

# *Dysphonia in Children*

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Let me tell you the typical history of dysphonia in children: a school-age boy has hoarseness worsened after sports activities such as football, where he uses his voice extensively. It occurs during leisure activities and right after them. This history characterizes the greatest incidence of dysphonia in children, and is the typical history of vocal nodules. Practitioners frequently discuss what to do with children who have vocal nodules. I will talk about what we think about the etiopathogenesis of vocal nodules.

The pediatric larynx is very similar to the adult female larynx. Men go through a process of transformation during puberty that predisposes them to abnormalities different from those of women and children. The female larynx during phonation can be perceived as a child's larynx. In the pediatric population and in women, there is broader posterior opening (glottic triangular posterior chink) during phonation. We have carried out studies and noticed a clear correlation between the glottic triangular posterior chink and the relation between the membranous and the cartilaginous portions of the glottis. The smaller that proportion, as in women and in children, the larger the posterior opening.

In male larynges this correlation is different. This has been known for many centuries, but we have detected telelaryngoscopically that a glottic proportion over 1:1 (one), as in men, produces no posterior chink. In men, the proportion is directly related to greater approximation of arytenoid cartilages, that is, during phonation they are very close; thus, when speaking under pressure, there is no complete relaxation of the posterior cricoarytenoid nor the lateral muscles in the respective phases of adduction and abduction. Therefore, the impact during phonation, in this situation of primary muscle-tension, occurs in the region of the vocal processes, and for this reason there are more cases of posterior granuloma in men than in women.

In female and children's larynges, in which the proportion is below or equal to 1 (one), during phonation there is approximation of vocal folds, which maintains the arytenoids partially separated. In hyperactive children, who yell, speak loudly, and force the neck when they speak, the larynx is under tension. So, what happens? There is no complete relaxation of muscles, and arytenoid approximation is even more difficult; the glottic triangular posterior chink becomes a glottic triangular medioposterior chink, which concentrates the source of phonation to be distributed

throughout the membranous portion of the vocal folds onto the mid-third, the vortex of the triangle of the chink, leading to greater impact on tissues and to the formation of nodules. This is the reason why children have a high incidence of vocal nodules.

When they grow up, what happens? Women virtually maintain the child's pattern, with a glottic triangular posterior chink. In boys, the larynx eventually goes into the male pattern, changing its anatomical conditions and making the nodule go away.

Understanding this process is essential. What should we do for young people? We should provide guidance to the family and the child, explaining that this is a benign effect that will disappear and leave no sequelae.

Intervention by a speech-therapist is directed to vocal hygiene and to situations when the child has some restrictions or has to speak in public. In these cases, we may also recommend surgery. We should not overwhelm the child with speech therapy nor submit him to surgery routinely, preferring to offer only counseling. For girls, counseling should be more detailed, because the female larynx is predisposed to maintaining its anatomic configuration during adult years. This is our concept of the formation of nodules, and according to it we define our approach to their clinical management.

### **Recommended readings**

1. Tuma J, Yazaki R K, Pontes P, Brasil O O C. Configuração das pregas vestibulares em laringes de pacientes com nódulo vocal. *Rev Bras Otorrinolaringol* 2005; 71: 576-581.
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3. Pontes P, Biase N, Kyrillos L. Configuration in the Development of Posterior Laryngeal Granuloma. *Ann Otol Rhinol Laryngol* 2001; 110: 765-769.
4. Ruiz D M C, Pontes P, Behlau M. Laryngeal Microweb and Vocal Nodules. A Clinical Study in a Brazilian Population. *J Dysmorphol Speech Hearing Dis* 1998; 1: 7-12.
5. Pontes P, Behlau M, Kyrillos L. An Attempt to Understand the Posterior Triangular Glottic Chink. *Rev Laryngol Otol Rhinol* 1994; 115: 3-6.