Cogitare Enfermagem

ORIGINAL ARTICLE

EFFECTS OF REDUCTION MAMMOPLASTY ON THE PULMONARY FUNCTION AND THE QUALITY OF LIFE OF WOMEN WITH GIGANTOMASTIA

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ABSTRACT
Objective: To evaluate the effects of reduction mammoplasty on the pulmonary function and quality of life of women with gigantomastia.
Method: Observational study (a case series) that retrospectively analyzed the medical records of 14 cases of women who underwent reduction mammoplasty in the last 12 months at the surgical clinic service of a university hospital in Rio de Janeiro.
Results: The mean age, height and weight of the women who underwent mammoplasty were, respectively, 44.5 years, 158 cm and 93.8 kg. Body mass index revealed obesity classes ranging from I to III. Regarding spirometry, the values of FVC ranged from 92.76% of the predicted theoretical value before surgery to 94.74% and 91.77%, respectively 30 and 60 days after surgery.
Conclusion: Reduction mammoplasty can improve women's quality of life, according to the reports of the participants. There was no association between mammoplasty and improvement of the respiratory function.

DESCRIPTORS: Mammoplasty; Quality of Life; Spirometry; Plastic Surgery; Surgical Nursing.

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EFEITOS DA MAMOPLASTIA REDUTORA NA FUNÇÃO PULMONAR E QUALIDADE DE VIDA DE MULHERES SUBMETIDAS À GIGANTOPLASTIA

RESUMO

Objetivo: avaliar os efeitos da mamoplastia redutora na função pulmonar e qualidade de vida de mulheres com gigantomastia.

Método: estudo observacional do tipo série de casos que analisou retrospectivamente o prontuário de 14 casos de mulheres submetidas à mamoplastia redutora nos últimos 12 meses no serviço de clínica cirúrgica de um hospital universitário do Rio de Janeiro.

Resultados: a média de idade, altura e peso das mulheres submetidas à mamoplastia foi respectivamente, 44,5 anos, 1,58 m e 93,8 kg. O índice de massa corporal evidenciou obesidade de graus I a III. Em média a espirometria variou de 92,76% do valor teórico predito antes da cirurgia, para 94,74% e 91,77%, 30 e 60 dias após a cirurgia respectivamente.

Conclusão: a mamoplastia de redução pode melhorar a qualidade de vida das mulheres, conforme autorrelato. Não houve associação da mamoplastia com a melhora da função respiratória.

DESCRITORES: Mamoplastia; Qualidade de Vida; Espirometria; Cirurgia Plástica; Enfermagem Cirúrgica.

EFECTOS DE MAMOPLASTÍA REDUCTORA EN FUNCIÓN PULMONAR; CALIDAD DE VIDA DE MUJERES SOMETIDAS A GIGANTOPLASTÍA

RESUMEN

Objetivo: Evaluar efectos de la mamoplastía reductora en función pulmonar y calidad de vida de mujeres con gigantomastía.

Método: Estudio observacional tipo serie de casos, con análisis retrospectivo de historias clínicas de 14 casos de mujeres sometidas a mamoplastía reductora en los últimos 12 meses en servicio de cirugía clínica de hospital universitario de Rio de Janeiro.

Resultados: La media etaria, altura y peso de las mujeres sometidas a mamoplastía fue, respectivamente: 44,5 años, 1,58 m y 93,8 kg. El índice de masa corporal evidenció obesidad de grados I a III. En promedio, la espirometría varió del 93,76% del valor teórico previsto antes de la cirugía al 94,74% a los 30 días de la cirugía y 91,77% a los 60.

Conclusión: La mamoplastía reductora puede mejorar la calidad de vida de las mujeres, según su testimonio. No existió asociación de la mamoplastía con mejoras en la función respiratoria.

DESCRIPTORES: Mamoplastía; Calidad de Vida; Espirometría; Cirugía Plástica; Enfermería Quirúrgica.

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INTRODUCTION

Gigantomastia is a rare condition characterized by overgrowth of the breast tissue that can be physically and psychosocially disabling for the patient. Many authors consider gigantomastia as breast enlargement that requires reduction of more than 1500g per breast. However, there is no consensus in the literature regarding the weight of reduction, which ranges from 0.8 to 2 kg. Despite the lack of a universally accepted definition, in many references the definition of gigantomastia is directly associated with overweight breast tissue. However, there seems to be greater consensus regarding the use of surgical treatment (reduction mammoplasty), which is considered the dominant treatment for gigantomastia [1].

The incidence and prevalence rates of gigantomastia are not known, let alone its morbidity and mortality rates. The most common complications are estimated to be mastalgia, ulceration and infection, postural problems, lower back pain and chronic traction injury of the 4th/ 5th/ 6th intercostal nerves, with resultant loss of nipple sensation and intrauterine growth restriction [1-2], complications that can significantly decrease the quality of life of the affected women.

The main complaints of women with gigantomastia, and which lead to reduction mammoplasty, range from cosmetic concerns (obtaining a more aesthetic breast shape) to somatic symptoms. Although there is evidence that this surgery significantly mitigates these symptoms, improving the quality of life of the patients, in many cases this procedure is perceived much more as an aesthetic than a therapeutic intervention [2-3].

Studies have reported the extent to which gigantomastia contributes to change the functional component, causing circulatory, respiratory and postural disorders. Regarding respiratory disorders, it is worth mentioning pulmonary dysfunction, a complication associated with gigantomastia, which has not yet been investigated and documented in the literature. It affects lung capacities and volumes, which can be assessed by pulmonary function tests: spirometry and measurement of arterial blood gases [4-6].

Besides causing aesthetic problems, the large and heavy breasts of the patients - and most of these patients are also obese - can cause significant restriction and reduction of compliance of chest wall, interference with pulmonary ventilation, and hence reduce the quality of life of these individuals.

Thus, pulmonary dysfunction and impairment of functional capacity – with functional capacity perceived as the patient's ability to perform ordinary daily activities, which is one of the parameters for assessment of quality of life - must be considered in the evaluation of nurses, physicians and physiotherapists as important indicators and potential physiological parameters for complications and limitations in the bodies of women with gigantomastia. These health professionals should prioritize the indication and execution of reduction mammoplasty, emphasizing that this surgical intervention is for therapeutic rather than aesthetic purposes.

Based on the aforementioned, the structured research question is what are the effects of reduction mammoplasty on spirometry and on the quality of life of women with gigantomastia?

In order to answer this question, the present study aimed to evaluate the effects of reduction mammoplasty on lung function and the quality of life of women with gigantomastia, as well as to estimate Forced Vital Capacity (FVC), Maximum Voluntary Ventilation (MVV), Forced Expiratory Volume in one second (FEV), Forced Expiratory Flow (FEF), Tiffeneau Index (FEV/ FVC), FEF25-75 / FVC, and quality of life of women with gigantomastia before and after they had undergone reduction mammoplasty.

METHOD

Observational study (a case series) that retrospectively analyzed all the cases of patients who have undergone reduction mammoplasty in the last 12 months at the surgical clinic of a university hospital.

Convenience sampling was used and 14 female patients with gigantomastia who underwent reduction mammoplasty were included. The follow-up period was six months after hospital discharge, and the outcomes were evaluated within 30 and 60 days after the surgical procedure. Data of interest for the analysis of the outcomes were extracted from patients' records. It should be noted that, according to the medical records, all spirometric tests were performed in a private clinic using the Koko® SX 1000 PC-BASED SPIROMETRY spirometer, and the tests were performed by the same professional in all the cases investigated.

Eligibility criteria were women aged 18 up to 60 years old and Body Mass Index (BMI) equal to or higher than 23kg/m^2, smokers or not, with or without medical history, and who agreed to participate in the study.

All patients underwent the Costa Lima surgical technique associated with the inferior vascular pedicle flap under general anesthesia. It was selected because it is the technique most frequently used for breast reduction in patients with gigantomastia [3].

Data were statistically analyzed by the R program. Descriptive statistical analysis was used to calculate the distribution of variables based on the means and standard deviation. Differences between means were measured to estimate the difference in magnitude of the effect of surgery on spirometry variables (MVV, FVC, FEV FVC, and FEF 25% -75% / FVC), to assess restrictive impairments before and after surgery.

Quality of life was assessed qualitatively with a questionnaire elaborated by the researchers containing four open-ended questions, namely: 1- What has changed in your life after surgery? 2 - What is your physical state after surgery? 3 - What is your satisfaction level after surgery? 4 - Did the outcome of the surgery improve your self-esteem?

The present study was approved by the Research Ethics Committee of UNIRIO under protocol no 2.719.674.

RESULTS

Table 1 shows the age distribution of the women who participated in the study (mean age 44.5 (± 8.12 years) and the anthropometric characteristics of these women at baseline.

Table 1 - Profile of participants at baseline. Rio de Janeiro, RJ, Brazil, 2018 (continues)

Patient	Age	Height m	Weight kg	BMI
1	37	1.61	83	32.02
2	35	1.63	99	37.26
3	42	1.68	85	30.11
4	61	1.52	71	30.73
5	52	1.65	84	30.85

6	34	1.62	97	36.96
7	38	1.59	100	39.55
8	52	1.66	110	39.91
9	38	1.44	77	37.13
10	43	1.55	113	47.03
11	45	1,52	108	46.74
12	44	1,5	90	40
13	48	1.56	103	42.32
14	55	1.62	94	35.81
Mean	44.57	1.58	93.85	37.60
SD	8.12	0.06	12.70	5.50

The average height was 158.2cm (± 6.93cm). Regarding weight, the mea was 93.8 (± 12.70 kg), with a median of 95 kg.

With an average BMI of 37.60 (± 5.50), the participants of the study fell into the obese categories, as follows: class I obesity: four women (33.33%) with BMI 30 to 34.9; class II obesity: six women (50%) with BMI 35 to 39.9, and class III obesity or morbid obesity: two women (16.33%) with BMI higher than 40.

Regarding spirometry, it was found that FVC (Table 2) ranged from 92.76% of the predicted theoretical value (mean 3.12 ± 0.344 L / min) before surgery to 94.74% and 91.77% after surgery (within 30 and 60 days after surgery), indicating that surgery did not significantly impact this variable.

Table 2 - Distribution of the theoretical reference and estimates of the CFV spirometric variable. Rio de Janeiro, RJ, Brazil, 2018 (continues)

Patient	Theoretical reference	Preoperative estimate	1st Postoperative estimate	2nd Postoperative estimate
1	3.55	3.24	3.28	3.36
2	3.45	3.2	3.7	3.26
3	3.55	3.45	3.41	3.35
4	2.52	2.4	2.52	2.63
5	3.45	2.65	2.64	2.7
6	3.42	3.83	3.76	3.69
7	3.22	3.05	2.94	2.99
8	3.3	2.7	3.02	2.87
9	2.62	3.11	3.18	3.09
10	2.96	3.2	3.32	3.19
11	2.79	2.78	2.64	2.42
12	2.94	2.15	2.11	2.34

13	2.92	2.44	2.42	1.99
14	3.07	2.39	2.26	2.28
Mean	3.12	2.89	2.94	2.86
SD	0.34	0.47	0.52	0.49

FVC represents the maximum volume of exhaled air with maximum effort, which occurs at the point of maximum inspiration. The FVC result is usually expressed in absolute values and in predicted percentage. When the result is below 80% of the predicted percentage, with normal FEV1/FVC, it suggests restrictive disorder.

No evidence of restrictive disorders was found in the cases investigated before or after surgery during follow-up. Surgery did not change the mean CFV in the first or second postoperative evaluation (2.94 and 2.96 L/min respectively). Both measures remained slightly below the expected average of 3.12 L/ min.

FVC is the most important pulmonary function test because during expiration, there is a limit to the maximum flow that can be reached at any lung volume of an individual.

Regarding MVV, Table 3 shows a slight increase in MVV 60 days after surgery, of 1.65 L/min., even though still far from the predicted value (101.85 L/min). In morbidly obese women (patients 10, 11 and 13), there was no significant improvement in MVV.

Table 3 - Distribution of theoretical reference and estimates of the spirometric variable VVM. Rio de Janeiro, RJ, Brazil, 2018

Patient	Theoretical reference	Preoperative estimate	1st Postoperative estimate	2nd Postoperative estimate
1	119.28	105.89	98.16	101.34
2	108.25	90.58	96.37	102.27
3	109.47	110.59	108.82	105.52
4	76.46	72.78	65.05	83.44
5	107.88	77	77.07	76.18
6	107.72	123.28	121.69	120.51
7	101.22	83.25	87.02	89.95
8	99.98	78.88	79.02	83.73
9	84.73	93.06	94.5	91.69
10	92.8	96.27	96.99	98.24
11	87.7	86.8	81.44	84.88
12	113.96	53.06	62.38	66.75
13	110.92	66.46	64.79	57.76
14	105.6	71.26	69.75	69.97
Mean	101.85	86.36	85.93	88.01
SD	12.21	18.73	17.76	16.97

MVV represents the maximum volume of ventilated air in one period, by repeated forced breathing maneuvers. The test provides a nonspecific overview of the ventilatory function. The units used are L/min. Considering the value expected for mean MVV according to the characteristics of the study participants (MVV = 101.85 L / min), it was found that only in the second spirometric test, up to 60 days after surgery, there was an improvement in the estimated MVV value, compared to the period before surgery (86.36 x 88.01 L / min), with an average increment of 1.64 L/min.

In spirometry performed within 30 days after surgery, the mean MVV value was estimated at 85.93 L/min, a decrease of 0.43 L/min in MVV, which can be explained, among other things, by the limitations of chest expandability, imposed by pain, considering the time interval between the surgery and the first spirometry. The surgery only improved MVV values among women aged 30-45 years, from 93.64 L/ min to 94.15 L/min within 30 days after surgery and to 95.68 L/min within 60 days after surgery. Women with Class II obesity had an average improvement from 90.05 L/ min to 93.02 L/min, within 60 days after surgery, an increase of 2.97 L/ min.

MVV tests the individual's ability to sustain a high level of ventilation. Abnormal MVV values occur when an individual has clinically significant or especially obstructive restrictive disease. In this regard, the fact that a small increase in MVV was observed after surgery, even within 60 days after surgery, shows how reduction mammoplasty in women with gigantomastia can improve the ventilatory capacity of these patients, since obtaining a true, reliable measure of MVV depends greatly on patient effort.

Odds Ratio (OR) was calculated to estimate the chance of MVV improvement through comparisons between the group of women with class I and class II obesity; between the group of women with class I and class III obesity and between the group of women with class II and class III obesity and considering MVV values before surgery and 60 days after surgery.

Odds ratio in the first comparison was 0.33 (95% confidence interval (CI): 0.0208 to 5.3294) p = 0.43; in the second comparison, 0.33 (95% CI: 0.01 to 6.65) and in the last comparison, 1.0 (95% CI: 0.07 to 12.55) p = 1.0. There was no statistical significance in all comparisons.

Comparisons were also made regarding age and MVV. Women aged 35-45 years and women over 45 years were compared regarding the chance of presenting improvement in MVV. Women younger than 45 were 1.2 times more likely to improve MVV after surgery than women older than 45 (OR 1.2 95% CI: 0.1303 to 11.0529) p = 0.8721, without statistical significance.

It should be noted that individuals with restrictive lung disease can obtain MVV values within the normal range because they are able to compensate for the lack of volume increase with significant increases in respiratory rate.

Regarding FEV1 (Table 4), a variable that indicates the volume of exhaled air in the first second during the FVC maneuver, indicating the amount of air eliminated in the first second of the forced expiratory maneuver, and therefore, the measurement of the most clinically useful pulmonary function, no significant improvements were observed in the women after surgery in either group, considering age and class of obesity.

Table 4 - Distribution of the theoretical reference and the estimates of the spirometric variable FEV1. Rio de Janeiro, RJ, Brazil, 2018 (continues)

Patient	Theoretical ref.	Preop estimate	1st Postop estimate	2nd Postop estimate
1	2.34	2.86	2.65	2.74

2	3.45	2.75	3.16	2.76
3	2.96	2.99	2.94	2.85
4	2.07	1.97	2.17	2.26
5	2.77	2.15	2.06	2.06
6	2.91	3.33	3.29	3.26
7	2.74	2.48	2.35	2.43
8	2.7	2.2	2.56	2.26
9	2.29	2.52	2.55	2.48
10	2.51	2.6	2.77	2.65
11	2.37	2.35	2.2	2.14
12	2.46	1.69	1.74	1.8
13	2.45	1.8	1.75	1.56
14	2.51	1.96	1.88	1.89
Mean	2.60	2.40	2.43	2.36
SD	0.34	0.47	0.49	0.46

Odds ratios were calculated considering FEV1 measurements before surgery and 60 days after surgery between the groups of women with class I obesity, compared to the group of women with class II obesity, and among the group of women with class II obesity compared to the group of women with class III obesity, to assess the odds ratio of improvement of FEV1 after surgery in these groups. The same comparison was made for age range, comparing women aged 35-45 years, with women over 45 years.

OR in the first comparison (Class I obesity x class II obesity) was 0.66 (95% CI: 0.03 to 11.28) p = 0.77. In the second comparison (class II obesity x class III obesity), OR was 0.50 (95% CI: 0.03 to 6.68) p = 0.60 and in the third comparison (class I obesity x class III obesity), OR was 0.66 (95% CI: 0.03 to 11.28) p = 0.77. Regarding age and FEV1, OR was 0.75 (95% CI: 0.07 to 7.21) p = 0.80. There was no statistical significance in any of the comparisons.

The diagnosis of obstructive disorder is obtained with the ratio between the two measures. The result depends on the equation that is determined according to the patient. There were no changes in this variable after surgery.

As it can be seen in Table 5, except for morbidly obese (patients 10, 11 and 13), all other patients had FEV1/FVC in the preoperative phase within the expected theoretical values. In most patients, there was a decrease in FEV1/ FVC, resulting in an average reduction of 83.58 L to 82.30L (-1.28L).

Table 5 - Distribution of the theoretical reference and the estimates of the spirometric variable spirometric variable FEV1/FVC. Rio de Janeiro, RJ, Brazil, 2018 (continues)

Patient	Theoretical ref.	Preoperative estimate	1st postoperative estimate	2nd Postoperative estimate
1	83.11	88.22	80.93	81.45
2	84,85	85.83	85	84.89

3	82.6	86.54	86.15	85.19
4	81.96	81.79	86.03	85.77
5	80.18	81.04	78	76.29
6	85.23	87.04	87.45	88.17
7	85.03	81.25	79.95	81.46
8	81.08	81.36	80.07	78.93
9	87.81	80.89	80.37	80.3
10	84.82	81.34	82.03	83.15
11	85	84.39	83.21	88.59
12	83.55	78.37	82.33	77.03
13	83.69	73.72	72.42	78.26
14	81.25	82.28	83.59	82.83
Mean	83.58	82.43	81.96	82.30
SD	2.05	3.80	3.88	3.91

Women younger than 45 years were 1.2 times more likely to have a higher FEV1/ FVC ratio after surgery than women older than 45 years (OR 1.2 CI 95%: 0.13 to 11.05), though without statistical significance p = 0.87.

Only among women with class I obesity FEV1 / FVC improved compared to the expected theoretical value (81.25 L) and after surgery. In the first measurement, within 30 and 60 days after surgery, FEV1/FVC were 83.59 L and 82.83 L, respectively, an increase of 1.31 and 0.55 L, respectively.

The chance of women with class I obesity improving the FEV1/FVC ratio compared to women with class II obesity after surgery was 1.2 higher, but without statistical significance (OR 1.2 95% CI: 0, 13 to 11.05) p = 0.87.

In the comparison between women with class II obesity and women with class III obesity, OR was 0.33 (95% CI: 0.02 to 5.32), also without statistical significance (p = 0.43). In the comparison of women with class I obesity with women with class III obesity, an OR of 0.08 (95% CI: 0.003 to 1.94) was obtained, also without statistical significance (p = 0.12). All comparisons considered the first and third spirometric measurements (before surgery and 60 days after surgery).

Mean Forced Expiratory Flow (FEFx-y%) represents the mean forced expiratory flow of a segment obtained during FVC maneuver. FEF25-75% is the average forced expiratory flow in the middle range of FVC, i.e. between 25 and 75% of the FVC curve. Also, the mean forced expiratory flow (FEF 25-75%), indicating a parameter obtained during FVC maneuver.

As it was observed in the previous variables, surgery had a very slight impact on this variable too. However, six patients (50%) had a slight increase in FEF 25-75% compared to the expected theoretical value. Even among the morbidly obese patients, there was an improvement in the FEF 25-75% ratio. Of the three (25%) patients in this obesity class, there was no improvement in only one, precisely in the oldest patient, aged 48 years.

The OR of women under 45 years increases FEF 25% -75% after surgery. Compared to women older than 45 years, it was 0.08 (95% CI: 0.003 to 1.94), but without statistical significance (p = 0.12).

The OR of women with class I obesity compared to women with class II obesity after surgery, regarding the improvement of FEF 25% -75% was 0.20 (95% CI: 0.01 to 3.66) p = 0.27, without statistical significance.

In the comparison of women with class II obesity and women with class III obesity, OR was 0.60 (95% CI: 0.026 to 13.58) p = 0.74830. In the comparison of women with class I obesity and women with class III obesity, OR was 3.0 (95% CI: 0.15 to 59.89, also without statistical significance (p = 0.47). All comparisons considered the first and third spirometric measurements (before surgery and 60 days after surgery).

Regarding quality of life, all women said they experienced a significant change in their lives after surgery. They said that their self-esteem improved, that they felt more attractive, more enthusiastic, and reported reduced back pain. They have a physical condition more compatible with their age and are very satisfied with the outcome of the surgery.

DISCUSSION

Gigantomastia is a condition that affects young and adult women in all age groups, causing different types of harm and negative physical and psychosocial impacts, and these individuals suffer from musculoskeletal diseases and chronic pain as a result of breast enlargement[1].

In some cases of gigantomastia, the breast may grow 13-23 kg, leading to a significant physical and mental burden, which can dramatically decrease the quality of life of these women [1-2].

All the 14 women (100%) surgically treated in this study had gigantomastia and faced some type of physical and psychosocial distress. Surgery to remove excess breast tissue was indicated to provide relief in physical symptoms, especially those related to breathing.

However, the results obtained showed that surgical treatment of gigantomastia was not very effective for improving spirometry results, despite the fact that reports of decreased complaints of pain related to breast size were found in qualitative analysis. Perhaps better spirometry results could have been obtained with a longer follow-up period after surgery[4].

Even the patient's postoperative condition, considering the period in which postoperative spirometry was performed (within 30 days and 60 days after surgery), might have been a confounding factor that compromised the tests and had a slight impact on the improvement of respiratory function after reduction mammoplasty for gigantomastia, regarding the variables examined [5].

It should be noted that only two (13.33%) of the women who participated in this study had FVC values - the most important pulmonary function test to be considered in gigantomastia cases – higher than the expected values, which shows the extent to which the condition of these women, all obese, impacted the respiratory function.

Regarding MVV, the slight increase of 1.65 L/min after 60 days of surgery was not statistically significant, as found in other spirometric variables analyzed. Women with class I obesity seem to be the ones who can benefit most from FEV1/FVC with reduction mammoplasty for gigantomastia. Compared to women with class II obesity, the chance of improving this relationship was 1.2 higher, but without statistical significance (OR 1.2 95% CI: 0.13 to 11.05) p = 0.87.

Women younger than 45 years appear to be more likely to benefit from surgery, regarding improvement in FEV1/FVC ratio, compared to older women (OR 1.2 CI 95%: 0.13 to 11.05), though without statistical significance (p = 0.87).

Although BMI may be associated with postoperative complications[7], no complications that could be associated with BMI were observed in the sample, which suggests that reduction mammoplasty in the case of gigantomastia is an intervention that can be advantageous even in overweight and obese women.

The follow-up time and the intervals between postoperative spirometry should be considered limitations of the study that may impact the results found. Ideally, the follow-up period should be at least 6 months to 5 years. Unfortunately, this was not possible due to the short deadline for the completion of the study, which was developed during a postdoctoral internship.

CONCLUSION

Reduction mammoplasty in women with gigantomastia can improve the quality of life of these individuals, reducing the intensity of symptoms such as spinal pain and unwillingness to perform daily tasks, as reported by the women who participated in the study. There was no association between mammoplasty and improvement in the respiratory function because there was not statistical significance in all the comparisons made.

It should also be stressed that in the present study gigantomastia was a problem associated with negative impacts, regardless of whether the patients were obese or not and regardless of the degree of obesity, especially regarding quality of life and respiratory function.

REFERENCES

1. Chetty V, Ndobe E. Macromastia and gigantomastia: efficacy of the superomedial pedicle pattern for breast reduction surgery. S. Afr. j. surg. [Internet]. 2016 [acesso em 20 dez 2018]; 54(4): 46-50. Disponível em: http://www.scielo.org.za/scielo.php?script=sci_arttext&pid=S0038-23612016000400011&lng=en.

2. Andrade AC, Veiga DF, Aguiar IC, Juliano Y, Sabino-Neto M, Ferreira LM. Outcomes analysis of breast reduction in Brazilian women using the BREAST-Q® questionnaire: a cross-sectional controlled study. Clinics. [Internet]. 2018 [acesso em 20 dez 2018]; 73. Disponível em: http://dx.doi.org/10.6061/clinics/2018/e313.

3. Cunha MS, Santos LL, Viana AA, Bandeira NG, Lima FJA, Meneses JVL. Avaliação da função pulmonar em pacientes submetidas à mastoplastia redutora. Rev. Col. Bras. Cir. [Internet]. 2011 [acesso em 20 dez 2018]; 38(1): 11-14. Disponível em: http://dx.doi.org/10.1590/S0100-69912011000100003.

4. Machado JRS, Bilheri DFD, Tomasi LL, Steidl EMS, Mancopes R. Respiratory muscle training outcomes on swallowing biomechanics and respiratory function measures in normal subjects. Rev. CEFAC. [Internet]. 2018 [acesso em 20 dez 2018]; 20(6): 778-784. Disponível em: http://dx.doi.org/10.1590/1982-021620182069417.

5. Gutiérrez CM, Beroiza WT, Borzone TG, Caviedes SI, Céspedes GJ, Gutiérrez NM, et al. Espirometría: manual de procedimientos. Rev. chil. enferm. respir. [Internet]. 2018. [acesso em 20 dez 2018]; 34(3): 171-188. Disponível em: http://dx.doi.org/10.4067/s0717-73482018000300171.

6. Rocha MRS da, Souza S, Costa CM da, Merino DFB, Montebelo MIL, Rasera-Júnior I, et al. Airway positive pressure vs. exercises with inspiratory loading focused on pulmonary and respiratory muscular functions in the postoperative period of bariatric surgery. ABCD, arq. bras. cir. dig. [Internet]. 2018. [acesso em 20 dez 2018]; 31(2). Disponível em: http://dx.doi.org/10.1590/0102-672020180001e1363.

7. Parikh M, Chung M, Sheth S, McMacken M, Zahra T, Saunders JK, et al. Randomized pilot trial of bariatric surgery versus intensive medical weight management on diabetes remission in type 2 diabetic patients who do NOT meet NIH criteria for surgery and the role of soluble RAGE as a novel biomarker of

success. Ann Surg. [Internet]. 2014[acesso em 20 dez 2018]; 260(4):617-22. Disponível em: https://www.ncbi.nlm.nih.gov/pubmed/25203878.

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