Editorial

Oncological safety of lipofilling after breast conserving surgery

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We read with high interest the publication by Cohen *et al.* entitled "*Lipofilling after breast conserving surgery: a comprehensive literature review investigating its oncologic safety*" (1). The authors performed an excellent work reviewing the current literature on this controversial topic of locoregional cancer recurrence in patients that underwent lipofilling following breast conserving surgery. They concluded that there are not enough data to reach a consensus at the moment.

Lipofilling is broadly accepted for breast reshaping after breast cancer surgery and can provide satisfactory cosmetic results (2). However, some plastic surgeons are reluctant to offer this procedure since its long-term oncological safety has still not been clearly established.

Over the last years, concerns regarding the oncological safety of lipofilling have developed from experimental animal studies showing that adipose-derived stem cells can promote proliferation of residual cancer cells (3,4). Nonetheless, these data cannot be extrapolated to humans. In 2009, the American Society of Plastic Surgeons issued the Fat Grafting Task Force to assess the safety and efficacy of autologous fat grafting (5). Since then, more studies have been done without reaching a consensus. Short follow-up, difference in timing of fat injection and ambiguous definition of cancer status are some of the design problems encountered in these studies.

Lipofilling of the breast can be a traumatic procedure that can trigger an inflammatory and remodeling process. Moreover, some techniques that include enrichment with adipose-derived stem cells could have a potential increased oncogenic risk. In addition, time to follow-up imaging should be taken into account to avoid misinterpreting fat necrosis for tumor recurrence (6).

Based on our experience, several women at our institution decide to undergo breast conservation therapy, which includes lumpectomy followed by radiation. In our practice, during lumpectomy, we try to perform a simultaneous *oncoplastic reshaping* of the breast in order to avoid any potential contour deformity during closure. This is done with the purpose of reducing any dead space, improve the contour and assemble the natural appearance of the contralateral breast. In certain circumstances, when a patient with large breasts requires a lumpectomy and at the same time wants to proceed with a breast reduction, it is very common to offer an *oncoplastic breast reduction* for both breasts. However, when we have attempted both types of surgical interventions, oncoplastic reshaping or oncoplastic breast reduction, and we still encounter a breast shape defect, a formal discussion with the patient is done to explain the possibility of fat grafting to resurface and improve the contour of the breast. Some studies have demonstrated that with adequate radiologic follow-up, new lesions can be detected and differentiated from benign findings such as fat necrosis (6-9). However, this is a one-to-one patient and surgeon discussion, which will require long-term follow-up, adequate documentations of clinical visits and potential further biopsies if necessary.

Further multicenter prospective randomized studies with a large cohort and matched controlled group are necessary to determine decision making supported by evidence-based

medicine. Additionally, standardized protocols for timing of fat injection as well as harvesting methods should be developed.

In conclusion, a strong debate remains upon the safety and oncological risk of lipofilling after breast conserving surgery. We support that well-designed, adequately powered prospective studies looking at molecular levels are still needed. In addition, until we have more data from studies assigned with a higher level of evidence, it is important that patient and surgeons discuss the potential risks and benefits of lipofilling and work together to come into agreement with a plan that can cover the patients' needs while ensuring their safety.

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Footnote

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