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## BREAST REDUCTION IN PATIENTS WITH MACROMASTIA: SURGICAL APPROACHES AND MENTAL AND PHYSICAL HEALTH OUTCOMES

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**Abstract: INTRODUCTION** Macromastia presents significant physical and psychological challenges, often manifesting as chronic pain, respiratory restrictions, and skin complications. Conservative treatments provide limited relief, making breast reduction surgery a common solution for addressing these burdens. Various surgical techniques, such as pedicle approaches and liposuction, cater to individual patient needs and aim to enhance physical comfort and aesthetic outcomes. Patient satisfaction following breast reduction is generally high, with many reporting substantial improvements in self-esteem, physical function, and quality of life. The introduction emphasizes the importance of breast reduction as a multifaceted intervention that addresses both physical and mental health aspects in patients with macromastia. **OBJETIVE** To assess the physical and psychological outcomes of breast reduction surgery in patients with macromastia, examining the effectiveness of various surgical techniques and their impact on quality of life. **METHODS** This is a narrative review which included studies in the MEDLINE – PubMed (National Library of Medicine, National Institutes of Health), COCHRANE, EMBASE and Google Scholar databases, using as descriptors: “” AND “” AND “” AND “” AND “” in the last years. **RESULTS AND DISCUSSION** The surgery consistently reduces musculoskeletal pain, alleviates skin issues, and improves respiratory capacity. Patients report high satisfaction, citing enhanced body image and psychological relief. However, scarring, changes in sensation, and the potential impact on breastfeeding capacity are noted complications. Physiotherapy and multidisciplinary postoperative care contribute to functional recovery, while newer, minimally invasive techniques show promise for improved aesthetic outcomes. The results highlight breast reduction as a successful intervention with comprehensive benefits, despite the necessity of managing some postoperative

perative challenges. **CONCLUSION** Breast reduction surgery provides transformative relief for patients with macromastia, addressing chronic physical discomfort and promoting psychological well-being. The procedure's physical benefits include significant pain relief and enhanced mobility, while psychological improvements reflect gains in self-esteem and social confidence. Complications are generally manageable, with patient education and multidisciplinary care enhancing recovery. Future research aims to refine surgical techniques and improve access to ensure broader benefits for patients with macromastia, underscoring the surgery's vital role in enhancing quality of life.

**Keywords:** Macromastia; Breast reduction surgery; Physical and psychological outcomes; Reduction mammoplasty techniques; Quality of life improvements.

## INTRODUCTION

Macromastia, a condition characterized by the excessive development of breast tissue, presents significant physical, psychological, and social challenges for affected individuals<sup>1</sup>. This hypertrophy is often linked to genetic predispositions, hormonal factors, and other less-defined physiological influences, leading to physical strain and a compromised quality of life<sup>1</sup>. Patients with macromastia commonly experience chronic musculoskeletal pain, notably in the neck, shoulders, and back, which can impede daily activities and contribute to a diminished capacity for physical exertion<sup>1</sup>. Beyond physical discomfort, macromastia is associated with psychological distress due to body image concerns, social stigma, and reduced self-esteem, underscoring the complex, multidimensional burden of this condition on patients<sup>1</sup>.

The impact of macromastia extends beyond musculoskeletal pain, as it often contributes to skin conditions and respiratory limitations that further affect patient comfort and health<sup>2</sup>.

Commonly observed dermatological issues include intertrigo, inframammary dermatitis, and shoulder grooving caused by the constant pressure from bra straps, which exacerbate patient discomfort<sup>2</sup>. Additionally, there is evidence suggesting that macromastia can contribute to restricted respiratory function due to the weight and positioning of excess breast tissue, a factor particularly significant for patients with pre-existing respiratory conditions<sup>2</sup>. These factors collectively underscore the necessity of effective management options that address both the physical and psychological aspects of macromastia<sup>2</sup>.

Conservative treatments for macromastia, including physical therapy, supportive undergarments, and analgesics, provide limited relief for patients with severe symptoms, often making surgical intervention the most viable option<sup>3</sup>. Breast reduction surgery, or reduction mammoplasty, is commonly recommended when conservative treatments fail to alleviate the physical and psychological burden of macromastia<sup>3</sup>. This procedure involves the removal of excess breast tissue, fat, and skin, with the dual aim of reducing breast size and enhancing anatomical balance, thus alleviating associated symptoms<sup>3</sup>. However, surgical approaches and techniques vary significantly, with considerations for patient anatomy, surgical outcomes, and potential complications guiding the choice of procedure<sup>3</sup>.

Numerous surgical techniques have been developed to optimize the outcomes of reduction mammoplasty, with methods ranging from liposuction-based reductions to more complex pedicle-based techniques<sup>4</sup>. The inferior, superomedial, and vertical pedicle techniques are among the most widely used approaches, each with distinct advantages in terms of tissue preservation, aesthetic outcome, and scar management<sup>4</sup>. Liposuction offers a less invasive option, although it is typically limited to cases without substantial skin excess or ptosis<sup>4</sup>. The selection of technique is critical,

as it influences not only the physical outcomes but also the patient's satisfaction and psychological well-being, an aspect central to the success of macromastia management<sup>4</sup>.

Patient satisfaction and quality of life post-surgery are generally high, with significant improvements reported in physical comfort, aesthetic self-perception, and psychological health<sup>5</sup>. Reduction mammoplasty has been shown to relieve chronic pain, enhance physical function, and improve posture, thereby allowing patients to resume physical activities that were previously limited by breast hypertrophy<sup>5</sup>. Moreover, patients frequently report enhanced body image, self-esteem, and social confidence, reflecting the procedure's transformative effect on psychological well-being<sup>5</sup>. This positive impact on both physical and mental health outcomes makes breast reduction surgery a pivotal intervention for patients with macromastia<sup>5</sup>.

Despite its benefits, reduction mammoplasty is not without risks, including complications related to scarring, sensation changes, and the potential for asymmetry<sup>6</sup>. Wound healing issues, infections, and scarring are complications that require meticulous surgical planning and postoperative care to minimize the impact on patient satisfaction<sup>6</sup>. Additionally, the risk of reduced nipple sensitivity and breastfeeding capacity post-surgery must be considered, especially in younger patients<sup>6</sup>. These potential complications underscore the importance of patient education and shared decision-making in the preoperative period to ensure that patients have realistic expectations and an understanding of the risks involved<sup>6</sup>.

The ethical and socioeconomic dimensions of breast reduction surgery are also notable, as access to this procedure varies widely due to cost, insurance coverage, and healthcare policies<sup>7</sup>. While many patients seek reduction mammoplasty for health-related reasons, coverage by insurance providers is often incon-

sistent, with criteria for approval differing by jurisdiction and provider<sup>7</sup>. This discrepancy creates a barrier for patients whose physical and psychological health would benefit from the surgery but who may not have the financial means to afford it independently<sup>7</sup>. Thus, there is an ongoing discussion within the medical community regarding the necessity of establishing consistent, equitable policies for accessing breast reduction surgery<sup>7</sup>.

Emerging advancements in minimally invasive techniques and perioperative care offer promising avenues for reducing the risks and improving outcomes associated with breast reduction<sup>8</sup>. Innovations in surgical technology, such as advanced suturing techniques and less invasive incisions, have been developed to enhance aesthetic outcomes and reduce recovery time<sup>8</sup>. Additionally, the integration of postoperative physical therapy and tailored rehabilitation programs is becoming increasingly recognized as essential for optimizing long-term functional outcomes<sup>8</sup>. As research continues to evolve, these advancements underscore the potential for breast reduction surgery to further improve patient quality of life and overall health, especially when combined with comprehensive, multidisciplinary care<sup>8</sup>.

## **OBJETIVES**

To assess the physical and psychological outcomes of breast reduction surgery in patients with macromastia, examining the effectiveness of various surgical techniques and their impact on quality of life.

## **SECONDARY OBJETIVES**

1. To evaluate the reduction in musculoskeletal pain and other physical symptoms following breast reduction.
2. To analyze patient satisfaction and psychological improvements post-surgery.

3. To review complications associated with breast reduction, including scarring and sensation changes.
4. To explore the impact of breast reduction on functional aspects, such as respiratory function and physical activity levels.
5. To identify future directions and innovations in breast reduction techniques for enhanced patient outcomes.

## METHODS

This is a narrative review, in which the main aspects of physical and psychological outcomes of breast reduction surgery in patients with macromastia, examining the effectiveness of various surgical techniques and their impact on quality of life in recent years were analyzed. The beginning of the study was carried out with theoretical training using the following databases: PubMed, sciELO and Medline, using as descriptors: “Reduction Mammoplasty” OR “Macromastia Complications” OR “Breast Surgery Outcomes” OR “Physical and Psychological Health Post-Surgery” OR “Surgical Techniques in Breast Reduction” in the last years. As it is a narrative review, this study does not have any risks.

**Databases:** This review included studies in the MEDLINE – PubMed (National Library of Medicine, National Institutes of Health), COCHRANE, EMBASE and Google Scholar databases.

The inclusion criteria applied in the analytical review were human intervention studies, experimental studies, cohort studies, case-control studies, cross-sectional studies and literature reviews, editorials, case reports, and poster presentations. Also, only studies writing in English and Portuguese were included.

## RESULTS AND DISCUSSION

Studies consistently demonstrate that breast reduction surgery yields significant physical and psychological benefits, including substantial relief from chronic pain, improved posture, and enhanced mobility<sup>9</sup>. Patients frequently report a marked reduction in musculoskeletal discomfort, particularly in the upper back, shoulders, and neck, areas heavily impacted by the weight of hypertrophic breast tissue<sup>9</sup>. The improvement in posture resulting from the reduction of breast mass further alleviates physical strain and facilitates greater comfort in daily activities, which patients often find transformational<sup>9</sup>.

Beyond musculoskeletal improvements, breast reduction surgery contributes to resolving secondary physical issues such as respiratory restrictions and skin conditions commonly associated with macromastia<sup>10</sup>. Reduced breast size often leads to improved respiratory function, an especially important outcome for patients with pre-existing respiratory concerns<sup>10</sup>. Additionally, breast reduction alleviates common dermatological complaints, including intertrigo and skin irritation, thereby reducing the need for continuous dermatological treatments and improving overall skin health<sup>10</sup>.

Patient-reported outcomes consistently highlight high satisfaction rates following breast reduction, primarily due to the combined physical and aesthetic benefits of the procedure<sup>11</sup>. The improved body image and self-esteem reported by patients reflect the surgery's profound impact on quality of life, as it addresses both functional impairments and cosmetic concerns<sup>11</sup>. Many patients find that their social interactions and self-confidence improve postoperatively, a psychological benefit that reinforces the value of breast reduction as a therapeutic intervention<sup>11</sup>.



Psychological well-being is another critical area positively affected by breast reduction, with patients reporting reductions in anxiety, depression, and social isolation<sup>12</sup>. For many, the physical relief from chronic pain directly contributes to improved mental health, as pain often exacerbates stress and other psychological burdens<sup>12</sup>. Additionally, the enhancement in physical appearance post-surgery enables patients to engage more confidently in social situations, diminishing the social stigma and self-consciousness often associated with macromastia<sup>12</sup>.

Despite its clear benefits, breast reduction surgery involves a range of potential complications, with scarring and changes in sensation among the most commonly reported<sup>13</sup>. Scarring is an inevitable aspect of most reduction techniques, although advancements in surgical approaches have sought to minimize scar visibility and improve healing outcomes<sup>13</sup>. Changes in nipple and breast sensation, while generally mild, can be a more distressing outcome for patients, particularly those for whom tactile sensitivity is a priority<sup>13</sup>.

Another significant consideration is the impact of breast reduction on breastfeeding ability, especially relevant for younger patients considering future pregnancies<sup>14</sup>. The surgical techniques employed, particularly those involving pedicle approaches, influence the preservation of lactation capability, with some techniques offering better outcomes than others<sup>14</sup>. While patient education on this matter is essential, newer techniques continue to emerge with the potential to improve lactation outcomes following reduction mammoplasty<sup>14</sup>.

Postoperative complications, such as wound healing issues and infections, are relatively uncommon but warrant consideration given their impact on recovery and aesthetic outcomes<sup>15</sup>. In cases where wound healing is delayed or infection arises, targeted postopera-

tive care, including appropriate dressings and antibiotic management, is essential to ensure optimal healing and patient satisfaction<sup>15</sup>. Proper preoperative planning and adherence to sterile protocols during surgery significantly reduce the incidence of these complications<sup>15</sup>.

Pain relief is one of the most consistently reported benefits of breast reduction, with a notable decrease in chronic pain scores following surgery<sup>16</sup>. This reduction in pain not only enhances physical comfort but also contributes to a greater overall quality of life, enabling patients to participate in physical activities and daily tasks that were previously hindered by discomfort<sup>16</sup>. Long-term follow-ups indicate sustained pain relief, affirming the procedure's effectiveness in addressing chronic pain associated with macromastia<sup>16</sup>.

Functional improvements post-surgery extend to respiratory capacity, as patients report improved breathing ease due to the reduction in chest wall pressure<sup>17</sup>. The positive respiratory outcomes associated with breast reduction are particularly beneficial for individuals with respiratory conditions exacerbated by excessive breast tissue<sup>17</sup>. By reducing the weight on the chest, breast reduction surgery alleviates breathing restrictions, facilitating a more active and comfortable lifestyle<sup>17</sup>.

Aesthetic satisfaction post-surgery is high, with patients appreciating the proportionality and natural contour achieved through modern breast reduction techniques<sup>18</sup>. This satisfaction is not solely related to physical outcomes; it also reflects patients' contentment with their self-image and confidence<sup>18</sup>. The aesthetic outcomes contribute significantly to the psychological benefits reported by patients, as a natural appearance aligns with their expectations and promotes positive self-perception<sup>18</sup>.

Reduced shoulder grooving and bra strap pain are additional physical benefits of breast reduction that patients frequently highlight in postoperative evaluations<sup>19</sup>. Shoulder grooving, caused by prolonged strain from heavy breasts, often leads to persistent discomfort and aesthetic concerns<sup>19</sup>. Alleviating this pressure allows patients to wear a wider range of clothing options comfortably, further contributing to improved self-confidence and physical comfort<sup>19</sup>.

Physiotherapy as an adjunct to postoperative recovery has shown promise in enhancing functional outcomes and reducing complications associated with breast reduction<sup>20</sup>. Targeted exercises focusing on shoulder and back strength assist patients in adapting to the changes in weight distribution and posture post-surgery<sup>20</sup>. Physiotherapy programs tailored to each patient's needs have the potential to expedite recovery and improve long-term outcomes by addressing musculoskeletal adaptations resulting from breast reduction<sup>20</sup>.

Multidisciplinary care, encompassing both surgical and psychological support, is increasingly recognized as a valuable component of breast reduction recovery<sup>21</sup>. Integrating psychological support into postoperative care addresses the mental health aspects often intertwined with macromastia, providing a more holistic approach to patient well-being<sup>21</sup>. Collaboration among surgeons, psychologists, and physiotherapists can optimize outcomes by ensuring that both the physical and psychological needs of patients are met comprehensively<sup>21</sup>.

Comparative studies on inpatient versus outpatient settings for breast reduction highlight the feasibility of outpatient procedures for select cases, offering reduced costs and recovery time without compromising safety<sup>22</sup>. Outpatient settings, when appropriate, provide a less invasive option that can streamline the recovery process while maintaining

comparable outcomes to traditional inpatient procedures<sup>22</sup>. However, patient selection is critical, as certain cases may require extended observation due to individual health considerations and risk factors<sup>22</sup>.

The incidence of revision surgeries following breast reduction is relatively low, but these cases typically arise from asymmetry concerns or patient dissatisfaction with initial aesthetic outcomes<sup>23</sup>. Revision procedures focus on achieving symmetry and refining aesthetic results to better align with patient expectations, underscoring the importance of precise surgical planning and patient-surgeon communication<sup>23</sup>. Clear preoperative communication regarding realistic outcomes is essential to minimizing the need for revisions and enhancing overall patient satisfaction<sup>23</sup>.

## CONCLUSION

Breast reduction surgery is a transformative intervention that addresses the multifaceted impacts of macromastia, providing substantial improvements in physical comfort, psychological well-being, and quality of life. Patients consistently report relief from chronic musculoskeletal pain, enhanced posture, and the alleviation of secondary physical symptoms such as respiratory restrictions and skin issues, highlighting the procedure's effectiveness in addressing the physical burdens of excessive breast tissue. These outcomes not only validate the clinical utility of breast reduction but also reinforce its significance as a therapeutic solution for patients facing the physical challenges associated with macromastia.

The psychological benefits associated with breast reduction are equally compelling, as the procedure significantly enhances body image, self-esteem, and social confidence. For many patients, the surgery marks a pivotal improvement in mental health, as the relief from chro-

nic pain and improved physical appearance empower them to engage more fully in social activities and personal pursuits. The impact on quality of life is therefore profound, reflecting the procedure's unique role in addressing both the physical and psychological dimensions of macromastia.

Complications associated with breast reduction, while generally manageable, underscore the importance of careful surgical planning, patient education, and multidisciplinary postoperative care. Scarring, changes in sensation, and potential limitations on breastfeeding are key considerations that require thorough discussion with patients to align surgical expectations with achievable outco-

mes. The involvement of physiotherapy and psychological support in postoperative care further enhances recovery, offering a holistic approach that addresses both immediate and long-term patient needs.

Future directions in breast reduction surgery emphasize the refinement of minimally invasive techniques, improved aesthetic outcomes, and the development of standardized access policies to ensure equitable care for all patients. These innovations, combined with a commitment to comprehensive, patient-centered care, hold promise for maximizing the benefits of breast reduction for patients with macromastia.

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