Effective November 1, 2023, refer to CMS Manual 100-02, Chapter 16-General Exclusions from Coverage for services included in this policy.

BlueCross BlueShield of Alabama

Name of Blue Advantage Policy:

Adipose-derived Stem Cells in Autologous Fat Grafting to the Breast

Policy #: 476
Latest Review Date: January 2023
Category: Surgery
ARCHIVED EFFECTIVE 11/1/2023

BACKGROUND:

Blue Advantage *medical policy does not conflict with Local Coverage Determinations (LCDs), Local Medical Review Policies (LMRPs) or National Coverage Determinations (NCDs) or with coverage provisions in Medicare manuals, instructions or operational policy letters. In order to be covered by Blue Advantage the service shall be reasonable and necessary under Title XVIII of the Social Security Act, Section 1862(a)(1)(A). The service is considered reasonable and necessary if it is determined that the service is:*

1. *Safe and effective;*
2. *Not experimental or investigational*;*
3. *Appropriate, including duration and frequency that is considered appropriate for the service, in terms of whether it is:*

    - *Furnished in accordance with accepted standards of medical practice for the diagnosis or treatment of the patient's condition or to improve the function of a malformed body member;*
    - *Furnished in a setting appropriate to the patient's medical needs and condition;*
    - *Ordered and furnished by qualified personnel;*
    - *One that meets, but does not exceed, the patient's medical need; and*
    - *At least as beneficial as an existing and available medically appropriate alternative.*

Routine costs of qualifying clinical trial services with dates of service on or after September 19, 2000 which meet the requirements of the Clinical Trials NCD are considered reasonable and necessary by Medicare. Providers should bill* ***Original Medicare* *for covered services that are related to* ***clinical trials*** *that meet Medicare requirements (Refer to Medicare National Coverage Determinations Manual, Chapter 1, Section 310 and Medicare Claims Processing Manual Chapter 32, Sections 69.0-69.11).*

POLICY:

Blue Advantage will treat use of **autologous fat grafting to the breast, using adipose-derived stem cells** as a **non-covered** benefit and as **investigational.**

Blue Advantage does not approve or deny procedures, services, testing, or equipment for our members. Our decisions concern coverage only. The decision of whether or not to have a certain test, treatment or procedure is one made between the physician and his/her patient. Blue Advantage administers benefits based on the members' contract and medical policies. Physicians should always exercise their best medical judgment in providing the care they feel is most appropriate for their patients. Needed care should not be delayed or refused because of a coverage determination.

DESCRIPTION OF PROCEDURE OR SERVICE:

Following a mastectomy, patients often experience pain and irradiated skin; as an adjunct to reconstructive breast surgery, surgeons will sometimes graft autologous fat to the breast. Adipose-derived stem cells (ADSCs) have been proposed as a supplement to the fat graft in an attempt to improve graft survival; however, whether ADSCs plays a role in tumorigenesis it still relatively unknown.

Autologous Fat Grafting to the Breast

Autologous fat grafting to the breast has been proposed for indications that include breast augmentation and following oncologic surgery. Proposed indications after oncologic surgery include as an adjunct to reconstruction postmastectomy or lumpectomy for contour deformities and improved shape and volume of the breast, for postmastectomy pain syndrome (neuropathic pain), and for irradiated skin to soften the skin and restore it to nonirradiated appearance and consistency which may reduce complications and failure rates and oncologic concerns have limited application in the breast.

NOTE: This policy does not address the use of autologous fat tissue in aesthetic breast augmentation (i.e., cosmesis).

Adipose-Derived Stem Cells

Stem cell biology, and the related field of regenerative medicine, involves multipotent stem cells that exist within a variety of tissues, including bone marrow and adipose tissue. Studies have shown that one gram of adipose tissue yields approximately 5 x 103 stem cells, which is up to 500 times greater than the number of mesenchymal stem cells in one gram of bone marrow. Stem cells, because of their pluripotentiality and unlimited capacity for self-renewal, offer promise for tissue engineering and advances in reconstructive procedures. Adipose tissue in particular represents an abundant and easily accessible source of adipose derived stem cells (ADSC), which can differentiate along multiple mesodermal lineages. ADSCs may allow for improved graft survival and generation of new fat tissue after transfer from another site.

The potentially therapeutic properties of ADSC have led to novel techniques of fat grafting in conjunction with ADSC therapy for breast fat grafting. Differentiation of ADSC into adipocytes may provide a reservoir for adipose tissue turnover. Differentiation of ADSC into endothelial cells, with release of angiogenic growth factors by ADSC, may decrease the rate of graft resorption by increasing blood supply to the grafted fat tissue. Further, ADSC may serve to accelerate wound healing and protect the graft from ischemic reperfusion injury. Current methods for isolating ADSCs can involve various processes, which may include centrifugation and enzymatic techniques that rely on collagenase digestion—which, in turn, is followed by centrifugal separation to isolate the stem cells from primary adipocytes. Isolated ADSCs can be expanded in a monolayer on standard tissue culture plastic surfaces with a basal medium containing 10% fetal bovine serum. Newly developed culture conditions provide an environment in which the study of ADSCs can be done without the interference of animal serum and may also allow rapid expansion of autologous ADSCs in culture for use in human clinical trials. A standard expansion method has not yet been established.

To address the problems of unpredictability and low rates of fat graft survival, Yoshimura et al developed a technique known as cell-assisted lipotransfer (CAL), which produces autogenous fat rich in ADSCs. In CAL, half of the lipoaspirate is centrifuged to obtain a fraction of concentrated ADSCs; meanwhile, the other half is washed, enzymatically digested, filtered, and spun down to an ADSC-rich pellet. The latter is then mixed with the former, converting a relatively ADSC-poor aspirated fat to ADSC-rich fat.

A point-of-care system is available for concentrating ADSC from mature fat. The Celution™ system (Cytori Therapeutics, Inc) is designed to transfer a patient's own adipose tissue from one part of the body to another in the same surgical procedure.

KEY POINTS:

This policy has been updated regularly with searches of the MEDLINE database. The most recent literature update was performed through November 11, 2022.

Summary of Evidence

For individuals who have breast cancer who receive of autologous fat grafting to the breast with ADSC enrichment of the graft, the evidence includes small cohort studies, some of which are prospective. Relevant outcomes are symptoms, morbid events, functional outcomes, quality of life, resource utilization, and treatment-related morbidity. The studies were heterogeneous in the patient selection, methods in harvesting stem cells, number of procedures, and outcomes measured. Studies have mainly reported patient and investigator satisfaction and functional and cosmetic results. Limitations of the data include sample sizes, short-term follow-up, and uncertainty about the possible oncologic influence ADSC may have on the fat grafting procedure. One small, prospective study (N=20 patients) found that the use of ADSC enrichment with autologous fat grafting over autologous fat grafting alone improved the retention rate of the fat graft postoperatively at 6- and 12-months, yet larger high-quality clinical trials are needed to confirm this benefit. The evidence is insufficient to determine the effects of the technology on health outcomes.

Practice Guidelines and Position Statements
American Society for Aesthetic Plastic Surgery and American Society of Plastic Surgeons
The American Society for Aesthetic Plastic Surgery and the American Society of Plastic Surgeons released a joint position statement on the use of stem cells in aesthetic surgery in 2011. Based on a systematic review of the peer-reviewed literature, the societies concluded that while there is potential for the future use of stem cells in aesthetic surgical procedures, the scientific evidence and other data are very limited in terms of assessing the safety or efficacy of stem cell therapies in aesthetic medicine.

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

KEY WORDS:
Fat grafting, autologous fat grafting, adipose-derived stem cells, Celution™ System, Cytori Therapeutics, breast reconstruction with fat grafting, breast reconstruction with adipose-derived stem cells, ADSC, autologous fat transplantation to the breast, autologous cell-enriched fat grafting, lipoaspirate transplant, cell-assisted lipotransfer, CAL, Celution 800 System®, Revolve Envi 600

APPROVED BY GOVERNING BODIES:
Cytori Therapeutics, Inc was awarded 510(k) marketing clearance in September 2006 from the U.S. Food and Drug Administration's (FDA) Center for Devices and Radiological Health (CDRH) for the Celution™ Cell Concentration System as a cell saver device. The system is cleared for the collection, concentration, washing and re-infusion of a patient's own cells for applications that may include, but are not limited to cardiovascular, plastic and reconstructive, orthopedic, vascular, and urological surgeries and procedures.

In 2007, Cytori Therapeutics received the FDA 510(k) clearance to market the Autologous Fat Transfer system, which transfers a patient's own adipose tissue from one part of the patient's body to another.

In 2017, the Revolve Envi 600 Advanced Adipose System (LifeCell Corporation, Branchburg, NJ) was cleared for marketing by the FDA through the 510(k) process. The system harvests, filters, and transfers autologous adipose tissue for fat grafting. Uses include reconstructive surgery.

BENEFIT APPLICATION:
Coverage is subject to member's specific benefits. Group specific policy will supersede this policy when applicable.

CURRENT CODING:

CPT Codes:

15771	Grating of autologous fat harvested by liposuction technique to trunk, breasts, scalp, arms, and/or legs; 50cc or less injectate
15772	Grating of autologous fat harvested by liposuction technique to trunk, breasts, scalp, arms, and/or legs; each additional 50cc or part thereof

The following CPT codes should not be used:

CPT Codes:

15769	Grafting of autologous fat harvested by direct excision (e.g., fat, dermis, fascia) (Effective 01/01/20)
15770	Graft, derma, fat, fascia
19380	Revision of reconstructed breast (eg, significant removal of tissue, re-advancement and/or re-inset of flaps in autologous reconstruction or significant capsular revision combined with soft tissue excision in implant-based reconstruction)

REFERENCES:

1. Agha RA, Pidgeon TE, Borrelli MR, et al. Validated Outcomes in the Grafting of Autologous Fat to the Breast: The VOGUE Study. Development of a Core Outcome Set for Research and Audit. Plast Reconstr Surg. May 2018;141(5):633e-638e.
2. Jeon HJ, Choi DH, Lee JH, et al. A Prospective Study of the Efficacy of Cell-Assisted Lipotransfer with Stromal Vascular Fraction toCorrect Contour Deformities of the Autologous Reconstructed Breast. Aesthetic Plast Surg. Jun 2021; 45(3): 853-863.
3. Kamakura T, Ito K. Autologous cell-enriched fat grafting for breast augmentation. Aesthetic Plast Surg. Dec 2011; 35(6):1022-1030.
4. Mizuno H, Hyakusoku H. Fat grafting to the breast and adipose-derived stem cells: recent scientific consensus and controversy. Aesthtic Surg J 2010; 30(3):381-387.
5. Perez-Cano R, Vranckx JJ, Lasso JM et al. Prospective trial of adipose-derived regenerative cell (ADRC)-enriched fat grafting for partial mastectomy defects: the RESTORE-2 trial. Eur J Surg Oncol 2012; 38(5):382-389.
6. Rigotti G, Marchi A, Galie M et al. Clinical treatment of radiotherapy tissue damage by lipoaspirate transplant: A healing process mediated by adipose-derived adult stem cells. Plast Reconstr Surg 2007; 119(5):1409-1422; discussion 1423-1404.

7. Sterodimas A, de Faria J, Nicaretta B eta al. Tissue engineering with adipose-derived stem cells (ADSCs): Current and future applications. J Plast Reconstr Aesthet Surg 2010; 63(11):1886-1892.
8. Wilson A, Butler PE, Seifalian AM. Adipose-derived stem cells for clinical applications: a review. Cell Prolif 2011; 44(1):86-98.
9. Yoshimura K, Sato K, Aoi N et al. Cell-assisted lipotransfer for cosmetic breast augmentation: supportive use of adipose-derived stem/stromal cells. Aesth Plast Surg 2008; 32(1):48-55; discussion 56-47.

POLICY HISTORY:

Adopted for Blue Advantage, June 2011
Available for comment June 23 – August 8, 2011
Medical Policy Group, July 2011
Medical Policy Group, July 2013
Medical Policy Group, April 2014
Medical Policy Group, November 2015
Medical Policy Group, August 2016
Medical Policy Group, October 2017
Medical Policy Group, March 2019
Medical Policy Group, December 2019: Annual Coding Update
Medical Policy Group, January 2020
Medical Policy Group, October 2020: Annual Coding Update. Revised description of CPT 19380 to state "Revision of reconstructed breast (eg, significant removal of tissue, re-advancement and/or re-inset of flaps in autologous reconstruction or significant capsular revision combined with soft tissue excision in implant-based reconstruction). CPT 19366 deleted and moved to Previous Coding Section.
Medical Policy Group, January 2021
Medical Policy Group, January 2022
Medical Policy Group, January 2023
Medical Policy Group, January 2023: Removed codes 11950, 11951, 11952, 11954, 19499 from Current Coding section. No change in policy intent.
Medical Policy Group, November 2023: Archived effective 11/1/2023.
