



## MASSACHUSETTS

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# Medical Policy Surgical Ventricular Restoration

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### Policy Number: 544

BCBSA Reference Number: 7.01.103

NCD/LCD: N/A

### Related Policies

None

### Policy

**Commercial Members: Managed Care (HMO and POS), PPO, and Indemnity  
Medicare HMO Blue<sup>SM</sup> and Medicare PPO Blue<sup>SM</sup> Members**

Surgical ventricular restoration is **INVESTIGATIONAL** for the treatment of ischemic dilated cardiomyopathy.

### Prior Authorization Information

#### Inpatient

- For services described in this policy, precertification/preauthorization **IS REQUIRED** for all products if the procedure is performed **inpatient**.

#### Outpatient

- For services described in this policy, see below for products where prior authorization **might be required** if the procedure is performed **outpatient**.

	<b>Outpatient</b>
<b>Commercial Managed Care (HMO and POS)</b>	This is <b>not</b> a covered service.
<b>Commercial PPO and Indemnity</b>	This is <b>not</b> a covered service.
<b>Medicare HMO Blue<sup>SM</sup></b>	This is <b>not</b> a covered service.
<b>Medicare PPO Blue<sup>SM</sup></b>	This is <b>not</b> a covered service.

### CPT Codes / HCPCS Codes / ICD Codes

*Inclusion or exclusion of a code does not constitute or imply member coverage or provider reimbursement. Please refer to the member's contract benefits in effect at the time of service to determine coverage or non-coverage as it applies to an individual member.*

Providers should report all services using the most up-to-date industry-standard procedure, revenue, and diagnosis codes, including modifiers where applicable.

The following codes are included below for informational purposes only; this is not an all-inclusive list.

**The following CPT code is considered investigational for Commercial Members: Managed Care (HMO and POS), PPO, Indemnity, Medicare HMO Blue and Medicare PPO Blue:**

### CPT Codes

CPT codes:	Code Description
33548	Surgical ventricular restoration procedure, includes prosthetic patch, when performed (e.g., ventricular remodeling, SVR, SAVER, Dor procedures)

### Description

Surgical ventricular restoration (SVR) is also known as surgical anterior ventricular endocardial restoration, left ventricular reconstructive surgery, endoventricular circular plasty, or the Dor procedure. Named after the surgeon who pioneered the expansion of techniques for ventricular reconstruction and is credited with treating heart failure patients with SVR and coronary artery bypass grafting.

SVR is usually performed after coronary artery bypass grafting and may precede or be followed by mitral valve repair or replacement and other procedures such as endocardectomy and cryoablation for treatment of ventricular tachycardia. A key difference between SVR and ventriculectomy (ie, for aneurysm removal) is that, in SVR, circular “purse string” suturing is used around the border of the aneurysmal scar tissue. Tightening of this suture is believed to isolate the akinetic or dyskinetic scar, bring the healthy portion of the ventricular walls together, and restore a more normal ventricular contour. If the defect is large (ie, an opening >3 cm), the ventricle may also be reconstructed using patches of autologous or artificial material to maintain the desired ventricular volume and contour during closure of the ventriculotomy. In addition, SVR is distinct from partial left ventriculectomy which does not attempt specifically to resect akinetic segments and restore ventricular contour.

### Summary

Surgical ventricular restoration (SVR) is designed to restore or remodel the left ventricle to its normal, spherical shape and size in patients with akinetic segments of the heart, secondary to ischemic dilated cardiomyopathy.

For individuals who have ischemic dilated cardiomyopathy who receive SVR as an adjunct to coronary artery bypass grafting, the evidence includes a large randomized controlled trial (another randomized controlled trial reported results, but most trial enrollees overlapped with those in the larger trial) and uncontrolled studies. The relevant outcomes are overall survival, symptoms, quality of life, hospitalizations, resource utilization, and treatment-related morbidity. The randomized controlled trial, the Surgical Treatment of Ischemic Heart Failure trial, did not report significant improvements in quality of life outcomes for patients undergoing SVR as an adjunct to standard coronary artery bypass grafting surgery. Several uncontrolled studies have suggested that SVR can improve hemodynamic functioning in selected patients with ischemic cardiomyopathy; however, these studies are considered lower quality evidence. The evidence is insufficient to determine the effects of the technology on health outcomes.

### Policy History

Date	Action
4/2020	BCBSA National medical policy review. Description, summary and references updated. Policy statements unchanged.
4/2019	BCBSA National medical policy review. Description, summary and references updated. Policy statements unchanged.

3/2018	New references added from BCBSA National medical policy. Background and summary clarified.
4/2017	BCBSA National medical policy review. Policy clarified, deleted “or postinfarction left ventricular aneurysm” from the statement. 4/1/2017
4/2015	Clarified coding information.
7/2014	Updated Coding section with ICD10 procedure and diagnosis codes, effective 10/2015.
12/2013	New references from BCBSA National medical policy.
11/2011-4/2012	Medical policy ICD 10 remediation: Formatting, editing and coding updates. No changes to policy statements.
1/1/2012	New policy, effective 1/1/2012, describing ongoing non-coverage.

## Information Pertaining to All Blue Cross Blue Shield Medical Policies

Click on any of the following terms to access the relevant information:

[Medical Policy Terms of Use](#)

[Managed Care Guidelines](#)

[Indemnity/PPO Guidelines](#)

[Clinical Exception Process](#)

[Medical Technology Assessment Guidelines](#)

## References

1. Jones RH, Velazquez EJ, Michler RE, et al. Coronary bypass surgery with or without surgical ventricular reconstruction. *N Engl J Med.* Apr 23 2009;360(17):1705-1717. PMID 19329820
2. Holly TA, Bonow RO, Arnold JM, et al. Myocardial viability and impact of surgical ventricular reconstruction on outcomes of patients with severe left ventricular dysfunction undergoing coronary artery bypass surgery: results of the Surgical Treatment for Ischemic Heart Failure trial. *J Thorac Cardiovasc Surg.* Dec 2014;148(6):2677- 2684 e2671. PMID 25152476
3. Oh JK, Velazquez EJ, Menicanti L, et al. Influence of baseline left ventricular function on the clinical outcome of surgical ventricular reconstruction in patients with ischaemic cardiomyopathy. *Eur Heart J.* Jan 2013;34(1):39-47. PMID 22584648
4. Michler RE, Rouleau JL, Al-Khalidi HR, et al. Insights from the STICH trial: change in left ventricular size after coronary artery bypass grafting with and without surgical ventricular reconstruction. *J Thorac Cardiovasc Surg.* Nov 2013;146(5):1139-1145 e1136. PMID 23111018
5. Kukulski T, She L, Racine N, et al. Implication of right ventricular dysfunction on long-term outcome in patients with ischemic cardiomyopathy undergoing coronary artery bypass grafting with or without surgical ventricular reconstruction. *J Thorac Cardiovasc Surg.* May 2015;149(5):1312-1321. PMID 25451487
6. Prior DL, Stevens SR, Holly TA, et al. Regional left ventricular function does not predict survival in ischaemic cardiomyopathy after cardiac surgery. *Heart.* Sep 2017;103(17):1359-1367. PMID 28446548
7. Mark DB, Knight JD, Velazquez EJ, et al. Quality of life and economic outcomes with surgical ventricular reconstruction in ischemic heart failure: results from the Surgical Treatment for Ischemic Heart Failure trial. *Am Heart J.* May 2009;157(5):837-844, 844 e831-833. PMID 19376309
8. Marchenko A, Chernyavsky A, Efendiev V, et al. Results of coronary artery bypass grafting alone and combined with surgical ventricular reconstruction for ischemic heart failure. *Interact Cardiovasc Thorac Surg.* Jun 2011;13(1):46-51. PMID 21402600
9. Athanasuleas CL, Stanley AW, Buckberg GD, et al. Surgical anterior ventricular endocardial restoration (SAVER) for dilated ischemic cardiomyopathy. *Semin Thorac Cardiovasc Surg.* Oct 2001;13(4):448-458. PMID 11807740
10. Athanasuleas CL, Stanley AW, Jr., Buckberg GD, et al. Surgical anterior ventricular endocardial restoration (SAVER) in the dilated remodeled ventricle after anterior myocardial infarction. RESTORE group. *Reconstructive Endoventricular Surgery, returning Torsion Original Radius Elliptical Shape to the LV.* *J Am Coll Cardiol.* Apr 2001;37(5):1199-1209. PMID 11300423

11. Mickleborough LL, Merchant N, Ivanov J, et al. Left ventricular reconstruction: Early and late results. *J Thorac Cardiovasc Surg.* Jul 2004;128(1):27-37. PMID 15224018
12. Bolooki H, DeMarchena E, Mallon SM, et al. Factors affecting late survival after surgical remodeling of left ventricular aneurysms. *J Thorac Cardiovasc Surg.* Aug 2003;126(2):374-383; discussion 383-375. PMID 12928633
13. Sartipy U, Albage A, Lindblom D. The Dor procedure for left ventricular reconstruction. Ten-year clinical experience. *Eur J Cardiothorac Surg.* Jun 2005;27(6):1005-1010. PMID 15896609
14. Hernandez AF, Velazquez EJ, Dillum MK, et al. Contemporary performance of surgical ventricular restoration procedures: data from the Society of Thoracic Surgeons' National Cardiac Database. *Am Heart J.* Sep 2006;152(3):494-499. PMID 16923420
15. Tulner SA, Bax JJ, Bleeker GB, et al. Beneficial hemodynamic and clinical effects of surgical ventricular restoration in patients with ischemic dilated cardiomyopathy. *Ann Thorac Surg.* Nov 2006;82(5):1721-1727. PMID 17062236
16. Tulner SA, Steendijk P, Klautz RJ, et al. Clinical efficacy of surgical heart failure therapy by ventricular restoration and restrictive mitral annuloplasty. *J Card Fail.* Apr 2007;13(3):178-183. PMID 17448414
17. Williams JA, Weiss ES, Patel ND, et al. Outcomes following surgical ventricular restoration for patients with clinically advanced congestive heart failure (New York Heart Association Class IV). *J Card Fail.* Aug 2007;13(6):431-436. PMID 17675056
18. Dzemali O, Risteski P, Bakhtiary F, et al. Surgical left ventricular remodeling leads to better long-term survival and exercise tolerance than coronary artery bypass grafting alone in patients with moderate ischemic cardiomyopathy. *J Thorac Cardiovasc Surg.* Sep 2009;138(3):663-668. PMID 19698853
19. Ohira S, Yamazaki S, Numata S, et al. Ten-year experience of endocardial linear infarct exclusion technique for ischaemic cardiomyopathy. *Eur J Cardiothorac Surg.* Sep 25 2017. PMID 29029034
20. Neumann FJ, Sousa-Uva M, Ahlsson A et al. 2018 ESC/EACTS Guidelines on myocardial revascularization. *Eur. Heart J.* 2019 Jan;40(2). PMID 30165437