EMOTIONAL BLOCKING IN ESOPHAGEAL SPEECH

WILLIAM G. WILLIAMS

Complex as it is for the laryngectomy to produce adequate esophageal speech when all systems function satisfactorily, the process proves even more difficult when emotional blocking occurs. Not only does the withdrawing or overanxious neophyte face this problem but the experienced esophageal speaker also. The following discussion offers a frame of reference that will aid in understanding several aspects of this phenomenon organized under the following headings: (1) The anatomy and neurophysiology of esophageal speech structures, (2) Emotion as a physiopsychological phenomenon, and (3) Implications of emotional blocking in the laryngectomized individual.

Anatomy and neurophysiology of Esophageal speech structures

In any consideration of speech, normal or esophageal, we must remember that it represents an overlaid function using structures not specifically designed for speech *per se*. Instead the act of speaking must conform to and, on occasion, give way to, primarily biological processes.

Because most persons will agree that knowledge of the physiology of the larynx is incomplete, it will be perhaps worthwhile to review briefly some of the structures and functions involved that facilitate esophageal speech in the laryngectomized individual.

One thing is absolutely certain. The laryngectomy must learn very quickly that he has probably suffered no loss of any structure in the oropharynx or mouth cavity (except of course where glossectomy, etc., has been necessary). He must be confident that certain original structures in these areas still obtain for his use. To be ultimately successful, he must shift his thinking or awareness that speech is taking place from the mouth cavity itself and instead concentrate largely on initiating speech at the area in his throat that we know to be served by the cricopharyngeal sphincter. The following structures and functions as discussed in Gray (1966) etc., are therefore important as we study the phenomenon of esophageal speech.

A. Mouth Cavity and Oropharynx

The mouth cavity, oropharynx (and nasopharynx) are in reality an extension of the alimentary canal. Inherent therefore as the outer protective covering

William G. Williams is the Chief of Audiology and Speech Pathology, VA Hospital, Long Beach, California.

throughout are the mucosa with a marked variety of tissue, depending upon geography and function. The nasopharynx, for example, is covered by columnar ciliated epithelium while that of the oropharynx and laryngopharynx are characterized not only by pseudo-stratified columnar epithelium but also by stratified squamous epithelium. The latter stands more abuse but, as may be expected, also shows an unfortunate affinity for carcinoma cell growth.

The tongue plays a significant role in esophageal speech. It strongly influences the production of vowels and also the specific sounds of *k, g* and *ng.* Since two of the tongue's most important muscles, the genioglossus and hyoglossus, connect to the hyoid, it is obvious that removal of the hyoid as in some wide field surgery, may materially affect not only the above sounds but also the swallowing act itself.

Highly important for all speech is the palatal function within the mouth cavity. The rapid precise sphincter-like action of the soft palate and uvula is unique in its influence not only upon adequate voice quality but also the basic act of swallowing. Where the necessary surgery or other factors affect the ninth and tenth cranial nerve controls of the mouth cavity, oropharynx, and nasopharynx, we may expect to observe impaired action of these essential activities.

B. Laryngopharynx

The laryngopharynx reaches largely from the level of the epiglottis, present or not, to the esophagus. It is bordered anteriorly by the repaired tissues extant in the neck proper and posteriorly by the vertebral column. Neural and muscular involvement in this area has to do with the middle and inferior pharyngeal constrictors. Also playing unique roles are the stylopharyngeus and salphingopharyngeus as well as the palatal tensors and levators. Innervation of the laryngopharynx arises in the pharyngeal plexus, the paired vagus nerves, and with interweaving of the glossopharyngeal nerve.

C. Esophagus

The lower reaches of the laryngopharynx are continuous with the esophagus. The esophagus is a tube about 25 cm. in length that contracts most at the level of the sixth cervical vertebra and extends through the diaphragm where it contracts again ending at about the eleventh thoracic vertebra. The superior esophageal muscles consist of the red skeletal or partly voluntary variety while those inferiorly soon become smooth muscle or involuntary in nature. The recurrent laryngeal nerve supplies the striated muscle while the sympathetic trunks of the vagus supply the smooth muscle. These cranial parasympathetic and sympathetic fibres form plexuses between the two layers of the muscular coat of the esophagus and in the submucosa.

Basic Anatomy of the Esophageal Speech Structure

According to Levin (1962) and Ackerman (1962) most acceptable current surgical procedures include neck dissection with total laryngectomy and/or pharyngectomy and other contiguous organs in order to improve cure chances of carcinoma of the larynx. Wide field surgery includes removal of the larynx including the preepiglottic space. In addition the strap muscles are removed, all of the hyoid superiorly, and the cricoid with sometimes the second and third tracheal rings inferiorly. Optimum surface area of the mucous membrane is retained and desirable for creating the tool for speech training.

Thus variations in available tissue do exist because the remaining anatomy relects the surgeon's obligation and/or preference. One of the surgeon's prim« considerations is the prevention of pharyngeal or upper esophageal stenosis. Looked at in another way, the surgeon serves the patient significantly if he is able to maintain partly voluntary control over the striated fibres in the upper esophageal sphincter. The implications in this result for speech learning are obvious.

Emotion as a Physiopsychological Phenomenon

Emotional states in the human are among the most complex of all physiological —psychological phenomena involving as they do a wide variety of diffuse and intermingling processes throughout the body. Some external evidences of varying emotions may be facial expression and colour, body posture and gestures, perspiration and vocalization itself. Non-visible body activities include internal muscle tensing, rises in blood sugar and blood pressure, decreases in intestinal movement, and changes in respiration. AH of these may be subject to cultural and social modification. The complexity of emotion may be recognized when one considers how difficult at times it is, from observation alone, to differentiate among an individuals fear, aggression, or anger and especially so when one may produce or lead into the other without easily perceptible transition.

This brings us to the consideration that two basic aspects inherent in all emotion are (1) feeling or experience on the one hand and (2) behaviour or expression on the other. These evidences of emotion cannot really be dichotomized any more than we can isolate the voluntary from the involuntary modes of responses. For example, facial movements of all types may occur involuntarily under emotional pressure while there is both voluntary and involuntary mobility of some body movements (Gardner 1959). Anomalous as it may be the very primitive necessity for breathing may be impeded at the very time that oxygen is needed for survival. As Levin (1962) puts it, 'The pattern of shutting out and shutting in caused by withdrawal from a hostile world has been shown to modify breathing. . .' In entertainers or speakers some instances of stage fright often produce vocal hypofunction, including tight breathing and a weak voice with lowered subglottal respiratory pressure. Even in normal voices excitement and

anger raise the voice level and pitch while fear and depression lower it (Levin, 1962). To go even further in relation to our present discussion, '. . . regressive vocal patterns under emotional conflicts change sphincter action. . . .' (Moses, 1960). Moses (1960) further reports that others have also recognized a smaller lumen results from tenseness and anxiety. Breathholding, that involves closing of the laryngeal sphincter, often reveals insecurity or frustration. This prephonatory phase of the sphincter 'belongs to all the primitive laryngeal reflexes like coughing, gagging, retching, vomitting, and swallowing' (Moses, 1960). In addition, under emotional influences, the nasal mucous membranes shrink and swell, their dryness and moisture reflecting endocrine—psychogenic changes.

Current thinking is that emotional and other blocking mechanisms are not contained in the cortex but are instead in a lower level of sensory pathways. This attitude is supported in part by Hysson's hypothesis that there is a diencephalic co-ordination between uncontrolled cries of emotion, utterances which escape cortical controls (Moses, 1960). The complex central controlling system has been commonly accepted as the reticular formation that has connections with the principal sensory and motor pathways, brainstem, cerebellum, and other parts of the cortex. Without the reticular system (and, recently recognized, the role of the cerebellum) the cortex would be flooded with unwanted stimuli to 'jam' the nervous system; with it we must accept the highly significant role of the emotions in any aspect of learning but perhaps most important of all in any learning and subsequent production of speech or vocal expression.

Implications of Emotional Blocking in the Laryngectomized Individual

The laryngectomized person must learn to communicate by pharyngeal or esophageal speech using his intact oral mechanism following either laryngo fissure, partial laryngectomy, or total laryngectomy. He will have to learn to inject air into the esophagus and 'trap' it below the cricopharyngeal sphincter, which must then be released gently in order to produce the necessary vibration column of air that will become his means or source of speech production. Because rapid repetitions of this activity are essential to a normal speech rhythm (as normal as possible that is) it is therefore obvious that the early concept of 'belching' air from the stomach does not readily apply—the time and distance differentials are too great. Not only must the patient learn a relaxed, easy injection and release of air at the level of the sphincter to reduce stoma air and noise: this desirable techr nique also reduces the buildup of stomach 'gas' that accrues from the mistaken 'belching' process. The laryngectomy eventually succeeds optimally when his attention is focused at the sphincter level during speech; when he 'feels' speech occurring, in part, at this level rather than being distracted by abdominal activity that used to be encouraged as the source of vocalization air. Since the swallowing process is significant in the effectiveness of his new way of vocalizing, we can readily

see how trauma or excision of part of the ninth or tenth cranial nerves or the necessary muscles and mucous membrane affect its development.

In terms of what we have discussed it is therefore also evident that the phenomenon of emotional blocking can interfere immeasurably with the act of speaking not only in the beginner but also in the accomplished esophageal speaker.

We already know that speech often gives way to the more urgent biological processes. This hierarchy can be observed in the child about to receive a shot in the arm. The physician well knows that a brief absence or restriction of vocal language in the child at that particular time may not necessarily indicate a defective speech mechanism. As a corollary the competent laryngectomized speaker need not be criticized for his momentary, emotionally induced vocal silence. Naturally the newly laryngectomized person in his first speech lesson faces even greater complications.

In light of the previous observation that emotionality influences faster and deeper respiration we can better appreciate therefore the marked expulsion of air from the stoma. The frequently observed ineffectiveness or inability to accomplish the swallowing act that precedes pharyngeal speech may be related at least in part to the breathholding and pseudocroup of emotionally induced asthma. Not the least effect associated with emotional blocking is the drying of the mucous membrane that will materially impede clear, effortless, rapid swallowing or injection. It is interesting also to speculate that the tensing of the laryngeal and pharyngeal muscles that result in various voice disorders in the intact larynx may find a parallel in the tensing and therefore lack of dynamic juxtaposition of the cricopharyngeal sphincter.

The new laryngectomy's emotional involvement in the complexities of the initial therapy sessions may even militate against learning the basic concepts or insight necessary for monitoring his progress. We are all familiar with the unique ability of a sleeping mother to ignore loud frequent nocturnal furnace noises but who responds immediately to the slightest whimper made by her sleeping infant. This interesting capacity for selective attention needs consideration as we reflect that something of a similar nature can reasonably be taking place in the laryngectomy when the clinician is trying to teach him that speech now originates in a different part of his body.

His obvious anxiety in the situation may interfere with the effectiveness of his trials simply because he selectively attended to some aspects of the process going on inside him while others, such as the precise timing of events, continue to elude him. He may even complicate the learning process by not fully appreciating those initial occasions when he succeeded in doing what you wanted, simply because his more primitive feeling at the time was either hostile, or failure oriented. It is certain that emotional blocking continues to be a highly significant variable in the acquisition of adequate pharyngeal or esophageal speech.

This paper has been designed to provide some commonly known data on the anatomy and physiology of the larynx and to suggest certain aspects of emotional

blocking that delay or impede learning of pharyngeal or esophageal voice production. With the insight thus provided a clinician may be expected to face the new laryngectomy with greater patience and confidence in himself and with a deeper understanding of the forces at work in his patient.

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