Modern Plastic Surgery, 2026, 16(2), 70-79
https://www.scirp.org/journal/mps
ISSN Online: 2164-5280
ISSN Print: 2164-5213

Breast Hypertrophy Management in a Low Income Country: Initial Experience of the First Senegalese Plastic Surgery Department

Mamadou Lassana Foba[1,2], El Hadji Daour Teuw[1], Mame Nafissatou Dia[1], Ainina Ndiaye[1,2], Anne-Aurore Sankale[1,2]

[1]Plastic, Reconstructive and Aesthetic Department, Centre Hospitalier National Universitaire de FANN, Dakar, Senegal
[2]Plastic, Reconstructive and Aesthetic Department, Université Cheikh Anta Diop de Dakar, Dakar, Senegal
Email: mamadoulassana1.foba@ucad.edu.sn, elhadjidaourteuw97@gmail.com, naliaichadia@gmail.com, aninandiaye@yahoo.fr, aasankale@yahoo.fr

How to cite this paper: Foba, M.L., Teuw, E.H.D., Dia, M.N., Ndiaye, A. and Sankale, A.-A. (2026) Breast Hypertrophy Management in a Low Income Country: Initial Experience of the First Senegalese Plastic Surgery Department. *Modern Plastic Surgery*, **16**, 70-79.
https://doi.org/10.4236/mps.2026.162007

Received: February 11, 2026
Accepted: April 21, 2026
Published: April 24, 2026

Abstract

Breast hypertrophy, characterised by excessive breast enlargement, affects women's quality of life. Breast reduction surgery is the main treatment. However, many challenges remain in our developing country context. Limited technical facilities and the lack of financial resources among local populations constitute a real obstacle. This study aims to examine the epidemiological and clinical aspects of breast hypertrophy and to evaluate its management in this particular context with the aim of identifying practical improvements.

Keywords

Breast Hypertrophy, Arrow, Reduction, Thorek, Mc Kissok

1. Introduction

Breast hypertrophy is defined as excessive breast size, especially in relation to a woman's body type. It is usually accompanied by sagging breasts or breast ptosis and sometimes breast asymmetry. In a context of globalisation and the resulting convergence of beauty standards towards a standard model, black African women increasingly perceive breast hypertrophy as a real handicap rather than a generous gift from nature. This has resulted in a new and growing demand for this type of surgery in our countries [1].

The aim of our study is to report on the epidemiological, clinical, therapeutic and evolutionary aspects of the management of breast hypertrophy.

2. Patients and Methods

This is a retrospective and descriptive study covering a period of 21 years from 18/01/2001 to 20/07/2023, which identified patients in the Plastic, Reconstructive and Aesthetic Surgery Department of Aristide Le Dantec Hospital and Fann Hospital.

The records of 48 patients who consulted for breast hypertrophy during the study period were collated.

The patients were treated either at Aristide Le Dantec Hospital or at Fann Hospital in Dakar by the same surgical team.

The epidemiological aspects concerned:

- Age;
- The influence of pregnancies;

The clinical aspects concerned

- The reasons for consultation;
- Morphological data: the arrow.

The therapeutic data reported were:

- The rate of patients operated on
- The surgical technique used;
- The distribution according to the weight of the excision (left breast and right breast).

The evolutionary aspects studied were:

- Average follow-up
- Complications
- Sequelae;
- Patient satisfaction assessment (Likert scale).

The pre-established design was created so that the measurements of the ideal breast could be identified, as illustrated in **Figure 1** [1]. All patients underwent surgery under general anaesthesia and tracheal intubation.

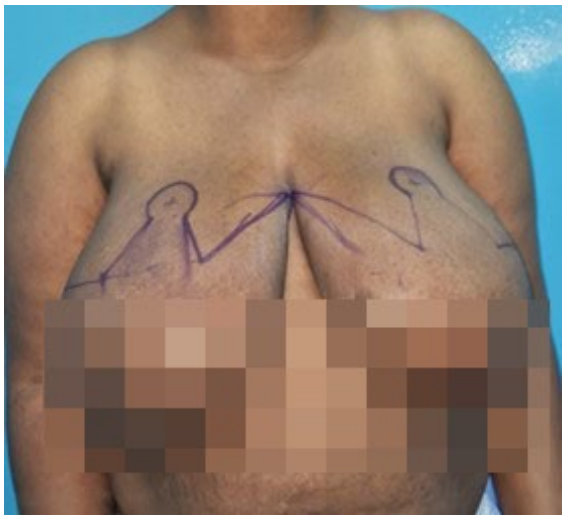

Figure 1. Measurements.

3. Results

Epidemiological Aspects: The average age of the patients was 33.65 years, with extremes ranging from 16 to 51 years. The median age was 33.00 years (See Table 1). The patients in our series were at different stages of their reproductive lives, hence the study of the influence of pregnancies. The average was 1.89 pregnancies with a median of 1.00 pregnancy, ranging from a minimum of 0 to a maximum of 7 pregnancies.

Table 1. Distribution of patients by age categories.

Age categories	Number	Percentage
11 - 20 ans	6	12.5%
21 - 30 ans	16	33.3%
31 - 40 ans	12	25%
41 - 50 ans	11	22.9%
51 - 60 ans	3	6.3%
Total	**48**	**100%**

Clinical Aspects: The majority of our patients consulted us for functional discomfort such as heaviness in the chest wall and back pain. Aesthetic reasons were secondary and mentioned in 42.20% of cases. The average cup size was 34.97 cm, with extremes ranging from 20 cm to 60 cm (See Figure 2).

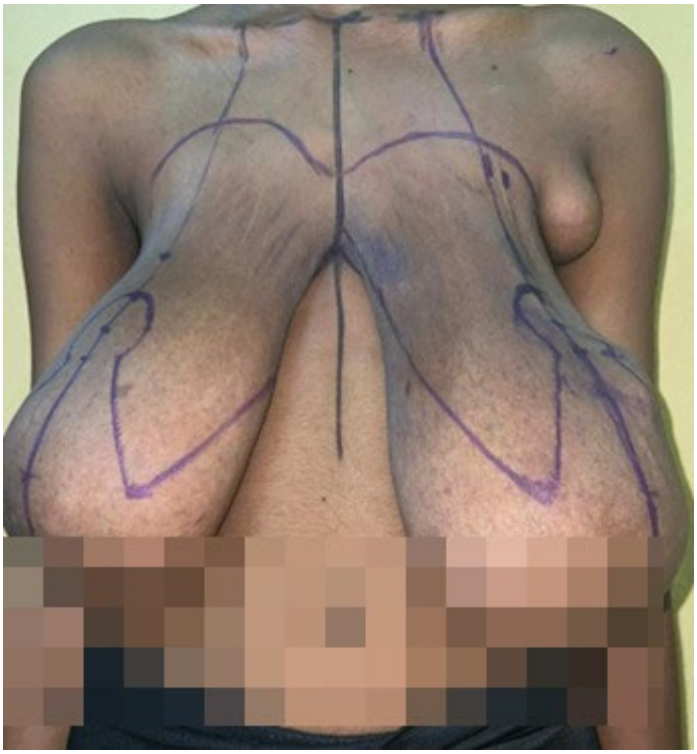

Figure 2. Cup size (left: 36.5 cm; right: 37).

Therapeutic Aspects: Our study included 48 patients who consulted for breast hypertrophy, 28 of whom underwent breast reduction surgery, representing 56.25% of cases.

The patients who did not undergo breast reduction surgery were lost to follow-up for various reasons.

Four surgical techniques were used:

- The most commonly used technique was free areolar grafting or Thorek's technique in 64.30% of cases, *i.e.* 18 patients.
- The upper pedicle technique was performed in 14.30% of patients in our study, *i.e.* 4 cases;
- The Mc Kissock vertical pedicle technique was performed in 17.90% of patients, or 5 cases (Figure 3);

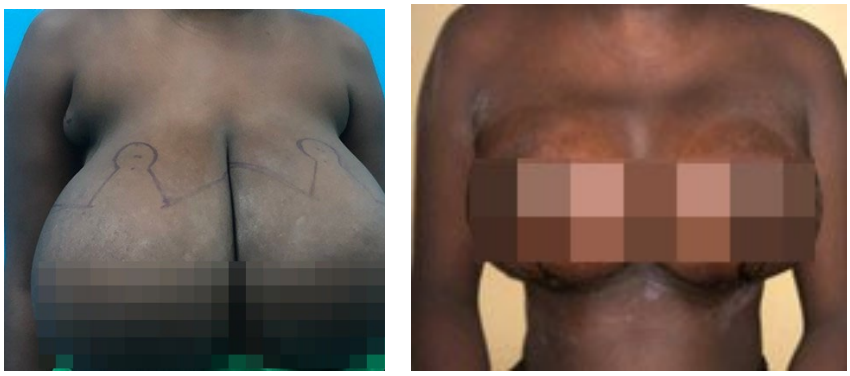

Figure 3. Mac Kissock technic (Preoperative and postoperative).

- Finally, the inferior pedicle technique was performed in 3.60% of cases, or in a single patient.

It is important to note that the various surgical techniques were performed bilaterally (See Table 2).

Table 2. Summary table of surgical techniques.

Srugical techniques	Number	Percentage
Free areolar graft	18	64.3%
Superior pedicle technique	4	14.3%
Vertical pedicle technique	5	17.9%
Inferior pedicle technique	1	3.6%
Total	28	100%

In our study, subcutaneous fat tissue was removed with an average weight of 979.56 g per breast, with minimum values ranging from 163 g to a maximum value of 3200 g, with a median of 1000 g. The distribution of patients according to removal weight intervals is detailed in Figure 4.

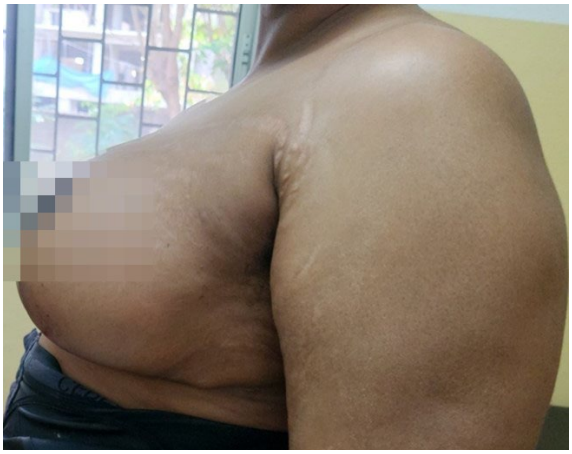

Figure 4. Post-operative follow up 1 year (lateral view).

Evolutionary Aspects: With an average follow-up of 9 years, complications were noted during our study and concerned only 5 patients; they are reported in Figure 5.

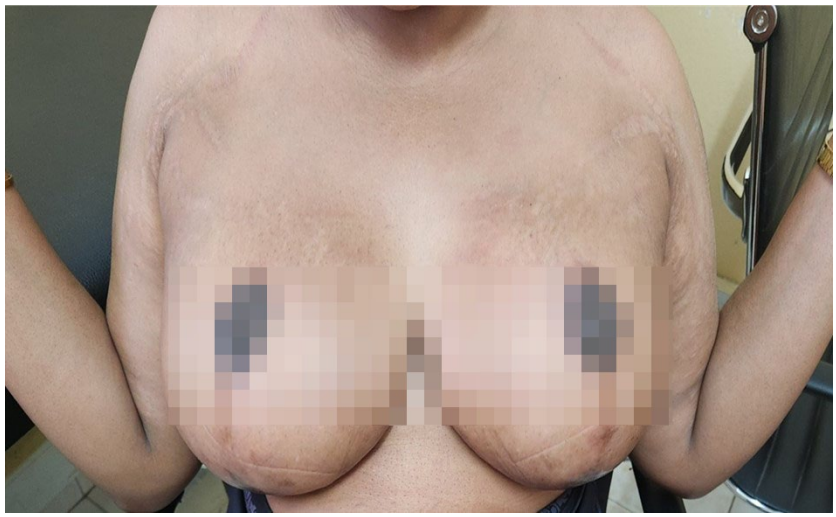

Figure 5. Post-operative follow up 1 year (Frontal view).

These complications were mainly infections, accounting for 60% of complications, followed by haematomas and lymphatic effusions in equal proportions in one patient. No deaths were reported.

Sequelae were found during our study, with hypertrophic scars being the most common, accounting for 38.46% of cases, followed by areola necrosis, which accounted for 19.23%. Skin necrosis and defective scarring appeared in equal proportions (15.38%), while areola malposition, asymmetry and sensitivity disorders were the least common sequelae, accounting for 3.85%.

The patients' opinion of the outcome of the procedure is shown in Figure 6 using a Likert scale comprising six items to assess patient satisfaction, the first three of which have a positive value and the last three a negative value. Overall,

we can say that 75% of the patients who underwent surgery were satisfied with the outcome according to the Likert scale.

4. Discussion

The average age of our patients is similar to that found by many authors, whose patients are in their thirties: 33.2 years for Mojallal *et al*. [2], 36 years for Loury *et al*. [3] and 33.9 years for Sankalé *et al*. [1]. In practice, breast volume stabilises from around the age of 16, so once the mammary glands have reached maturity, the procedure can be performed. The majority of patients in our series had at least one pregnancy in their history (57.10%). The average was 1.89 pregnancies. These results contrast with those of Sankalé *et al*. [1], who found a higher parity (63.8%) and an average of 2.1 pregnancies in women from the same population. However, the average number of children was significantly higher in our series than in Western series, with 1.4 pregnancies for Loury's series [3]. This situation can be explained by a decline in the birth rate due to the adoption of birth spacing policies in Senegal, in particular the widespread use of contraception. However, the birth rate remains higher than in the West.

In our series, most patients consulted for functional discomfort (57.80%) and 42.20% came for aesthetic reasons. These results contrast with those of Belcadi [4] in Morocco, who found that all patients presented with functional discomfort such as back pain and that 89% of them had aesthetic discomfort as a secondary reason for consultation. Similarly, Wolfswinkel *et al*. [5] and Nguyen *et al*. [6] in the USA found that the majority of patients consulted for functional pain (neck, back, shoulder and breast pain). Cosmetic discomfort can result from various factors, including social perceptions of beauty and cultural norms. Women may feel social pressure to conform to specific aesthetic standards, which can influence their feelings about their physical appearance. In our specific context, a higher percentage of women complained of lower back pain than those complaining of aesthetic discomfort. This may be attributable to several factors, including cultural differences, individual variations in pain tolerance, and personal health priorities.

The most consistent feature noted in our data was a deflection of more than 20 cm. The most common range was between 31 and 40 cm, with an average of 33.2 cm and a median of 33 cm. It is noteworthy that Sankalé *et al*. [1] reported an average of 33 cm for this measurement, while Mojallal *et al*. [2] in Lyon observed an average of 34.5 cm. An intriguing observation emerges from the fact that despite racial differences between the groups of patients studied, the average measurements of breast hypertrophy remain relatively similar. Similarly, Kumar *et al*. [7] in the United States (New Orleans) identified an average projection of 33.57 cm.

Of the 48 patients included in the study, only 28 underwent surgery, representing a rate of 56.25%. Our results, compared to those of Sankalé *et al*. [1], show a rate of 46.8% in a similar study. This can be explained by the fact that our study covers the work of four surgeons, whereas in the first study, only one surgeon was

in charge of the surgical procedures. However, much higher rates are found, such as those of Belcadi [4] in Morocco, where 100% of the patients surveyed (51 cases) underwent surgery. In addition, Kececi & Sir [8] and Deconinck *et al*. [9] in the West report rates similar to those of Belcadi [4], with 39 and 119 cases surveyed, respectively. The differences in intervention rates between this study and those conducted in the Maghreb and the West are attributed to factors such as the lack of hospital facilities dedicated to this intervention; there is currently only one plastic surgery department in Senegal. In addition, the cost of the procedure can also be a barrier to its implementation; in a public facility, the procedure costs around 500,000 FCFA (€762.47), and this amount is doubled or tripled in private facilities. An employee in an urban area earns an average of 104,869 CFA francs, compared to 75,564 CFA francs in a rural area (source: ansd.sn). This situation puts the procedure out of reach for the majority of patients.

Our cohort also included women who wanted to become pregnant in the future; the decision to postpone the procedure may have been influenced by the inability to breastfeed after the Thorek technique.

Furthermore, the small size of our sample of 48 patients shows that many women suffering from breast hypertrophy do not have access to specialist consultation due to a lack of information, proximity or acceptance of their fate.

The predominant surgical method was Thorek's technique, which was used in 64.30% of cases, while Sankale used Mac Kissock's technique in 50% of cases. The choice of technique was based on the extent of the hypertrophy, the breast sagging and the patient's morphometric data. Our study follows the recommendations of Hulard *et al*. [10], who suggests that the choice of surgical technique for breast reduction is mainly based on the assessment of breast sagging. If the sagging is less than 27 cm, breast reduction using the Mac Kissock method is recommended. However, if the sagging is greater than 30 cm or in cases of gigantomastia, breast reduction using the Thorek technique is recommended. For sagging between 27 and 30 cm, the choice between the two techniques depends on the patient's age, skin quality and the surgeon's preferences.

In our study, the average excision weight was 979.56 g with a median of 1000 g. However, Sankalé *et al*. [1] found an average excision weight of 1300 g, while Antony *et al*. [11] reported an average weight of 827.5 g. These differences can be explained by changing attitudes in our part of the world; the stereotype of the "diongoma" African woman with generous curves is increasingly giving way to a more slender figure, reflecting a dynamism, if not a certain athleticism. More and more female breasts that were considered normal and therefore did not prompt a desire for breast reduction a decade ago are now considered too large because they hinder physical activity, leading to an increase in reductions on comparatively smaller breasts.

The average follow-up in our series is 9.76 years, which is similar to that of Vidali *et al*. [12] in France, who recorded an average follow-up of 10 years in his study. The rapid loss of postoperative follow-up of a patient after breast reduction

surgery can be attributed to various factors. Satisfaction with the results, the absence of complications and a positive experience may explain why a patient might not feel the need to return for follow-up appointments, but complications, dissatisfaction or unresolved concerns could also cause the patient to avoid consultations out of fear or disappointment. Personal constraints such as financial problems, time constraints or family commitments may also play a role. Inadequate communication between the surgeon and the patient, as well as the choice of external medical follow-up, are other possible factors. It is essential that medical staff maintain open communication, properly inform the patient about the importance of follow-up appointments, and proactively address any loss of follow-up to ensure optimal care.

In our study, complications were dominated by infections in three patients, followed by haematomas and lymphatic effusions. This finding is consistent with the results of Sankalé *et al*. [1], who reported a low complication rate, mainly suppurations. These results are consistent with those of Letertre *et al*. [13], where only one complication required reoperation (haematoma), while the others were treated by puncture (four haematomas) or guided healing (two scar separations).

This finding is due to aseptic conditions, which are not always optimal in developing countries despite continuous improvements.

The sequelae are mainly due to scarring and are sometimes exacerbated by factors such as depigmented skin, which remains a public health problem in many countries in sub-Saharan Africa. This condition weakens the skin and severely compromises the quality of healing.

In the literature, the method used to determine satisfaction rates varies depending on the author, with various factors taken into account. We used the Likert scale, which is a more stringent scale consisting of six items, to assess the degree of satisfaction. Our study revealed a satisfaction rate of 71.43%. In Senegal, Sankalé *et al*. [1] recorded a satisfaction rate of 90.9% in a previous study. In addition to the fact that the Likert scale is more stringent in terms of satisfaction, this decrease can be explained in part by the involvement of a larger number of surgeons (four) with different levels of experience in breast surgery, whereas in Sankalé's previous study, the surgical procedures were performed by a single experienced surgeon. In France, Aillet *et al*. [14] assessed satisfaction by considering shape, residual volume, symmetry and scarring, obtaining a rate of 83%. Other authors have also reported high satisfaction rates, such as 84% for Glatt *et al*. [15] and 87% for Davis *et al*. [16], with a significant reduction in functional symptoms and psychological distress after surgery.

5. Conclusions

Breast hypertrophy is defined as a pathological process in which the breast increases in size beyond normal proportions. It causes significant psychological distress and physical discomfort, often leading to postural adjustments. Surgery for breast hypertrophy, and cosmetic and reconstructive surgery in particular, has

long been considered a luxury in Africa. Public health policies have not made it a priority. However, it is now gaining a notable place in our surgical practice.

Breast reduction surgery offers satisfactory results, although in adolescents, the scarring, psychological and functional repercussions may limit its indication. Informing patients about the anticipated benefits and risks remains essential, with particular attention to young women of childbearing age.

Consent and Approval

This study received ethical approval from an Institute Review Board (IRB) and informed consent was obtained from all study participants.

Conflicts of Interest

The authors have no financial interest to declare in relation to the content of this article.

References

[1] Sankale, A.A., Bouchama, A., Ndiaye, A. and Toure, C.T. (2012) Les hypertrophies mammaires: Etude preliminaire a Dakar. *Mali Médical*, **27**, 23-26.

[2] Mojallal, A., Comparin, J.P., Voulliaume, D., Chichery, A., Papalia, I. and Foyatier, J. (2005) Place de la réduction mammaire à pédicule supérieur dans les gigantomasties. *Annales de Chirurgie Plastique Esthétique*, **50**, 118-126. https://doi.org/10.1016/j.anplas.2004.09.004

[3] Loury, J., Piquet, M., Letertre, P., Pauchot, J. and Tropet, Y. (2010) Étude rétrospective des complications et imperfections: À propos de 100 cas de mammoplastie de réduction à pédicule supérieur. *Annales de Chirurgie Plastique Esthétique*, **55**, 187-194. https://doi.org/10.1016/j.anplas.2009.06.011

[4] Belcadi, J. (2020) Plasties de reduction des hypertrophies mammaires: A propos de 51 cas. Mohamed V, Rabat.

[5] Wolfswinkel, E., Lemaine, V., Weathers, W., Chike-Obi, C., Xue, A. and Heller, L. (2013) Hyperplastic Breast Anomalies in the Female Adolescent Breast. *Seminars in Plastic Surgery*, **27**, 49-55. https://doi.org/10.1055/s-0033-1347167

[6] Nguyen, J.T., Wheatley, M.J., Schnur, P.L., Nguyen, T.A. and Winn, S.R. (2008) Reduction Mammaplasty: A Review of Managed Care Medical Policy Coverage Criteria. *Plastic and Reconstructive Surgery*, **121**, 1092-1100. https://doi.org/10.1097/01.prs.0000304238.43482.9c

[7] Kumar, T.A., Yoo, A., Nachabe, A.M., Womac, D.J., Boraski, J.C. (2023) The Safety of Long Inframammary Fold to Nipple Lengths in Inferior Pedicle Breast Reductions: A Decade of Experience. *Eplasty*, **23**, e11.

[8] Kececi, Y. and Sir, E. (2014) Prediction of Resection Weight in Reduction Mammaplasty Based on Anthropometric Measurements. *Breast Care*, **9**, 41-45. https://doi.org/10.1159/000358753

[9] Deconinck, C., de Greef, C., Walravens, C. and Calteux, N. (2002) À propos de 243 plasties mammaires verticales pour hypertrophie et/ou ptôse importantes. Étude rétrospective, analyse des résultats et description des modifications techniques. *Annales de Chirurgie Plastique Esthétique*, **47**, 623-632. https://doi.org/10.1016/s0294-1260(02)00154-1

[10] Hulard, O., Voinchet, V., Casanova, D., Magalon, G. (1998) Etude prospective à

propos de 100 cas d'hypertrophie mammaire. *Annales de Chirurgie Plastique Esthétique*, **43**, 224-233.

[11] Antony, A.K., Yegiyants, S.S., Danielson, K.K., Wisel, S., Morris, D., Dolezal, R.F., *et al.* (2013) A Matched Cohort Study of Superomedial Pedicle Vertical Scar Breast Reduction (100 Breasts) and Traditional Inferior Pedicle Wise-Pattern Reduction (100 Breasts): An Outcomes Study over 3 Years. *Plastic and Reconstructive Surgery*, **132**, 1068-1076. https://doi.org/10.1097/prs.0b013e3182a48b2d

[12] Vidali, N., Chevet-Noel, A., Ringenbach, P. and Andreoletti, J.B. (2019) Fautil encore drainer les réductions mammaires? *Annales de Chirurgie Plastique Esthétique*, **64**, 54-60. https://doi.org/10.1016/j.anplas.2018.03.006

[13] Letertre, P., Lasserre, G. and Ricbourg, B. (2009) Traitement des hypertrophies mammaires très importantes et des gigantomasties par la technique de réduction dite à pédicule postéro-inférieur. À propos de 20 cas. *Annales de Chirurgie Plastique Esthétique*, **54**, 331-339. https://doi.org/10.1016/j.anplas.2008.10.004

[14] Aillet, S., Watier, E., Jarno, P., Chevrier, S. and Pailheret, J. (2001) Hypertrophie mammaire juvénile: Analyse des résultats à long terme des plasties mammaires de réduction. *Annales de Chirurgie Plastique Esthétique*, **46**, 585-594. https://doi.org/10.1016/s0294-1260(01)00064-4

[15] Glatt, B.S., Sarwer, D.B., O'Hara, D.E., Hamori, C., Bucky, L.P. and LaRossa, D. (1999) A Retrospective Study of Changes in Physical Symptoms and Body Image after Reduction Mammaplasty. *Plastic and Reconstructive Surgery*, **103**, 76-82. https://doi.org/10.1097/00006534-199901000-00013

[16] Davis, G.M., Ringler, S.L., Short, K., Sherrick, D. and Bengtson, B.P. (1995) Reduction Mammaplasty: Long-Term Efficacy, Morbidity, and Patient Satisfaction. *Plastic and Reconstructive Surgery*, **96**, 1106-1110. https://doi.org/10.1097/00006534-199510000-00015