

**University of Medicine and Pharmacy of Craiova  
DOCTORAL SCHOOL**



## **PhD Thesis**

***BREAST RECONSTRUCTION AFTER SURGERY FOR  
BREAST HIPERTROPHY AND BENIGN TUMORS***

## **Summary**

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## **INTRODUCTION**

According to statistics, only in the United States in 2012 over 14 million cosmetic surgery of the breasts were made, but only about 3% of these were for surgical breast reconstruction after mastectomy as an interventional oncology treatment, although about 300,000 women are diagnosed each year with mammary tumors and most of them suffer breast surgery that can vary from partial, segmental or total removal of the breast.

This creates a major gap between the number of surgeons able to successfully carry out such intervention and the number of patients who would require them, making obvious the need to increase the number of professionals that are able to perform breast reconstruction after mastectomy, especially the aesthetic mastectomy in people diagnosed with breast hypertrophy.

Based on medical literature data, in this study we aimed to elucidate, using specific research methods, the impact of clinical and psychological intervention of breast reconstruction in patients suffering from breast hypertrophy and benign tumors.

We hope that our study will shade some light on the need of breast reconstruction, its impact on specific pathology (mammary hypertrophy and benign tumors) and to contribute in improving breast reconstruction techniques that can help to avoid any complication that may arise.

## **CHAPTER I**

### **Functional anatomy of the mammary gland**

Adult female mammary gland is located on both side of the anterior chest having its base stretching from about the second to the sixth rib. Medial mammary glands touching the edge of the sternum and lateral the medial axilla. They extend lateral to the axilla through a pyramidal axillary tail

Following its medioclavicular line, mammary gland extends from the second to the sixth rib. It is situated on a substantial layer of fascia that surrounds the superomedial surface of pectoralis major, serratus anterior and anterior sheath of the rectus in the inferomedial part.

## **CHAPTER II**

### **Hypertrophic breast and benign tumors of the breast**

Benign breast disease encompasses a wide range of conditions that concern patients, vexing physicians and are more common than breast cancer but received less attention in medical literature. The diagnostic protocol includes needle biops that is now used in most dedicated clinics treating breast diseases. This technique providing 99% sensitivity for cancer and benign interventions decreased noticeably.

Condition like fibrocystic disease or breast fibroadenoma were a clinical problem for centuries, as seen from various writings, like those of Astley Cooper in the early nineteenth century.

Benign breast disease has always been neglected in comparison to cancer, despite the fact that only one out of ten patients who presents to a clinic suffer from breast cancer. In recent years, there has been a noticeable and welcome corrective to this neglect, but already interest in benign disease is back in decline, at a moment when advances in molecular biology promise a better understanding of the physiology of development function and human breast involution.

## **CHAPTER III**

### **Type of breast plasty surgery and reconstructive breast reduction**

Breast reconstruction surgery is a standard technique that can be performed either as an immediate or delayed intervention after a mastectomy procedure. As a form of immediate reconstruction, it is a simple procedure compared to reconstruction involving transfer of myocutaneous flaps method. Most patients who have undergone mastectomy are eligible for immediate breast reconstruction, even when the primary tumor was an unfavorable prognostic.

The number of breast reconstruction is increasing with the patient information on it's benefits and on it's results. However, patients should be carefully selected to achieve optimal results even if implants have improved in recent years in concern to design and technology.

## **CHAPTER IV**

### **Goals and objectives**

The study aims to investigate the peculiarities related to breast reduction in cases of breast hypertrophy. Subsequently this study had the following objectives:

1. Establishing the frequency of risk factors associated with breast hypertrophy;
2. Anthropometric investigation of breast hypertrophy;
3. Comparative evaluation of surgical and post-surgical parameters.
4. Evaluation of post-surgical complications for breast reduction.

## **CHAPTER V**

### **MATERIAL AND METHODS**

The study included a total of 65 female diagnosed with breast hypertrophy who underwent surgery and reconstruction breast reduction. The diagnoses and surgery was made in Gonesse Hospital, Paris, France. Patients included in the study were hospitalized, investigated, treated and evaluated between May and July 2012.

The study was a prospective one, cases were pursued and evaluated at intervals of time defined by the study protocol for 6 months after surgery.

Criteria for inclusion :

- Breast hypertrophy diagnosis.
- Breast reduction surgery
- Age over 18 years.

History was determined using a questionnaire focused on following the frequency of risk factors associated with breast hypertrophy or the ones that can affect the surgery. Also the patient's physiological history (number of births, cesarean births) was determined.

For data processing and results interpretation MedCalc software was used, the main argument in using it was the ease and handling of statistical tools needed for medical statistics.

## **CHAPTERS VI AND VII**

### **RESULTS, DISCUSSION AND CONCLUSIONS**

The average age of patients included in the study was  $37.12 \pm 10.12$  years, the minimum was 19 years, which is higher than 18 the minimum inclusion criteria and the maximum 60 years.

Breast reconstruction was most frequent in cases with breast hypertrophy that were in the 4th decade of life. Over 35% (36.38%) of all cases included in the study had an aged between 40 and 49 years (23 cases).

The distribution of breast reconstruction for breast hypertrophy in this study was most commonly found in patients that were between 30 and 49 years, with accounting for almost two thirds of all cases (60%, N = 39 ).

Body weight is one of the factors that can influence mammary hypertrophy and is often associated with it. For this reason, weight and body mass index analysis is required. For the 65 cases included in the study group an average weight of  $76.43 \pm 12.99$  kg was found.

The lowest weight for the study group was 51 kg and the maximum was 115 kg. Although weight is not a very accurate indicator in assessing if a person is overweight or obese, the mean body weight for our study group was almost 20% (18.8%) higher in women with breast hypertrophy compared with the average weight of women in France, which is one of the lowest in Europe 63.4 kg.

A small number of cases had a body weight of 50-59 kg (5 cases) representing only 8.1% of the total lot.

There was a higher frequency of upper weight classes. Thus nine of the 65 cases included in the group had at the moment of the surgery more than 90 kg, representing 14.5% of the all group, 7 of them were in between 90-99 kg (11.3%) and 2 cases had a weight exceeding 100 kg (3.2%).

Cases with mammary hypertrophy that was given breast reconstruction had a pronounced profile of obesity. This feature is expressed by higher mean BMI. Almost half (46%) of the cases presented, at the time of surgery, a body mass index that could include them in the obese category (30 cases).

More than 40% of the cases analyzed showed a thoracic diameter of 95 to 100. A total of 16 cases showed thoracic diameter sizes of 105 (12 cases) and 110 (4 cases), the cumulative proportion of the two subgroups was 23.08%. Thus it has been

observed that two-thirds of the cases (43 cases, 66.17%) had a chest diameter of between 95 and 110.

A total of 45 women had given of birth before the surgery, making the almost 70% of all cases. Although births, especially in women with many births is usually most commonly associated with breast hypertrophy, there were a total of 20 women who have never given birth 30.8%. More than 40% of women (27 cases, 41.5%) had one or two births.

The results of this study are similar with those found in the literature concerning this topic and identified, as described, a high frequency of back pain in the group of women with breast hypertrophy. One third of the cases studied (21 cases) had complaints of various back pain degrees as one of the main symptoms.

The ptosis in women who required surgical reduction was very high. Evaluation of breast ptosis is based on the position of the areolas and nipples in relation to inframammary fold on one hand and as well as the volume counts and reach the breast located below the inframammary fold on the other hand.

Although age is associated with breast ptosis by degenerative changes in the mammary gland and skin, this combination is more common if the ptosis is low. For the study lot, the mammary hypertrophy was very high and was found in younger ages.

It was identified a slight increase in mean ptosis in women aged between 18 and 40 years. The average level of ptosis for the 20-29 age group was  $10.27 \pm 4.1$  cm, and for the 30-39 age group was  $11.59 \pm 4.49$  cm, with a statistical significance in between the two means are acceptable ( $p = 0.0458$ , CI 95% 1.07 to 2.832), thus validating a ptosis increase by almost 15% between the 2 age groups.

Another decrease of the group was the average level of ptosis after the age of 40 years (average breast ptosis of  $9.06 \pm 2.74$  cm) compared to women over 40 years ( $10.86 \pm 4.28$  inches). Explanation is that with age degeneration is more obvious, but it is associating with lower levels of ptosis compared with those generated by only breast hypertrophy.

The relationship between age and breast hypertrophy was not very strong, because most women who undergo breast reduction are generally younger on the one hand and on the other hand large mammary hypertrophy is also seen in younger age. However the role of age can not be underestimated in the evolution of large hypertrophy, which is more relevant for mammary hypertrophy of lower levels than those found in the study group.

Ptosis of large breast hypertrophy is not significantly associated with age, or the number of births.

About 30% of patients (19 cases, 29.3%) required 3 hours of surgery (180 minutes), with an average surgery time of 3:00 to 3.5 hours, recorded for 60% of the cases included in the group (38 cases, 58.46%).

The duration of intervention has increased proportionally with the volume of tissue excised. In the cases where 500-1000 grams of tissue were eliminated during surgery over 3.5 hours were needed (8.3%), and for resections 1000 to 1500 grams was needed nearly three times more time (23.1%).

Volume breast hypertrophy and reduction level imposed or required by the patients influence the duration of the surgery. The correlation between weight and excised during surgery was significant, the Pearson correlation coefficient was 0.52.

Analyzing data from the study of the correlation between the duration of surgery and breast hypertrophy associated variables was a significant correlation between the amount of hypertrophy, especially with the volume of the gland removed and duration of the surgery. Thus all variables associated with breast hypertrophy (drooping breasts, chest diameter, the distance between the sternum and nipple fork, weight) showed significant positive correlation coefficients ( $> 1$ ) but at low values, suggesting a low but statistically significant ( $p < 0.05$ ) level during surgery breast hypertrophy. This correlation is stronger but if you take into account the degree of breast reduction gear, which corresponds to the weight of excised.

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