

Corporate Medical Policy

Surgical Treatment of Chest Wall Deformities (Congenital or Acquired)

File Name: surgical_treatment_of_chest_wall_deformities_congenital_or_acquired
Origination: 1/2009
Last Review: 8/2023

Description of Procedure or Service

Chest wall deformities are usually congenital but may be acquired due to trauma. There are 3 types of congenital chest wall deformities; pectus excavatum, pectus carinatum, and Poland's syndrome. Chest wall abnormalities can cause cardiopulmonary problems due to physiologic impairment. Symptoms frequently do not appear during childhood because of the pliability of the chest. As the child grows, the chest becomes more rigid causing the patient to develop symptoms.

Pectus excavatum (PE) is the most common congenital chest wall deformity and is found predominantly in males. Pectus excavatum is also known as cobbler's chest, sunken chest, hollowed breast, or funnel breast. This condition is thought to occur due to an excessive growth of the lower costal cartilages, which causes a concave appearance of the chest. The lower third part of the inwardly displaced sternum is usually most affected. PE is usually diagnosed within the first year of life and tends to worsen as the child grows. It typically worsens during puberty, which is a time of rapid growth. The deformity may be deeper on the right side than the left possibly due to a rotation of the sternum. This can cause various degrees of sternal depression. Sternal depression may cause dyspnea, chest pain, palpitations and fatigue with mild physical activity. Other symptoms of PE are frequent respiratory infections, asthmatic symptoms and functional impairment due to respiratory impairment. PE is frequently associated with scoliosis, Marfan syndrome, and congenital heart disease.

Pectus carinatum (PC) is not as common as pectus excavatum but like PE is most frequently seen in males. Pectus carinatum is also known as pigeon breast, chicken breast and keeled chest. PC appears as a flattened chest with a bowed out appearance. This condition is not usually diagnosed until the rapid growth that occurs during puberty. Patients with pectus carinatum may have symptoms such as restrictive air exchange. Depending on the degree of the defect they may have difficulty with expiration of air out of the lungs. Conditions associated with PC are respiratory infections, rickets, asthma, and cardiac abnormalities.

Poland syndrome is a rare birth defect and appears with lateral depression of the ribs usually on the right side more often than the left side. Poland syndrome is also known as Poland's anomaly or Poland's syndactyly. It, like PE and PC, is seen most frequently in males. When the defect occurs on the left side of the sternum the heart and lungs are more affected because they are covered only by a thin layer of skin and tissue. Poland syndrome appears with absences or incomplete development of the pectoralis minor muscles and of the costal cartilages. Hypoplasia of the breast, subcutaneous tissue, lack of axillary hair and hand and upper extremity defects are also signs. Portions of the second, third and fourth ribs may be partially absent as well as upper costal cartilage.

Related Policies

Breast Surgeries
Cosmetic and Reconstructive Surgery

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*****Note: This Medical Policy is complex and technical. For questions concerning the technical language and/or specific clinical indications for its use, please consult your physician.**

Policy

BCBSNC will provide coverage for surgical treatment of chest wall deformities (congenital or acquired) when it is determined to be medically necessary and when the medical criteria and guidelines shown below are met.

Benefits Application

This medical policy relates only to the services or supplies described herein. Please refer to the Member's Benefit Booklet for availability of benefits. Member's benefits may vary according to benefit design; therefore member benefit language should be reviewed before applying the terms of this medical policy.

Most BCBSNC benefit plans limit coverage for cosmetic procedures, while providing coverage for reconstructive procedures. These terms are defined as follows:

- Cosmetic-to improve appearance. This does not include restoration of physiological function resulting from accidental injury, trauma or previous treatment that would be considered a covered service. This also does not include reconstructive surgery to correct congenital or developmental anomalies that have resulted in functional impairment
- Reconstructive procedures are performed on structures of the body for the purpose of improving/restoring bodily function or correcting significant deformity resulting from accidental injury, trauma, or previous therapeutic process.

Please refer to Certificate for availability of benefits. This policy relates only to the services or supplies described herein. Benefits may vary according to benefit design; therefore certificate language should be reviewed before applying the terms of the policy.

When Surgical Treatment of Chest Wall Deformities (Congenital or Acquired) is covered

Surgical Treatment of Pectus Excavatum, Pectus Carinatum, or Poland syndrome may be medically necessary and reconstructive when the following guidelines are met:

1. When there is functional impairment, documented by one of the following:
 - decreased cardiac output and/or abnormal pulmonary function during exercise; OR
 - anticipation of future cardiovascular compromise; OR
 - signs or symptoms that impair the patient's ability to participate in usual activities, such as shortness of breath (dyspnea) at rest or on exertion; OR
 - arrhythmias or clinical stigmata of decreased cardiac output; AND
2. The procedure is expected to correct the functional impairment; AND
3. The anatomical criterion for the condition is met:
 - for treatment of Pectus Excavatum, the Haller Index is greater than or equal to 3.2, OR
 - for treatment of Pectus Carinatum, the Haller Index is less than or equal to 2.0, OR
 - for treatment of Poland syndrome, when rib formation is absent.

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When Surgical Treatment of Chest Wall Deformities (Congenital or Acquired) is not covered

- When the guidelines above are not met; OR
- When the surgical treatment is for cosmetic reasons (intended to improve appearance and not primarily to restore bodily function or to correct significant deformity resulting from accidental injury, trauma, or previous therapeutic process.)

Policy Guidelines

The Haller index, or pectus severity index, is the most common used scale for determining the severity of chest wall deformities. The Haller index is obtained by dividing the inner width of the chest at its widest point by the distance between the posterior surface of the sternum and the anterior surface of the spine. This measurement uses the deepest level of the inner sternal depression to the anterior aspect of the vertebral body. CT scans are used to define the index. At times the rotation, asymmetry and underlying chest structure may make this measurement difficult to obtain. A normal chest has a Haller index of about 2.5.

Billing/Coding/Physician Documentation Information

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable service codes: 21740, 21742, 21743

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful, but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

Scientific Background and Reference Sources

Cheezum MK, Lettieri CJ. Cardiopulmonary manifestations of pectus excavatum. Retrieved 10/31/08 from http://bcbsma.medscape.com/viewarticle/571222_print.

Senior Medical Director Review - 1/22/2009

Specialty Matched Consultant Advisory Panel review 9/2010

Jaroszewski D, Notrica D, McMahon L, Steidley DE, Deschamps C. Current management of pectus excavatum: a review and update of therapy and treatment recommendations. *J Am Board Fam Med.* 2010 Mar-Apr;23(2):230-9. Retrieved on August 17, 2010 from <http://www.jabfm.org/cgi/content/full/23/2/230>

Specialty Matched Consultant Advisory Panel review 9/2011

Brochhausen C, Turial S, Müller FK, Schmitt VH, Coerdts W, Wihlm JM, Schier F, Kirkpatrick CJ. Pectus excavatum: history, hypotheses and treatment options. *Interact Cardiovasc Thorac Surg.* 2012 Jun;14(6):801-6. Retrieved from <http://icvts.oxfordjournals.org/content/14/6/801.long>

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Blanco FC, Elliott ST, Sandler AD. Management of congenital chest wall deformities. Semin Plast Surg. 2011 Feb;25(1):107-16. Retrieved from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3140238/?tool=pubmed>

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American Pediatric Surgical Association (EAPSA). Pectus Carinatum Guideline August 8, 2012. Retrieved from http://www.eapsa.org/AM/Template.cfm?Section=Statements_Guidelines&Template=/CM/ContentDisplay.cfm&ContentID=3474

Frantz FW. Indications and guidelines for pectus excavatum repair. Curr Opin Pediatr. 2011 Aug;23(4):486-91.

Specialty Matched Consultant Advisory Panel review 9/2013

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Medical Director review 9/2014

Specialty Matched Consultant Advisory Panel review 9/2015

Medical Director review 9/2015

Specialty Matched Consultant Advisory Panel 8/2020

Specialty Matched Consultant Advisory Panel 8/2021

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Policy Implementation/Update Information

2/16/09 New policy written. Reviewed with Senior Medical Director 1/22/2009. Surgical treatment of chest wall deformities (congenital or acquired) may be medically necessary and reconstructive when the following guidelines are met: A.Surgical treatment for Pectus Excavatum: 1. when there is documented functional impairment (i.e., decreased cardiac output and/or abnormal pulmonary function during exercise; OR 2. when future cardiovascular compromise is anticipated; OR 3. when there is medical record documentation of signs or symptoms that impair the patient's ability to participate in usual activities, such as shortness of breath (dyspnea) at rest or on exertion; OR 4. when there are arrhythmias or clinical stigmata of decreased cardiac output; AND 5. the Haller Index is greater than or equal to 3.2. AND 6. the procedure is expected to correct the

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functional impairment. B. Surgical treatment for Pectus Carinatum: 1. when there is documented functional impairment (i.e., decreased cardiac output and/or abnormal pulmonary function during exercise; OR 2. when future cardiovascular compromise is anticipated; OR 3. when there is medical record documentation of signs or symptoms that impair the patient's ability to participate in usual activities, such as shortness of breath (dyspnea) at rest or on exertion; OR 4. when there are arrhythmias or clinical stigmata of decreased cardiac output; AND 5. the Haller Index is less than or equal to 2.0; AND 6. the procedure is expected to correct the functional impairment. C. Surgical treatment for Poland syndrome: 1. when there is documented functional impairment (i.e., decreased cardiac output and/or abnormal pulmonary function during exercise; OR 2. when future cardiovascular compromise is anticipated; OR 3. when there is medical record documentation of signs or symptoms that impair the patient's ability to participate in usual activities, such as shortness of breath (dyspnea) at rest or on exertion; OR 4. when there are arrhythmias or clinical stigmata of decreased cardiac output; AND 5. when rib formation is absent; AND 6. the procedure is expected to correct the functional impairment. "When Not Covered": A. When the guidelines above are not met; OR B. When the surgical treatment is for cosmetic reasons (intended to improve appearance and not primarily to restore bodily function or to correct significant deformity resulting from accidental injury, trauma, or previous therapeutic process.)" Notification given 2/16/09. Policy effective 5/18/09. (btw)

- 6/22/10 Policy Number(s) removed (amw)
- 10/26/10 Specialty Matched Consultant Advisory Panel review 9/2010. Combined criteria numbers 4 through 6 under the "When covered" section for Pectus Excavatum , Pectus Carinatum and Poland syndrome. References updated. (mco)
- 10/11/11 Removed information regarding the Haller Index from "Description" section, as it is also discussed in the "Policy Guidelines" section. Consolidated the "When Covered" section. Added the following requirements to the "When Covered" section: a. for treatment of Pectus Excavatum, the Haller Index is greater than or equal to 3.2, OR b. for treatment of Pectus Carinatum, the Haller Index is less than or equal to 2.0, OR c. for treatment of Poland syndrome, when rib formation is absent. Specialty Matched Consultant Advisory Panel review 9/2011. (mco)
- 10/16/12 References updated. Medical Director review 8/2012. Specialty Matched Consultant Advisory Panel review 9/2012. No changes to Policy Statements. (mco)
- 10/15/13 References updated. Specialty Matched Consultant Advisory Panel review 9/2013. Medical Director review 9/2013. No changes to Policy Statements. (mco)
- 10/14/14 Specialty Matched Consultant Advisory Panel review 9/2014. Medical Director review 9/2014. Description section revised to include related policies. (mco) (td)
- 10/30/15 Specialty Matched Consultant Advisory Panel review 9/30/2015. Medical Director review 9/2015. (td)
- 12/30/16 Specialty Matched Consultant Advisory Panel review 9/28/2016. No change to policy statement. (an)
- 9/15/17 Specialty Matched Consultant Advisory Panel review 8/30/2017. No change to policy statement. (an)
- 9/7/18 Specialty Matched Consultant Advisory Panel review 8/22/2018. No change to policy statement. (an)

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- 9/10/19 Specialty Matched Consultant Advisory Panel 8/20/2019. No change to policy statement. (eel)
- 9/8/20 Specialty Matched Consultant Advisory Panel 8/19/2020. References updated. No change to policy statement. (eel)
- 9/21/21 Specialty Matched Consultant Advisory Panel 8/2021. Medical Director review 8/2021. (jd)
- 9/13/22 Specialty Matched Consultant Advisory Panel 8/2022. Medical Director review 8/2022. References updated. No change to policy statement. (tt)
- 8/29/23 Specialty Matched Consultant Advisory Panel 8/2023. Medical Director review 8/2023. References updated. No change to policy statement. (tt)

Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.