FirstChoice VIP CARE
by Select Health of South Carolina

Supraglottoplasty and Laryngoplasty

Clinical Policy ID: CCP.1157

Recent review date: 3/2026

Next review date: 7/2027

Policy contains: Laryngoplasty; obstructive sleep apnea; supraglottoplasty; vocal cord paralysis laryngomalacia; glottic insufficiency; recurrent laryngeal nerve; dysphonia.

FirstChoice VIP Care has developed clinical policies to assist with making coverage determinations. FirstChoice VIP Care's clinical policies are based on guidelines from established industry sources, such as the Centers for Medicare & Medicaid Services (CMS), state regulatory agencies, the American Medical Association (AMA), medical specialty professional societies, and peer-reviewed professional literature. These clinical policies along with other sources, such as plan benefits and state and federal laws and regulatory requirements, including any state- or plan-specific definition of "medically necessary," and the specific facts of the particular situation are considered, on a case by case basis, by FirstChoice VIP Care when making coverage determinations. In the event of conflict between this clinical policy and plan benefits and/or state or federal laws and/or regulatory requirements, the plan benefits and/or state and federal laws and/or regulatory requirements shall control. FirstChoice VIP Care's clinical policies are for informational purposes only and not intended as medical advice or to direct treatment. Physicians and other health care providers are solely responsible for the treatment decisions for their patients. FirstChoice VIP Care's clinical policies are reflective of evidence-based medicine at the time of review. As medical science evolves, FirstChoice VIP Care will update its clinical policies as necessary. FirstChoice VIP Care's clinical policies are not guarantees of payment.

Coverage policy

Laryngoplasty is clinically proven and, therefore, may be medically necessary for members with glottic insufficiency who have not achieved an adequate response to conservative treatment, when one of the following procedures is performed (American Academy of Otolaryngology-Head and Neck Surgery Foundation [Stachler, 2018]):

- Unilateral or bilateral injection medialization using a U.S. Food and Drug Administration-approved bulking agent.
- Unilateral or bilateral lateral framework medialization with or without arytenoid adduction.

Supraglottoplasty is clinically proven and, therefore, may be medically necessary when all of the following criteria are met (Carter, 2016; Kaditis, 2017):

- The diagnosis is laryngomalacia in a child age two or younger.
- There is documented hypoxia, hypercapnia, failure to thrive, infantile sleep apnea, cor pulmonale, or pulmonary hypertension unresolved with conservative management.

Limitations

No limitations were identified during the writing of this policy.

Alternative covered services

Laryngoscopy and laryngeal electromyography.

Background

Vocal cord paralysis refers to complete vocal cord immobility, while vocal cord paresis refers to reduced vocal cord mobility. Vocal cord paralysis may be the result of recurrent or superior laryngeal nerve damage or, less commonly, of vagus nerve damage that may be permanent or reversible depending on cause and treatment. In such cases, nerve function to adduct the vocal cords for voice production and cough is affected, and the glottis fails to adequately function, leading to an increased risk of aspiration. The most common type of vocal cord paralysis is unilateral (Singh, 2024).

In the absence of aspiration or other serious pathology, conservative intervention with speech therapy and a 12-month observation period may be appropriate to see if the patient can recover vocal and swallowing interventions. More aggressive approaches may be indicated to protect the airway and prevent aspiration. Surgical interventions include temporary or permanent vocal fold injection augmentation, medialization laryngoplasty, laryngeal reinnervation, and arytenoid adduction (Singh, 2024).

Injection laryngoplasty, also known as injection augmentation, involves the injection of bulking agents (e.g., hyaluronic acid) into the lateral aspect of the paralyzed vocal fold to move the vibrating surface towards the midline and enhance glottic closure. Injection laryngoplasty may be performed in an outpatient, hospital, or ambulatory surgical facility under conscious sedation or in a surgeon's office with local anesthesia. Medialization laryngoplasty is an open surgical procedure that exposes the larynx for implant placement (Singh, 2024).

Laryngomalacia is a congenital anomaly affecting the laryngeal structure most commonly in infants, although it may occur in older children and some adults. It primarily involves a structural weakness in the soft tissues of the larynx in the supraglottic area. During inspiration, the larynx may collapse and partially obstruct the airway, resulting in the characteristic stridor heard in infants. Frequently, laryngomalacia is self-limiting, improves with age as the laryngeal structures mature, and requires only conservative management such as feeding upright, antireflux therapy, and close observation of respiratory symptoms. In severe cases, surgical intervention may be needed to address symptoms of hypoxia, hypercapnia, failure to thrive, infantile sleep apnea, cor pulmonale, or pulmonary hypertension (Klinginsmith, 2024).

Supraglottoplasty is a surgical procedure that removes excess tissue and reshapes the structures of the upper larynx. The supraglottoplasty procedure may consist of several procedures, broadly categorized as debulking of arytenoids, division of aryepiglottic folds, and epiglottis surgery (Del Do, 2018).

Findings

Guidelines

According to the American Academy of Otolaryngology-Head and Neck Surgery Foundation's guideline on patients with dysphonia, surgery is generally not the primary treatment for the majority of patients with dysphonia and should be targeted at specific pathologies. Medialization techniques are indicated for glottic insufficiency, for which there are several etiologies, including impaired vocal fold mobility (e.g., paralysis or paresis), bowing, and vocal fold soft tissue defects. Medialization techniques consist of injection medialization with a bulking agent or laryngeal framework medialization with or without arytenoid adduction. These techniques may be performed unilaterally or bilaterally. For spasmodic dysphonia and other types of laryngeal dystonia, botulinum toxin injections are preferred (Stachler, 2018).

The American Academy of Otolaryngology-Head and Neck Surgery Foundation's (2014) position statement considers supraglottoplasty an effective and not investigational procedure for treatment for obstructive sleep apnea in adults.

A 2017 systematic review by the European Respiratory Society Task Force of children age 1 to 23 months with obstructed sleep disorder breathing concluded that among interventions targeting specific conditions, supraglottoplasty is most often used for laryngomalacia (Kaditis, 2017).

A consensus of recommendations for treating infants with severe laryngomalacia was developed by the International Pediatric Otolaryngology Group, including indications for performing supraglottoplasty (Carter, 2016).

Evidence review

Laryngoplasty

Overall, the best evidence supporting the safety and efficacy of laryngoplasty procedures consists of nonrandomized studies of patients with unilateral vocal fold paralysis. There is insufficient evidence to determine the superiority of one laryngoplasty procedure over another. Choice of procedure will depend on several factors including patient preferences and expectations, laryngoscopy findings, the possibility for spontaneous recovery, need for immediate effect, airway compromise, and surgeon's preference.

In adults, both injection laryngoplasty and laryngeal framework medialization improve perceptual, acoustic, quality of life, and laryngoscopic outcomes, and compare favorably to other surgical options such as arytenoid adduction and laryngeal reinnervation (AlGhamdi, 2025; Coulter, 2023; Granato, 2019). One systematic review found injection laryngoplasty had lower complication rates than medialization laryngoplasty (7% versus 15%), but complications were generally minor (Coulter, 2023). In other systematic reviews, injection laryngoplasty improved dietary intake (Pan, 2022) and reduced the need for permanent thyroplasty (Vila, 2018). There were no differences in outcomes based on type of anesthesia provided in an operating room (general) versus in-office (local) (Carsuzaa, 2025).

The choice of injection material, volume, and timing of the intervention can impact the effectiveness of the procedure, particularly vocal quality (Safia, 2024). Systematic reviews cite variable treatment protocols and insufficient long-term follow-up data, which limit the ability to compare the effectiveness of injectable substances and implants. Hyaluronic acid and calcium hydroxyapatite appear safe and effective treatments for glottic insufficiency (Alkhalifah, 2025; Henriques, 2025). Silicone and Gore-Tex implants appear to provide adequate and comparable results in patients receiving type 1 thyroplasty (Vance, 2025).

In pediatric populations, the main causes of unilateral vocal fold paralysis are trauma due to cardiac surgery and idiopathic paralysis. Recovery is often prolonged, placing the child at risk for aspiration and dysphonia. Speech therapy, injection laryngoplasty, medialization laryngoplasty, and laryngeal reinnervation are corrective options. While laryngoplasty outcomes are less established in children, systematic review evidence shows generally favorable improvements in phonation and dysphagia outcomes, and the results are comparable to laryngeal reinnervation (Aires, 2020; Marvin, 2023). A limited meta-analysis demonstrated a mean improvement after laryngoplasty intervention in 79% (95% confidence interval 67% to 91%) of children, with an overall complication rate of 15% (Marvin, 2023).

In children with bilateral vocal cord paralysis, the primary treatment is tracheostomy. A systematic review of 10 studies (n = 80) examined the effectiveness of percutaneous vocal fold lateralization. Mean follow-up was 30 months. The average age of participants ranged from four days to ten years. Preoperatively, approximately 37% of the participants had undergone tracheostomy, 31% had a high-flow nasal cannula, and three participants required transient orotracheal intubation. In the overall cohort, vocal fold mobility returned in 35%, predominantly in those with neurological etiologies, and 25.6% had some degree of dysphonia. Approximately 11% experienced

postoperative complications, with glottic edema leading to reintubation being the most common. Six patients required revision procedures to relocate lateralization suture or due to skin abscess. Low occurrences of granuloma (one case), suture removal (three cases), and death (one case) were reported. The majority of participants (86%) who had undergone a tracheostomy preoperatively were successfully decannulated, but only three participants regained vocal fold mobility (Carneiro, 2025).

Laryngeal cleft is a rare congenital disorder where the larynx and esophagus fail to fully fuse. A systematic review analyzed the outcomes of 713 young children (mean age 33.7 months) with type 1 laryngeal clefts, of whom 38% of patients received injection laryngoplasty as a primary therapy. After an average 6.8 month follow-up, 90% of parents reported symptom improvement. These results compare favorably to formal surgical repair (Reddy, 2020).

Evidence supporting laryngoplasty procedures for treating bilateral vocal fold paralysis is very limited. Various surgical techniques, including laryngoplasty, have been studied in adults and children with the goals of either avoiding tracheostomy with small changes to both voice parameters or deglutition, decannulating the tracheostomy tube, or improving breathing function. The evidence does not permit conclusions regarding the optimal surgical intervention for this condition (Al-Khatib, 2024; de Almeida, 2023; Nemry, 2024).

Supraglottoplasty

Laryngomalacia is a common cause of swallowing disorders. Evidence from systematic reviews and meta-analyses of supraglottoplasty consists of nonrandomized studies in pediatric populations. The mean age of children presenting with laryngomalacia is less than 12 months, and children often present with other comorbidities, most commonly gastroesophageal reflux. Despite heterogeneous samples, supraglottoplasty appears to be an effective treatment option for resolving symptoms of dysphagia in children presenting with severe laryngomalacia (Mills, 2024; Rossoni, 2024). A portion may require intensive care post-operatively. Factors linked to elevated risk of intensive care included neurological disease, perioperative oxygen saturation < 95%, prolonged surgical time, and age less than two months (Kang, 2023).

One systematic review included 18,317 infants with laryngomalacia. The mean age was 10.6 months (range 0 to 252 months) with a 1.4:1 male to female ratio. Following supraglottoplasty, complete resolution of symptoms occurred in 73.6% of participants. The apnea-hypopnea index was reduced in those with concurrent sleep disordered breathing, but not resolved (mean difference -10.0, 95% confidence interval 15.6 to -4.5 events per hour) (Mills, 2024). Another meta-analysis (n = 311, mean age four months) found supraglottoplasty reduced the prevalence of oropharyngeal dysphagia by 59% when measured immediately postoperatively (Rossoni, 2024).

Laryngomalacia in children with Down syndrome presents additional challenges, as airway obstruction and hypotonia may occur at multiple levels and significant comorbidities are often present. While the evidence is very limited in this population, Salloum's review found 20 of 32 participants were successfully treated with supraglottoplasty. The duration of follow-up ranged from 12 to 102 days (Salloum, 2021).

There is very limited evidence supporting supraglottoplasty as a surgical option for isolated, persistent pediatric obstructive sleep apnea in the absence of laryngomalacia. Supraglottoplasty may reduce but not resolve apneic events (Leonard, 2025; Mills, 2024).

A review of 20 studies (n = 1,186) compared repeat surgery rates of unilateral and bilateral supraglottoplasty for laryngomalacia. Unilateral procedures had a significantly higher rate of repeat surgery, most of which were contralateral procedures, whereas bilateral procedures were associated with a slightly higher risk of supraglottic stenosis (0% versus 1.2%, *P* = .011) (Avillion, 2019).

In 2025, we reorganized the findings, updated the references, and modified medical necessity criteria for laryngoplasty based on updated guideline criteria.

In 2026, we updated the references with no policy changes warranted.

References

On February 2, 2026, we searched PubMed and the databases of the Cochrane Library, the U.K. National Health Services Centre for Reviews and Dissemination, the Agency for Healthcare Research and Quality, and the Centers for Medicare & Medicaid Services. Search terms were "laryngoplasty" (MeSH), "vocal cord paralysis/surgery" (MeSH), "supraglottoplasty," "thyroplasty," "vocal cord paralysis," "vocal fold paralysis," and "laryngomalacia." We included the best available evidence according to established evidence hierarchies (typically systematic reviews, meta-analyses, and full economic analyses, where available) and professional guidelines based on such evidence and clinical expertise.

Aires MM, Marinho CB, de Vasconcelos SJ. Surgical interventions for pediatric unilateral vocal fold paralysis; A systematic review and meta-analysis. *Int J Pediatr Otorhinolaryngol*. 2020;141:110553. Doi: 10.1016/j.ijporl.2020.110553.

AlGhamdi MA, Alghamdi LN, AlQazenli MK, Alrashid DS, Bakhsh Z. Effectiveness of laryngeal reinnervation compared to medialization thyroplasty in the treatment of unilateral vocal fold paralysis: A systematic review and network meta-analysis. *World J Otorhinolaryngol Head Neck Surg*. 2025;11(3):449-461. Doi: 10.1002/wjo2.214.

Alkhalifah KM, Ahmed W, Alnawmasi HS, et al. The use of hyaluronic acid in the treatment of unilateral vocal fold paralysis: A systematic review and meta-analysis. *Cureus*. 2025;17(6):e85728. Doi: 10.7759/cureus.85728.

Al-Khatib T, Turkistani L, Abdu SH, Alahmadi RA, AlGhamdi MA, Butt N. Glottic widening procedures (GWPS) to avoid tracheostomy in infants' bilateral vocal cord paralysis: A systematic review and meta-analysis. *Int J Pediatr Otorhinolaryngol*. 2024;186:112133. Doi: 10.1016/j.ijporl.2024.112133.

American Academy of Otolaryngology – Head and Neck Surgery. Vocal cord (fold) paralysis. https://www.enthealth.org/conditions/vocal-cord-fold-paralysis/. Last reviewed August 2018.

American Academy of Otolaryngology-Head and Neck Surgery Foundation. Position statement: Surgical management of obstructive sleep apnea. https://www.entnet.org/resource/position-statement-surgical-management-of-obstructive-sleep-apnea/. Published July 31, 2014.

Avillion MP, Neighbors CLP, Biello A, Anderson LC, Liming BJ, Camacho M. Unilateral vs bilateral supraglottoplasty: A meta-analysis of rates of return to surgery and supraglottic stenosis. *Otolaryngol Head Neck Surg*. 2019;161(5):742-753. Doi: 10.1177/0194599819847644.

Ballard DP, Abramowitz J, Sukato DC, Bentsianov B, Rosenfeld RM. Systematic review of voice outcomes for injection laryngoplasty performed under local vs general anesthesia. *Otolaryngol Head Neck Surg*. 2018;159(4):608-614. Doi: 10.1177/0194599818780207.

Carneiro NS, Neto JFL, Salgueiro B, et al. Vocal fold lateralization by percutaneous suture in children: A systematic review. *Am J Otolaryngol*. 2025;46(3):104606. Doi: 10.1016/j.amjoto.2025.104606.

Carsuzaa F, Milhe de Saint Victor S, Crestani S, Lagier A, Espitalier F, de Mones E. Techniques of injection laryngoplasty under local anaesthesia in unilateral vocal fold paralysis: A systematic review. *Clin Otolaryngol*. 2025;50(4):600-608. Doi: 10.1111/coa.14307.

Carter J, Rahbar R, Brigger M, et al. International Pediatric ORL Group (IPOG) laryngomalacia consensus recommendations. *Int J Pediatr Otorhinolaryngol*. 2016;86:256-261. Doi: 10.1016/j.ijporl.2016.04.007.

Coulter M, Marvin K, Brigger M, Johnson CM. Dysphagia outcomes following surgical management of unilateral vocal fold immobility: A systematic review and meta-analysis. *Otolaryngol Head Neck Surg*. 2023;168(1):14-25. Doi: 10.1177/01945998211072832.

de Almeida RBS, Costa CC, Lamounier ESDP, et al. Surgical treatment applied to bilateral vocal fold paralysis in adults: Systematic review. *J Voice*. 2023;37(2):289.e1-289.e13. Doi: 10.1016/j.jvoice.2020.11.018.

Del Do M, Song SA, Nesbitt NB, et al. Supraglottoplasty surgery types 1-3: A practical classification system for laryngomalacia surgery. *Int J Pediatr Otorhinolaryngol*. 2018;111:69-74. Doi: 10.1016/j.ijporl.2018.05.022.

Granato F, Martelli F, Comini LV, et al. The surgical treatment of unilateral vocal cord paralysis (UVCP): Qualitative review analysis and meta-analysis study. *Eur Arch Otorhinolaryngol*. 2019;276(10):2649-2659. Doi: 10.1007/s00405-019-05587-2.

Henriques DP, Martins RHG, Cataneo AJM. Efficacy of injectable laryngoplasty with hyaluronic acid and/or calcium hydroxyapatite in the treatment of glottic incompetence. Systematic review and meta-analysis. *J Voice*. 2025;39(4):945-953. Doi: 10.1016/j.jvoice.2023.01.020.

Kaditis AG, Alonso Alvarez ML, Boudewyns A, et al. ERS statement on obstructive sleep disordered breathing in 1- to 23-month-old children. *Eur Respir J*. 2017;50(6):1700985. Doi: 10.1183/13993003.00985-2017.

Kang ES, Turkdogan S, Yeung JC. Disposition to pediatric intensive care unit post supraglottoplasty repair: A systematic review. *J Otolaryngol Head Neck Surg*. 2023;52(1):35. Doi: 10.1186/s40463-023-00622-z.

Klinginsmith M, Winters R, Goldman J. Laryngomalacia. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. https://www.ncbi.nlm.nih.gov/books/NBK544266/. Last updated January 10, 2024.

Leonard JA, Blumenthal DL, Almasri MM, Zalzal H, Riley CA, Lawlor CM. Management of obstructive sleep apnea in the infant: A systematic review and meta-analysis. *Otolaryngol Head Neck Surg*. 2025;172(3):759-773. Doi: 10.1002/ohn.1021.

Marvin K, Coulter M, Johnson C, Friesen T, Morris K, Brigger MT. Dysphagia outcomes following surgical management of unilateral vocal fold immobility in children: A systematic review. *Otolaryngol Head Neck Surg*. 2023;168(4):602-610. Doi: 10.1177/01945998221084891.

Mills JF, Monaghan NP, Nguyen SA, et al. Characteristics and outcomes of interventions for pediatric laryngomalacia: A systematic review with meta-analysis. *Int J Pediatr Otorhinolaryngol*. 2024;178:111896. Doi: 10.1016/j.ijporl.2024.111896.

Nemry N, Lechien JR. Surgical treatments of pediatric bilateral vocal fold paralysis: A systematic review. *J Otolaryngol Head Neck Surg*. 2024;53:19160216241291807. Doi: 10.1177/19160216241291807.

Pan S, Sadoughi B. Effectiveness of injection laryngoplasty for aspiration in acute iatrogenic vocal fold paralysis: A systematic review. *Laryngoscope*. 2022;132(4):813-821. Doi: 10.1002/lary.29326.

Reddy P, Byun YJ, Downs J, Nguyen SA, White DR. Presentation and management of type 1 laryngeal clefts: A systematic review and meta-analysis. *Int J Pediatr Otorhinolaryngol*. 2020;138:110370. Doi: 10.1016/j.ijporl.2020.110370.

Rossoni EP, Miranda VSG, Barbosa LR. The prevalence of dysphagia in children with laryngomalacia pre and postsupraglottoplasty: A systematic review with meta-analysis. *Int Arch Otorhinolaryngol*. 2024;28(1):e170-e176. Doi: 10.1055/s-0042-1755309.

Safia A, Abd Elhadi U, Roch M, et al. Determinants of clinical response to injection laryngoplasty in unilateral vocal fold paralysis: A systematic review and meta-analysis. *Int J Surg*. 2024;110(11):7281-7310. Doi: 10.1097/js9.0000000000001978.

Salloum S, Mahsoun Y, Al-Khatib T, Marzouki H, Zawawi F. Supraglottoplasty in the management of laryngomalacia in children with Down syndrome: A systematic review. *Int J Pediatr Otorhinolaryngol*. 2021;142:110630. Doi: 10.1016/j.ijporl.2021.110630.

Singh JM, Wang R, Winters R, et al. Unilateral vocal fold paralysis. In: *StatPearls* [Internet]. Treasure Island (FL): StatPearls Publishing; 2025 Jan-. https://www.ncbi.nlm.nih.gov/books/NBK519060/. Last updated February 9, 2024.

Stachler RJ, Francis DO, Schwartz SR, et al. Clinical practice guideline: Hoarseness (dysphonia) (update). *Otolaryngol Head Neck Surg*. 2018;158(1_suppl):S1-S42. Doi: 10.1177/0194599817751030.

Vance DG, Allen DZ, Leming AB, et al. Systematic review and meta-analysis of outcomes in type 1 thyroplasty comparing Silastic to Gore-Tex. *Laryngoscope*. 2025;135(4):1236-1247. Doi: 10.1002/lary.31867.

Vila PM, Bhatt NK, Paniello RC. Early-injection laryngoplasty may lower risk of thyroplasty: A systematic review and meta-analysis. *Laryngoscope*. 2018;128(4):935-940. Doi: 10.1002/lary.26894.

Policy updates

1/2015: initial review date and clinical policy effective date: 4/2015

12/2016: Policy references updated.

12/2017: Policy references updated.

12/2018: Policy references updated. Policy number changed to CCP.1157.

3/2020: Seven references added to the policy.

3/2021: Policy references updated.

3/2022: Policy references updated.

3/2023: Policy references updated.

3/2024: Policy references updated.

3/2025: Policy references updated.

3/2026: Policy references updated.

Related Codes

Below are the most commonly submitted codes for the service(s)/item(s) subject to this policy CCP.1157. This is not an exhaustive list of codes. Providers are expected to consult the appropriate coding manuals and bill accordingly.

Code	Code Description
31580	Laryngoplasty; for laryngeal web, with indwelling keel or stent insertion
31551	Laryngoplasty; for laryngeal stenosis, with graft, without indwelling stent placement, younger than 12 years of age
31552	Laryngoplasty; for laryngeal stenosis, with graft, without indwelling stent placement, age 12 years or older

Code	Code Description
31553	Laryngoplasty; for laryngeal stenosis, with graft, with indwelling stent placement, younger than 12 years of age
31554	Laryngoplasty; for laryngeal stenosis, with graft, with indwelling stent placement, age 12 years or older
31587	Laryngoplasty, cricoid split, without graft placement
31591	Laryngoplasty, medialization, unilateral
31599	Unlisted procedure, larynx