The Use of Speech Aid Prosthesis as a Diagnostic Tool

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It becomes more apparent today that a team evaluation is the most desirable approach to diagnosis and treatment planning in cleft lip and cleft palate cases, even though it may precipitate debates during treatment planning sessions. With this in mind the thoughtful use of a speech aid prothesis is most helpful as a diagnostic tool prior to a final team decision in instances where the prognosis of surgical correction of a cleft is questionable.

The advantages of using a reversible treatment technique (the prosthesis) merit consideration. A preliminary series of speech lesions can be instituted to improve basic tongue movement, evaluate the patient's speech potential with controlled closure, and allow a definitive prognosis before the risk of surgery is introduced.

Too frequently, only the opinion that good speech 'probably' will result following surgery influences the team's recommendation for surgery to start the patient's rehabilitation, making speech therapy the major factor. When the surgeon and speech therapist express reasonable doubts concerning the prognosis of potentially good speech production following surgery, it is comforting to know that the prosthodontist can make it possible to evaluate the likely speech potential following closure by fabricating a prosthetic speech aid.

The speech therapists on our team institute a series of speech lessons, usually in braces of twenty weeks with bi-weekly therapy sessions, following construction of the prosthesis. A series of tapes are used to monitor the patient's progress. When the lessons are complete and there is substantial evidence to mould a conclusive diagnosis, electing or rejecting surgical correction, we proceeded to outline the treatment plan with more confidence.

The speech aid should receive careful attention to certain critical areas to insure its value as a diagnostic tool. Although it is a temporary appliance, it must be functionally accurate.

A check list to follow in the construction of the diagnostic prosthesis includes the following points: a) Positive stability of the appliance during deglutition and speech production. Cineradiographic evaluation, if

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available, of the appliance is the best check. b) Adequate closure in all dimensions of the cleft at the periphery of the prosthesis extending into the nasopharyngeal void. c) No impingement of the pharyngeal section on the posterior throat wall during extreme movements of the head and neck particularly with the head in a chin-on-chest attitude, retro-flexed, and in extreme rotations to the left and right. d) The level of the inferior surface of the velar and pharyngeal section should be parallel and slightly superior to the existing plane of the hard palate. This will remove the possibility of undesirable contact with the posterior portion of the tongue during speech or deglutition. e) The most posterior aspect of the pharyngeal section which is in near apposition to the posterior throat wall should not be at a lower level than the more anterior portion of the section where it joins the velar section. These dimensions are attained almost automatically in the careful moulding of the section if the framework is constructed at a high parallel level to start. The clinician has to purposely introduce the errors since they do not occur naturally if the technique of moulding is accomplished solely by the dynamics of existing tissues. (There may be exceptions due to anatomy.) f) Adjustments are advisable after moulding by the muscle pressure technique. Here the critical skill of the prosthodontist is most useful. It is frequently necessary to overextend the peripheral dimensions of the pharyngeal section because of the excessive force of the musculature in the first moulding step. Without overextension there may be air escape in speech production. g) There must be neither displacement of the appliance by interfering clasp work on the occlusal surfaces nor eccentric striking by the lower teeth against the acrylic palate.

In conclusion, although the diagnostic speech aid is a temporary fabrication of acrylic and wrought wire, it must be critically constructed for optimal use as a diagnostic tool in instances of questioned surgical correction of the velum. The versatility of the prosthesis is that it can be discarded or adjusted with facility if ineffectual during the diagnostic period prior to a team decision involving surgery.

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