

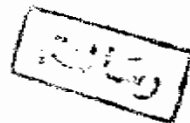
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**DIAGNOSIS AND TREATMENT OF
SWALLOWING DISORDERS**

ESSAY

SUBMITTED FOR PARTIAL FULFILMENT OF
THE M.Sc DEGREE IN
OTO-RHINO-LARYNGOLOGY

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بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
قَالَ سَتَجِدُنِي إِذَا عِلَّيْتُ لَنَا الْإِمَامَةَ

مدد ق الله العظيم

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INTRODUCTION

Swallowing is one of the more complex processes in the body, requiring synergistic motion of several different structures in rapid sequence. Failure of these processes can result in inefficient swallowing, which causes increasingly poor nutrition and hydration. More importantly, the failure of these processes can also lead to massive aspiration and sudden death.

During the oral stage of swallowing, the tongue propels the bolus posteriorly. During the pharyngeal swallow, the tongue, the larynx, and the pharyngeal walls generate forces that drive the bolus rapidly into the esophagus while the larynx remains closed to protect the airway. Failure in the coordination of these structures leads to pharyngeal dysphagia. However, efficient pharyngeal function also depends on oral cavity and esophageal function. With the number of sites for potential impairment of the swallowing process. Diagnosis and treatment of patients with swallowing disorders present a clinical challenge.

Patients with swallowing disorders can be divided into two groups. One group will have an obvious cause of their disorder based on their history, whereas the other group will present a diagnostic problem. The clinical approach to swallowing disorders of unknown cause is the same as with other diagnostic problems. The evaluation is based on a well-directed history, the physical examination, and carefully selected diagnostic tests. Without the appropriate diagnostic information. It is difficult to plan treatment of the swallowing impairment. This essay provides the structure for a well-directed evaluation of swallowing disorders. Information that can be obtained by the modified barium swallow and manofluorography is presented. In many cases, these tests can provide information for making the primary diagnosis and understanding the impairment of the swallow mechanism. Based on the pathogenesis of the swallowing impairment. treatment plans for swallowing disorders are presented.

ANATOMICAL REVIEW

ANATOMICAL REVIEW

The muscles of mastication

Although other muscles also act upon the mandible, the term muscles of mastication is used to describe the temporalis, the masseter and the lateral and medial pterygoid muscles. These muscles all receive their innervation from the mandibular division of the trigeminal nerve, indicating their origin from the musculature of the first branchial arch.

The temporalis muscles are fan-shaped muscles which take origin from the lateral aspect of the skull up to the inferior temporal line. The muscle fibres converge towards their tendinous insertions on the coronoid process of the mandible.

The masseter muscles may be divided into superficial and deep parts. The superficial parts arise from the lower border of the zygomatic arch and pass downwards and backwards to be inserted into the lower half of the lateral surface of the mandibular ramus. The deep parts arise from the inner surface of the lower part of the zygomatic arch and pass vertically downwards to be inserted into the

mandibular ramus above the insertion of the superficial parts of the muscle.

The lateral pterygoid muscle has two heads, each with a separate origin: the inferior head arises from the lateral surface of the lateral pterygoid plate, and the superior head from the infratemporal surface of the greater wing of the sphenoid. The muscle fibres are inserted into the neck of the condyle and into the disc and capsule of the temporomandibular joint.

The medial pterygoid muscle also has two heads. The anterior head arises from the pyramidal process of the palatine bone and the posterior head from the medial surface of the lateral pterygoid plate.

Actions of the muscles of mastication

The muscles of mastication, in conjunction with other muscles, such as the mylohyoid, buccinator and digastric, initiate the movements of the mandible. The movements may be summarized as follows, with the major actions of the muscle indicated:

- Elevation is produced by the masseter, medial pterygoid and anterior fibres of temporalis.
- Depression is produced by the lateral pterygoids.

- Protrusion is produced by the lateral and medial pterygoids.
- Retraction is produced by the posterior fibres of temporalis.
- Lateral excursions are produced by the medial and lateral pterygoids of both sides acting alternately .

[Jenkins, 1978]

Muscles of the cheeks and lips:

The cheeks and lips contain some of the muscles of facial expression which are primarily muscles controlling the degree of opening and closing of the orifices of the face. The expressive functions of the facial musculature have developed secondarily.

The muscles of the face are all derived embryologically from the mesenchyme of the second branchial arch; and therefore, the motor innervation is that to the second arch, the facial nerve.

The muscle of the lip is the orbicularis oris, the fibres of which are divided into four parts which correspond to the four quadrants of the lips. Muscle fibres in the philtrum insert into the nasal septum. The range of movements produced by this muscle include lip closure, protrusion and pursing. The muscles which radiate from the

orbicularis oris can be divided into the superficial muscles of the upper and lower lips.

Two muscles extend to the corner of the mouth, the risorius and the buccinator muscles. The risorius which lies superficial to the buccinator stretches the angle of the mouth laterally. The buccinator, which arises from the pterygomandibular raphe, inserts mostly into the mucous membrane covering the cheek, and its main function is to maintain the tension of the cheek against the teeth during mastication.

Numerous minor salivary glands line the inner surfaces of the lips and cheeks. The parotid duct pierces each buccinator muscle after passing around the anterior margin of the masseter muscle, with its orifice lying opposite the second upper molar tooth.

The soft palate

The soft palate is a fibrous aponeurosis, the shape and position of which is altered by the tensor palati muscles, the levator palati muscles, the palatoglossus and the palatopharyngeus muscles.

The tensor palati muscle arises from the scaphoid fossa of the sphenoid bone and from the lateral side of the

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The tensor palati muscle arises from the scaphoid fossa of the sphenoid bone and from the lateral side of the

cartilaginous part of the eustachian tube. The muscle fibres converge towards the pterygoid hamulus where they become tendinous, and bend at right angles around hamulus to become the palatine aponeurosis. When the tensor palati muscles contract, the palatine aponeurosis becomes taut. The motor innervation is derived from the mandibular division of the trigeminal nerve.

The levator palati muscle takes origin from the petrous temporal bone and the medial side of the cartilaginous part of the eustachian tube. The muscle curves downwards, forwards and medially to form a muscular sling which, when acting against the stiffened aponeurosis, produces an upward and backward movement of the soft palate. The nerve supply to the levator palati is derived from the cranial part of the accessory nerve. Fig. (1)

The paired palatopharyngeus muscles extend from the palate down the lateral pharyngeal walls, where they form the posterior pillars of the fauces to insert into the posterior border of the thyroid cartilage. The action of these muscles is to elevate the larynx and pharynx but they also arch the relaxed palate and depress the tensed palate. The nerve supply is from the cranial accessory nerve.

The paired palatoglossus muscles arise from the palatine aponeurosis and descend as the anterior pillar of