

TRAINING IN ONCOPLASTIC AND RECONSTRUCTIVE BREAST SURGERY: ANALYSIS OF TRAINING IN AMERICA AND IN THE EUROPEAN UNION WITH THE BRAZILIAN REALITY

Formação em cirurgia oncoplástica e reconstrutiva da mama: análise da formação na América e na União Europeia com a realidade brasileira

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ABSTRACT

The reconstructive and aesthetic breast surgery is a major breakthrough for the treatment of women fighting cancer. An advantage for the patient is the reduction of surgical treatment to one professional, besides the psychological and aesthetic relief of having her breast comfortably reconstructed by the doctor who is already accompanying her in the treatment of the disease. Considering the advances in oncological breast surgery, the ideal surgical procedure is one that achieves local control of the disease by maintaining the symmetry of the breast with immediate reconstruction. Plastic surgery techniques can be used in breast cancer surgery. The original focus is on improving the quality of life of oncological patients undergoing treatments that may be more effective in the aesthetic and functional point of view from the perspective of traditional techniques of breast conservation. Formation and training of professionals able to treat breast cancer is an innovative concept that brings discussions to the scientific community. Specific studies are required to standardize oncoplastic training. Training in reconstructive and aesthetic breast surgery also brings about new perspectives of surgical research related to aesthetic results, quality of life and local control, as well as the optimization of operative time, reducing adverse effects and costs. This study aimed to evaluate the main existing techniques, the training time for specialization in the context of Brazilian reality and whether it is necessary to change the current training model. This review is based on the conviction shown in other publishing studies (in press), which demonstrate the best way and the best work load for the improvement of the mastologist regarding oncoplastic and reconstructive breast surgeries.

KEYWORDS: Breast neoplasm; mammoplasty; education.

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RESUMO

A cirurgia reparadora e estética da mama representa um grande avanço para o tratamento de mulheres que lutam contra o câncer. Uma das vantagens para a paciente é a diminuição de procedimentos cirúrgicos e tratamentos com mais de um profissional, além do alívio psicológico e estético de ter sua mama reconstruída de forma confortável pelo médico que já a acompanha no tratamento da doença. No que diz respeito aos avanços das cirurgias oncológicas da mama, deve-se levar em consideração o procedimento ideal com margens livres e o controle local adequado da doença, a reconstrução imediata da mama de forma simétrica e, por fim, a transposição de técnicas da cirurgia plástica para a cirurgia de câncer de mama. O foco original é a melhoria da qualidade de vida das pacientes oncológicas submetidas a tratamentos que podem ser mais eficazes do ponto de vista estético-funcional sob a ótica das técnicas tradicionais de conservação mamária. A formação e a capacitação de todos os profissionais aptos ao tratamento do câncer de mama é um conceito inovador e trará discussões e novos desafios ao meio científico, o que instiga a possibilidade de criar estudos específicos que levem em consideração a opinião da sociedade no intuito de padronizar a formação em oncoplastia. A pesquisa científica é necessária para avaliar muitos outros aspectos relacionados à oncoplastia, como o resultado estético, a qualidade de vida das pacientes e o controle local da doença, bem como a otimização do tempo operatório e a redução de efeitos adversos e custos. O presente estudo visou avaliar as principais técnicas existentes, o tempo para formação dessa especialização no contexto da realidade brasileira e se há necessidade de mudanças no modelo de formação dos profissionais que optarem por segui-la. Esta revisão baseia-se na convicção mostrada em trabalhos em editoração (*in press*) que demonstram a melhor forma e a melhor carga horária para aprimoramento do mastologista em técnicas de cirurgia oncoplástica e reconstrutiva da mama referendada em observação.

PALAVRAS-CHAVE: Neoplasia da mama; mamoplastia; educação.

INTRODUCTION

Oncoplastic surgery in the treatment of breast cancer favors breast surgeons in the contexts of breast reconstruction and patient care, providing better aesthetic results without sacrificing the oncological treatment. The interaction between plastic surgery and mastology techniques originated a new approach to surgical training that aims to facilitate the treatment of this neoplasm. Technological advancements and benefits provided have already been discussed and presented in various global scenarios¹.

Professionals from different fields came together to share experiences and confront basic principles and techniques involved. Oncoplastic and reconstructive surgery of the breast was introduced in postgraduate course programs in 2010, during the Annual Clinical Congress of the American College of Surgeons (ACS), in San Francisco, California, with the participation of 120 professionals specializing in breast surgery, general surgery and plastic surgery. In this event, well-known oncoplastic surgeons, such as Dr. Elizabeth Beahn and Prof. Melvin Silverstein, brought to light a number of relevant aspects of oncoplasty, such as indications, contraindications, postoperative radiotherapy, cost-effectiveness and variations in surgical time¹.

Most patients diagnosed with breast cancer in the United States are currently treated by a general surgeon specialized in cancer surgery. This scenario is different in Brazil, where most of the surgeries are performed by breast surgeons with training in general surgery, oncologic surgery and/or gynecology and obstetrics².

The objective of this study was to analyze the discussions about the different formations of the breast surgeons in the studies published in the European Union and the works published by their direct collaborators to contrast and compare the different views put forward by each professional. The present study evaluated the different models for the training of breast reconstruction worldwide and their results. We focused our assessment on the essential criteria for candidates to participate in the training and performed a curricular analysis in the oncology field. Finally, we assessed whether significant changes in the current model of breast reconstruction surgery training in Brazil are required.

METHODS

The present study is a review of the scientific literature on the training of surgeons to perform oncoplastic and reconstructive breast surgeries. According to Gil³, a bibliographical research is carried out using publications that are already prepared, especially books and scientific papers. The present bibliographic work is a literature review of published works, master's thesis, electronic magazines and federal council bulletins. Our search terms included oncoplastic, surgeon training, reconstructive surgery of the breast and their equivalent in Portuguese (*oncoplastia, formação do cirurgião* and *cirurgia reparadora da mama*) with no period limits. In the result section, we discussed different points of view that form the training base considering time and number of patients adequate to oncoplastic surgery referral, as well as the amplitude of the clinical situation.

OBJECTIVES

General Objectives

To discuss methodological, operational and training aspects of professionals in oncoplastic and reconstructive breast surgery in Brazil.

Specific objectives

- To identify the time required for the training of medical professionals in oncoplastic and reconstructive breast surgery;
- To know and define the methodology applicable to the training of oncoplastic and reconstructive breast surgery (postgraduate programs, specialization courses, extension courses, continuing education, modular courses);
- To establish the professional practice time in oncoplastic and reconstructive breast surgery; and
- To identify the professional profile indicated for the performance of oncoplastic and reconstructive breast surgery.

RESULTS

Oncoplastic and reconstructive breast surgery scenario in several continents

The oncoplastic and reconstructive surgery of the breast techniques discussed worldwide seem to have parameterization with the Brazilian reality. The basis of reconstructive surgeries applied both in the US and in the European Union has the same basic surgical features for tumor removal and reconstitutions by flaps or breast implants. In relation to basic training, not many differences have been observed, since most professionals are surgeons — breast surgeons, plastic surgeons or oncologists. It should be emphasized that, although reconstructive surgeries are performed mostly by professionals of various specializations, the aesthetic part is almost entirely reserved for breast surgeons with training in oncoplastic and reconstructive breast surgeries⁴.

According to Mazzei⁵, mastology, oncology and general surgery professionals should have mastery over oncoplastic and reconstructive breast surgery techniques in order to plan and customize the treatment for each patient. This, undoubtedly, has led to protests by plastic surgeons who advocate oncoplastic surgery is an exclusive practice for professionals in this field. This medical progress can aggregate plastic surgery techniques, adapting them to the oncological profile. The various Brazilian institutions that offer training in this specialty train residents to perform and develop the process correctly. Several international health centers find difficulties in adding plastic surgeons to teams for different reasons, which forces breast surgeons to acquire more experience in the reconstructive area⁵.

Baldam⁶ analyzes that the legacy of historical surgical training meant that, until recently, few surgeons were equipped to offer this surgical approach to cancer, which simultaneously involves aesthetics and reconstruction. The author states that the change in the training of these professionals came to definitively change this reality. According to him, in the United Kingdom, only in the last decade, about 90 surgeons were awarded with high level scholarships. The basic course consists of 12 months of oncoplastic surgery training in 9 training centers performed by breast surgeons and plastic surgeons in an integrated manner. This approach seems to improve the quality of surgical care for the benefit of women, in addition to indicating a renovation in the field of breast surgery, far from the procedures based purely on resection techniques that remained unchanged for many decades.

Therefore, the outcome of the process in the UK has been marked by the interest in training among surgeons, so as to continue investing in a career in the breast surgery field, thus encouraging national scholarships and making them highly competitive. Some countries are already prepared to absorb this new medical specialty and have strategies in a partnership with the government to support the benefits of this type of surgery. The psychological impact on the patient and the increase in survival rates are numerically enthusiastic. Table 1 shows the training requirements to complete specialization in different countries⁷⁻¹¹.

Oncoplastic Surgery in Brazil

According to Brazilian Law n. 12,802, sanctioned on April 24, 2013, when there are technical conditions, reconstruction shall be performed in the same surgery. In case of the immediate reconstruction is impossible, the patient shall be referred for follow-up and submitted to surgery soon after reaching the required clinical conditions¹². This law was elaborated by Congresswoman Rebecca Garcia, who fought for more than five years for this service to be offered by the Brazilian public unified health system (SUS). The deputy reports that this law originated from feminist movements that believed the mutilation left by a tumor removal surgery would cause psychological damage as an effect of low self-esteem¹³.






After the law passed, some medical societies — such as the Brazilian Society of Mastology (SBM), the Brazilian Society of Plastic Surgery (SBCP) and the National Cancer Institute (INCA) — took actions to include oncoplasty as a medical complement in academic and extensive training for different specialties, graduating and training professionals who work in the fight against breast cancer to perform the reconstructive treatment in the early stages of diagnosis. According to Ruffo¹⁴, in an interview with Onconews, oncology safety must be aligned with aesthetic results to promote the better quality of life of patients. In addition, there seems to be the need

for more intensive training of our professionals. The SBM has identified this gap even among residency graduates who have recently undergone medical licensing examination. In this sample, it is possible to see that 20% of these medical residency programs still offer very little or almost no oncoplastic training¹⁴. In 2010, in Brazil, five courses in oncoplasty were started

(post-graduation, specialization or continuing or modular education), which are described in Table 2.

In Brazil, the requirements to apply for these courses are medical specialty in oncology, breast surgery or plastic surgery. The selection process includes curricular analysis, specific test and interview.

Table 1. Basic training for oncoplastic specialization in Brazil and in other countries.

Country	Attending physician	Base	Future actions
	Dick Rainsbury	General surgeons Breast surgeons	Encourage training through scholarships Introduce plastic surgery techniques to postgraduate training
	Belen Maerck	Gynecologist General Surgeons with postgraduate degrees in Mastology	Create a new surgical specialty Implement intensive training courses on breast reconstruction
	Maria João Cardoso	Gynecologists Oncologists Plastic surgeons	Certification Centers Design appropriate curriculum to train professionals
	Cícero Urban	Mastologists Gynecologists Plastic Surgeons Oncologists	Train professionals with a specialty in Mastology Grant scholarships to multiply professionals
	Breast Surgeon	General surgeons	Introduce programs for breast reconstruction techniques combined with plastic surgery techniques

Source: Cardoso MJ, et al.²⁷

Table 2. Training centers in oncoplasty in Brazil.

Institution	City	Physician in charge	Certification	Workload
Santa Casa de Belo Horizonte	Belo Horizonte	Douglas Pires	Graduate diploma	540 h (15 months)
Hospital do Câncer de Barretos	Barretos	Gustavo Zucca Matthes	Specialization course	380 h (19 months)
Hospital Araújo Jorge de Goiânia	Goiânia	Régis Paulinelli	Continuing education	240 h (10 months)
Beneficência Portuguesa de São Paulo	São Paulo	Vilmar Marques	Extension course	240 h (10 months)
Hospital das Clínicas da Universidade Federal do Rio Grande do Sul	Porto Alegre	Jorge Biazús	Modular course	60 h Module

Source: Pires DM. Tcc - Orivaldo Gazoto Jr. [personal message] Message received on April 13, 2016.

Oncoplasty development

Today's medical career requires specific refinements in each area. Patients are aware that specialized care is available for certain types of diseases, and realize that the care provided by a specialist is better than the service provided by a general surgeon. Thus, medical specialists who provide this type of care will, in great demand, be a byproduct of a well-informed society¹⁵.

Physicians who graduated in general surgery seem to respond well to these demands, seeking professional distinction in record numbers. It is estimated that half of the general surgeons acquire, each year, a certificate in some subspecialty recognized by the American Board of Medical Specialties¹⁶. Although the data show high volume of mortality by the hands of general surgeons, physicians who seek training are more assertive in complex surgical procedures such as oncology surgery. Oncoplasty came as an aggregating byproduct that, in addition to generating good results against breast cancer, promotes an increase in the quality of life of the patient. Oncoplasty also provides improvements in self-esteem by preserving a part of the body that, for a long time during the fight against this type of cancer, used to be mutilated¹⁷.

The emergence of oncoplasty and fundamental techniques

In the 1990s, the German surgeon Audretsch coined the term oncoplastic surgery to name the procedures that allowed tumor resection followed by immediate breast reconstruction, with restorative techniques that applied the principles of cosmetic surgery and its variations (considering tumor location in the different quadrants of the breast and the relationship between breast volume and tumor size). After that, this new technique for the handling of breast cancer spread in Europe and the United States. Multidisciplinary work with the integration of oncologists and plastic surgeons began with excellent results. The immediate reconstruction of the breast was consecrated as a routine practice of major importance. Oncoplasty or oncoplastic surgery is the union of plastic surgery techniques directed to the reconstruction of the breast in the treatment against mammary tumors. From the 1980s and especially in the 1990s, part of the breast started to be preserved in cases of initial cancer. Some studies have shown that breast conservation enhances the quality of life and the self-esteem, and the fear of disease recurrence is not different between patients undergoing conservative breast therapy and mastectomy. However, there are still insufficient studies regarding the impact of oncoplastic surgery on local recurrences and overall disease-free survival. In addition, data regarding their aesthetic results are also limited. Thus, everything should be done to increase the breast conservation rate. However, the aesthetic result may vary between the different conservative procedures. It is extremely important to follow the surgical guidelines and to use oncoplastic techniques

when indicated, especially in patients with larger tumors⁴. Partial breast reconstruction techniques were also developed using the same principles of breast aesthetic surgeries, such as suspension, reduction and placement of silicone prostheses¹. In 1994, a division of the breast into quadrants was instituted, which allowed the prior and planned analysis of the oncoplastic techniques to be used¹⁷.

Breast oncoplastic surgery is based on some fundamental techniques: reconstructions with and without flaps and breast implants¹⁹ (Tables 3-5).

Oncoplastic surgery and the Brazilian public service

In 2016, 57,960 new cases of breast cancer were estimated in Brazil²⁰. Oncoplasty may be able to improve the outcome in the treatment of most patients, including those treated by the SUS. In this context, the diffusion of professionals specialized in oncoplasty is essential, aiming at the benefit to patients submitted to breast surgery for cancer treatment. Currently, the number of Brazilian professionals qualified in oncoplasty is limited, especially those in the public health sector²¹. In Brazil, breast surgeons are the target audience in oncoplasty training, which is an excellent starting point for defining the purpose of this

Table 3. Types of techniques without flaps.

Type	Breast size	Tumor location
Lower pedicle	Small, medium and large	Lateral and medial and superior quadrants
Upper pedicle	Medium and large	Lower quadrants
Round block	Small and medium	Periareolar and central quadrant

Source: Mesquita M²⁸.

Table 4. Types of techniques with flaps.

Type	Correction type	Risks
TRAM flap	Post-mastectomy defects	High
Latissimus dorsi muscle rotation	Post-quadrant defects	Reduced

TRAM: transverse abdominal muscle.

Source: Mesquita M²⁸.

Table 5. Flap reconstruction.

Breast type	Indication
Implants or expanders	All sizes but more appropriate to small, medium or absent breasts

Source: Mesquita M²⁸.

study. The emphasis of oncoplastic specialization courses is the improvement of existing surgical techniques towards aesthetic breast reconstruction⁵.

In a publication of the SBM magazine, from São Paulo, Mazzei (2010) states: “Our surgical practice underwent major and important modifications in the last years with conservative and less mutilating techniques, which allow us to preserve more of the cutaneous tissue, the nipple-areolar complex, the mammary gland and the axilla”⁵. Today, breast surgeons must have mastery over oncoplastic surgery techniques in order to plan and provide the most appropriate treatment for patients. This undoubtedly has created protests on the part of plastic surgeons, who consider themselves to be exclusive for this specialty. It is a fact that the interaction between teams allows knowledge sharing and the adaptation of plastic surgery techniques to the oncological profile. Therefore, institutions that offer training in this specialty certainly cover some of the oncoplastic techniques and must increasingly improve this approach⁵. The point defended by Mazzei portrays that oncoplastic surgeons must have a curriculum in oncology⁵ in order to provide the most appropriate treatment for their patients. The data in Table 6 were published by SUS and refer to the medical actions for breast repair surgery. The figures reveal that the number of procedures is growing, which is encouraging. However, the rate of repair surgery does not exceed 10% in the states analyzed.

DISCUSSION

After evaluating some authors of oncoplasty worldwide, we observed that three specialties have greater demand for oncoplastic certification: breast surgery, plastic surgery and oncology surgery. Most of these specialties are based both in the United States and in the European Union. These professionals seek certification as a process of medical career improvement, aiming to combine treatment with psychological and aesthetic features. Although Brazil is a country of continental dimensions, not all its regions have multidisciplinary teams.

Table 6. Number of reparative surgeries in some Brazilian states.

State	Procedures	Repair surgery	%
São Paulo	8,058	386	4.8
Rio de Janeiro	3,951	220	5.6
Minas Gerais	2,429	88	3.6
Ceará	2,242	15	0.7
Pernambuco	2,155	54	2.5
Brasil	32,548	1074	3.3

Source: Resende MA²⁹.

Some regions are faced with the shortage of specialized physicians, which forces patients to travel in order to seek breast cancer treatment, consequently reducing survival rates. A trained oncoplastic practitioner, by having support material, will considerably reduce the number of deaths due to late treatment or absence of treatment, contributing to an effective public health program.

Mastology point of view

The surgical treatment of benign and malignant mammary neoplasias, as well as the approach of hypertrophies and mammary asymmetries, requires mastologists to have the technical knowledge previously applied by plastic surgeons. The contralateral breast symmetry among patients undergoing conservative surgical treatments should be considered. Oncological mammoplasty adapts mammoplasty to the surgical treatment of breast cancer. It is a well-defined surgical strategy to treat selected cases that promotes an increase in conservative surgery indications²². Reduction mammoplasty techniques appear to be safe for treating neoplasms in any mammary region with satisfactory aesthetic results. They are based on original techniques that preserve the ascending and perfusing features of the nipple-areolar complex²². For conservative surgical treatments, breast cancer surgeons should take the following into consideration: local recurrence, survival rates and patient satisfaction. The application of mammoplasty techniques in the treatment of breast cancer offers an improvement in patient satisfaction, without compromising oncological outcomes²³. In relation to relapses, tumors larger than 2 cm appear to have an increased risk of local recurrence²⁴.

The results of oncological mammoplasty are similar to those obtained in purely esthetic reductions.²² The proper preoperative planning should consider tumor location and the relation of the area to be resected with the total mammary volume. That will determine the technique to be applied and the location of the incisions for a satisfactory outcome both from the oncological and the aesthetic points of view. Patients affected by mammary neoplasia and with very large breasts, when submitted to oncological mammoplasty, will, in addition to the treatment of the disease, benefit from an improvement in overall quality of life. Although these patients could have a good outcome with simple conservative surgery, they constitute the group with the highest morbidity in postoperative radiotherapy, which is usually very uncomfortable due to the volume and shape of their breasts. In addition, dose homogeneity is more difficult to obtain in large breasts²².

A good preoperative evaluation (with emphasis on the resection area, incision design, possibility of immediate silhouette repair and mammary symmetry), besides providing treatment of malignant neoplasms, improves the patients' quality of life²². The basis of mastology requires the current

professional to master surgical techniques of reductive mamoplasty, to provide a treatment with oncological safety associated with excellence in aesthetic results for a greater number of patients.

Plastic surgery's point of view

According to Sampaio²⁵, the approach of plastic surgeons to breast surgeons, radiologists, pathologists, clinical oncologists and radiotherapists, when aiming to exchange knowledge, contributes with the multidisciplinary understanding of breast cancer. According to clinical oncology and oncoplastic breast surgery experience, the concerns that a plastic surgeon should have when performing oncoplastic surgery include:

1. awareness of the extent of the disease;
2. oncologic surgical programming and possibilities of intraoperative changes;
3. anatomopathological diagnosis and margin control;
4. radiotherapy and breast reconstruction;
5. adjuvant chemotherapy and neoadjuvant chemotherapy;
6. reconstruction aesthetic results; and
7. clinical and imaging follow-up²⁵.

The plastic surgery principles indicate that oncological or mastological follow-up is of extreme importance for a better treatment strategy. The plastic surgeon should also be concerned about the aesthetic implications of radiotherapy treatment (which may be compromised²⁶) or chemotherapy, which should start within 12 weeks after the surgical procedure²⁵.

Oncology Overview

It is the responsibility of the surgeon to diagnose breast cancer and ensure that there is a multidisciplinary team to approach the treatment before introducing the patient in the process. Another essential component is the inclusion of the patient in the multidisciplinary team, since a consensus among professionals will result in a common agreement on the guidelines and will have an impact on the quality of care. The absence of guidelines will result in different ways of treating patients within the same team, generating lack of clarity and variability in outcomes. A database on breast cancer is essential for auditing and for surgical quality control in individual units. The objective of this database is to define standards of care towards the cure of the patient. The presence of combined protocols allows the deficiencies to be clearly identified. It is a fundamental auditing principle to change and improve the surgical practice. Delayed diagnosis of breast cancer due to poor quality of care can alter the disease stage and impact patients' survival. The oncology practitioner is, for the most part, the first point of contact for patients with symptomatic disease, who has the responsibility to adequately refer the patient to the diagnostic service. Finally, oncology advocates that it should be the basis

for the oncoplastic surgeon, in order to guarantee better survival and, especially, the quality of the treatment from beginning to end. This is justified by the fact that, in the middle of their studies, oncoplastic surgeons study techniques of treatment for all types of cancer and have contact with a multidisciplinary team of professions, including radiology, radiography, pathology, surgery, nursing and medical physics.

CONCLUSION

Considering the time invested in training and thesis defense of each specialty, it is relevant that all areas involved have a minimum knowledge of cancer treatment and undergo a selective process related to a multidisciplinary surgery team before handling the neoplasia. Mastology and oncology already have an extensive curriculum, with no need for selections to be eligible for sub-specialization in oncoplasty. However, the plastic surgeon needs to perform a curricular test of medical activities directly or indirectly connected with the treatment of cancer in general, or specifically breast cancer. An additional period should be introduced in the plastic surgeon's curriculum to approach oncological theories and techniques. The commitment of oncoplasty with patients favored less invasive surgical procedures. Many of the oncoplastic techniques can be performed by other medical specialties, but, without proper professional training, they can lead to inappropriate harm to patients. According to Simmons⁷, it is extremely important to be flexible and adaptable to these changes in the way we care for our cancer patients.

Table 1 shows that, in Brazil, in the United States and in Europe, the specialties do not differ from each other in relation to the surgical basis of breast reconstruction or in relation to initial or advanced treatment of breast cancer. Based on these conclusions, we can suggest the following design for the formation of oncoplastic breast professionals:

1. type of training: postgraduate program, in which the graduate student will receive academic background proved by a thesis presentation;
2. training time: which can vary between 12 and 24 months, depending on the previous training;
3. number of procedures: at least 4 patients for each of the basic themes of oncoplastic training, including changes in breast volume;
4. target audience: plastic surgeons, breast surgeons and oncologists.

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