MEDICAL POLICY

POLICY TITLE	SURGICAL TREATMENT OF HEART FAILURE
POLICY NUMBER	MP 1.082

CLINICAL BENEFIT	☒ MINIMIZE SAFETY RISK OR CONCERN. ☒ MINIMIZE HARMFUL OR INEFFECTIVE INTERVENTIONS. ☐ ASSURE APPROPRIATE LEVEL OF CARE. ☐ ASSURE APPROPRIATE DURATION OF SERVICE FOR INTERVENTIONS. ☐ ASSURE THAT RECOMMENDED MEDICAL PREREQUISITES HAVE BEEN MET. ☐ ASSURE APPROPRIATE SITE OF TREATMENT OR SERVICE.
Effective Date:	**5/1/2025**

I. POLICY

Partial Left Ventriculectomy

Partial left ventriculectomy is considered **investigational** for the surgical approach to the treatment of congestive heart failure, as there is insufficient evidence to support a conclusion concerning the health outcomes or benefits associated with this procedure.

Surgical Ventricular Restoration

Surgical ventricular restoration is considered **investigational** for the treatment of ischemic dilated cardiomyopathy or post-infarction left ventricular aneurysm, as there is insufficient evidence to support a conclusion concerning the health outcomes or benefits associated with this procedure.

Cross-Reference:
MP 1.026 Total Artificial Hearts and Implantable Ventricular Assist Devices

II. Product Variations

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This policy is only applicable to certain programs and products administered by Capital Blue Cross and subject to benefit variations as discussed in Section VI. Please see additional information below.

FEP PPO: Refer to FEP Medical Policy Manual. The FEP Medical Policy manual can be found at: https://www.fepblue.org/benefit-plans/medical-policies-and-utilization-management-guidelines/medical-policies.

III. Description/Background

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Partial Left Ventriculectomy

Partial left ventriculectomy (PLV) is a surgical procedure aimed at improving the hemodynamic status of patients with end-stage heart failure by directly reducing left ventricular size, and thereby improving the pump function of the left ventricle (LV).

This surgical approach to the treatment of heart failure (also known as the Batista procedure, cardio-reduction, or left ventricular remodeling surgery) is primarily directed at patients with an underlying non-ischemic dilated cardiomyopathy. Initially, the procedure was intended for patients awaiting cardiac transplantation, either as a "bridge" to transplantation or as an alternative to transplantation. The theoretical rationale for this procedure is that by reducing LV wall volume, LV wall tension is reduced, and LV pumping function will be improved.

Treatment of heart failure is generally through lifestyle modifications and medications. Medications are effective for controlling the symptoms of heart failure, but progression of disease can still occur. For end-stage heart failure, consideration of cardiac transplantation is the main alternative.

The original partial left ventriculectomy (PLV) procedure, as developed by Batista, involves a wide excision of the posterolateral wall and apex of the heart and removal of a wedge-shaped portion of the LV. PLV may be accompanied by repair of the mitral valve, either through valvuloplasty or annuloplasty. A variety of complications of PLV have been reported, including sudden death, progressive heart failure, arrhythmias, bleeding, renal failure, respiratory failure, and infection.

Surgical Ventricular Restoration

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

SVR procedure is usually performed after coronary artery bypass grafting and may proceed 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 (i.e., 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 (i.e., 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 (i.e., the Batista procedure); which does not attempt to specifically resect akinetic segments and restore ventricular contour.

IV. Rationale

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Summary of Evidence

Partial Left Ventriculectomy
Some clinical series have reported improvement in ejection fraction and symptoms following PLV; however, there is a lack of controlled trials comparing this procedure to alternative treatments. Perioperative mortality and complications are high, and the improvements reported in symptoms may not be a result of the surgical procedure. The high rates of perioperative morbidity and mortality, the lack of demonstrated long-term outcome benefits, and the high relapse rates, have led to diminished enthusiasm for this procedure. As a result of the lack of evidence on benefits from the procedure, and the possibility of harm, PLV is considered not medically necessary.

Surgical Ventricular Restoration
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. 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 that the technology results in an improvement in the net health outcomes.

V. DEFINITIONS

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ANEURYSM refers to a localized abnormal dilatation of a blood vessel, usually an artery, due to a congenital defect or weakness in the wall of a vessel.

CARDIOMYOPATHY is a disease of the myocardium (heart muscle) causing enlargement.

HEART FAILURE is an abnormal condition that reflects impaired cardiac pumping. Its causes include myocardial infarction, ischemic heart disease, and cardiomyopathy. Failure of the ventricles to eject blood efficiently results in volume overload, ventricular dilation, and elevated intracardiac pressure.

ELECTROSTIMULATION refers to the use of electric current to affect a tissue, such as a nerve, muscle, or bone.

MITRAL VALVE is the cardiac valve between the left atrium and left ventricle.

TACHYCARDIA is an abnormally rapid heart rate, greater than one hundred (100) beats per minute.

VI. BENEFIT VARIATIONS

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The existence of this medical policy does not mean that this service is a covered benefit under the member's health benefit plan. Benefit determinations are based on the applicable health benefit plan language. Medical policies do not constitute a description of benefits. Members and providers should consult the member's health benefit plan for information or contact Capital Blue Cross for benefit information.

VII. DISCLAIMER

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Capital Blue Cross' medical policies are developed to assist in administering a member's benefits. These medical policies do not constitute medical advice and are subject to change. Treating providers are solely responsible for medical advice and treatment of members. Members should discuss any medical policy related to their coverage or condition with their provider and consult their benefit information to determine if the service is covered. If there is a discrepancy between this medical policy and a member's benefit information, the benefit information will govern. If a provider or a member has a question concerning the application of this medical policy to a specific member's plan of benefits, please contact Capital Blue Cross' Provider Services or Member Services. Capital Blue Cross considers the information contained in this medical policy to be proprietary and it may only be disseminated as permitted by law.

VIII. CODING INFORMATION

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Note: This list of codes may not be all-inclusive, and codes are subject to change at any time. The identification of a code in this section does not denote coverage as coverage is determined by the terms of member benefit information. In addition, not all covered services are eligible for separate reimbursement.

Investigational; therefore, not covered:

Procedure Codes								
33542	33548							

IX. REFERENCES

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Partial Left Ventriculectomy

1. *Blue Cross and Blue Shield Association Technology Evaluation Center (TEC). Partial left ventriculectomy. TEC Assessments 1998; Volume 13, Tab 4*
2. *Franco-Cereceda A, McCarthy PM, Blackstone E,H et al. Partial left ventriculectomy for dilated cardiomyopathy: is this an alternative to transplantation? J Thorac Cardiovasc Surg 2001; 121(5):879-93*
3. *Heidenreich PA, Bozkurt B, Aguilar DA, et al. 2022 AHA/ACC/HFSA Guideline for the Management of Heart Failure: A Report of the American College of Cardiology/American*

Heart Association Joint Committee on Clinical Practice Guidelines. Circulation 2022; 145(18), e895–e1032
4. *Kawaguchi AT, Suma H, Konertz W et al. Left ventricular volume reduction surgery: The 4th International Registry Report 2004. J Card Surg 2005; 20(6): S5-11*
5. *Left ventricular reduction surgery. Ann Thorac Surg 1997; 63(3):909-10*
6. *Starling RC, McCarthy PM, Bud,a T et al. Results of partial left ventriculectomy for dilated cardiomyopathy: hemodynamic, clinical and echocardiographic observations. J Am Coll Cardiol 2000; 36(7):2098-103*
7. *Suma H, Tanabe H, Ueji,ma T et al. Selected ventriculoplasty for idiopathic dilated cardiomyopathy with advanced congestive heart failure: midterm results and risk analysis. Eur J Cardiothorac Surg 2007; 32(6):912-6.*
8. *National Coverage Determination for partial ventriculectomy (20.26). Center for Medicare and Medicaid Services.*
9. *Archived: Blue Cross Blue Shield Association Medical Policy Reference Manual. 7.01.66, Partial Left Ventriculectomy. August 2012. (Archived)*

Surgical Ventricular Restoration

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): 1705-17. 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): 2677-84.e1. 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.e6. 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): 1312-21. 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. *Piña IL, Zheng Q, She L, et al. Sex Difference in Patients With Ischemic Heart Failure Undergoing Surgical Revascularization: Results From the STICH Trial (Surgical Treatment for Ischemic Heart Failure). Circulation. Feb 20 2018; 137(8): 771-780. PMID 29459462*
8. *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): 837-44, 844.e1-3. PMID 19376309

9. *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. Jul 2011; 13(1): 46-51. PMID 21402600*
10. *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): 448-58. PMID 11807740*
11. *Athanasuleas CL, Stanley AW, 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): 1199-209. PMID 11300423*
12. *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*
13. *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): 374-83; discussion 383-5. PMID 12928633*
14. *Sartipy U, Albåge A, Lindblom D. The Dor procedure for left ventricular reconstruction. Ten-year clinical experience. Eur J Cardiothorac Surg. Jun 2005; 27(6): 1005-10. PMID 15896609*
15. *Hernandez AF, Velazquez EJ, Dullum 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): 494-9. PMID 16923420*
16. *Yang T, Yuan X, Li B, et al. Long-term outcomes after coronary artery bypass graft with or without surgical ventricular reconstruction in patients with severe left ventricular dysfunction. J Thorac Dis. Apr 28 2023; 15(4): 1627-1639. PMID 37197557*
17. *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): 1721-7. PMID 17062236*
18. *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): 178-83. PMID 17448414*
19. *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): 431-6. PMID 17675056*
20. *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): 663-8. PMID 19698853*
21. *Ohira S, Yamazaki S, Numata S, et al. Ten-year experience of endocardial linear infarct exclusion technique for ischaemic cardiomyopathy. Eur J Cardiothorac Surg. Feb 01 2018; 53(2): 440-447. PMID 29029034*
22. *Bakaeen FG, Gaudino M, Whitman G, et al. 2021: The American Association for Thoracic Surgery Expert Consensus Document: Coronary artery bypass grafting in*

patients with ischemic cardiomyopathy and heart failure. J Thorac Cardiovasc Surg. Sep 2021; 162(3): 829-850.e1. PMID 34272070

23. *Blue Cross Blue Shield Association Medical Policy Reference Manual. 7.01.103, Surgical Ventricular Restoration. March 2024*

X. Policy History

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MP 1.082	**07/20/2020 Consensus Review.** No change to policy statements. References updated.
	04/22/2021 Consensus Review. No change to policy statement. References added.
	03/25/2022 Consensus Review. Policy statement unchanged. Product variation and FEP language updated. Background revised. References added.
	10/09/2023 Consensus Review. No change to policy statement. Rationale, Definitions and References updated.
	10/20/2024 Minor Review. Changed policy statement related to partial left ventriculectomy from not medically necessary to investigational. References updated. Coding table updated for investigational code regarding partial left ventriculectomy.

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