7.01.163	Absorbable Nasal Implant for Treatment of Nasal Valve Collapse		
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Section:	7.0 Surgery	**Page:**	Page 1 of 15

Policy Statement

I. The insertion of an absorbable lateral nasal implant for the treatment of symptomatic nasal valve collapse is considered **investigational**.

NOTE: Refer to Appendix A to see the policy statement changes (if any) from the previous version.

Policy Guidelines

Coding

The following CPT code **replaced HCPCS code C9749** for repair of a nasal valve collapse:

- **30468**: Repair of nasal valve collapse with subcutaneous/submucosal lateral wall implant(s)

Previously there was no specific code for absorbable nasal implants. Some facilities may still use the unlisted code C1889 (Implantable/insertable device for device intensive procedure, not otherwise classified).

Physician work for the nasal implant placement would be billed with the unlisted CPT code 30999 (Unlisted procedure, nose). Some providers may use CPT 30465 (Repair of nasal vestibular stenosis [e.g., spreader grafting, lateral nasal wall reconstruction]) for this service; however, the unlisted code is appropriate.

Description

Nasal valve collapse (NVC) is a readily identifiable cause of nasal obstruction. Specifically, the internal nasal valve represents the narrowest portion of the nasal airway with the upper lateral nasal cartilages present as supporting structures. The external nasal valve is an area of potential dynamic collapse that is supported by the lower lateral cartilages. Damaged or weakened cartilage will further decrease airway capacity and increase airflow resistance and may be associated with symptoms of obstruction. Patients with NVC may be treated with nonsurgical interventions in an attempt to increase the airway capacity but severe symptoms and anatomic distortion are treated with surgical cartilage graft procedures. The placement of an absorbable implant to support the lateral nasal cartilages has been proposed as an alternative to more invasive grafting procedures in patients with severe nasal obstruction. The concept is that the implant may provide support to the lateral nasal wall prior to resorption and then stiffen the wall with scarring as it is resorbed.

Related Policies

- N/A

Benefit Application

Benefit determinations should be based in all cases on the applicable contract language. To the extent there are any conflicts between these guidelines and the contract language, the contract language will control. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage of these services as it applies to an individual member.

Some state or federal mandates (e.g., Federal Employee Program [FEP]) prohibits plans from denying Food and Drug Administration (FDA)-approved technologies as investigational. In these instances, plans may have to consider the coverage eligibility of FDA-approved technologies on the basis of medical necessity alone.

Regulatory Status

In May 2016, LATERA® (Entellus Medical/Stryker ENT, previously Spirox) was cleared for marketing by the U.S. Food and Drug Administration (FDA) through the 510(k) process.[2,] LATERA® is the only commercially available absorbable nasal implant for the treatment of nasal valve collapse. It is a class II device and regulatory details are summarized in Table 1.

Table 1. Absorbable Nasal Implant Cleared by the U.S. Food and Drug Administration

Product	Manufacturer	Date Cleared	510(k) No.	Product Code	Indication
LATERA® absorbable nasal implant	Spirox (part of Stryker)	2016	K161191	NHB	Supporting nasal upper and lower lateral cartilage

Rationale

Background

Nasal Obstruction

Nasal obstruction is defined clinically as a patient symptom that presents as a sensation of reduced or insufficient airflow through the nose. Commonly, patients will feel that they have nasal congestion or stuffiness. In adults, clinicians focus the evaluation of important features of the history provided by the patient such as whether symptoms are unilateral or bilateral. Unilateral symptoms are more suggestive of structural causes of nasal obstruction. A history of trauma or previous nasal surgery, especially septoplasty or rhinoplasty, is also important. Diurnal or seasonal variation in symptoms is associated with allergic conditions.

Etiology

Nasal obstruction associated with the external nasal valve is commonly associated with post-rhinoplasty or traumatic sequelae and may require functional rhinoplasty procedures. A common cause of internal nasal valve collapse is a septal deviation. Prior nasal surgery, nasal trauma, and congenital anomaly are additional causes.

Pathophysiology

The internal nasal valve, bordered by the collapsible soft tissue between the upper and lower lateral cartilages, the anterior end of the inferior turbinate, and the nasal septum, forms the narrowest part of the nasal airway. During inspiration, the lateral wall cartilage is dynamic and draws inward toward the septum and the internal nasal valve narrows providing protection to the upper airways. The angle at the junction between the septum and upper lateral cartilage is normally 10° to 15° in white populations. Given that the internal nasal valve accounts for at least half of the nasal airway resistance; even minor further narrowing of this area can lead to symptomatic obstruction for a patient. Damaged or weakened lateral nasal cartilage will further decrease airway capacity of the internal nasal valve area, increasing airflow resistance and symptoms of congestion.[1,]

Physical Examination

A thorough physical examination of the nose, nasal cavity, and nasopharynx is generally sufficient to identify the most likely etiology for the nasal obstruction. Both the external and internal nasal valve areas should be examined. The external nasal valve is at the level of the internal nostril. It is formed

by the caudal portion of the lower lateral cartilage, surrounding soft tissue and the membranous septum.

The Cottle maneuver is an examination in which the cheek on the symptomatic side is gently pulled laterally with 1 to 2 fingers. If the patient is less symptomatic with inspiration during the maneuver, the assumption is that the nasal valve has been widened from a collapsed state or dynamic nasal valve collapse. An individual can perform the maneuver on oneself and it is subjective. A clinician performs the modified Cottle maneuver. A cotton swab or curette is inserted into the nasal cavity to support the nasal cartilage and the patient reports whether there is an improvement in the symptoms with inspiration. In both instances, a change in the external contour of the lateral nose may be apparent to both the patient and the examiner.

Treatment

Treatment of symptomatic nasal valve collapse includes the use of non-surgical interventions such as the adhesive strips applied externally across the nose (applying the principle of the Cottle maneuver) or use of nasal dilators, cones, or other devices that support the lateral nasal wall internally (applying the principle of the modified Cottle maneuver).

Severe cases of obstruction resulting from nasal valve deformities are treated with surgical grafting to widen and/or strengthen the valve. Common materials include cartilaginous autografts and allografts, as well as permanent synthetic grafts. Cartilage grafts are most commonly harvested from the patient's nasal septum or ear.

Nasal Implants

The placement of an absorbable implant to support the lateral nasal cartilages has been proposed as an alternative to more invasive grafting procedures in patients with severe nasal obstruction.

Literature Review

Evidence reviews assess the clinical evidence to determine whether the use of technology improves the net health outcome. Broadly defined, health outcomes are the length of life, quality of life (QOL), and ability to function including benefits and harms. Every clinical condition has specific outcomes that are important to patients and managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.

To assess whether the evidence is sufficient to draw conclusions about the net health outcome of technology, 2 domains are examined: the relevance, and quality and credibility. To be relevant, studies must represent 1 or more intended clinical use of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial (RCT) is preferred to assess efficacy; however, in some circumstances, nonrandomized studies may be adequate. Randomized controlled trials are rarely large enough or long enough to capture less common adverse events and long-term effects. Other types of studies can be used for these purposes and to assess generalizability to broader clinical populations and settings of clinical practice.

Absorbable Lateral Nasal Valve Implant

Clinical Context and Therapy Purpose

The purpose of insertion of an absorbable nasal valve implant in patients who have symptomatic nasal valve obstruction due to nasal valve collapse (NVC) is to provide a treatment option that is an alternative to or an improvement on existing therapies.

The question addressed in this evidence review is: Does the use of an absorbable nasal valve implant in patients who have symptomatic nasal valve obstruction due to NVC improve the net health outcome?

The following PICO was used to select literature to inform this review.

Populations

The relevant population of interest is adults who have severe symptomatic nasal obstruction symptoms due to the internal (also known as zone 1) NVC. NVC is one of the recognized structural causes of obstructed breathing and congestion, and the diagnosis is primarily clinical. NVC may be unilateral or bilateral and is typically constant with each inspiration. The condition may occur in association with prior trauma or rhinonasal surgery. The evaluation consists of a clinical history to elicit alternative causes or co-occurring conditions such as obstructive sleep apnea or medication use. In addition to examination of the head and neck, the Cottle maneuver or modified Cottle maneuver (previously described) is used to rule-in NVC. Anterior rhinoscopy and nasal endoscopy are used to rule out structural abnormalities such as septal deviation or mucosal conditions such as enlarged turbinates. Radiographic studies are not generally indicated.[3,]

Interventions

The therapy being considered is a unilateral or bilateral insertion of an absorbable nasal implant into the lateral nasal wall. The product is predominantly cylindrical in shape with a diameter of 1 mm and an overall length of 24 mm with a forked distal end for anchoring into the maxillary periosteum. It is composed of poly (l-lactide-*co*-d-l-lactide) 70:30 copolymer, which is absorbed in the body over approximately 18 months. It is packaged with a 16-gauge insertion device. The available product information describes the integrity of the implant to be maintained for 12 months after implantation while a fibrous capsule forms around the device. A remodeling phase where collagen replaces the implant within the capsule persists through 24 months and is the purported mechanism of support for the lateral nasal wall support.[4,]

Comparators

The following therapies and practices are currently being used to treat NVC: nonsurgical treatments include the use of externally applied adhesive strips or intranasal insertion of nasal cones. The basic mechanism of action of these treatments is to widen the nasal valve and permit increased airflow. Surgical grafting using either autologous cartilage (typically from the nasal septum, ear, or homologous irradiated rib cartilage) or a permanent synthetic implant may be performed to provide structural support to the lateral wall support defect.

Outcomes

The general outcomes of interest are a change in symptoms and disease status, treatment-related morbidity, functional status, and change in the QOL. The Nasal Obstruction Symptom Evaluation (NOSE) score is an accepted symptom questionnaire for research purposes. The score can also be stratified to indicate the degree of severity of the nasal obstruction symptoms. The insertion of the absorbable implant is performed under local anesthesia and the adverse event profile includes mild pain, irritation, bruising and inflammation, awareness of the presence of the implant, infection, and the need for device retrieval prior to complete absorption.

Stewart et al (2004) proposed the NOSE as a validated sinonasal-specific health status instrument that is used to assess the impact of nasal obstruction on the QOL of affected persons.[5,] It is a 5-item questionnaire on breathing problems: nasal congestion or stuffiness, nasal blockage or obstruction, trouble breathing through the nose, trouble sleeping, and inability to get enough air through the nose during exercise or exertion. The responses are made on a Likert-type scale ranging from 0 (not a problem) to 4 (severe problem). The range of raw scores is 0 to 20. The score is then scaled to a potential total score of 0 to 100 by multiplying the raw score by 5. A score of 100 means the worst possible problem with nasal obstruction.

The NOSE scale-based nasal obstruction severity classification system is proposed as a means to classify patients for clinical management as well as to better define study populations and describe treatment or intervention responses (Table 2).[6,]

Table 2. NOSE Severity Classification

Severity Class	NOSE Score Range
Mild	5 to 25
Moderate	30 to 50
Severe	55 to 75
Extreme	80 to 100

NOSE: Nasal Obstruction Symptom Evaluation.

The duration of follow-up to assess early procedural outcomes is 1 month and at least 24 months would be required to evaluate the durability of symptom improvement as well as to confirm the association with the purported device mechanism of action.

Study Selection Criteria

- To assess efficacy outcomes, we sought comparative controlled prospective trials, with a preference for RCTs;
- In the absence of such trials, we sought comparative observational studies, with a preference for prospective studies;
- To assess long-term outcomes and adverse effects, we also sought single-arm studies that capture longer periods of follow-up and/or larger populations;
- Within each category of study design, prefer larger sample size studies and longer duration studies;
- We excluded studies with duplicative or overlapping populations.

Review of Evidence

Randomized Controlled Trial

One sham-controlled randomized trial with 3-month follow-up has been identified (Table 3). Stolovitzky et al (2019) randomized 137 patients with severe to extreme NOSE scores to an office-based nasal implant or sham control procedure.[7,] Follow-up at 3 months showed a significant improvement in responder rate, change in NOSE score, and visual analog scale compared to the sham group, although over half of the control group also were considered responders (Table 4). Six patients (8.6% of 70), had the implant removed by 3 months and analysis was not intent-to-treat (see Tables 5 and 6). Adverse events included pain (n=4), foreign body sensation (n=3), localized swelling (n=2), inflammation (n=1), skin puncture (n=1), and vasovagal response (n=2).

Table 3. Summary of Key RCT Characteristics

Study; Trial	Countries	Sites	Dates	Participants	Interventions	
					Active	Comparator
Stolovitzky et al (2019)[7,] **NCT03400787**	US	10	2017-2018	137 patients with severe to extreme NOSE scores after 4 weeks of medical management	Nasal implant (n=70)	Sham control with a cannula inserted into the nasal lateral wall (n=67)

NOSE: Nasal Obstruction Symptom Evaluation; RCT: randomized controlled trial.

Table 4. Summary of Key RCT Results at 3 Months

Study	NOSE Responder Rate at 3 mo %[1]	Change in NOSE Score at 3 mo (SD)	Change in VAS at 3 mo (SD)	Implant Removal
Stolovitzky et al (2019)[7,]	N=127	N=127		

Study	NOSE Responder Rate at 3 mo %[1]	Change in NOSE Score at 3 mo (SD)	Change in VAS at 3 mo (SD)	Implant Removal
NCT03400787				
Nasal Implant	82.5	−42.4 (23.4)	−39.0 (29.7)	6/70 (8.6%)
Sham Implant	54.7	−22.7 (27.9)	−13.3 (30.0)	
p-value	.001	<.001	<.001	

NOSE: Nasal Obstruction Symptom Evaluation; RCT: randomized controlled trial; SD: standard deviation; VAS: visual analog scale.
[1] 20% decrease or decrease in 1 category on the NOSE score.

Bikhazi et al (2021) reported results from a 24-month uncontrolled follow-up phase of the RCT.[8,] Participants randomized to the control group were given the option to crossover to the treatment group following the 3-month randomized phase. Table 5 shows the disposition of participants and Table 6 summarizes outcomes at 24 months for the treatment and crossover participants.

Table 5. Disposition of Participants in Uncontrolled 24-month Follow-up Phase of RCT[8,]

Total enrolled in randomized cohort	**137 (71 treatment, 66 sham)**
Sham participants undergoing crossover procedure	40 (61.0%)
Total enrolled in long-term follow-up phase	111 (71 treatment, 40 sham)
Total completing 12-month visit	90
Total completing 18-month visit	75
Total completing 24-month visit	70

RCT: randomized controlled trial.

Table 6. Summary of Key RCT Results - 24 Month Uncontrolled Crossover Phase[8,]

	NOSE Responder Rate[1]	Mean Change (SD) from Baseline in NOSE Score	Mean Change from Baseline in Nasal Obstruction VAS	Mean Change (SD) from Baseline in Epworth Sleepiness Scale	Device Migration/extrusion /retrieval	Total Adverse Events
Number analyzed	60	68	NR (reported in figure)	69	111	111
	88.2% (78.1%, 94.8%)	-38.4 (25.8); p<.001	≥29.7; p<.001 at all time points	-2.6 (4.1); p<.001 Among 26 participants with abnormal baseline score (> 10): -4.9 (4.1); p<.001	10 events in 10 participants (4.5% of total implants; 9% of participants)	34 events in 26 participants

NOSE: Nasal Obstruction Symptom Evaluation; NR: not reported; RCT: randomized controlled trial; SD: standard deviation; VAS: visual analog scale.
[1] 20% decrease or decrease in 1 category on the NOSE score.

Tables 7 and 8 summarize the limitations of the RCT and its uncontrolled follow-up phase. Study limitations include the lack of long-term follow-up of the control arm, significant loss of study participants to follow-up at 18 and 24 months (Table 5), and a lack of objective assessment of NVC.

Table 7. Study Relevance Limitations

Study	Population[a]	Intervention[b]	Comparator[c]	Outcomes[d]	Follow-Up[e]
Stolovitzky et al (2019)[7,]				6. Clinically significant difference not supported. A positive responder could still have severe symptoms.	

The study limitations stated in this table are those notable in the current review; this is not a comprehensive gaps assessment.
[a] Population key: 1. Intended use population unclear; 2. Study population is unclear; 3. Study population not representative of intended use; 4, Enrolled populations do not reflect relevant diversity; 5. Other.
[b] Intervention key: 1. Not clearly defined; 2. Version used unclear; 3. Delivery not similar intensity as comparator; 4.Not the intervention of interest.
[c] Comparator key: 1. Not clearly defined; 2. Not standard or optimal; 3. Delivery not similar intensity as intervention; 4. Not delivered effectively.
[d] Outcomes key: 1. Key health outcomes not addressed; 2. Physiologic measures, not validated surrogates; 3. No CONSORT reporting of harms; 4. Not establish and validated measurements; 5. Clinical significant difference not prespecified; 6. Clinical significant difference not supported.
[e] Follow-Up key: 1. Not sufficient duration for benefit; 2. Not sufficient duration for harms.

Table 8. Study Design and Conduct Limitations

Study	Allocation[a]	Blinding[b]	Selective Reporting[c]	Data Completeness[d]	Power[e]	Statistical[f]
Stolovitzky et al (2019)[7,]		3. Nasal examination was performed by the treating physician (patients were blinded) Longer-term follow-up data not blinded	In randomized phase, patients who had the implant removed were excluded from analysis.	6. Not intent-to-treat. Six patients who had implant removal were not analyzed. High loss to follow-up in longer-term phase		

The study limitations stated in this table are those notable in the current review; this is not a comprehensive gaps assessment.
[a] Allocation key: 1. Participants not randomly allocated; 2. Allocation not concealed; 3. Allocation concealment unclear; 4. Inadequate control for selection bias.
[b] Blinding key: 1. Not blinded to treatment assignment; 2. Not blinded outcome assessment; 3. Outcome assessed by treating physician.
[c] Selective Reporting key: 1. Not registered; 2. Evidence of selective reporting; 3. Evidence of selective publication.
[d] Data Completeness key: 1. High loss to follow-up or missing data; 2. Inadequate handling of missing data; 3. High number of crossovers; 4. Inadequate handling of crossovers; 5. Inappropriate exclusions; 6. Not intent to treat analysis (per protocol for noninferiority trials).
[e] Power key: 1. Power calculations not reported; 2. Power not calculated for primary outcome; 3. Power not based on clinically important differences.
[f] Statistical key: 1. Analysis is not appropriate for outcome type: (a) continuous; (b) binary; (c) time to event; 2. Analysis is not appropriate for multiple observations per patient; 3. Confidence intervals and/or p values not reported; 4. Comparative treatment effects not calculated.

Nonrandomized Studies

No studies have compared insertion of an implant with inferior turbinate reduction and/or septoplasty. A comparative observational study of 90 individuals with nasal obstruction published in 2021 compared nasal implants to a variety of open functional rhinoplasty techniques in individuals who had also undergone septoplasty and inferior turbinate reduction.[9,] However, this study was not included because of its retrospective design, follow-up of only 3 months, and heterogeneity in the indications for the interventions and the surgical techniques used.

Three prospective, single-arm cohort studies in a total of 307 individuals receiving nasal implants have evaluated outcomes at 24 months. The characteristics and results of these studies are summarized in Tables 9, 10, and 11.

Sidle, Stolovitzky, and colleagues (2019, 2021) reported outcomes from 2 post-marketing studies that enrolled a total of 277 patients with severe-to-extreme NOSE scores at 19 U.S. clinics between September 2016 and July 2017.[10,11,12,] One of the trials (NCT02964312) was conducted in an office

setting and enrolled 166 participants. The second study (NCT02952313) implanted the device in the operating room and included 113 participants. Concomitant procedures (septoplasty and/or inferior turbinate reduction) were at the discretion of the investigators. The most recent publication from these studies[12,] included data from 177 patients who were followed for 24 months under a protocol extension. NOSE scores through 24 months were reported separately for patients who received an implant alone (n = 69, NOSE = 30.4 [24.6 standard deviation {SD}]), implant plus inferior turbinate reduction (n=39, NOSE = 27.6 [23.1 SD]), or an implant combined with septoplasty and inferior turbinate reduction (n=69, NOSE = 16.0 [20.7 SD]). The data presented by Sidle et al (2021)[12,] is described in the tables below. The mean change from baseline for the 177 patients with 24-month data was -53.6 (95% confidence interval [CI], -57.0 to -50.1), with a responder rate of around 90%. Loss to follow-up in these cohorts was high, with 100 of 277 participants discontinuing the study before 24 months (44 were lost to follow-up, 17 withdrew due to lack of response, 38 withdrew or did not consent to the extension study, and 2 died). Sensitivity analysis, performed with a worst-case scenario with all missing 24-month data assigned no change from baseline, showed a mean change from baseline in the NOSE score of -34.2 (95% CI, -38.1 to -30.2), representing an improvement of 1 class.

San Nicoló et al (2017, 2018) reported 24-month outcomes for 30 patients who were treated at 3 clinical sites in Germany.[13,14,] In this study, 13.3% of patients had the implant removed.

The improvement in symptoms was consistent across the 3 studies, with a mean change of over 40 points from baseline on the NOSE score. The 24-month outcomes are the most relevant, as resorption and remodeling are expected to occur within that time frame.

Table 9. Summary of Prospective, Single-Arm Study Characteristics

Study	Study Type	Country	Dates	Participants[a]	Treatment, n	Follow-Up
Sidle et al (2021)[11,] **NCT02952313** **NCT02964312**	Two prospective single-arm cohorts	U.S. (19 clinical sites)	2016-2019	277 patients with severe to extreme nasal obstruction (NOSE score ≥55) and a positive Cottle maneuver	· Insertion of implant[b] alone (n=109) · Insertion of implant[b] plus inferior turbinate reduction (n=67) · Insertion of implant[b] plus septoplasty plus inferior turbinate reduction (n=101)	24 mo
San Nicoló et al (2017, 2018)[13,14,]	Prospective single-arm cohort	Germany (3 clinical sites)	NR	30	Insertion of 56 lateral wall implant[b]: · Bilateral: 26 · Unilateral: 4	1 wk and 1, 3, 6, 12, 24 mo

NOSE: Nasal Obstruction Symptom Evaluation; NR: not reported.
[a] Baseline inclusion criteria: NOSE score ≥55. Baseline exclusion criteria: septoplasty or turbinate reduction within 6 mo, rhinoplasty within 12 mo, recurrent nasal infection, intranasal steroids, permanent nasal implants or dilators, precancerous or cancerous lesions, radiation or chemotherapy within 24 mo.
[b] Absorbable polylactide implant marketed in the U.S. as Latera.

Table 10. Summary of Prospective, Single-Arm Study NOSE Score Results

Study	1 Month	3 Months	6 Months	12 Months	18 Months	24 Months
Sidle et al (2021)[11,]						
N or n	276	267	258	232	185	177
Baseline (SD)	77.8 (13.6)	77.7 (13.5)	77.6 (13.6)	77.0 (13.5)	77.6 (13.2)	78.0 (13.1)
Mean NOSE score (SD)[a]	33.7 (23.0)	27.8 (23.4)	27.5 (24.0)	26.0 (23.9)	25.4 (24.0)	24.2 (23.6)
Mean change from baseline (95% CI)	-43.9 (-46.7 to 41.2)	-49.9 (-52.7 to -47.1)	-50.2 (-53.0 to -47.3)	-51.5 (-54.5 to -48.4)	-52.2 (-55.6 to -48.8)	-53.6 (-57.0 to -50.1)
Responder rate[b]	90.9%	93.3%	91.9%	91.4%	93.5%	93.2%
Responder rate[b] for implant alone group	90.8% (99/109)	92.5% (98/106)	92.0% (92/100)	88.3% (83/94)	94.5% (69/73)	89.9% (62/69)
San Nicoló et al (2017, 2018)[13,14,]	**Baseline**		**3 Months**	**6 Months**	**12 Months**	**24 Months**

Study	1 Month	3 Months	6 Months	12 Months	18 Months	24 Months
N or n	30		29	30	29	25
Mean score (SD)	76.7 (14.8)	NR	28.4	33.3	35.2	32.0 (29.3)
Mean change from baseline (SD)			-48.4 (26.9)	-43.3 (29.7)	-40.9 (29.2)	-44.0 (31.1)
p			<.001	<.001	<.001	
N or n		NR	29	30	29	
Response rate, n (%)[b]			25 (86.2)	24 (80)	22 (75.9)	

CI: confidence interval; NOSE: Nasal Obstruction Symptom Evaluation; NR: not reported; SD: standard deviation.
[a] Paired tests were used to compare the mean baseline value with each of the follow-up time points to determine whether there was evidence of significant reductions in NOSE scores. All follow-up points were significant at p<.001.
[b] Response rate was defined as an improvement of at least 1 NOSE score category or a 20% reduction in NOSE score.

Table 11. Summary of Prospective,Single-Arm Study Safety and Adverse Event Results

Study	1 Month	3 Months	6 Months	12 Months	24 Months
Sidle et al (2019, 2021)[11,12,]					
Device related[a]				41 events in 31 patients	54 events in 45 patients
Device removals				17 out of 319 implants (5.3%)	22 out of 543 implants (4.0%)
San Nicoló et al (2017, 2018)[13,14,]					
N or n	30	29	30	29	25[b]
Device tolerability, % (n)					
None/mild pain	30 (100)	29 (100)	29 (96.7)	29 (100)	24 (96.0)
Not assessed			1 (3.3)		
No cosmetic changes[c]	26 (86.7)	27 (93.1)	27 (90.0)	26 (89.7)	17 (89.5)
Device-related adverse events[d]	5	0	0	0	0

[a] Foreign body sensation (6), sinus infection (1), mucous production (2), loss of smell/taste (1), skin irritation (1), hematoma (1), infection (4), pain (3), bumps (5), and implant retrievals (17).
[b] 4 patients had an additional procedure and 1 was lost to follow-up.
[c] Photographic review.
[d] 3 device retrievals, 1 hematoma, and 1 inflammation.
Study limitations are summarized in Tables 12 and 13. The lack of a comparator group inherent to the study design is a major limitation. Additionally, the indication for the nasal implant varied within the study populations, or was not adequately described.

Table 12. Nonrandomized Study Relevance Limitations

Study	Population[a]	Intervention[b]	Comparator[c]	Outcomes[d]	Duration of Follow-Up[e]
Sidle et al (2019, 2021)[11,12,]	1.Patient population varied in important clinical characteristics and types and rates of prior rhinologic surgery 2.Clinical context for patient selection for absorbable implant versus implant plus adjunctive surgery not described		No comparator	6. Clinically significant difference not supported. A positive responder could still have severe symptoms.	

Study	Population[a]	Intervention[b]	Comparator[c]	Outcomes[d]	Duration of Follow-Up[e]
San Nicoló et al (2017, 2018)[13,14,]	2. Clinical context for patient selection for absorbable implant versus alternative surgery not described 3. Study population is heterogenous: 68% had prior rhinonasal surgery		No comparator	6. Clinically significant difference not supported. A positive responder could still have severe symptoms.	

The study limitations stated in this table are those notable in the current review; this is not a comprehensive gaps assessment.
[a] Population key: 1. Intended use population unclear; 2. Study population is unclear; 3. Study population not representative of intended use; 4, Enrolled populations do not reflect relevant diversity; 5. Other.
[b] Intervention key: 1. Not clearly defined; 2. Version used unclear; 3. Delivery not similar intensity as comparator.
[c] Comparator key: 1.Not clearly defined; 2.Not standard or optimal; 3. Delivery not similar intensity as intervention; 4. Not delivered effectively.
[d] Outcomes key: 1.Key health outcomes not addressed; 2. Physiologic measures, not validated surrogates; 3.Not CONSORT reporting of harms; 4.Not established and validated measurements; 5. Clinically significant difference not prespecified; 6. Clinically significant differences not supported.
[e] Follow-Up key: 1. Not sufficient duration for benefits; 2. Not sufficient duration for harms.

Table 13. Nonrandomized Study Design and Conduct Limitations

Study	Allocation[a]	Blinding[b]	Selective Reporting[c]	Data Completeness[d]	Power[e]	Statistical[f]
Sidle et al (2019, 2021)[11,12,]		1. No control and not blinded to treatment assignment		1. Data incomplete for populations assessed for various outcomes 2. Missing data for patients who had device retrievals		
San Nicoló et al (2017, 2018)[13,14,]		1. No control and not blinded to treatment assignment		2. Missing data for patients who had device retrievals		

The study limitations stated in this table are those notable in the current review; this is not a comprehensive gaps assessment.
[a] Allocation key: 1. Participants not randomly allocated; 2. Allocation not concealed; 3. Allocation concealment unclear; 4. Inadequate control for selection bias.
[b] Blinding key: 1. Not blinded to treatment assignment; 2. Not blinded outcome assessment; 3. Outcome assessed by treating physician.
[c] Selective Reporting key: 1. Not registered; 2. Evidence of selective reporting; 3. Evidence of selective publication.
[d] Data Completeness key: 1. High loss to follow-up or missing data; 2. Inadequate handling of missing data; 3. High number of crossovers; 4. Inadequate handling of crossovers; 5. Inappropriate exclusions; 6. Not intent to treat analysis (per protocol for noninferiority trials).
[e] Power key: 1. Power calculations not reported; 2. Power not calculated for primary outcome; 3. Power not based on clinically important difference.
[f] Statistical key: 1. Analysis is not appropriate for outcome type: (a) continuous; (b) binary; (c) time to event; 2. Analysis is not appropriate for multiple observations per patient; 3. Confidence intervals and/or p values not reported; 4.Comparative treatment effects not calculated.

Summary of Evidence

For individuals with symptomatic nasal obstruction due to internal NVC who receive an absorbable lateral nasal valve implant, the evidence includes 1 randomized controlled trial (RCT) with a 24-month uncontrolled follow-up phase and 3 nonrandomized prospective, single-cohort studies. Relevant

outcomes are symptoms, change in disease status, treatment-related morbidity, functional outcomes, and QOL. Overall, improvements in a nasal obstruction score have been demonstrated in study reports. Follow-up at 3 months in the RCT showed a statistically significant improvement in response with the implant compared to the sham group, although over half of the control group were also considered responders. Twenty-four month follow-up has been reported in the 3 multicenter cohort studies and the uncontrolled crossover phase of the RCT. Loss to follow-up was high, although sensitivity analysis with a worst-case scenario supported an improvement in symptoms at 24 months. As reported, adverse events appeared to be mild in severity and self-limiting, but still common. In the larger cohorts, device retrievals or extrusions occurred in 4% of patients. The need for device retrievals appears to occur early in the course of follow-up (1 month); suggesting technical experience limitations on the part of the operator or inappropriate patient selection. No studies have been identified that compared insertion of an implant with inferior turbinate reduction and/or septoplasty. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Supplemental Information

The purpose of the following information is to provide reference material. Inclusion does not imply endorsement or alignment with the evidence review conclusions.

Practice Guidelines and Position Statements

Guidelines or position statements will be considered for inclusion in 'Supplemental Information' if they were issued by, or jointly by, a US professional society, an international society with US representation, or National Institute for Health and Care Excellence (NICE). Priority will be given to guidelines that are informed by a systematic review, include strength of evidence ratings, and include a description of management of conflict of interest.

American Academy of Otolaryngology-Head Neck Surgery

In 2010, the American Academy of Otolaryngology-Head Neck Surgery released a clinical consensus statement on the diagnosis and management of nasal valve compromise.[2] No more recent guidelines were identified. Table 14 summarizes the key consensus statements relevant to this review. The statement also indicated that nasal endoscopy and nasal photography were both deemed useful but not routinely required.

Table 14. Consensus Agreement: Diagnosis and Treatment of Nasal Valve Compromise

Item	Statement	Level of Consensus
Definition	Nasal valve compromise is a distinct clinical entity separate from other anatomic reasons for nasal obstruction	Agreement/strong agreement
History and physical	Main symptom of nasal valve compromise is decreased airflow as reported by the patient	Strong agreement
	Anterior rhinoscopy can be adequate for an intranasal evaluation of the nasal valve, weak or malformed nasal cartilages	Agreement/strong agreement
	Inspiratory collapse of the lateral nasal wall or alar rim is consistent with nasal valve compromise	Agreement/strong agreement
	Increased nasal obstruction associated with deep inspiration is consistent with nasal valve compromise	Agreement/strong agreement
Adjunctive tests	Criterion standard test to diagnose nasal valve compromise exists	Strong disagreement
Outcome measures	Various patient-reported outcomes (e.g., visual analog scales, satisfaction measures, quality of life scales) are valid indicators of successful intervention	General agreement
Management	Nasal strips, stents, or cones can be used to treat some patients	Strong agreement
	A surgical procedure that is intended to support the lateral nasal wall/alar rim is a distinct entity from procedures that correct a deviated nasal septum or hypertrophied turbinate	Strong agreement

U.S. Preventive Services Task Force Recommendations
Not applicable.

Medicare National Coverage
There is no national coverage determination. In the absence of a national coverage determination, coverage decisions are left to the discretion of local Medicare carriers.

Ongoing and Unpublished Clinical Trials
Unpublished trials that might influence this review are listed in Table 15.

Table 15. Summary of Key Trials

NCT No.	Trial Name	Planned Enrollment	Completion Date
Ongoing			
Unpublished			
NCT03793218	A Comparison of Alar Batten Graft to the Latera Nasal Implant for the Treatment of Nasal Valve Collapse	30	Nov 2021 (status unknown, last update Jan 2019)

NCT: national clinical trial.
[a] Denotes industry-sponsored or cosponsored trial.

References

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13. San Nicolo M, Stelter K, Sadick H, et al. Absorbable Implant to Treat Nasal Valve Collapse. Facial Plast Surg. Apr 2017; 33(2): 233-240. PMID 28388804
14. San Nicolo M, Stelter K, Sadick H, et al. A 2-Year Follow-up Study of an Absorbable Implant to Treat Nasal Valve Collapse. Facial Plast Surg. Oct 2018; 34(5): 545-550. PMID 30227454

Documentation for Clinical Review

- No records required

Coding

This Policy relates only to the services or supplies described herein. Benefits may vary according to product design; therefore, contract language should be reviewed before applying the terms of the Policy.

The following codes are included below for informational purposes. Inclusion or exclusion of a code(s) does not constitute or imply member coverage or provider reimbursement policy. Policy Statements are intended to provide member coverage information and may include the use of some codes for clarity. The Policy Guidelines section may also provide additional information for how to interpret the Policy Statements and to provide coding guidance in some cases.

Type	Code	Description
CPT®	30465	Repair of nasal vestibular stenosis (e.g., spreader grafting, lateral nasal wall reconstruction)
	30468	Repair of nasal valve collapse with subcutaneous/submucosal lateral wall implant(s)
	30999	Unlisted procedure, nose
HCPCS	C1889	Implantable/insertable device, not otherwise classified

Policy History

This section provides a chronological history of the activities, updates and changes that have occurred with this Medical Policy.

Effective Date	Action
12/01/2018	BCBSA Medical Policy adoption
02/01/2019	Coding update
12/01/2019	Policy revision without position change
12/01/2020	Annual review. No change to policy statement. Policy guidelines and literature review updated.
01/01/2021	Coding update
02/01/2021	Coding update
12/01/2021	Annual review. No change to policy statement. Literature review updated.
12/01/2022	Annual review. No change to policy statement. Policy guidelines and literature review updated.
12/01/2023	Annual review. No change to policy statement. Literature review updated

Definitions of Decision Determinations

Medically Necessary: Services that are Medically Necessary include only those which have been established as safe and effective, are furnished under generally accepted professional standards to treat illness, injury or medical condition, and which, as determined by Blue Shield, are: (a) consistent with Blue Shield medical policy; (b) consistent with the symptoms or diagnosis; (c) not furnished primarily for the convenience of the patient, the attending Physician or other provider; (d) furnished at the most appropriate level which can be provided safely and effectively to the patient; and (e) not more costly than an alternative service or sequence of services at least as likely to produce equivalent therapeutic or diagnostic results as to the diagnosis or treatment of the Member's illness, injury, or disease.

Investigational/Experimental: A treatment, procedure, or drug is investigational when it has not been recognized as safe and effective for use in treating the particular condition in accordance with generally accepted professional medical standards. This includes services where approval by the federal or state governmental is required prior to use, but has not yet been granted.

Split Evaluation: Blue Shield of California/Blue Shield of California Life & Health Insurance Company (Blue Shield) policy review can result in a split evaluation, where a treatment, procedure, or drug will be considered to be investigational for certain indications or conditions, but will be deemed safe and effective for other indications or conditions, and therefore potentially medically necessary in those instances.

Prior Authorization Requirements and Feedback (as applicable to your plan)

Within five days before the actual date of service, the provider must confirm with Blue Shield that the member's health plan coverage is still in effect. Blue Shield reserves the right to revoke an authorization prior to services being rendered based on cancellation of the member's eligibility. Final determination of benefits will be made after review of the claim for limitations or exclusions.

Questions regarding the applicability of this policy should be directed to the Prior Authorization Department at (800) 541-6652, or the Transplant Case Management Department at (800) 637-2066 ext. 3507708 or visit the provider portal at www.blueshieldca.com/provider.

We are interested in receiving feedback relative to developing, adopting, and reviewing criteria for medical policy. Any licensed practitioner who is contracted with Blue Shield of California or Blue Shield of California Promise Health Plan is welcome to provide comments, suggestions, or concerns. Our internal policy committees will receive and take your comments into consideration.

For utilization and medical policy feedback, please send comments to: MedPolicy@blueshieldca.com

Disclaimer: This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. Blue Shield of California may consider published peer-reviewed scientific literature, national guidelines, and local standards of practice in developing its medical policy. Federal and state law, as well as contract language, including definitions and specific contract provisions/exclusions, take precedence over medical policy and must be considered first in determining covered services. Member contracts may differ in their benefits. Blue Shield reserves the right to review and update policies as appropriate.

Appendix A

POLICY STATEMENT (No changes)	
BEFORE	**AFTER**
Absorbable Nasal Implant for Treatment of Nasal Valve Collapse 7.01.163 **Policy Statement:** I. The insertion of an absorbable lateral nasal implant for the treatment of symptomatic nasal valve collapse is considered **investigational**.	**Absorbable Nasal Implant for Treatment of Nasal Valve Collapse 7.01.163** **Policy Statement:** I. The insertion of an absorbable lateral nasal implant for the treatment of symptomatic nasal valve collapse is considered **investigational**.