

Considerations for performing immediate breast reconstruction during the COVID-19 pandemic

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The appearance of coronavirus disease 2019 (COVID-19) has provoked a global public health emergency, spreading to more than 150 countries,¹ and Italy has been particularly affected.

The COVID-19 pandemic has represented a contemporary "sui generis" challenge for healthy system requiring a sudden reorganization of hospital structures and resettlement of therapeutic algorithms. The directives of the Italian Ministry of Health indicated to postpone all nonurgent surgical procedures and outpatient services, performing only urgent interventions or procedures for oncological pathologies. On March, the American College of Surgeons published guidelines for triage of nonemergent surgical intervention during the coronavirus pandemic, based on the Elective Surgery Acuity Scale (ESAS).² The ESAS considers low-risk cancer as tier 2a (deferrable whenever possible) and other cancers as tier 3 a and so not deferrable.² Cancer patients have an elevated risk for acquiring COVID-19 and subsequent complications because of their immunodepression, poor functional status, and frequent hospital visits and admissions.³ Moreover, Liang et al reported that oncologic patients who underwent surgery in the 30 days before contracting COVID-19 in China developed more frequently a severe form of disease compared to those who did not underwent surgery.⁴

Breast carcinoma is the most frequent malignancy among women, and its modern surgical treatment nowadays includes breast reconstruction. Given the rapid evolution of the current situation, very few data of the different breast units about the present attitude toward breast cancer management are available.⁵ Breast surgeons seem to agree on the fact that delaying elective surgical procedures may be more appropriate for select cases such as clinical stage I or stage II in which 60-day delays in surgical intervention were not

associated with worse oncological outcomes.^{6,7} To date, no guidelines on breast reconstructive surgery have been published. The aim of this article is to report our decision-making attitude during COVID-19 emergency in the field of breast reconstruction.

In line with government directives, our institution limits elective surgery to oncologic procedures, and the reconstructive time is considered an integrated part of the treatment. All admitted patients undergo a pharyngeal swab at time of hospitalization.

Our breast unit delays surgical treatment for low-grade tumors and ductal carcinoma in situ, while other breast cancer patients are offered lumpectomy or mastectomy as needed. Patients are evaluated case by case by a multidisciplinary team composed by breast surgeon, oncologist, radiologist and plastic surgeon to minimize the exposure to COVID-19 without compromising oncological safety and offering the best possible aesthetic outcome. The plastic surgeon purpose should be to achieve a satisfactory aesthetic result by adopting the easiest technique, limiting as much as possible operating times, risk of postoperative complication, duration of hospitalization, and outpatient visits. Another crucial point is to inform the patient about the hypothetic increased risk to contract COVID-19 derived from an expansion of operative time and an increase in outpatient visits.

Practically, free flap reconstruction has been suspended and local flaps are rarely used whenever immediate autologous reconstruction is absolutely needed. Indeed, we think that in case of mastectomy after previous breast conserving surgery and radiation therapy, a delayed autologous breast reconstruction is the safer option.

At this time, prepectoral or subpectoral implant-based reconstruction (IBR) represents the most simple and effective choice. In all

mastectomy procedures, we performed an intraoperative mastectomy skin flap perfusion assessment through indocyanine green angiography. This operation takes between 5 and 7 minutes and allows to guide the decision-making process among subpectoral or prepectoral IBR minimizing the risk of postoperative complications.

1 | UNILATERAL NIPPLE SPARING MASTECTOMY (NSM)

In case of unilateral NSM, a prepectoral direct to implant (DTI) or a subpectoral two-stage IBR is performed.

In detail, in case of thick (>0.8 mm) and well-perfused mastectomy flap, we choose a prepectoral IBR with polyurethane-covered silicone implant without acellular dermal matrix (ADM)⁸ (Figure 1). The rationale of the use of polyurethane-covered implant instead of ADM-assisted implant⁹ is due to polyurethane implant characteristics which simplify the healing process in case of IBR, thus making this procedure particularly suitable in current times. Indeed, in our experience, polyurethane-covered implants accomplish many goals: easiness of surgery with reduction of operative times, immediate implant tissue adhesion which facilitates healing, reduced onset of seroma and lowers drainage output. Nevertheless, polyurethane-covered IBR requires a learning curve for implant positioning in order to be able to use the characteristics of the adherent surface in patient's favor. For example, in case of NSM, the adherent surface of polyurethane consents to place the mastectomy flap in order to choose the desired nipple areola complex (NAC) position. By adjusting the NAC position with this maneuver, it is possible to lower the need of contralateral surgery. Thus, in case of ptosis grade 1, contralateral surgery can be avoided. In case of medium size and ptosis grade 2, a contralateral mastopexy may be indicated. The average operative time in case of unilateral polyurethane-covered IBR ranged from 45 to 65 minutes depending on the need to perform a contralateral mastopexy. Patients are discharged 36 hours after surgery and drainage removal occurs between the 6th and the 8th postoperative day requiring only 1 outpatient visit. In short, in our hands the adoption of polyurethane-covered IBR keeps immediate postmastectomy reconstructions simpler thus limiting patient risk of exposure to COVID-19.

A thin (<0.8 mm) mastectomy flap, slightly perfused to the angiographic intraoperative control represents the second possible scenario. In this case, we choose a subpectoral two-stage IBR to simplify surgery, avoid contralateral breast surgery, and diminish operative time. Operative time in case of unilateral subpectoral reconstruction with tissue expander ranged between 40 and 55 minutes. Patients are discharged 36 hours after surgery and drainage removal occurs between the 12th and the 14th postoperative day requiring at least 2 outpatient visits.

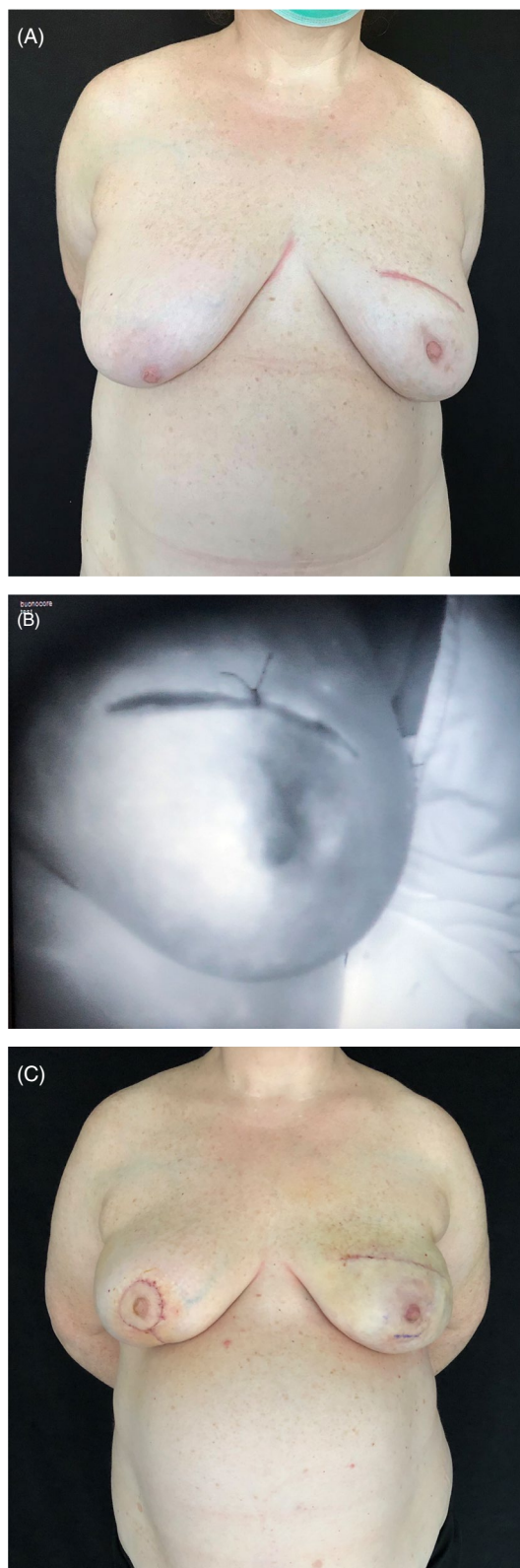


FIGURE 1 Patient underwent unilateral left NSM + prepectoral IBR with polyurethane-covered implant (Polytech 30746, 420 cc) and contralateral mastopexy. A, Preoperative. B, Intraoperative (ICG). C, Postoperative (28th postoperative day) [Color figure can be viewed at wileyonlinelibrary.com]

2 | BILATERAL NSM

All surgeries are performed in double team to minimize operative times. When mastectomy flaps are thin (<0.8 cm) and with suboptimal perfusion, a subpectoral DTI with microtextured anatomical implants or two-stage IBR is performed depending on cases.

A prepectoral DTI breast reconstruction using polyurethane-covered implant is performed if mastectomy flap thickness is >0.8 cm and shows good perfusion. Operative time ranged between 60 and 75 minutes and 50 and 60 minutes respectively in case of subpectoral or prepectoral bilateral IBR. Patients are discharged 36 hours after surgery. Drainages removal and outpatient visits are equal to those of unilateral IBR.

3 | SKIN SPARING MASTECTOMY (SSM)

SSM patients undergo two-stage IBR. In case of small breast, a subpectoral two-stage IBR is performed. In case of medium-large breast size with any ptosis degree, the mastectomy flap evaluation guides our choice. A thick (>0.8 mm) and well-perfused flap allows a DTI polyurethane-covered IBR, while patients presenting a thin (<0.8 mm) and slightly perfused flap are addressed to a subpectoral two-stage reconstruction.

4 | SKIN REDUCING MASTECTOMY (SRM)

SRM patients undergo a DTI prepectoral polyurethane-covered IBR. In these cases, we systematically harvest an inferior dermo-adipose flap to cover most of the implant.

In conclusion, we briefly reported our decision-making attitude for breast reconstruction during COVID-19 emergency with the aim to share our experience in this critical moment.

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