

Oncology/Radiotherapy

Radiotherapy and breast reconstruction after surgical treatment of breast cancer

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Considering the psychosocial benefits obtained with immediate breast reconstruction (IBR)¹, this procedure has been increasingly applied in Brazil, mainly in the immediate surgical context. The two main modalities of IBR used are the ones that employ autogenous tissue or artificial breast implants or expanders.

There is no consensus regarding the ideal time to carry out the IBR within the multimodal context of oncological treatment, especially when there is indication of radiotherapy (RT) after the mastectomy – which depends on the surgical specimen – and also considering the lack of randomized studies comparing RT pre- and post-plasty.

There is a rationale followed by many large American centers, to choose RT before IBR for two main reasons:

After the procedure, tissue that does not belong to the breast bed (muscle flaps, skin and prosthesis) would be irradiated without need.

The IBR carried out before the RT can lead to inadequate planning, either with excessive irradiation of adjacent organs, or insufficient irradiation of the surgical bed and/or lymph node draining.

Other obstacles to be faced are related to the size of breast reconstruction that is carried out, which very often modifies the patient's anatomy due to the large-volume plasty and the use of expanders with metallic components within the irradiation field, which can result in regions of under and overdose², clinically translating as a higher chance of developing complications after the RT. Moreover, breast medialization, symmastia and flat chest naturally impair radiotherapy planning. On the other hand, in addition to the aforementioned psychological gain with the immediate breast reconstruction, another justification by those supporting this technique is that RT can compromise the skin and subjacent tissue quality, thus impairing the plasty, consequently affecting the cosmetic results³.

In this context, complications can arise after IBR fol-

lowed by RT. These are closely associated with the plastic surgery technique that was employed for the reconstruction. In cases where prostheses are used, there is a higher incidence of fibrosis in the graft/tissue interface, capsular contracture and inadequate healing of the skin. In cases that use autologous tissue, an increase in the rate of necrosis, fibrosis, atrophy and flap contracture can be observed.

A recent prospective, multicentric, non-randomized study aimed at determining the factors responsible for reconstruction failure and capsular contracture in mastectomized patients submitted to immediate plastic surgery with expansion and graft and subsequent RT. A total of 141 patients were assessed, with a mean follow-up of 37 months. According to Baker's classification, capsular contracture grade 0, 1 or 2 occurred in 67.5% of the cases; grade 3 or 4, in 32.5%. At the univariate analysis, the factors associated with Baker's classification grade 3 and 4 were adjuvant treatment with hormone therapy ($p = 0.02$), the mastologist ($p = 0.04$) and smoking ($p = 0.05$). The only significant factor in the multivariate analysis was the mastologist ($p = 0.009$). Three factors were associated with immediate surgical failure at the multiple logistic regression analysis: tumor T3 and T4 ($p = 0.0005$), smoking ($p = 0.001$), positive axillary lymph node ($p = 0.004$). Patients with none, 1, 2 or 3 of these factors have an estimated failure probability of 7; 15.7; 48.3 and 100%, respectively. The authors conclude that immediate reconstruction (with tissue expansion followed by breast implant) can be considered and three factors can be used to select patients that can benefit the most from this surgical technique⁴.

Unquestionably, the best way to manage this situation is to use a multidisciplinary approach, with the active participation of the radiotherapist, mastologist, plastic surgeon and clinical oncologist to achieve a consensus regarding the individualized and optimized treatment for each case.

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