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The role of oncoplastic surgery in balancing oncological safety and aesthetic outcomes: A critical review of techniques that combine cancer removal with reconstructive surgery, and their impact on patient satisfaction and quality of life
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ABSTRACT: Background: Oncoplastic surgery, which combines tumor resection with reconstructive techniques, has emerged as an effective approach to breast cancer treatment, aiming to enhance both oncological safety and aesthetic outcomes. This approach addresses the need for cancer removal while considering the psychological and physical impact of disfigurement on patients. Aim: This review aimed to critically evaluate various oncoplastic techniques and their effectiveness in achieving a balance between oncological safety and aesthetic outcomes, as well as to assess their impact on patient satisfaction and quality of life. Methods: A comprehensive literature review was conducted, examining studies published from 2000 to 2023 that evaluated the outcomes of oncoplastic surgery in breast cancer patients. Key databases, including PubMed, Scopus, and Web of Science, were searched for relevant studies. Selection criteria focused on studies that reported on both oncological safety (recurrence rates, margin status) and aesthetic or quality-oflife outcomes (patient-reported satisfaction, physical well-being). Data from selected studies were analyzed to identify common techniques and assess their outcomes. Results: The findings indicated that oncoplastic surgery was associated with high patient satisfaction rates and improved quality of life, particularly in body image and psychological well-being. Techniques such as volume displacement and volume replacement were found effective in achieving symmetrical and aesthetically pleasing results. Recurrence rates and oncological outcomes were comparable to standard breast-conserving surgery, demonstrating that oncoplastic approaches did not compromise cancer control. However, certain complex techniques were associated with increased operative times and risk of complications. Conclusion: Oncoplastic surgery proved to be a valuable approach in breast cancer treatment, successfully balancing oncological safety with aesthetic outcomes. The integration of reconstructive techniques has led to enhanced patient satisfaction and quality of life without increasing the risk of cancer recurrence. These findings support the broader adoption of oncoplastic techniques, though careful patient selection and surgeon

expertise remain essential to optimize outcomes. Keywords: Oncoplastic surgery, breast cancer, oncological safety, aesthetic outcomes, patient satisfaction, quality of life, reconstructive surgery INTRODUCTION: In recent decades, breast cancer treatment has evolved significantly, with a growing emphasis not only on improving survival rates but also on addressing patients' quality of life and satisfaction with aesthetic outcomes. Traditional breast-conserving surgery, while effective in cancer removal, often left patients with notable cosmetic defects and asymmetry, impacting their self-esteem and overall well-being [1]. Oncoplastic surgery emerged in response to this challenge, aiming to balance oncological safety with aesthetic outcomes. By combining oncological resection with reconstructive techniques, oncoplastic surgery sought to optimize both the elimination of cancerous tissue and the preservation or restoration of breast appearance [2]. This approach represented a paradigm shift, acknowledging that for many patients, survival alone was not the only desired outcome; maintaining a sense of normalcy and bodily integrity also held substantial importance. Oncoplastic techniques gained popularity because they enabled surgeons to remove larger volumes of tissue while simultaneously reconstructing the breast, minimizing visible deformities [3]. Early procedures in oncoplastic surgery included volume displacement and volume replacement techniques, depending on factors such as tumor size, location, and patient anatomy. Volume displacement methods involved rearranging the remaining breast tissue to fill the defect left after tumor removal, while volume replacement utilized autologous tissue grafts from other parts of the body, such as the latissimus dorsi muscle [4]. These techniques allowed surgeons to cater the procedure to individual patient needs, offering a personalized approach that enhanced both functional and aesthetic outcomes. Over time, these methods were refined, and new techniques emerged to expand the application of oncoplastic surgery across various stages and types of breast cancer. Studies consistently reported that oncoplastic surgery contributed to higher levels of patient satisfaction by providing improved aesthetic outcomes and minimizing psychological distress [5]. Women undergoing oncoplastic procedures experienced enhanced self-image and emotional well-being compared to those who underwent standard breast-conserving surgery. This was particularly relevant as breast cancer diagnosis often brought a significant psychological burden, including anxiety, depression, and concerns about body image. Oncoplastic surgery addressed these concerns by offering patients an option that not only removed cancer but also helped them feel more confident and at ease with their bodies post-surgery [6]. This dual benefit of addressing both oncological and aesthetic considerations likely contributed to the growing acceptance of oncoplastic techniques among patients and healthcare providers. Furthermore, the oncological safety of oncoplastic surgery has been a critical focus in the literature. Early concerns centered around the potential for compromised margins due to complex reconstructions, which could lead to higher recurrence rates [7]. However, multiple studies revealed that oncoplastic surgery, when performed by skilled surgeons, maintained adequate surgical margins and local control comparable to conventional breast-conserving techniques. As more evidence accumulated, oncoplastic surgery

became increasingly recognized as a safe and effective approach, reducing the need for additional surgeries and promoting better overall patient outcomes. Oncoplastic surgery has been instrumental in advancing patient-centered care by integrating oncological and reconstructive considerations [8]. Its evolution reflects a holistic view of breast cancer treatment, acknowledging that successful outcomes encompass not only survival but also psychological and aesthetic aspects. While traditional surgical approaches met the primary goal of cancer removal, they often left patients struggling with long-term physical and emotional consequences. In contrast, oncoplastic surgery allowed women to recover from breast cancer without enduring severe disfigurement, fostering a sense of physical integrity and well-being. This shift in focus was particularly relevant in an era where patient quality of life and satisfaction were gaining greater attention within the medical community [9]. The subsequent sections of this review will critically analyze the various oncoplastic techniques, their specific advantages and limitations, and the broader impact on patient satisfaction and quality of life. By examining the evolution, techniques, and outcomes associated with oncoplastic surgery, this review aims to provide a comprehensive overview of its role in modern breast cancer care, offering insights into how it has transformed patient experiences and outcomes in the pursuit of holistic and patient-centered cancer treatment [10]. Materials and Methods: This study aimed to critically review the role of oncoplastic surgery in balancing oncological safety with aesthetic outcomes. The research focused on evaluating various oncoplastic surgical techniques that combine cancer removal with reconstructive surgery, exploring their impact on patient satisfaction and quality of life. The study population consisted of 90 patients diagnosed with breast cancer who underwent oncoplastic surgery between May 2023 and April 2024. These patients were selected from a cohort of individuals who were referred to the surgical department at a tertiary cancer care center. Study Design A retrospective, observational study design was employed to assess the outcomes of oncoplastic surgery in terms of oncological control, aesthetic results, and overall patient satisfaction. Data were collected from patient records, surgical reports, and follow-up consultations. Ethical approval was obtained from the institutional review board, and all patients provided informed consent for inclusion in the study. Patient Selection The study included adult women aged 30 to 70 years who were diagnosed with breast cancer and had undergone oncoplastic surgery during the study period. Inclusion criteria required patients to have undergone either partial or full mastectomy with simultaneous reconstructive surgery. The exclusion criteria comprised individuals with distant metastatic disease, those who received pre-operative chemotherapy or radiation therapy before surgery, and patients with significant comorbid conditions that could affect surgical outcomes. Surgical Procedures Oncoplastic techniques used in the study included a variety of methods combining breast cancer resection with immediate reconstruction. These techniques included breast-conserving surgery with local tissue rearrangement (e.g., latissimus dorsi flap, or reduction mammoplasty) and immediate breast reconstruction using implants or autologous tissue flaps (e.g., DIEP flaps). Surgeons selected the

appropriate procedure based on tumor size, location, and breast size, ensuring optimal oncological margins and aesthetic preservation. Data Collection Data were collected at multiple time points: pre-operatively, immediately post-operatively, and at six-month follow-up. Key outcome measures included oncological safety, aesthetic satisfaction, and patient-reported quality of life. Oncological safety was evaluated by reviewing pathological reports for clear surgical margins, absence of local recurrence, and metastasis. Aesthetic outcomes were assessed using a combination of clinical assessments by the surgical team and patient self-assessments via the Breast Q questionnaire, which evaluates satisfaction with breast appearance and functionality. Additionally, the EQ-5D scale was used to assess overall health-related quality of life. Statistical Analysis Descriptive statistics were used to summarize patient demographics, surgical procedures, and outcome measures. Comparative analysis was performed using paired t-tests for continuous variables such as preand post-operative aesthetic scores and quality of life measures. Fisher's exact test was used for categorical variables such as recurrence rates and margin status. A p-value of