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Reduction mammoplasty in adolescents and elderly: A ten year case series analyzing age related outcome with focus on safety and complications

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Summary *Introduction:* Reduction mammoplasty alleviates symptoms of macromastia in various ways. Current study results mainly identify perioperative risk factors for middle aged patients. We investigated a large series of consecutive breast reductions procedures to study whether patients' age at the time of operation is related to the postoperative outcome.
Methods: We retrospectively reviewed all non-oncologic breast reduction procedures at a single institution over a ten year time period, analyzing patients (age, BMI, comorbidities, medication) and operation specific characteristics' (pedicle, nipple-to-sternal notch, resection weight, complications) to identify risk factors related to patients' age at the time of operation. Patients were therefore divided into three groups, according to their age (group I ≤ 20 years, group II ≥60 years, group III 21 to 59 years).
Results: 539 patients were included in the study, in total 1065 reduction mammoplasties were performed over a ten year period. The overall complication rate was 33% (n = 175). Excluding minor complications, the total complication rate was 9.5% (n = 51). High body mass index (≥30 kg/m2) (p = 0.02) could be identified as a statistically significant risk factor for major and minor complications. Smoking (p = 0.09) and age ≥ 60 years (p = 0.08) showed a tendency toward higher risk for major and minor complications.

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Conclusion: This study shows an increased risk for complications when performing reduction mammoplasty in older patients, presumably due to the higher prevalence of comorbidities in this patient group as compared to young patients.

Introduction

The numerous advantages of reduction mammoplasty have been described extensively in the literature, i.e. relief of shoulder and back pain, cure of macerations in the inframammary fold, improvement of body image and self esteem.[1–4] In addition patients may be released from psychological and somatic burdens directly derived from breast hyperplasia, independent of actual resection weights and patients' body weight.[1] Notably, the typical female patient who undergoes reduction mammoplasty is middle aged, white Caucasian and obese.[2–6]

Risk factors in reduction mammoplasty procedures of middle-aged patients have been studied extensively.[2–6] This study focuses on the investigation of risk factors of the steadily increasing part of population 60 years and older, as well as the population of adolescents, who undergo reduction mammoplasty.[7]

The proportion of the elderly (defined as 60 years of age or older) is increasing in the western world.[8] In Germany, the percentage of people 60 years or older is expected to increase from 28% in 2015 to 36% in 2030.[7] Plastic surgeons face a population of elderly who have high demands and expectations on their last decades in life.

Adolescents defined as people 20 years or younger[9] represent the so-called generation Y. They are known to be more body-conscious than previous generations.[10] The number of plastic surgery procedures performed in that group has increased recently.[11]

The goal of the current study with 1065 reduction mammoplasties is to analyze whether there is a statistically significant difference in perioperative risk for complications between adolescents and elderly patients when performing reduction mammoplasty. Based on our study results and literature research, we discuss to what extent those two patient populations profit from reduction mammoplasty and to what extent special awareness is recommended when providing the indication for reduction mammoplasty on any patient.

Patients and methods

In this retrospective study at the Department of Plastic & Aesthetic, Reconstructive & Hand Surgery, AGAPLESION Markus Hospital, Johann Wolfgang von Goethe University, Frankfurt, Germany, the charts of n = 539 female patients with n = 1065 reduction mammoplasties between 2005 and 2015 were reviewed retrospectively. Ethics approval for the study was obtained from the ethical committee of the federal states' Medical Association. The methods of the study adhered to the STROBE guidelines. The details of all female patients who underwent a reduction mammoplasty for non-oncological indications and in whom complete records were available, were included in the study. Reduction mammoplasty is defined as a shaping operation on the breast including correction of breast ptosis requiring removal of excess skin and glandular and adipose breast tissue, irrespective of the amount of removed breast tissue. This practice is based on the standard protocol of our institution, which determines that all removed breast tissue is sent for histopathologic evaluation. When skin only is removed for correction of a breast ptosis, the skin is not sent to pathology. Age, site of reduction mammoplasty, comorbidities, pedicle, resection weight, nipple to sternal notch, complications, complication management and scar quality and time of follow up were recorded (see Tables 1 and 2). Oncological patients were excluded from the study to prevent a bias in patients who were previously treated with radiotherapy and/ or oncoplastic breast surgery.

We examined the influence of patient age on the postoperative complication rate. For this, we divided the patients into three groups. Group I included all patients 20 years or younger, group II included all patients 60 years or older, patients aged from 21 to 59 years served as control group (group III).

According to our institutional standard protocol, a multistaged informed consent is conducted with every patient. Breast reduction surgery was performed either by a superior pedicle according to Höhler/ Pitanguy,[12,13] or the inferior pedicle as described previously by Robbins.[14] Markings are done preoperatively on the patient in a standing position. In the operation theatre, patients receive single-shot antibiotics (1g cephazoline i.v., or Clindamycin 600 mg i.v. in case of allergies to cephazoline) 30 minutes prior to surgery. Operation starts with injection of diluted epinephrine solution (1:400.000) on the incision sites, avoiding the nipple-areola-complex. Resection is always done on both breasts by the same surgeon. Drains are used routinely.

Patients' characteristics of the three groups are shown in Table 1. Operation specific characteristics are shown in Table 2. Simply put group II had more voluminous breasts with regards to resection weight, sternal notch-to-nipple distance and body mass index (BMI) than group I (Figure 1).

Complications were broadly defined with the intention to include minor complications as well. Each minor dehiscence of wound edges was documented, as well as fat necrosis and minor seromas. All complications requiring operative revision were defined as major complications. These include: haematoma, infection, (partial) nipple-areola-complex necrosis, seroma and delayed wound closure. Delayed wound healing was defined as an open wound more than three weeks post operation. Table 3 shows an overview of minor and major complications in the total patient population (Table 3).

Statistical analysis was performed using the software BiAS (v 11.3 (epsilon)) for windows. $P < 0,05$ was defined as statistically significant. The significance of the differences was tested with logistic regression. A p value lower 0.05 was defined as statistical significant. A p value between 0.05 and