Primary reconstruction with implants in breast cancer
Aspects of oncological safety and aesthetic outcome

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ABSTRACT

Introduction: Despite the introduction of breast conserving surgery, in Sweden mastectomy is still annually recommended to 40–50 % (about 3000) of women with breast cancer. National guidelines state that, in the absence of contraindications, these women should be offered breast reconstruction. Immediate reconstruction has many advantages compared with delayed reconstruction but questions have been raised about the method’s oncological safety and which method is preferable.

Aim: The first aim was to clarify whether it is sufficiently safe oncologically to offer breast cancer patients primary reconstruction with implants. The next aim was to evaluate different techniques for objective evaluation of breast volume and shape. The third and final aim was to compare two different expander implants regarding the number of operations needed to achieve patient satisfaction, and to measure and compare their cosmetic outcomes objectively and subjectively.

Patients and methods: In a long-term follow-up (median 11.5 years) cohort study, 300 representative invasive breast cancer patients operated with primary reconstruction with implants were compared to 300 matched controls operated with mastectomy alone (Paper I). In a pilot study, 25 patients were operated with a new crescent-shaped expander implant and the result was compared with those seen after surgery with traditional expander implants (Paper II). Twelve patients were included, 6 preoperatively and 6 postoperatively, in a methodological analysis comparing five different methods for evaluating the volume and shape of the breast (Paper III). The final study (Paper IV) was a prospective trial evaluating 40 patients, randomised to either a round one-stage permanent expander implant (n=20) or a crescent two-stage implant procedure (n=20). The number of operations needed and the patients’ satisfaction were evaluated and compared by two panels, one of experts and one of lay people. Objective measurement methods for evaluation of volume and contour differences between the breasts were tested. Quality of life was evaluated with the SF-36 health declaration.

Results: There were no significant differences between mastectomy with and without primary reconstruction regarding incidence of local and/or regional recurrences, or time to start of oncological treatment (Paper I). The outcome with the crescent-shaped expander gave an impression of a more naturally shaped breast (Paper II), which was confirmed in the randomized study. Of the patients operated with the one-stage procedure, 70 % had revision surgery. No major differences were seen between the groups regarding quality of life (Paper IV). Volume was estimated significantly better with traditional, simpler methods like plastic casts compared to modern technology like Magnetic Resonance Imaging and three-dimensional techniques, which tended to overestimate volume. Shape could be measured objectively with a two-dimensional technique based on three-dimensional laser scanning (Paper III).

Conclusion: The cohort study with a well-matched control group demonstrates that immediate breast reconstruction with implants can be offered and performed on patients with invasive breast cancer without any negative effect on oncological safety. The two-stage crescent method gave better aesthetic results than the one-stage procedure, which in a majority of the patients failed to be a one-stage method. An easy and simple method like plastic casts gave more accurate measurements of breast volume than advanced techniques. Laser scanning is a new method for objective measurement of shape and symmetry.