Tongue Patterns

Normal Tongue Patterns

Tongue movements are an integral part of the eating process. The following six normal patterns (suckling, simple tongue protrusion, sucking, munching, tongue tip elevation and lateral tongue movements) are presented in order from primitive to more mature patterns. All of the following patterns are normal, but do not involve any lateral tongue movement. The person cannot move food between molars for chewing. Since this is needed for chewing more viscous food, she/he fails to move along the continuum of greater variety and separation of tongue, lip, and jaw patterns. The person is limited to a diet which does not require chewing and grinding, such as a pureed diet.

♦ **Suckling**

The primary movement in suckling is extension – retraction. The tongue does not extend beyond the lips. Lateral movement is not observed. The tongue may show a semibowl shape (cupping). The tongue remains flat and thin. The movement is accomplished with normal tonal changes with rhythmical cycles of extension – retraction. Jaw opening and closing occur in conjunction with tongue movement. This is a normal but primitive pattern. The extrinsic muscles are primarily involved.

♦ **Simple tongue protrusion**

This is a primitive, normal movement associated with the suckling pattern. The tongue extends between the teeth or gums. The tongue remains flat and thin with no abnormal tonal changes. (In the normal population, this may be called tongue thrust, especially by speech pathologists).

♦ **Sucking**

The tongue is flat and thin, movement is up and down and is contained within the mouth. The tongue tip elevates to the anterior hard palate. The movement is rhythmical, up-down cycles, with normal tonal changes. The normal rhythm for nutritive sucking is one cycle per second; non-nutritive suck is faster or slower than that rate. A suck occurs with two kinds of pressure: positive pressure and negative pressure. Positive pressure occurs when the jaw elevates, the tongue elevates to the hard palate, and the lips seal.

> **Negative pressure** occurs when the jaw drops, the tongue moves away from the hard palate, the posterior cheeks contract, the soft palate elevates, and the lips remain sealed. More coordination and strength is needed for the negative phase of suck. If the individual fatigues, the positive pressure phase will be observed.

♦ **Tongue tip elevation**

This pattern emerges during suck. The anterior one-third of the tongue raises upward to contact the upper teeth or alveolar ridge (gums behind upper teeth). It indicates separation of tongue and jaw movement. This movement continues to develop so that the tongue tip can reach the upper lip, even when the jaw is depressed. For function, the tongue tip should elevate to contact the end of the upper surface when the jaw is slightly open.

♦ **Munching**

This is a pattern used to describe observations during eating. It is a combination of movements for the lips, tongue and jaw. The primary movement of the tongue is up and down with flattening and spreading. Tongue movements are accompanied by up and down movement of the jaw for chewing and biting. This is a normal tongue pattern observed in early chewing. Food is positioned on the body of the tongue and raised upward to the palate to break up the food prior to swallowing. Soft, lumpy foods, ground meats, and foods that dissolve in saliva (such as crackers), are tolerated with this chewing pattern.

♦ **Lateral tongue movement**

The tongue moves to either side, horizontally, to shift food from the center of the mouth to the side. Initially, the tongue may barely shift toward the gum. As skill develops, the tongue will contact the gum or molars. With more control, the tongue will move over the gums or molars. With continued development, the tongue will extend into either cheek. As skills develop, the tongue can move food from one side across the midline to the other side. As movements become more defined, lateral and tongue tip elevations are combined to allow sweeping/cleaning movements of lips, palate, upper and lower gums and inside the cheeks. This allows particles of food to be gathered and positioned on the tongue prior to swallowing.

Abnormal Tongue Patterns

Caregivers often see these patterns but may attribute them to voluntary behavior rather than to existing oral motor patterns. The individual with these patterns is at greater risk for poor weight gain, dehydration and aspiration. Meals may take longer to complete. For each of the patterns described, the caregiver must compensate at mealtime with greater control of the placement and amount of food and fluids presented. If the person is dependent at mealtime, she/he must depend on the caregiver to provide that control with safe and appropriate techniques.

♦ **Tongue tremor**

Rapid, small movements of the tongue during purposeful activity, such as sucking. A mildly abnormal pattern indicating fatigue. May be observed in nursing infants at the end of a nursing session.

♦ **Exaggerated tongue protrusion**

The tongue shows extension (forward movement) beyond the border of the lips which is non-forceful. The movement is a rhythmical extension – retraction pattern. It is similar to a suckle pattern but is mildly abnormal.

♦ **Tongue thrust**

The tongue is thickened and bunched. The movement is an outward extension beyond the border of the lips. The movement is forceful and is associated with an abnormal increase in muscle tone. This may occur as part of a total extension pattern of the body, or with hyperextension of the head and neck. The tongue thrust may make it difficult to insert a utensil into the mouth or may cause food to be ejected during feeding. During drinking, the tongue may thrust into the cup or may protrude in a very tight, bunched fashion beneath the cup.

♦ **Tongue retraction**

Also known as pseudoankyloglossia, not posterior tongue "tie" – In this abnormal movement, the tongue appears thickened and bunched. The movement is retraction, a strong, pulling back of the tongue into the posterior portion of the oral cavity, associated with abnormal increased muscle tone. The tip of the tongue is not forward and even with the lower lip. It is pulled back toward the middle of the hard palate and may be held firmly against the hard or soft palate. Hard approximation of the tongue with the palate may make insertion of utensils extremely difficult and may make it nearly impossible for any food to be placed on top of the tongue for swallowing. Gagging may be increased for the person with this pattern. Severe tongue retraction can partially block the laryngeal airway contributing to added respiratory problems during feeding. Tongue retraction may be associated with other patterns of retraction or extension in the body (i.e., shoulder retraction or neck extension) or it may be an abnormal pattern used as compensation by a person with poor swallowing patterns. When a person has swallowing difficulties, food which moves rapidly or is very thin may be uncontrollable and life threatening when the tongue is more forward. In such cases, the tongue retracts, resulting in reduction of the size of the pharyngeal opening. This pattern is associated with abnormal increased muscle tone.

♦ **Asymmetrical tongue placement or movement**

The tongue deviates to one side or the other and may show atrophy on the affected side. It may be accomplished by or associated with abnormal tone in the facial musculature. All movements of the tongue are affected. The tongue deviates or is pushed toward the weak side. If lateral tongue movement is consistently observed only to one side, it may not be active lateral movement, but rather may be asymmetrical movement toward the weak side.

♦ **Hypotonic tongue**

The tongue may appear thickened and shows little or no active movement. The fibers of the tongue are elongated past neutral at rest, with more space between the fibers. This is a functional (muscle) problem, not a structural problem. Surgical resection is not helpful in improving function. Fasciculations, small, uncoordinated movements over the body of the tongue, may be observed when the tongue is at rest. These movements may increase during eating, drinking, swallowing and vocalizations.

♦ **Macroglossia**

A rare structural (tissue) problem which occurs during fetal development in the first trimester. This is usually associated with other midline defects, including heart defects, agenesis of the corpus callosum, facial clefts, etc. The tongue looks nothing like a normal tongue. There are areas of unusual tissue distribution seen on the body of the tongue.

♦ **Dystonic tongue movement**

Rhythmical, nonfunctional movement of the tongue associated with Parkinson's or Parkinson's-like symptoms. The ability to interrupt the movement is related to the severity of the disease. With less severe involvement, the pattern can be interrupted during functional activities such as eating or speech, and will not be observed during sleep. The patterns most frequently observed include small movements, which looks as if the person is licking the lips continuously, and the twisting of the tongue and untwisting of the tongue which may look as if the person is chewing on the tongue continuously.

♦ **Tongue fasciculations**

An abnormal pattern of non-rhythmical, unorganized contraction of individual muscle fibers across the surface of the tongue. May be observed when the tongue is at rest or following direct stimulation to the tongue. May also be observed during generalized hypertonicity or hypotonicity affecting the whole body. Often associated with brain stem injury.

♦ **Ankyloglossia**

A structural impairment consisting of a shortened lingual frenulum. The body of the tongue is thinned, with the lateral borders elevated. A heart shaped indention may be noted at the front center edge of the tongue. Function is limited if the tongue tip cannot contact the upper surface when the jaw is nearly closed.

♦ **Pseudo Ankyloglossia**

A functional impairment in which the body of the tongue is thickened and retracted. The lingual frenulum appears as a prominent white fiber at the center of the tongue tip. The end of the tongue is blunt and thick. This pattern responds best to therapy, not surgery.

♦ **Geographic Tongue**

- Map-like appearance on the upper surface and sides of the tongue
- Benign condition, not an infection. Too many cells die off at one time
- Also called benign migratory glossitis or erythema migrans
- Affecting about 1% to 3% of people, more common in women than in men
- Irregular patches on parts of the tongue that vary in size and shape and change shape
- May have mild discomfort or a burning or painful sensation especially with acidic foods or toothpaste