpatient clinics of Kasr Elaini and Abou Rich children hospital in the period from May 2004 to April 2006, of these cases six were referred from Phoniatric clinics.

All cases were complained of hypernasal speech and on examination; they showed the three criteria of submucous cleft palate which means bifid uvula, bluish zona pellucida of the soft palate (Fig. 1) and notched posterior border of the hard palate.

Speech therapy was tried to correct the hypernasality for all cases before coming to the ENT clinic with no success.

All cases were subjected to the followings:
Preoperative evaluation:

- Full ENT examination.
- Flexible nasopharyngoscopy (Fig. 2A and B): the nose is decongested and anesthetized with a mixture of 4% lidocaine and 0.05% oxymetazoline hydrochloride. The nasopharyngoscope is passed through the nostril, superior to the inferior turbinate, to the choana. Passage of the scope along the floor of the nose does not position the fiberscope

Fig. 1 Bluish zona pellucida in the midline of the soft palate.