Göteborg, 2023

On Massive Weight Loss and Body Contour

Breast measurements and excess skin, before and after bariatric surgery and in the normal population

Akademisk avhandling

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Avhandlingen baseras på följande delarbeten

I. **Ockell J**, Elander A, Staalesen T, Fagevik Olsén M. *Evaluation of excess skin in Swedish adults 18-59 years of age*.
J Plast Surg Hand Surg. 2017 Apr;51(2):99-104.

II. **Ockell J**, Biörserud C, Staalesen T, Fagevik Olsén M, Elander A. *Physical measurements, and patients´ perception of excess skin on the arms and thighs before and after bariatric surgery*. Eur. J. Plast. 2022 Aug;45(14):631-640

III. **Ockell J**, Biörserud C, Fagevik Olsén M, Elander A, Hansson E. *´Normal´ breast dimensions in obese women – reference values and the effect of weight loss.* Manuscript submitted.

IV. **Ockell J**, Biörserud C, Fagevik Olsén M, Elander A. *Evaluation of modified abdominoplasty for excess skin in post-bariatric surgery patients with residual obesity*. In manuscript

SAHLGRENSKA AKADEMIN
INSTITUTIONEN FÖR KLINISKA VETENSKAPER

GÖTEBORGS UNIVERSITET

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Breast measurements and excess skin, before and after bariatric surgery and in the normal population

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Abstract

Background/Aims: Bariatric surgery is an effective treatment for severe obesity. However, massive weight loss is associated with adverse effects, such as excess skin. The overall aim of this thesis was to investigate the effect of obesity and massive weight loss on excess skin on arms, thighs, breasts, and abdomen, compared to a normal population.

Materials and methods: The studies were conducted at Sahlgrenska University Hospital, Carlanderska Hospital, and Art Clinic, Gothenburg, Sweden. In **Paper I**, a questionnaire designed to evaluate excess skin, mainly in post-bariatric patients (the SESQ), was sent to 1408 individuals of a normal population to produce reference values, 530 responded. **Papers II-III** were prospectively designed to study excess skin on the extremities and breasts, before and after bariatric surgery, as well as breast measurements in women with obesity (n =200). A secondary aim was to find prediction models for post-operative discomfort from excess skin in arms, and thighs, and change in breast measurements after weight loss. In **Paper IV**, a modified technique for abdominoplasty on post-bariatric patients with residual obesity was evaluated regarding complications and patient satisfaction, to evaluate the safety and efficiency (n= 130).

Results: Paper I revealed that most responders do not report excess skin (78%). As with post-bariatric patients, the most common locations were the abdomen, arms, breasts/chest which also caused the most discomfort. In **Paper II**, most physical measurements on the extremities decreased after bariatric surgery. The patients, especially the women, however, perceived that the amount increased and resulted in more discomfort. The patients that likely will suffer the most from the excess skin can be predicted before bariatric surgery, by measuring the ptosis of the upper arms and thighs. In **Paper III**, the study resulted in reference values for breast measurements for women with obesity, thus adding to the previous standard of normality. Furthermore, a model for predicting the effect of weight loss on these measurements was described. In **Paper IV**, the results indicate that a modified abdominoplasty may be a safe and effective compromise for post-bariatric patients with residual obesity.

In summary: Most of the normal population does not report excess skin, adding to the validity of the SESQ. Most physical measurements of the arms and legs decrease after bariatric surgery, but many patients perceive that the amount and discomfort increase. It is possible to predict which patients will suffer most from excess skin on the extremities after bariatric surgery. Breast measurements are related to BMI, and it is possible to predict the changes in these measurements with a change in BMI. Finally, a modified abdominoplasty may be a feasible compromise for a safe and yet effective treatment for excess abdominal skin for post-bariatric patients with residual obesity.

Keywords: obesity, bariatric surgery, massive weight loss, breast hypertrophy, excess skin, SESQ, anthropometrics

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