

The Tongue Was Involved, But What Was the Trouble?

The search for the cause of a preschooler's difficult behavior leads to a surprising discovery.

BY NICOLE ARCHAMBAULT BESSON



Anything that affects a child's ability to breathe through the nose during the day—such as allergies—raises a red flag, as that same issue may affect nighttime sleep breathing.

and reported concerns, suspected his difficulties could be related to a little-known disorder.

Comprehensive intake

Part of my assessment involved collecting information from Aiden's teachers, caregivers and health care providers, in addition to parent reports.

Aiden's history included premature birth, jaundice, frequent ear infections, sinus infections and environmental allergies. Ear infections are not uncommon in children with lingual frenulum restrictions, as tongue-ties can result in swallow patterns that don't adequately ventilate eustachian tubes to support optimal middle ear functioning. And anything that affects a child's ability to breathe through the nose during the

Aiden, almost 5, is the brightest child in his pre-kindergarten class, but his teachers and parents are struggling to understand his behavior.

Aiden is constantly in motion, purposefully crashing into objects around him with little, if any, sense of caution. He avoids social interaction and doesn't understand how to take turns in a conversation. Easily frustrated, Aiden tantrums and acts out, does not like to follow directions, and forgets basic instructions and routine tasks, like brushing his teeth after breakfast and putting empty juice boxes in the trash can.

Aiden's parents turned to his pediatrician, who was concerned enough about issues of attention, hyperactivity and dysregulation to send the family to a neuropsychologist for testing.

Although Aiden had a prior history of receiving speech-language treatment for articulation, the neuropsychologist sent him to me because I am trained in orofacial myofunctional therapy. To check for an altered lingual frenulum (tongue-tie), I scheduled Aiden for an orofacial myofunctional assessment, which looks at oral and muscle functions related to proper oral rest postures, speaking, chewing, swallowing and nasal breathing support. I indeed discovered a tongue-tie, and given Aiden's history

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day—such as allergies—raises a red flag, as that same issue may affect nighttime sleep breathing.

The parents also indicated that Aiden is a picky eater, sitting at the table for an average of two minutes during meals and often leaving his plate untouched.

Aiden spoke at a very low volume, mumbling and running words together, with unfamiliar listeners understanding his connected speech less than 50 percent of the time. Aiden became frustrated when he wasn't understood.

In addition to atypical and age-appropriate articulation errors, Aiden had an interdentalized lisp for phonemes /s/, /z/, /t/, /n/ and /l/. This tongue thrust also resulted in an abnormal swallow pattern (tongue-thrust swallow) for liquids and solids. Many instances of tongue thrust in speaking and swallowing

are rooted in airway obstructions: For example, if the airway is obstructed during nighttime sleep breathing, the tongue will clear the oral cavity with a constant tongue-thrust pattern to maintain the airway, a behavior that is then generalized to the daytime.

Therefore, tongue thrusts may be more than just a speech issue in need of remediation—they often are indicators of an underlying airway issue.

Airway issues, in turn, can wreak havoc on learning and academics, behaviors and mood, attention and memory, abstract thinking, problem solving, and speech and language—secondary to reduced oxygen to the brain.

Aiden's speech and swallowing issues—in addition to his altered lingual frenulum—raised the possibility that his daily struggles

were related to a more pervasive and life-altering issue than initially suspected.

Mouth and face tell all

As speech-language pathologists know, one of the tongue's biggest roles—and the most essential to human life—is maintaining the airway for breathing. A lingual frenulum restriction affects the genioglossus muscle (a known upper-airway dilator) because the frenulum fibers don't stretch. This aspect of a speech-language assessment, however, can easily be overlooked in the midst of so much ground to cover in a limited amount of time.

Aiden's orofacial myofunctional exam revealed additional factors that pointed to a potentially compromised airway: a low forward tongue posture at rest (further visible by protrusion of the tongue through the



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teeth and lips), open lips at rest, a high narrow palate, wear patterns on the teeth (sign of possible nocturnal teeth grinding), enlarged tonsils and a convex facial profile (a pronounced head and recessed chin). Studies from the Journal of Craniofacial Surgery (see sources) show that a child with enlarged tonsils, malocclusion and convex facial profile has a two-to-three times greater risk for sleep-disordered breathing.

And at night?

Aiden's sleep-quality screening questionnaire further revealed the telltale signs and symptoms of nighttime breathing difficulties:

- Snoring nightly.
- Mouth breathing or open lips position.
- Grinding teeth (a micro-arousal that alerts the body to breathe).
- Restless sleep.
- Waking multiple times (from snoring, grinding teeth or body movement to open the airway).
- Enuresis (often from a diuretic hormone produced by an overworked heart).
- Waking in the morning feeling tired, even after ample sleep.
- Complaining of being or appearing tired during the day.

An interdisciplinary solution

Aiden's assessment warranted immediate referral to the appropriate medical professionals. At the top of this list was consultation from an airway-centric orthodontist to weigh in on the position of the facial and cranial bones in relation to the airway, and an otolaryngologist to assess nasal openings and to address potential signs of sleep-disordered breathing and/or airway obstructions. Enlarged tonsils, for example, can be accompanied by enlarged adenoids that further restrict the airway—Aiden's adenoids were obstructing 80 percent of his airway.

- The collaborative team recommended the otolaryngologist **release Aiden's restricted frenulum** when removing Aiden's adenoids and tonsils.
- I planned **orofacial myofunctional therapy** to begin a couple weeks before surgery to address jaw stabilization.
- I also planned **post-surgical orofacial myofunctional treatment** to re-educate the oral and facial muscles to support proper oral rest postures, speaking, swallowing and chewing, as well as to retrain nasal breathing. Studies show that

this follow-up treatment improves outcomes for children whose tonsils and adenoids are removed.

- The neuropsychologist, informed of Aiden's physiological issues that resulted in sleep-disordered breathing—and possibly his behavior issues—decided to **wait on Aiden's response to the medical and rehabilitative services** before reaching a diagnosis.

Improved outlook

From participation in an orofacial myofunctional program, Aiden has improved oral rest postures, tongue-tip elevation for some lingual alveolar sounds, improved speech intelligibility, increased talking and increased confidence speaking. He also is beginning to normalize his swallow pattern.

He sleeps through the night at least three nights per week, which his mother says is an enormous improvement for all of them. He also moves less in bed when sleeping.

People can no longer hear him breathing through the daytime. And in treatment he shows improved focus, participation and ability to follow directions. He now has a foundation for airway health and quality sleep—the fuel that drives children's health, growth and development, and learning. Aiden—and his parents—are now resting easy. 🔄

A Hidden Epidemic of Lost Sleep

Sleep problems affect up to 25 percent of the world's population, according to the World Association of Sleep Medicine (worldsleepday.org/2015s-slogan). They affect males and females from all walks of life and of all ages.

Quality sleep is the foundation of every human function, and compromised sleep can affect health, physical growth, learning and academics, socialization, emotional well-being, swallowing, communication, and executive-function skills, particularly in a developing child. Its manifestations are easily overlooked or mistaken for something else, yet 25 to 50 percent of preschoolers have sleep problems. Most parents do not realize that nighttime sleep breathing should be quiet, with the lips together at rest.

Sleep-disordered breathing alone can increase a child's risk for a special educational need by 40 percent, according to sleep researcher Karen Bonuck. Children can be moved off that track through the efforts of an interdisciplinary team and appropriate interventions.

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