

FIRST REPORTED CASE OF BILATERAL DIEP FLAP RECONSTRUCTION FOLLOWING BIA-ALCL IN A TRANSGENDER FEMALE PATIENT

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Summary

The prevalence of individuals with gender dysphoria is increasing. With recent advances in health care and societal support, appropriate treatment has become more accessible, leading to an increased demand for gender-affirming care. Chest feminization surgery is a critical component of management, with breast enhancement using implants being one of the most sought-after physical modifications in this population. However, as the demand for implants rises, so does the awareness of a rare condition: breast-implant-associated anaplastic large cell lymphoma (BIA-ALCL), an uncommon type of peripheral T-cell lymphoma. Transgender women are often excluded from routine breast screening and follow-up programs, which can result in delayed recognition and diagnosis of this condition. Nevertheless, BIA-ALCL generally presents as a localized disease with an excellent prognosis when treated with en bloc total capsulectomy. After surgery, the issue arises of how to proceed with the reconstructive process. We report the first case of breast reconstruction in a transgender woman with bilateral DIEP flaps after successful treatment of BIA-ALCL. In this context, autologous breast reconstruction strikes as a safe and feasible surgical technique that, when performed by skilled surgeons, achieves not only good aesthetic results but also safety goals.

Key words: chest feminization, gender affirmation, transgender, BIA-ALCL, implant, lymphoma, bilateral, DIEP flap

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INTRODUCTION

In the last edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM 5), Gender dysphoria (GD) is defined as a “marked incongruence between an individual’s experienced or expressed gender and the one assigned at birth”. Individuals with GD are at risk of suffering cultural stigmatization, low self-esteem, and increased risk of suicidality ¹. To address these psychological issues, gender affirmation surgery often plays a crucial role, and chest feminization is commonly the first step. The criteria for performing these procedures are outlined in the most recent edition

of the World Professional Association for Transgender Health (WPATH) ². Up to 70% of these patients seek surgical breast augmentation using implants ^{3,4}. However, this approach is now facing a new challenge: a recently recognized condition associated with implants: breast implant-associated anaplastic large cell lymphoma (BIA-ALCL) ⁵. Most cases of BIA-ALCL cases are associated with macrotextured breast implants, and the disease is generally indolent when confined to the capsule, with a favorable prognosis following complete surgical excision, including *en bloc* capsulectomy and removal of the implants ^{6,7}.

To date, only four cases of BIA-ALCL in the transgender population have been reported in the literature ⁵. Unlike breast cancer patients, who typically undergo routine follow-ups and screenings, individuals with breast implants – whether for cosmetic breast augmentation or as part of gender reassignment surgery – often lack consistent postoperative monitoring. This lack of routine screening can result in delayed diagnoses in this population. Although reported cases of BIA-ALCL in transgender patients are exceedingly rare, comparisons with other BIA-ALCL cases reveal significant delays in presentation and diagnosis within this specific group. Given the underlying psychological considerations for these patients, reconstructive options following BIA-ALCL treatment are of particular importance. Even though the disease has been predominantly associated with macrotextured implants, there is currently no definitive evidence regarding the safety of smooth implant reconstruction following BIA-ALCL ^{6,7}. For this reason, autologous reconstruction remains the most reliable treatment option to restore quality of life, to offer to these patients ⁵. We report the case of a successful bilateral Deep Inferior Epigastric Perforator (DIEP) flap reconstruction in a transgender male-to-female patient after being treated for BIA-ALCL.

CASE REPORT

A 31-year-old Italian caucasian non-smoker transgender woman was admitted in November 2024 to the plastic surgery service at Tor Vergata for bilateral autologous breast reconstruction with DIEP flap after being treated for BIA-ALCL in another center. The family history was positive for oncological disease; she had a sister who passed away at the age of 40 for breast cancer. In 2017, she received pre-pectoral bilateral breast augmentation surgery with periareolar incision and silicone-macrotexture implants (Allergan, Inspira TSF, Ref. N-TSF485, 485 g). In 2020, she started presenting swelling and enlargement of her left breast. Magnetic resonance imaging (MRI) confirmed left breast

periprosthetic effusion and fine needle aspiration cytology (FNAC) of fluid effusion, and cytological evaluation revealed large-sized atypical CD30+ lymphoid cells, highly suspicious for Anaplastic Large Cell Lymphoma (ALCL). After the cytological diagnosis, the patient underwent 2-[Fluorine-18]fluoro-2-deoxy-D-glucose Positron emission tomography-computed tomography (FDG PET-CT) scan that did not reveal any focal periprosthetic, loco-regional, or distant pathological uptake (cT1N0M0). In May 2021, bilateral *en bloc* breast implant removal and *en bloc* periprosthetic capsulectomy were performed. Histological test of the capsule confirmed the diagnosis of BIA-ALCL with the following immunophenotypic profile, CD30+, CD3+, CD2-, CD7, CD5-. Due to the early stage of the disease (Stage 1A as proposed by Clemens et al.) ⁸, adjuvant chemotherapy was omitted. Postoperative follow-up after 3 years was unremarkable, and after refusing implant reconstruction with smooth surface device in another institution, the patient came to our hospital where we suggested a total bilateral autologous reconstruction with a bilateral DIEP flap. Pre-operatively the patient underwent computed tomography angiography of the abdomen to study the perforator vessels from the deep inferior epigastric artery (Fig. 1).

Intraoperatively, we applied our acute isovolemic hemodilution protocol in order to obtain a target value of hematocrit between 27 and 30 percent to provide better microcirculatory perfusion ⁹, then flaps were raised both on a single perforator with flaps 'weights of 790 g (right) and 845 g (left) revascularized through end-to-end bilateral anastomoses between the deep inferior epigastric arteries (DIEA) and the subscapular arteries, followed by veins anastomoses between the deep inferior epigastric and superficial epigastric veins and the circumflex scapular comitant veins ¹⁰. The flap inset proceeded with slight coning to recreate an aesthetic contour, and a 15 x 4 cm skin paddle was left along the inframammary fold for Doppler monitoring (Fig. 2).

There were no intraoperative or postoperative complications, and the patient was discharged four days after the operation. Three months after surgery, the patient is in good general and local conditions (Fig. 3). The flaps remain viable, and there have been no complications at the donor and recipient sites.

DISCUSSION

According to the last clinical recommendations ⁶ embraced by the Italian Ministry of Health and build further on the United States National Comprehensive Cancer Network (NCCN) ⁸ and UK guidelines ¹¹, in patients with confirmed diagnosis of BIA-ALCL confined



Figure 1. Preoperative photograph (**left**) of a 31-year-old transgender woman after breast implants removal following diagnosis of BIA-ALCL; postoperative photograph (**right**) after breast reconstruction with bilateral DIEP flaps at 3-months follow-up (**left lateral view**).



Figure 2. Preoperative photograph (**left**) of a 31-year-old transgender woman after breast implants removal following diagnosis of BIA-ALCL; postoperative photograph (**right**) after breast reconstruction with bilateral DIEP flaps at 3-months follow-up (**frontal view**).



Figure 3. Preoperative photograph (**left**) of a 31-year-old transgender woman after breast implants removal following diagnosis of BIA-ALCL; postoperative photograph (**right**) after breast reconstruction with bilateral DIEP flaps at 3-months follow-up (**right lateral view**).

to the capsule, the en-bloc capsulectomy should be performed, followed by immediate or delayed breast autologous reconstruction.

The history of transgender health is complex and has undergone significant evolution over time. In the 21st century, remarkable progress has been made in transgender healthcare, including increased insurance coverage for transgender-related care, improved cultural competency among healthcare providers, medical advancements and enhanced surgical techniques¹². The most frequent encountered psychopathologies among this population include depressive disorders, anxiety, substance abuse, personality disorders, and a suicide attempt rate between 19 to 25%^{3,13}. This is a topic of major significance because according to some studies the prevalence of transgender individuals is increasing over time¹⁴. For all these reasons, gender-affirmation surgery is of great importance, especially chest feminization and breast sensation¹⁵, the most pursued physical modification in this population. As Weigert R. et al. describes¹³, this procedure significantly improves body satisfaction score and increased quality of life.

In patients diagnosed with BIA-ALCL the issue arises of how to proceed with the reconstructive process. There is still no definite evidence on the safety of

smooth implants reconstruction following BIA-ALCL in the literature. For this reason, it is not recommended and should be avoided any type of implant placement, neither textured or smooth, after the en-bloc capsulectomy both in aesthetic and reconstructive BIA-ALCL patients. Conversely, it is highly recommended to opt for an autologous breast reconstruction, using free flaps, ergonomic FALD flap¹⁶⁻¹⁹ or autologous fat grafting alone⁶. On the other hand, DIEP flap augmentation has also the advantage of achieving abdominal feminization by improving lower abdominal contour²⁰. Due to the increasing number of transgender patients seeking breast implant surgery, healthcare providers should promote both awareness among these patients of the potential risks associated with the procedure, breast cancer screening and tailored postoperative follow-up that includes reconstruction treatment²¹⁻²⁵. This last aspect is crucial to consider, as for this population, physical appearance goes beyond aesthetics; it plays an integral role in their psychological well-being and treatment¹.

CONCLUSIONS

To the best of our knowledge, this is the first clinical

case known in literature of bilateral DIEP reconstruction in a transgender after treatment of BIA-ALCL. BIA-ALCL is a rare complication of breast implantation, and it is important to counsel all patients undergoing implant placement, including transgender women, on its risk²⁶. Reconstruction should be considered and provided to patients after being submitted to multidisciplinary team assessment²⁷. Since evidence on the safety of implant reconstruction with smooth device following BIA-ALCL must be still confirmed, autologous reconstruction seems the most appropriate procedure for this subgroup of patients. The purpose must be the achievement of an aesthetic result in line with the patient's gender identity, and with the highest level of safety, to avoid further complications²⁸ and cancer recurrence²⁹.

Conflict of interest statement

We, hereby certify, that to the best of our knowledge no financial support or benefits have been received by author or any co-author, by any member of our immediate family or any individual or entity with whom or with which we have a significant relationship from any commercial source which is related directly or indirectly to the scientific work which is reported on in the article. None of the authors has a financial interest in any of the products, devices, or drugs mentioned in this manuscript.

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Author contributions

BL: A, W
BG: D, DT, W
GD'O: D, DT
MG: D, DT
VC: A, W

Abbreviations

A: conceived and designed the analysis
D: collected the data
DT: contributed data or analysis tool
S: performed the analysis
W: wrote the paper
O: other contribution (specify contribution in more detail)

Ethical considerations

Not applicable.

Disclosures

The patient gave written consent to the drafting of the article, and the use of images.

References

- Garg G, Elshimy G, Marwaha R. Gender dysphoria. En StatPearls. StatPearls Publishing 2024.
- Coleman E, Radix AE, Bouman WP, et al. Standards of care for the health of transgender and gender diverse people, version 8. *Int J Transgend Health* 2022;23(Suppl 1):S1-S259. <https://doi.org/10.1080/26895269.2022.2100644>
- Kanhai RC, Hage JJ, Asscheman H, et al. Augmentation mammoplasty in male-to-female transsexuals. *Plast Reconstr Surg* 1999;104:542-551. <https://doi.org/10.1097/00006534-199908000-00039>
- Claes KEY, D'Arpa S, Monstrey SJ. Chest surgery for transgender and gender nonconforming individuals. *Clin Plast Surg* 2018;45:369-380. <https://doi.org/10.1016/j.cps.2018.03.010>
- Zaveri S, Yao A, Schmidt H. Breast implant-associated anaplastic large cell lymphoma following gender reassignment surgery: a review of presentation, management, and outcomes in the transgender patient population. *Eur J Breast Health* 2020;16:162-166. <https://doi.org/10.5152/ejbh.2020.5480>
- Longo B, Di Napoli A, Curigliano G, et al. Clinical recommendations for diagnosis and treatment according to current updated knowledge on BIA-ALCL. *Breast* 2022;66:332-341. <https://doi.org/10.1016/j.breast.2022.11.009>
- Jaffe ES, Ashar BS, Clemens MW, et al. Best practices guideline for the pathologic diagnosis of breast implant-associated anaplastic large-cell lymphoma. *J Clin Oncol* 2020;38:1102-1111. <https://doi.org/10.1200/JCO.19.02778>
- Clemens MW, Jacobsen ED, Horwitz SM. 2019 NCCN Consensus Guidelines on the diagnosis and treatment of Breast Implant-Associated Anaplastic Large Cell Lymphoma (BIA-ALCL). *Aesthet Surg J* 2019;39(Suppl. 1):S3-S13. <https://doi.org/10.1093/asj/sjy331>
- Amoroso M, Özkan Ö, Özkan Ö, et al. The effect of normovolemic and hypervolemic hemodilution on a microsurgical model: experimental study in rats. *Plastic Reconstr Surg* 2015;136:512-519. <https://doi.org/10.1097/PRS.0000000000001525>
- Laporta R, Longo B, Pagnoni M, et al. Accidental injury of the latissimus dorsi flap pedicle during axillae dissection: types and reconstruction algorithm. *Microsurgery* 2014;34:5-9. <https://doi.org/10.1002/micr.22112>
- Turton P, El-Sharkawi D, Lyburn I, et al. UK guidelines on the diagnosis and treatment of breast implant-associated anaplastic large cell lymphoma (BIA-ALCL) on behalf of the medicines and healthcare products regulatory agency (MHRA) plastic, reconstructive and aesthetic surgery expert advisory group (PRASEAG). *Eur J Surg Oncol* 2021;47:199-210. <https://doi.org/10.1016/j.ejso.2020.07.043>
- Frey JD, Poudrier G, Thomson JE, et al. A historical review of gender-affirming medicine: focus on genital reconstruction Surgery. *J Sex Med* 2017;14:991-1002. <https://doi.org/10.1016/j.jsxm.2017.06.007>

- ¹³ Weigert R, Frison E, Sessiecq Q, et al. Patient satisfaction with breasts and psychosocial, sexual, and physical well-being after breast augmentation in male-to-female transsexuals. *Plast Reconstr Surg* 2013;132:1421-1429. <https://doi.org/10.1097/01.prs.0000434415.70711.49>
- ¹⁴ Collin L, Reisner S. L, Tangpricha V. Prevalence of transgender depends on the «case» definition: a systematic review. *J Sex Med* 2016;13:613-626. <https://doi.org/10.1016/j.jsxm.2016.02.001>
- ¹⁵ Longo B, Campanale A, Santanelli di Pompeo F. Nipple-areola complex cutaneous sensitivity: a systematic approach to classification and breast volume. *JPRAS* 2014;67:1630-1636. <https://doi.org/10.1016/j.bjps.2014.08.043>
- ¹⁶ Paolini G, Amoroso M, Pugliese P, et al. Functional sequelae following bilateral mastectomy and immediate reconstruction with latissimus dorsi flap: medium-term follow-up. *JPRAS* 2014;48:99-103. <https://doi.org/10.3109/2000656X.2013.812968>
- ¹⁷ Longo B, D'Orsi G, Vanni G, et al. Fat-augmented latissimus dorsi flap for secondary breast reconstruction in small to medium-sized irradiated breasts. *Plast Reconstr Surg* 2023;152:1165-1173. <https://doi.org/10.1097/PRS.00000000000010480>
- ¹⁸ Longo B, D'Orsi G, Giacalone M, et al. The ergonomic FALD flap for one-stage total breast reconstruction. *Plast Reconstr Surg Glob Open* 2023;11:E5262. <https://doi.org/10.1097/GOX.00000000000005262>
- ¹⁹ Longo B, D'Orsi G, Orlando G, et al. Recurrent dermatofibrosarcoma protuberans of the clavicular region: radical excision and reconstruction with Latissimus Dorsi myocutaneous flap. *PRRS* 2022;1:14-19. <https://doi.org/10.57604/PRRS-002>
- ²⁰ Corso G, Gandini S, D'Ecclesiis O, et al. Risk and incidence of breast cancer in transgender individuals: a systematic review and meta-analysis. *Eur J Cancer Prev* 2023;32:207-214. <https://doi.org/10.1097/CEJ.0000000000000784>
- ²¹ Nolan IT, Alba BE, Weinstein B, et al. Gender-affirming DIEP flap breast augmentation. *Plast Reconstr Surg Glob Open* 2024;12:E6217. <https://doi.org/10.1097/GOX.00000000000006217>
- ²² Patel H, Samaha Y, Ives G, et al. Chest feminization in male-to-female transgender patients: a review of options. *Transgend Health* 2021;6:244-255. <https://doi.org/10.1089/trgh.2020.0057>
- ²³ de Boer M, van der Sluis W. B, de Boer J. P, et al. Breast implant-associated anaplastic large-cell lymphoma in a transgender woman. *Aesthet Surg J* 2017;37:NP83-NP87. <https://doi.org/10.1093/asj/sjx098>
- ²⁴ Materazzo M, Vanni G, Rho M, et al. Breast Implant-Associated Anaplastic Large Cell Lymphoma (BIA-ALCL) in a young transgender woman: a case report. *International J Surg Case Rep* 2022;98:107520. <https://doi.org/10.1016/j.ijscr.2022.107520>
- ²⁵ Patzelt M, Zarubova L, Klener P, et al. Anaplastic large-cell lymphoma associated with breast implants: a case report of a transgender female. *Aesthetic Plast Surg* 2018;42:451-455. <https://doi.org/10.1007/s00266-017-1012-y>
- ²⁶ Bacot-Davis VR, Moran AH. Transgender preventative health chest/breast cancer screening. *Front Health Serv* 2024;4:1434536. <https://doi.org/10.3389/frhs.2024.1434536>
- ²⁷ Miller TJ, Wilson SC, Massie JP, et al. Breast augmentation in male-to-female transgender patients: technical considerations and outcomes. *JPRAS Open* 2019;21:63-74. <https://doi.org/10.1016/j.jprra.2019.03.003>
- ²⁸ Grippaudo FR, Renzi L, Costantino B, et al. Late unilateral hematoma after breast reconstruction with implants: case report and literature review. *Aesthet Surg J* 2013;33:830-834. <https://doi.org/10.1177/1090820X13496249>
- ²⁹ Santanelli F, Paolini G, Campanale A, et al. The "Type V" skin-sparing mastectomy for upper quadrant skin resections. *Ann Plast Surg* 2010;65:135-139. <https://doi.org/10.1097/SAP.0b013e3181c60f41>