



CASE STUDY

Prevalence of breast cancer in reduction mammoplasty specimens, in women of African origin: preliminary histology results at Mankweng and Polokwane ospitals Clinical Case Series

Mzezewa S.Z^{1*} | Setati M.² | Netsniongolwe T³

¹. MD, M. Med. Surg, PhD,
Department of Plastic and
Reconstructive Surgery,
Pietersburg and Mankweng
Hospitals

²MB ChB. FCPHM, Public Health
Medicine Limpopo Department of
Health

³M.Med. Plast. Surg. Sinoamadi V.
MBChB

Abstract

Introduction. We report the first study on the prevalence of breast cancer in reduction mammoplasty specimens conducted in Limpopo province, South Africa. The prevalence of breast cancer is relatively low among pre-menopausal African women. Worldwide prevalence has been reported to range between 0.1% and 4.5%. Patients requesting reduction mammoplasty fear that their breast enlargement may be caused by the disease. Reduction mammoplasty is a common operation performed by plastic and reconstructive surgeons globally, but is an uncommon operation in Limpopo.

Aims and objectives. To determine the prevalence of breast cancer in reduction mammoplasty specimens and to record the pertinent characteristics.

Method. A prospective study of 104 female patients requesting reduction mammoplasty from 2007–2014 at Polokwane and Mankweng hospitals. The outcome measures were weight of specimens and histological investigation for breast carcinoma, body mass index and jugular–nipple distances.

Results. All patients were of African origin whose median age was 32.4 (16–53) years, and median weight of excised tissue was 3.4 (1.45–6.2) kg. The median weight of patients was 77 (63–92) kg. The median BMI was 34.5 (29.1–39.9) kg/m². The median jugular–nipple distance was 39 (25–51) cm on the right and 41 (29–53) cm on the left breast. Histological investigation revealed normal breast tissue in 57 cases, fibroadenosis in 25 cases, and duct hyperplasia in 22 cases.

Conclusion.

Breast cancer was not detected.

The study population was relatively young at a mean age of 32.4 (16–53) years, without personal nor family history of breast cancer.

Keywords: Breast cancer, patient age, Breast cancer history, Specimen weight, Reduction mammoplasty, Jugular–nipple distance.

1 | INTRODUCTION

Background

Patients requesting reduction mammoplasty fear that their breast enlargement may be caused by cancer. Reduction mammoplasty is a common operation performed by plastic and reconstructive surgeons globally. (1) It is relatively uncommon in parts of Africa. Here we report the first study on the prevalence of breast cancer in reduction mammoplasty specimens performed at Polokwane and Mankweng hospitals in Limpopo province, South Africa.

At these centres, this is a rare operation due to shortage of plastic surgeons and the burden of other life-threatening pathologies such as skin cancer and trauma. Elsewhere breast cancer in reduction mammoplasty specimens has been reported in the literature to vary between 0.1% and 4.5%. (2) The patients usually complain of upper backache, of problems in obtaining brassieres of the correct size and finding clothes that fit. They also complain of difficulties in participating in sports. A common complaint by our patients in our warm environment is persistent moisture under the breasts. The moisture and maceration produce an offensive odour.

2 | AIMS AND OBJECTIVES:

1. To determine the prevalence of histologically confirmed breast cancer in reduction mammoplasty specimens from African women in Limpopo.
2. To reduce breast size and weigh the excised breast tissue.
3. To calculate the patient's body mass index (BMI) and measure the jugular–nipple distance (JND).
4. To add to the knowledge on breast cancer.

3 | METHODS

Consecutive female patients, 104 in total, requesting reduction mammoplasty were prospectively enrolled at the two hospitals from 2007 to 2014. Comprehensive history of the presenting complaint including family history of breast cancer – a positive personal or family history of breast cancer is associated with the disease – and complete physical examination were carried out and demographic data were recorded. The weight and height of the patients were measured and the body mass index (BMI) calculated. The jugular–nipple distances (JND) were measured.



FIGURE 1: PreOperation.

Pre-operative preparation followed full blood tests. Urea and electrolytes were recorded and relevant radiology, including mammography for patients over 40 years of age, were done. The women were starved 8 hours before surgery. All patients gave their informed consent. Reduction mammoplasty was performed under a general anaesthetic. The wise-pattern technique was used and the medial pedicle flap was preferred. All the patients were operated at either

Supplementary information The online version of this article (<https://doi.org/10.15520/jmrhs.v3i10.264>) contains supplementary material, which is available to authorized users.

Corresponding Author: Mzezewa S.Z
Salathiel Zhou Mzezewa
Email: mushavi@gmail.com



FIGURE 2: PostOperation.

Polokwane or at Mankweng, the academic teaching hospitals for the University of Limpopo.

If the JND was less than 38 cm, nipple areolar complex was preserved and rotated as medial pedicle flap. If the JND was greater than 38 cm, reduction mammoplasty was accompanied by a free nipple graft. Excised breast tissue was weighed and sent for histological examination.

Statistical analysis. Epi-Info Version 7 statistical software was used to calculate the median, range and percentile for categorical variables.

4 | RESULTS

Breast cancer was not detected in any of the specimens sent for histology.

A total of 104 female patients of African origin were enrolled in the study. Their median age was 32.4 (16–53) years and their median weight was 77 (63–92) kg. The median BMI was 34.5 (29.1–39.9) kg/m². The median jugular– nipple distance was 39 (25–51) cm on the right and 41 (29–53) cm on the left breasts. The median weight of excised tissue was 3.4 (1.45–6.2) kg. A total of 208 (for the 104 patients) breast specimens were investigated histologically. See Table 1.

5 | DISCUSSION

Occult breast carcinomas are rarely detected from reduction mammoplasty specimens. (1) Pre-operative patient evaluation, which includes family history of breast cancer and mammography, where indicated, may reduce the findings of breast cancer in the breast reduction specimens. (2) The incidence of breast cancer in such specimens has been reported in the literature as varying from 0.1% to 4.5%. (3) (4) The chances of finding pre-malignant or breast cancer in reduction mammoplasty specimens increase with advancing age of the patient: 0.8% for patients <40 years and 25% for those older than 60 years. (3) The probability of finding breast cancer in reduction mammoplasty specimens also increases with a family history of the disease. (4) It is reported to be four-fold if the reduction is unilateral to match a reconstructed breast following breast cancer surgery. (1)

Our study population was relatively young: the median age was 32.4 years and the oldest patient was 53 years. None of the patients had a personal or family history of breast cancer.

The life-time risk (0–74 years) of breast cancer in South Africa has been reported to be one in 36 overall, but varies from one in 81 in black, one in 13 in white, one in 63 in mixed-race and one in 21 for Asian women. (5)

From the above it can be noted that the risk of breast cancer is relatively low in African women. It is therefore not surprising that there was no evidence of breast cancer in the breast specimens in our study. However, this is no reason for complacency, because our study population was relatively young, and had no personal or family history of breast cancer. Changes in African women's lifestyles as well as altered diets may predispose them to risk factors for breast cancer, including P53 mutation. (6) The P53 is a tumor suppressor antigen, which suppresses tumors by regulating cell division i.e. not too fast or in an uncontrolled manner. It is located on chromosome 17.

We have at least one Caucasian patients on our skin cancer operations lists. We serve a rural, farming and mining community, subject to the risk of long sun exposure especially on the farms. The predomi-

nance of women of African origin in this study may have been because Caucasian and Asian women may not be aware that reduction mammoplasties are performed at Mankweng hospital, which was formerly designated for black patients only. Although reduction mammoplasty is not a cosmetic operation, it is perceived to be one reserved for the upper middle-class and wealthy patients. Most of our patients were operated from the general wards, however, Polokwane hospital has set aside a private ward to cater for the needs of medical insurance and fee-paying patients of any pathology.

The median weight of excised tissue in our study was 3.4 (1.45–6.2) kg. In other studies excised breast tissue weighed just 0.5–0.6 kg. (6) Macromastia may be a risk factor for breast cancer, but as yet there is no direct evidence. (6) A major risk factor for breast cancer is p53 mutation. (7) Higher adiposity values like larger BMI, increased waist circumference together with p53 mutations are associated with increased risk of premenopausal breast cancer. (6)

Body mass index greater than 35 kg/m² may be a risk factor for inflammation and insulin resistance. Reduction mammoplasty is associated with improved lung function,^[12,13] which is directly related to the amount of tissue removed. (6)

Our histological findings of normal breast tissue, fibroadenosis and duct hyperplasia were noted similarly in other studies.^[1,4,18] We did not find breast cancer in our reduction specimens. This should not give a false sense of freedom from breast cancer for these women, however. The breast specimens were large – median weight 3.45(1.45–6.2) kg. It is possible to miss a focus of cancer cells in such a large volume of breast tissue. Occult breast carcinoma is rarely detected in reduction mammoplasty specimens. (1) (2) “Studies have shown that black South African women have a lower incidence of breast cancer compared with other races or population groups.” (5) The combination of a young study population, median age 32.4 (16–53 years), black women, absence of breast cancer history and preoperative evaluation of the patients with mammography, where indicated, may have contributed to the absence of breast cancer in the histology of the specimens we examined. A South African study

found 2% breast malignancy in reduction mammoplasty specimens. In this study the mean age was 37.1 (20–84) years. (8)

Overall, our patients were very happy after surgery, that they could subsequently find brassieres and clothes that fitted and were able to participate in sporting activities. Cases in point are a female police officer and a female fire fighter who are now no longer confined to office duties. (9) (10) (11)

6 | CONCLUSION

Breast cancer was not detected in our reduction mammoplasty specimens.

The study population was relatively young.

Recommendations

Reduction mammoplasty specimens should always be submitted for histological investigation for breast cancer as a matter of routine.

Genetic tests for P53 antigen mutation should be recommended for women requesting breast reduction mammoplasty

Early screening for breast cancer by teaching women to do breast self-examination. Simultaneously, spouses and intimate partners should also be taught to feel for unusual breast lumps.

Encourage mammographic screening for women above 40 years.

Women should be encouraged to reduce weight as obesity can be a risk factor for numerous Non-Communicable Diseases(NCDs) including cancers.

More patients should be enrolled into the study.

Conflict of Interest:

The main author and the co-authors have no conflict of interest.

The study was approved by Mankweng and Polokwane Research Ethics committee Ref, PM RECO3UL

Acknowledgement.

Would like to thank the sisters in Female surgical wards of Mankweng and Polokwane hospitals for their dedication to their patients.

PREVALENCE OF BREAST CANCER IN REDUCTION MAMMOPLASTY SPECIMENS, IN WOMEN OF AFRICAN ORIGIN: PRELIMINARY HISTOLOGY RESULTS AT MANKWENG AND

POLOKWANE HOSPITALS

Would like to dedicate this study to my wife and my daughters. They are the engine that keeps me going.

REFERENCES

1. Ishag MT, Baschinsky DY, Beliaeva IV, Niemann TH, Marsh WL. Pathologic Findings in Reduction Mammoplasty Specimens. *American Journal of Clinical Pathology*. 2003;120(3):377–380. Available from: <https://dx.doi.org/10.1309/4kd652hn739xtlm3>. doi:10.1309/4kd652hn739xtlm3.
2. Kyriopoulos E, Kakagia D, Zapandioti P, Papaliodi E, Tsoutsos D. Pathologic Findings in Breast Reduction Specimens: Detection of Occult Premalignant and Cancerous Lesions. *Onkologie*. 2012;35(10):583–586. Available from: <https://dx.doi.org/10.1159/000342701>. doi:10.1159/000342701.
3. Tadler M, Vlastos G, Pelte MF, Tille JC, Bouchardy C, Usel M, et al. Breast lesions in reduction mammoplasty specimens: a histopathological pattern in 534 patients. *British Journal of Cancer*. 2014;110(3):788–791. Available from: <https://dx.doi.org/10.1038/bjc.2013.708>. doi:10.1038/bjc.2013.708.
4. Daniel A, Varobiof, Sitas G, Varobiof. Breast Cancer Incidence in South Africa. *J Clin Oncol*. 2001;19:11560987–11560987.
5. Taighini S. Is macromastia a risk factor for breast cancer? A study on 198 patients. *Pak J Biol Sci*. 2013;16(21):24511745–24511745.
6. Walerych D, Napoli M, Collavin L, Sal GD. The rebel angel: mutant p53 as the driving oncogene in breast cancer. *Carcinogenesis*. 2012;33(11):2007–2017. Available from: <https://dx.doi.org/10.1093/carcin/bgs232>. doi:10.1093/carcin/bgs232.
7. Sofianos C, Zinn RJ, Geoffreys DA, Kruger D. Pathological findings in reduction mammoplasty specimens: A South African perspective. *South African Medical Journal*. 2015;105(4):308–308. Available from: <https://dx.doi.org/10.7196/samj.9108>. doi:10.7196/samj.9108.
8. Iwuagwu OC. EFFECTS OF REDUCTION MAMMAPLASTY ON PULMONARY FUNCTION AND SYMPTOMS OF MACROMASTIA. *Plastic and Reconstructive Surgery*. 2003;112(7):1969–1970. Available from: <https://dx.doi.org/10.1097/01.prs.0000089289.06874.ab>. doi:10.1097/01.prs.0000089289.06874.ab.
9. Kececi Y, Dagistan S. Effects of Breast Reduction on Pulmonary Function. *International College of Surgeons*; 2014. Available from: <https://dx.doi.org/10.9738/inturg-d-13-00060.1>. doi:10.9738/inturg-d-13-00060.1.
10. Ozumba BC, Nzegwu MA, Anyikam A, Okoye I, Okafor OC. Breast Disease in Children and Adolescents in Eastern Nigeria—a Five-Year Study. *Journal of Pediatric and Adolescent Gynecology*. 2009;22(3):169–172. Available from: <https://dx.doi.org/10.1016/j.jpag.2008.10.007>. doi:10.1016/j.jpag.2008.10.007.
11. Sitas F, Madhoo J, Wessie J. Incidence of histologically diagnosed cancer in South Africa: 1993-1995, National Cancer Registry, South African institute for Cancer Research. Johannesburg; 1998.

How to cite this article: S.Z M., M. S., T N. Prevalence of breast cancer in reduction mammoplasty specimens, in women of African origin: preliminary histology results at Mankweng and Polokwane ospitals Clinical Case Series. *Journal of Medical Research and Health Sciences* . 2020;1109–1112. <https://doi.org/10.15520/jmrhs.v3i10.264>