

NURSING MANAGEMENT IN PATIENTS UNDERGOING PLASTIC AND RECONSTRUCTIVE BREAST SURGERY

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ABSTRACT

Keywords

Plastic surgery,
Breast Surgery,
Breast Reduction

Human beings are holistic entities with biopsychosocial aspects. Any intervention targeting one aspect of this whole has an impact on the individual's physical, psychological, and social well-being. Physical health and beauty hold great importance for individuals throughout history. Plastic reconstructive surgery involves the surgical treatment of congenital or acquired deformities affecting almost all externally visible parts of the human body, as well as the repair of open wounds, reattachment of severed parts, reconstruction of missing parts, and treatment of tumors located in the skin and subcutaneous tissue. It also includes various aesthetic surgical procedures aimed at enhancing appearance, commonly known as aesthetic or plastic surgery. While each surgical procedure presents its own unique challenges, interventions that alter physiological functions and disrupt body integrity, ultimately affecting one's lifestyle, can threaten body image and self-esteem. Particularly after breast surgery, both psychological and physiological issues may arise. In addressing these problems and preserving the biopsychosocial integrity of the patient, the role of nurses is crucial. The postoperative care of individuals should adopt a holistic approach and involve both the individual and their family. Care for individuals undergoing surgery should be planned in three stages: preoperative, intraoperative, and postoperative care. The implementation of care designed to facilitate the return of individuals to their normal lives should be personalized and tailored to the specific needs of each patient. Therefore, nurses should assess patients individually and plan nursing care accordingly, encompassing the preoperative, intraoperative, and postoperative phases.

INTRODUCTION

Human beings are holistic entities with biopsychosocial aspects. Any intervention targeting one aspect of this whole has an impact on the individual's physical, psychological, and social well-being. The World Health Organization (WHO) defines health as "a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity." Disease, on the other hand, refers to a medical condition that involves physiological and organic processes, affecting the individual's life in terms of physical, psychological, psychosocial, intellectual, and social dimensions¹. Diseases can temporarily or permanently disrupt an individual's adaptation due to functional impairments caused by various reasons. Individuals may develop different emotional responses and adjustment problems in response to illness². Emotional responses and adjustment disorders to illness can vary depending on factors such as individual's personality structure, physical and psychological condition, support from the environment, the magnitude and type of illness or loss, the approach of the healthcare team, and the individual's mental preparedness^{1,2}.

Volume: 1
Issue: 1
Page: 8-20

Received:
01.03.2023

Accepted:
01.06.2023

Available Online:
20.06.2023



DOI: 10.5281/zenodo.8110584

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Physical health and beauty hold great importance for individuals throughout history. Plastic reconstructive surgery involves the surgical treatment of congenital or acquired deformities affecting almost all externally visible parts of the human body, as well as the repair of open wounds, reattachment of severed parts, reconstruction of missing parts, and treatment of tumors located in the skin and subcutaneous tissue. It also includes various aesthetic surgical procedures aimed at enhancing appearance, commonly known as aesthetic or plastic surgery. The term "plastic" refers to reshaping something³. This reshaping process can involve improving the appearance or correcting a faulty bodily function in most cases. The term "reconstructive" refers to rebuilding or restoring. It is one of the main concerns of plastic surgery to reconstruct a lost organ or organ part due to various reasons (reconstruction) or create a non-existent organ (construction). Another term that defines the specialty is "aesthetic," which is associated with beauty⁴. In aesthetic surgeries, the goal is to transform the appearance of a body part that is normally considered normal into a shape that is perceived as more beautiful in society or in the individual's mind. This desire for transformation may arise from the desire to return to a perceived youthful appearance or dissatisfaction with one's current appearance^{3,4}.

Reconstruction positively influences an individual's self-confidence, body image perception, interpersonal relationships, and social interaction⁵. Such interventions have positive effects on mental health, emotional state, body satisfaction, and social life. To achieve successful outcomes from plastic surgery procedures, a thorough psychiatric evaluation should be conducted during the preoperative period to assess individuals' mental readiness^{6,7}.

While each surgical procedure presents its own unique challenges, interventions that alter physiological functions and disrupt body integrity, ultimately affecting one's lifestyle, can threaten body image and self-esteem¹.

In patients undergoing plastic and reconstructive breast surgery, the size, shape, and symmetry of the breasts can have psychological, sexual, and physical implications for the patients³. The breasts not only encompass secondary sexual characteristics but also hold importance in terms of the historical development of human beings and the continuity of generations⁸. Breastfeeding is crucial for the healthy development of future generations. In patients with excessively large breasts, physical quality of life can be significantly

affected, especially in conjunction with clothing choices. Disturbances in breast symmetry or excessively small or large breast size can lead to body image distortions and sexual inadequacy¹⁰. Individuals with excessively large breasts may experience physical activity limitations due to their breast size. Inability to adhere to desired clothing styles can lead to social isolation and subsequent psychological traumas¹¹.

Breast reduction surgery

Breast size, shape, and symmetry can affect patients psychologically, sexually, and physically. The breast is not only a secondary sexual characteristic but also important for the continuation of the human race in terms of historical development. Breastfeeding is important for the growth of healthy generations¹². In patients with excessively large breasts, especially along with their clothing style, their physical lives can be affected. Disturbance in breast symmetry and extreme size, whether small or large, can result in distorted self-perception and sexual inadequacy¹³. Physical activity may be restricted in individuals with excessively large breast size. Inability to implement the desired clothing style can lead to social isolation and various psychological traumas thereafter. In summary, a woman's breast size can affect her lifestyle, career, and social relationships¹⁴.

In patients with excessively large breasts, serious postural disorders occur due to the physical burden. Scoliosis, vertebral problems, chronic pain, and later on, neck pain can develop in these patients. Some patients may experience neurological symptoms such as numbness in the fingers in the long term. Reduction patients attract attention with high satisfaction rates due to the mentioned reasons¹⁵. However, especially due to the decreased sensitivity of the nipple after the operation, sexual life can be affected. Breastfeeding can be negatively affected by the impairment of nipple-areolar complex sensation¹⁴.

Pathological physiology of hypertrophic breast

Massive breast enlargement or gigantomastia was first described by Durston in 1670. The main factor in the development of giant breasts is believed to be an excessive end organ response to estrogen. However, Jabs and colleagues have shown that increased sensitivity to this receptor response exists in some patients, while in other patient groups, despite physiological estrogen

levels and receptors, breast hypertrophy can occur. The pubertal period and pregnancy, during which physiological values change, are the stages in which estrogen and receptor levels increase, and giant breasts are most commonly observed. The majority of the mass volume of giant breasts consists of adipose tissue and fibrous tissue, with a smaller portion containing glandular tissue¹⁶.

According to Kupfer and Dingman, pubertal massive breast hypertrophy is generally associated with fibroadenoma, phyllodes sarcoma, virgin hypertrophy, breast hamartoma, and trauma¹⁷.

Gigantomastia is characterized by excessive growth of breast tissue and has been defined by the removal of tissue weighing up to 1800 grams. The breasts are more affected by gigantomastia compared to simple breast hypertrophy occurring in the early years of puberty. Surgery takes the first priority in the general treatment approach to gigantomastia. According to Netscher and colleagues, reduction mammoplasty is necessary, especially in young patients and in the presence of massive asymmetric breast hypertrophy, and it improves patient comfort¹⁸.

Despite the option of surgery, recurrent massive hypertrophies can pose a problem in subsequent pregnancies. In these cases, repeat surgery is the first treatment option. Furthermore, no changes in hormone levels have been observed in this patient group¹⁹.

One study that explains the mechanisms of breast hypertrophy is Eliassen's study on atypical ductal hyperplasia. This study has shown that ductal hyperplasia may play a role in the etiology of breast hypertrophy. In the examinations, no malignant progression was observed in five out of five women, and all patients were followed up for nearly 39 months after the operation²⁰.

Recent experimental studies have shown that reducing hormone levels does not control gynecomastia. Baker and colleagues have reported successful experiments with combined tamoxifen and reduction mammoplasty in pubertal gigantomastia cases. Baker and colleagues presented four cases in the literature. In this study, patients prone to gigantomastia recurrence were treated. Unlike the other three patients, the patient who had passed the pubertal period did not experience recurrence and was treated with only one surgical intervention²¹.

Surgical indications for breast reduction

In general, it is important for breast size to be proportionate to body measurements in terms of musculoskeletal health. Otherwise, the symptoms can vary widely. In advanced cases, severe pain, eczema, fungal infections, petechial lesions, and pressure ulcers due to shoulder strap pressure can be observed. Neurological findings can occur in the upper extremities, such as complaints of paresthesia on the ulnar side of the upper extremity. Vertebral disorders such as kyphosis and scoliosis, as well as degenerative findings, are observed in advanced cases²².

The importance of the physical and psychological changes that occur in patients undergoing breast reduction is known by many surgeons. Although it may be difficult to standardize these changes in psychological terms, their significance should not be disregarded in the plastic surgery community¹⁵.

The relationship between the relief of these pains and reduction surgery has been investigated by Netscher and colleagues in patients with excessively large breast sizes. In this study, the authors suggested that it is more appropriate to evaluate variations in symptoms rather than the amount of tissue in the definition of symptomatic gigantomastia. There is no relationship between the patients' body mass indexes and symptoms; it has been found that different symptoms can occur in overweight patients independent of breast size. Therefore, according to the researchers, macromastia can be symptomatic regardless of the patient's age and weight¹⁸.

The impact of breast hypertrophy on quality of life has been examined by Kerrigan. In the first study conducted in this patient group, an average utility value close to patients with kidney transplantation or cardiac complaints (moderate angina pectoris) was determined. In another study, two groups of patients, one with a surgical treatment request and one without, were compared with a control group consisting of patients without breast hypertrophy. It was observed that there was a significant deterioration in patients' quality of life due to breast hypertrophy, as assessed by validated methodological questions (EuroQol, McGill pain, etc.). However, it was thought that this result was more related to the symptoms experienced by the patients rather than the breast size itself³.

The second study examined the effects of surgery on patient comfort. This study was conducted with a study group that would undergo surgery and two control groups. The control groups consisted

of patients with breast hypertrophy and bra size D or larger in the first group, and patients with normal breast size and bra size smaller than D in the second group. The effects of non-surgical procedures on symptomatic relief were analyzed in all subgroups. The quality of life parameters mentioned earlier was used. A total of 179 cases were followed preoperatively and postoperatively; a study group consisting of 88 women with hypertrophic breasts and a control group consisting of 96 patients were selected. Before surgery, it was found that 50% of the patients had constant or periodic back, neck, and shoulder pain related to the breasts. After the surgery, this rate decreased to less than 10%. Non-surgical treatment options were compared as subgroups in both patient groups. These conservative treatment options, including significant weight loss, did not result in any symptomatic improvement in the patients. Postoperatively, improvement was seen in the patients' quality of life standards compared to national values ($P < 0.05$). All these studies have shown the importance of appropriate surgical treatment in improving quality of life^{3,23}.

The objectives of reduction mammoplasty include Preservation of maximum sensitivity and circulation of the nipple: One of the goals of breast reduction surgery is to preserve the sensitivity and blood supply of the nipple as much as possible. Relief of pain, eczema, and symptoms related to posture: Breast reduction aims to alleviate symptoms such as pain, eczema, and postural issues that are associated with large breasts. Proper positioning of symmetrically located nipples: The surgery aims to position the nipples in the correct location with proper symmetry. Minimal scar formation: Reducing the visibility of scars is an objective of breast reduction surgery. Surgeons strive to minimize scarring and achieve the best possible aesthetic outcome. Achieving a shape that conforms to aesthetic standards: The surgery aims to achieve a breast shape that is aesthetically pleasing and proportional to the patient's body. Minimizing wound-related issues using atraumatic surgical techniques: The use of minimally traumatic surgical techniques helps minimize complications and issues related to the surgical incisions²⁴. Ensuring strong parenchymal support for long-lasting results: Breast reduction aims to provide adequate support to the breast tissue, resulting in long-lasting and stable outcomes. In addition to these objectives, many similar goals can be listed from the perspective of patient satisfaction. However, ongoing studies focus particularly on preserving nipple sensation and vascular structure, which may become a primary objective in the coming years, especially

in younger patient groups, considering sexual function²⁵.

Breast nipple size and position

The ideal diameter of the areola can vary from person to person but is typically between 38 to 45 mm on average. However, in cases of hypertrophic breasts, the areola diameter may be found to be increased due to tension on the skin. In such cases, communication between the patient and the surgeon is important for determining the final size of the areola²⁶.

Various methods have been reported for determining the ideal position of the nipple. In a clinical study conducted by Penn et al., an investigation was carried out to determine the ideal position in a total of 150 healthy subjects, with 20 of them being considered aesthetically ideal. In a woman with limbs measuring approximately 21 cm, an equilateral triangle is formed with the suprasternal notch representing the apex and the nipples representing the other two corners. The distance of 21 cm also corresponds to the distance from the nipple to the midclavicular line. The distance between the nipple and the inferior aspect of the breast was measured to be an average of 6.9 cm²⁷.

Another useful method for determining the final position of the nipple is the identification of the Pitanguy point. This point is determined by the intersection of the lower breast point with the midclavicular line. Some surgeons believe that the ideal level of the nipple after surgery should be at this point²⁸.

Several studies have attempted to determine the critical values and appropriate volumes for an ideal breast. However, despite these studies, the statistical results of the investigations conducted to determine the ideal position of the breast have not found widespread clinical application. Many surgeons agree that applying standardized anatomical data derived from the standardization of these values is not feasible for patients with different skeletal structures and breast shapes²⁹.

Breast reconstruction

Breast reconstruction methods

Breast reconstruction is one of the most commonly performed procedures by plastic surgeons. Over time, breast reconstruction has become more complex and sophisticated for various reasons. Firstly, the development of

repair options with perforator flaps, simultaneous implants, and allografts has expanded our choices for reconstruction. Secondly, there is an increasing number of women diagnosed with breast cancer at a younger age³⁰. Prophylactic bilateral mastectomy for patients with BRCA gene mutations has led to the need for bilateral breast reconstruction in younger women. The routine application of skin-sparing mastectomies and even nipple-sparing surgeries has made it possible to perform breast reconstructions that are more natural and realistic with minimal scarring. Reconstruction with implants has become more common in patients who will undergo radiation therapy. The goal of breast reconstruction is to create breasts that are more natural, aesthetically pleasing, and symmetrical with the remaining breast tissue. The challenge lies in being able to provide the right treatment to the right patient at the right time and integrating this treatment into the oncological treatment plan³¹.

Breast reconstruction planning:

- Appropriate timing
- Treatment for the contralateral breast
- Selecting the most suitable reconstruction method with low complication rates and good outcomes. In the preoperative period, the patient should be provided with detailed information about treatment plans and options, and the final decision should be made in collaboration with the patient³².

Implant-based reconstruction

Although autologous tissue repair is considered the ideal method for breast reconstruction, the extent of the surgical procedure, the length of the recovery period, potential complications, and the resulting scar raise concerns for many patients. Additionally, if simultaneous reconstruction is planned to be followed by radiation therapy, placing an expander initially can protect the flap from the adverse effects of radiation. Autologous reconstruction can be performed by de-epithelializing the pocket created by the expander after radiation therapy. Implant-based reconstruction is the simplest reconstruction method that can be applied in a patient undergoing mastectomy. However, achieving satisfactory, aesthetically pleasing results that appear natural and create a similar outcome to the contralateral breast in unilateral cases is not easy, despite the procedure being short and straightforward³³.

Simultaneous reconstruction with permanent/adjustable implant

The awareness of breast cancer risk factors and the accessibility of genetic testing have increased the rates of bilateral mastectomy in young women. These patients are willing to undergo simultaneous reconstruction with minimal scarring and minimal loss of workforce. Additionally, many of these patients are already dissatisfied with their breasts and consider or plan to use implants. For these patients, a single-stage simultaneous breast reconstruction can be planned, which will result in minimal scarring and also correct any pre-existing small breast or ptosis conditions³⁴.

The single-stage repair technique consists of the following stages:

- Skin-sparing mastectomy
- Muscle release and inframammary fold reconstruction
- Use of permanent or adjustable implants

Preoperative planning should be done jointly by the plastic surgeon and the oncologic surgeon. The inframammary fold is marked, the width of the skin resection is determined, and the feasibility of skin-sparing or nipple-sparing techniques is decided. The skin-sparing mastectomy is performed by the general surgeon, taking care to preserve the vascularity of the skin flaps. During the operation, it is important to pay attention to preserving the nipple-areolar complex or areolar skin, avoiding injury to the fascia and muscle, preserving the inframammary fold, and maintaining the circulation of the skin flaps to achieve optimal reconstruction³⁵.

After mastectomy, the integrity of the inframammary fold and muscle is evaluated. If the muscle and fold integrity are fully preserved, a method similar to the subpectoral breast augmentation technique can be applied. The pectoralis major muscle, starting from its lateral border, is dissected into subpectoral and serratus anterior muscle pockets until approximately 2 cm below the level of the inframammary fold. The muscle fibers and rectus fascia are incised at this level, preserving the inframammary fold. In operations performed with preservation of muscle integrity and attachment site, there is no need for fixation sutures or dermal grafts. If the decision is made to separate the pectoralis muscle, there are two options:

- Removing the pectoralis and serratus muscles: Both muscles are sutured together. Fixation is performed to prevent muscle traction. For this fixation, sutures, mesh, acellular dermis, or autologous dermis can be used.
- Removing only the pectoralis muscle: Fixation is performed using acellular dermis from the inferior and lateral sides.

Dissection begins from the lateral aspect of the pectoralis major muscle. The muscle is lifted, freeing the inferior attachment site and partially from the medial side. The serratus muscle is then lifted from the lateral side, and the pectoralis major muscle is separated from its inferior level. These two muscles are then sutured intermittently to expand the submuscular pocket. If there is any muscle injury or loss, acellular dermal grafts are an excellent choice for strengthening the muscle³⁶.

During the surgery, an adjustable sizer is placed under the muscle, and it is partially inflated to evaluate the size and position. The inferior edge of the muscle or the dermal graft is sutured to the fascia at the level of the inframammary fold. By leaving a gap of approximately 0.5-1 cm between the inferior end of the dermal graft and the inframammary fold, the lower pole can expand differently, creating a more anatomical pocket. Afterward, the sizer is replaced with a selected permanent or adjustable implant. The adjustable implant is inflated to the desired amount, without compromising the vascularity of the skin flaps. The injection port is placed laterally or in the axillary region. The skin incisions are closed using a purse-string or V-Y closure technique³⁷.

Tissue expander-assisted two-stage (delayed immediate) reconstruction

Tissue expansion followed by reconstruction with saline or silicone gel implants, is the most commonly performed method of breast reconstruction in the United States. In the early days, the results associated with this method were variable, with high complication rates reported. However, advancements in expander and implant technology, revised patient selection criteria, and modifications in surgical techniques have improved aesthetic outcomes and reduced complications. As a result, tissue expansion has gained popularity and has become the preferred method for simultaneous breast reconstruction. The reasons for choosing the two-stage expander-implant approach for breast reconstruction include

its relative ease, lack of donor site requirement, and faster return to normal activities³⁸.

Patient Selection: The success of simultaneous expander and implant reconstruction begins with careful patient selection. The patient's medical condition and evaluation of cancer treatment should be taken into consideration. These patients are generally assumed to receive adjuvant chemotherapy starting 4-6 weeks after mastectomy³⁹. Additional cancer treatments such as radiation therapy, if applicable to the patient, should be evaluated in conjunction with the oncologic surgeon, medical oncologist, and radiation oncologist. If the patient is expected to undergo radiation therapy, the decision of whether to perform two-stage simultaneous expander-implant reconstruction should be made. This method can be safely applied in selected patients by completing expansion before radiation therapy or, based on a multidisciplinary decision, reconstruction can be postponed until after all treatments are completed⁴⁰. Therefore, delayed simultaneous reconstruction is primarily preferred in patients with a high probability of receiving radiation therapy after mastectomy (in addition to all Stage II and above patients, those with T2 tumors, axillary involvement, widespread microcalcifications, and multisentric involvement). The ideal patient type is someone who is close to or slightly overweight (with a BMI not exceeding 28), has not received previous radiation therapy, and has mobile tissue over the ribs⁴¹. The pectoralis muscle should be intact, and the skin flaps should not be too thin. In patients undergoing unilateral mastectomy, the contralateral breast should also be evaluated to determine whether symmetry can be achieved. The size, base width, and amount of ptosis in the contralateral breast should be assessed, and the appropriate procedure should be planned accordingly⁴². In patients with a thin build, small or medium-sized breasts, who desire bilateral breast reconstruction, the lack of sufficient tissue for autologous reconstruction poses a barrier to such transfer. If the patient does not desire a small breast, she is not suitable for autologous transfer. As the patient's desired breast size increases, reconstruction can be achieved by expanding the tissue and creating a suitable pocket for an implant using the two-stage expander-implant method. On the other hand, expander-assisted two-stage reconstruction is a more reliable method than single-stage implant reconstruction in terms of mastectomy flap necrosis risk group, which includes smokers, obese individuals, and diabetic patients⁴³.

Contraindications: The definite contraindications of the method include infection, necrosis or poor quality of the chest wall skin, and having undergone radical mastectomy. Relative contraindications include previous radiation therapy to the chest wall and obesity⁴⁴.

Planning: After selecting the simultaneous two-stage expander-implant method, a personalized surgical plan is made for the patient. The oncologic surgeon and the patient jointly decide on the incision pattern. The most important part of preoperative planning is measuring the length of the breast base. For example, in a patient who desires a larger breast size but has small breasts, the expander can be planned slightly wider than the original base to fit the patient's chest measurements. In unilateral repairs, the expander size is planned according to the width of the contralateral breast. There are various types of expanders that can be used for breast reconstruction. These include expanders that can be inflated in different amounts in the upper and lower chambers and can serve as a permanent implant after the port is removed (Becker type), as well as single-chamber expanders that come in various sizes and shapes. In our clinic, integrated port anatomical tissue expanders are used. These tissue expanders have a more practical use compared to remote port expanders, but their only disadvantage is that they contain a metal component, which makes them unsuitable for MR imaging during the treatment period⁴⁵.

Placement of Tissue Expander: The reconstructive procedure begins with the inspection of the surgical site after mastectomy, ensuring hemostasis, and checking the viability of the skin flaps. Tissue support can be provided either with the pectoralis major muscle alone or with the combination of the pectoralis major, pectoralis minor, and serratus anterior muscles⁴³. The lateral edge of the pectoralis major muscle is lifted, starting from its origin, and by releasing its medial and inferior attachments, it is ensured to remain in the submuscular plane. The serratus muscle and fascia are also lifted laterally to create a suitable pocket for the expander⁴⁴. After thoroughly irrigating the pocket with antibiotic saline solution, separate drains are placed in the submuscular and subcutaneous planes, and the expander is placed beneath the muscle. Support is provided by suturing the lateral edge of the pectoralis muscle and the serratus muscle. During the surgery, the expander is inflated to half or two-thirds of the desired volume based on the circulation of the skin flaps⁴². The incisions are closed, and the drains are left in place for an average of three weeks.

The expander is gradually inflated starting from the third week, and it is inflated for an average of three sessions to reach the desired size before radiotherapy. Radiotherapy is planned and administered with the expander fully inflated⁴⁵.

Second Stage: The planning of the second stage begins with the evaluation of the expander and the surrounding tissue. Special attention should be given to the shape and position of the inframammary fold. Capsulotomy can be performed to lower or extend the inframammary fold laterally and medially. Capsulorrhaphy can be performed to raise the inframammary fold or narrow the lateral fold. The incisions are made a few centimeters above the inframammary fold to avoid changing its shape and position. The selection of the implant is based on preoperative measurements and the desired breast projection and shape⁴⁵.

Potential complications in breast reconstruction with implants

Ischemia and necrosis at the incision site: Ischemia and necrosis at the incision site can occur within 1-7 days after surgery. Surgical excision and closure are performed as soon as the process is complete for treatment. The occurrence of wound edge necrosis is more common in simultaneous repairs but can be seen in 1-3% of patients⁴⁶.

Hematoma: Hematoma, which can occur immediately or shortly after surgery, should be urgently explored surgically and irrigated and drained under antibiotic support. Hematoma, seen in less than 1% of patients, can lead to capsular contraction and infection if left untreated⁴⁶.

Implant Infection: Implant infection is the greatest threat to breast reconstruction. The incidence ranges from 0.5% to 2%. The first symptoms and signs can be observed between 5 days and 5 weeks after surgery. Infections caused by *Staphylococcus aureus*, *Staphylococcus epidermidis*, or *Pseudomonas* are usually characterized by the formation of abscesses around the 5th to 7th day. Common systemic symptoms include widespread redness, swelling, tenderness, fever, and fatigue. It should be considered as an urgent condition, and patients should be hospitalized for close monitoring and intravenous antibiotic therapy. Material should be obtained for culture. If there is no improvement and the condition worsens, immediate exploration is indicated. During exploration, if purulent and granulation tissues are encountered, the best

approach may involve removal of the implant, debridement of the infected tissues, intermittent irrigation of the pocket, and placement of a drain to close the wound. In cases where there are fewer signs of infection during surgery, the implant can be replaced with a smoother-surfaced implant, and the patient should be closely monitored. Appropriate antibiotic treatment should continue for 4-6 weeks. Patients with infection around the implant should be closely monitored for sequelae using ultrasound. Bedside aspiration can be performed if there is fluid presence around the implant. If the implant cannot be salvaged through these procedures, it should be removed, and reconstructive procedures should be delayed for 6-12 months⁴⁷.

Capsular Contraction: The rate of symptomatic capsular contraction varies between 3% and 5%. Keeping the inflation chamber of adjustable implants in place permanently is a valuable tool to treat this complication. Overinflation of the implant and achieving more expansion than desired 2-3 months after the onset of symptoms often solves the problem. If this solution cannot be achieved, complete or near-complete capsulectomy and implant replacement are performed. In cases where there is insufficient or thin soft tissue, autologous reconstruction can be added with the latissimus dorsi muscle flap⁴⁸.

Other Complications: Other complications include port rotation, disruption of implant integrity, surface irregularities, and rippling⁴⁹.

Autologous tissue breast reconstruction

According to some authors, breast reconstruction using autologous tissue has several advantages over implant-based reconstruction, such as lower overall cost, better cosmetic results, and the absence of foreign materials. Autologous reconstruction becomes the sole option when the problems associated with implants arise or are anticipated. The advancement of microsurgical techniques and the use of perforator flaps have improved autologous tissue reconstruction. The surgical team now has a variety of flap options with improved reliability. The development and increased use of breast-conserving surgical techniques, along with advancements in radiotherapy, have contributed to achieving optimal results⁵⁰.

Autologous tissue sources for breast reconstruction include:

Dorsal and lateral thoracic regions:

- Latissimus dorsi flap
- Thoracodorsal artery perforator flap
- Intercostal artery perforator flap

Lower abdomen:

- Transverse rectus abdominis flap (TRAM) with pedicled, free, and muscle-sparing options
- Deep inferior epigastric artery perforator flap (DIEP)
- Superficial epigastric artery flap

Hip and peri-iliac region:

- Rubens flap
- Superior gluteal artery perforator flaps (SGAP)
- Inferior gluteal artery perforator flaps (IGAP)

Thigh:

- Gracilis flap
- Anterolateral thigh flap (ALT)
- Medial thigh perforator flaps

Autologous tissues can also be used in conjunction with implants to prevent and treat complications associated with implants⁵¹.

Breast cancer is a disease that negatively impacts women biologically, psychologically, socially, and economically due to its uncontrolled growth and abnormal spread. It is considered a significant public health issue due to its high prevalence and poor prognosis²⁵. Breast cancer is the most common type of cancer and the leading cause of cancer-related death in women 15,25. According to the American Cancer Society's 2005 statistics, one in every eight women who reach the age of eighty is at risk of developing breast cancer. In Turkey, it is estimated that 10,000 women are diagnosed with breast cancer each year²⁵. Breast cancer accounts for 24.1% of all cancers in Turkey¹⁴. Although radical mastectomy is no longer the preferred treatment option in breast cancer due to changing technology and surgical techniques, breast reconstruction remains an important procedure when this method is employed. While the primary goal of breast cancer

treatment is the removal of cancer cells from the breast, post-treatment body image is a significant concern for women. The new appearance of the breast is one of the most important aspects in this regard²⁵. Nurses need to be equipped not only with the physical care of patients undergoing mastectomy but also with education for the patient and their families, planning and implementing patient-centered care, and addressing social and psychological care needs¹⁰.

Complications observed in autologous breast reconstruction

In the surgical treatment of breast cancer, modified radical mastectomy (MRM) is commonly used. Complications are observed in two out of three patients undergoing MRM. Additionally, the timing and staging of the breast reconstruction surgery also affect the types of complications that may arise¹⁰. Some of the complications include necrosis of the transferred tissue, blood clot formation, pain, and weakness in the donor area where the tissue is harvested. Following mastectomy, some patients may experience loss of sensation and numbness in the breast, often due to nerve damage. Complications related to mastectomy occurring within the first month after surgery are referred to as early-stage complications, while those occurring after the first month are considered late-stage complications⁵². Early-stage complications include seroma formation (25%), wound infection (10%), deep vein thrombosis (6%), pulmonary embolism (2%), and myocardial infarction (1%). Late-stage complications include lymphedema (11%), muscle atrophy (7%), restricted arm movement (8%), neuralgia (5%), skin stiffness (5%), hypertrophic scar formation (2%), and sinus formation (2%). Chronic pain is another long-term complication, with an incidence rate ranging from 4% to 22%. It is believed that chronic pain is caused by nerve damage during the surgical procedure, and this damage also contributes to limited arm movement. Chronic pain syndrome is more commonly observed in patients who undergo modified radical mastectomy compared to those who undergo breast-conserving surgery. In a study, it was reported that 70% of patients experienced numbness, 33% experienced pain, 25% experienced motor weakness, 24% experienced limb swelling, and 15% experienced stiffness. The same study found that 39% of patients had a significant impact on their daily activities¹⁰.

Generally, complications observed in patients

undergoing breast reconstruction include bleeding, hematoma, seroma, hernia, partial or complete necrosis of TRAM flap, fat necrosis, abdominal wall weakness, and infection. The likelihood of complications is higher in obese individuals, those with hypertension, diabetes mellitus, and smokers¹⁵.

Autologous breast reconstruction involves a longer surgical procedure and longer recovery time. Reconstructions performed with pedicled flaps are usually completed in a shorter period compared to free flaps, resulting in shorter hospital stays. Surgical procedures with free flaps, on the other hand, have longer durations¹⁰.

Nursing care in the preoperative and postoperative periods of breast reconstruction

The care of patients undergoing breast reconstruction is a collaborative process involving team members such as physicians, nurses, physical therapists, and psychologists, aiming to achieve success. Nursing care is of significant importance both before and after breast reconstruction. Nursing care in breast reconstruction should be planned to encompass the following fundamental aspects⁵³.

Preoperative patient preparation:

The preoperative period is a time when both the patient and their family experience fear and anxiety. The patient should be encouraged to discuss the procedure and share their feelings.

The patient should be allowed to ask questions, and the questions should be answered with simple, understandable, and free of medical terminology.

It is expected that some issues related to recovery may arise in any type of breast reconstruction. In such cases, the removal of the flap and reconstruction with an alternative method may be necessary. This situation should be explained to the patient in an appropriate manner.

The patient should be educated about the postoperative care, and if possible, written educational materials should be provided to support this education.

All necessary legal preparations should be completed prior to the surgery.

The patient should be taught respiratory exercises and the use of a spirometer, and it should be

explained that these should be performed every hour after the surgery. This education helps eliminate potential respiratory problems in the postoperative period and also contributes to expediting the recovery process.

The patient should be supported in quitting smoking (4 weeks prior to the surgery), discontinuing medications such as aspirin one week before, and achieving a body mass index (BMI) of 27 or below through weight loss.

The patient should be reminded to obtain a sports bra and an abdominal binder (to be worn on the day of discharge) for the postoperative period.

The patient should be informed that there will be a dressing on their abdomen or back during the postoperative period^{54,55}.

Postoperative patient care:

Breast reconstruction surgery typically lasts for an average of 4-8 hours. When the patient is brought to the clinic, they should be monitored using a cardiac monitor and oxygen saturation monitor. Intravenous fluids, drainage tubes, and a urinary catheter should be carefully monitored, and intake and output should be recorded.

The patient's blood pressure, pulse, body temperature, respiration, and pain should be evaluated every hour. The patient should be kept warm, as this promotes blood flow to the flap. Ventilator use should be avoided, and the room should not be exposed to drafts. Measures should be taken to ensure that the patient's body temperature does not drop below 37°C.

The patient's pain should be effectively managed. Nausea and vomiting symptoms should be monitored.

Patients undergoing breast reconstruction should be closely monitored for complications. It is important to inform the patient about the possibility of complications developing months or even years after the surgery.

Following the surgical procedure, signs such as swelling, pain, a sense of heaviness, and fluid accumulation under the breast incision or axillary region should be carefully monitored as indications of seroma.

Increased bloody drainage from the drain within the first 12 hours indicates hematoma. Swelling, tension, pain, and bruising in the surgical area

should be evaluated, and the amount and color of drainage should be monitored.

The patient should be instructed to wear compression stockings during the postoperative period. The patient should be encouraged to move their feet (forward and backward) while in bed.

If no issues related to the flap arise within the first 24 hours, the patient can begin drinking clear fluids (water, apple juice, etc.).

The reconstructed breast should be examined every 15-30 minutes during the first 24 hours. This examination includes assessing the softness, warmth, and color of the flap through touch and checking the pulse using a Doppler device. In the following days, the flap should be checked every hour.

During dressing changes, the area where the flap is located should be evaluated for signs of infection (redness, discharge, pain, odor) and inadequate tissue perfusion (bluish discoloration and insufficient capillary refill).

The flap and donor area should be protected from trauma. Tight-fitting clothes and bras with underwires that may impede blood flow should be avoided.

The patient should avoid sudden movements and gradually transition to daily life activities. They should avoid heavy lifting and lying in a prone (face-down) position. During sexual activities, care should be taken to avoid harming the donor area and flap.

The patient should be informed about when they can start driving (usually after one week) according to the physician's permission, and they should be reminded to attend a follow-up appointment six weeks after the surgery.

The patient should be taught how to perform self-breast examinations, emphasizing the importance of conducting regular self-examinations on a specific day each month. They should also be advised to undergo recommended mammography screenings at the recommended intervals.

Patients who undergo autologous breast reconstruction may benefit from physical therapy. Physical therapy helps restore shoulder mobility and assists in addressing weakness in the donor area. A physical therapist can help the patient gain strength, determine the safest way to adapt

to new physical limitations, and adjust to daily life activities. It should be explained that breast reconstruction does not increase the risk of breast cancer recurrence or interfere with screenings such as mammography^{23, 56}.

Discharge education:

The patient should be informed about the pain medications they can take at home when experiencing pain.

It should be emphasized that the patient needs to attend a follow-up appointment within 10 days after the surgery.

The patient can be informed that they can take a shower three days after the surgery, but if the drains have not been removed, they should wait until the drains are removed.

The patient should be advised that they can perform light household chores during the first 4-6 weeks.

The patient should be instructed to use an abdominal corset and supportive bra for 6 weeks after the surgery. However, heavy aerobic exercises should be avoided during the first 6 weeks. During this period, only walking and light stretching exercises may be appropriate.

The patient should follow the physician's recommendations regarding the timing of returning to work^{10,23}.

CONCLUSION

Physical health and beauty hold great importance for individuals throughout their lives. The size of a woman's breasts can impact her lifestyle, career, and social relationships. In addition to the diagnosis of breast cancer, the physical appearance after treatment is also a significant concern for women. Patients who undergo mastectomy seek ways to restore their breasts to their previous state. Autologous breast reconstruction, which is widely used today, is presented as a good option for women to achieve a more natural appearance after reconstruction. Breast reconstruction, when performed with appropriate surgical intervention and effective nursing care, can contribute significantly to increasing patient satisfaction and helping them return to their normal lives as quickly as possible.

Conflict of interest statement

The authors declare that they have no conflicts of interests.

Acknowledgements

None.

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