Editorial

Editorial: risk factors for chest wall depression in breast reconstruction

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We read with great interest the manuscript of Kim *et al.* entitled "*Risk factors for chest wall depression after implant insertion for breast reconstruction: a retrospective quantitative study*" (1). This is a retrospective study aimed at measuring the chest wall deformity (CWD) after implant insertion and identifying associated risk factors. The authors' results suggest that implant reconstruction causes CWD, which is associated with capsular contracture and patient age.

In 2015, Cherubino *et al.* reported that CWD were caused by the use of tissue expanders but found no specific risk factors to predict it (2). However, the study of Kim *et al.* did find the features mentioned that increase CWD.

Like any other solid, living tissues are subject to the fundamentals of the mechanics of materials. Vegas *et al.* shown how the long-term results in breast augmentation and augmentation-mastopexy could be explained by the resistance of the tissue material (3).

They focused on the resistance of each anatomical tissue, putting the most important point on the superficial fascia of the breast, which is the second strongest anatomical structure after the skin on breast surface (4,5). In this sense, these studies lay the groundwork for capsular contracture to cause CWD, as confirmed by Kim *et al.* (1).

This has taught us that the stiffness properties of the surrounding tissues are of utmost importance when planning our surgery and the final aesthetic and functional result (6). In this way Kuramoto *et al.* reported a case of a large CWD after the insertion of an expander in a patient with the sole history of rib harvesting for microtia treatment (7). In this rare case, lack of mechanical support did cause the chest wall deformity and the deficiency in breast expansion.

CWD is an important clinical consequence of heterologous breast reconstruction which must be taken into account because it alters the preoperative reconstructive measures, modifying the cosmetic result. Autologous fat grafting is also an important tool to improve the tissue characteristics and implant coverage, but it is not a risk-free surgery (8,9). This also serves as a complementary procedure to improve capsular contracture and underexpansion expected on CWD.

Currently, there is no clinical evidence that this CWD has negative effects on respiratory physiology. Since the grade of deformity is minor (a difference of 1–2 cms maximum) and the total volume of depression should not exceed 100 cc, it seems reasonable that this deformity has no relevant consequences in dynamic mechanics. Increased chest wall stiffness and changes in vital capacity only occur when large defects take place in the thorax, such as sternal or multiple ribs resections (10,11). For this reason, it lead us to think that the CWD of breast reconstruction may not have a functional impairment.

We think that CWD implies a cosmetic relevant alteration that must be taken into account for future

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surgeries, thinking of oversizing the implants or changing the initial reconstructive plan. A proper evaluation of the learned risk factors, would help surgeons predict the final outcome.

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