

DR. THEODORE A KUNG (Orcid ID : 0000-0002-0642-5558)

Article type : Commentary

Guidelines for breast reconstruction during the COVID-19 pandemic: are we considering enough evidence?

Nishant Ganesh Kumar M.D.,<sup>a</sup> Theodore A. Kung M.D.<sup>a</sup>

<sup>a</sup> Department of Surgery, Section of Plastic Surgery, University of Michigan, Ann Arbor, Michigan

**CORRESPONDING AUTHOR:**

Theodore A. Kung, MD

Assistant Professor of Surgery

Section of Plastic and Reconstructive Surgery

1500 E. Medical Center Drive

2130 Taubman Center

Ann Arbor, MI 48109-5231

Office: 734.647.3842

Email: [thekung@med.umich.edu](mailto:thekung@med.umich.edu)

This is the author manuscript accepted for publication and has undergone full peer review but has not been through the copyediting, typesetting, pagination and proofreading process, which may lead to differences between this version and the [Version of Record](#). Please cite this article as [doi: 10.1111/TBJ.14015](https://doi.org/10.1111/TBJ.14015)

This article is protected by copyright. All rights reserved

In light of the COVID-19 pandemic, on March 24<sup>th</sup> the American Society of Plastic Surgeons (ASPS) issued guidelines on how to triage breast reconstruction.<sup>1</sup> At the time of this commentary, the current guidelines from the ASPS recommend “*caution and [to] delay reconstruction,*” and that because it is elective, “*immediate autologous flap reconstruction for breast reconstruction...should be delayed*”. It also recommends that “*while erring on the side of delayed reconstruction, immediate tissue expander or direct to implant reconstruction can be evaluated on a case-by-case basis.*” These guidelines echo statements issued by the American College of Surgeons (ACS) that “*autologous breast reconstruction should be deferred,*” and by the Society of Surgical Oncology (SSO) that breast reconstruction “*should enable recovery as an outpatient*”<sup>2,3</sup>

In settings where reconstruction is not feasible because of a lack of personal protective equipment, reduction in available operating rooms, and limitations in staffing, it is certainly appropriate to delay breast reconstruction. However, when possible, immediate reconstruction should be performed because it has been shown to result in better psychosocial outcomes compared to delayed reconstruction.<sup>4</sup> Immediate reconstruction also avoids the perioperative risks of general anesthesia associated with a second operation and additional out-of-pocket expenses that can occur from an insurance standpoint when breast reconstruction is delayed. From a plastic surgery perspective, immediate reconstruction enables maximal preservation of the native skin envelope and optimizes breast shape and symmetry.

Upon cursory consideration, restriction of immediate autologous reconstruction in favor of delayed autologous reconstruction or immediate implant-based reconstruction during the pandemic may seem prudent. With the goal of minimizing the duration of operative room times to conserve resources, implant-based reconstruction adds less time to the mastectomy operation and utilizes fewer intraoperative resources compared to autologous reconstruction. In contrast, autologous reconstruction requires specialized instruments, equipment, and experienced team members with microsurgery expertise to facilitate efficient operative flow. Furthermore, the typical postoperative inpatient stay for autologous reconstruction is approximately 3 nights compared to implant-based reconstruction which can often be performed on an outpatient basis. Autologous reconstruction also mandates dedicated nursing staff to monitor the free flap during the hospital stay. These added resources, time, and labor requirements are balanced by the fact

that autologous reconstruction results in higher patient satisfaction and psychosocial wellbeing compared to implant-based reconstruction.<sup>5</sup>

As many hospital systems and multidisciplinary breast care teams rely on national guidelines to direct the practice of breast reconstruction during the pandemic, it is important to consider the immediate and long-term implications of broadly recommending implant-based breast reconstruction in the setting of COVID-19. In a recent study of over 12,000 women, implant-based reconstruction was associated with a greater number of hospital admissions and office visits compared to autologous reconstructions over a 2-year period.<sup>6</sup> While the mean inpatient hospital stay for autologous reconstruction was 3.6 days compared to 1.9 for implant-based reconstruction, subsequent inpatient admissions over a 2-year period was actually about 15% greater in the implant group compared to the autologous group. Moreover, a relatively common indication for hospital admission after implant-based reconstruction is postoperative infection, which can involve several days of receiving intravenous antibiotics. If this is unsuccessful, an operation to remove and potentially exchange the implant is recommended. Particularly in this context, the current breast reconstruction guidelines, which assume that implant-based reconstruction is a far less risky and complicated option compared to autologous reconstruction, does not necessarily reflect a truly evidence-based comparison of breast reconstruction options. Furthermore, in relation to the conservation initiatives resulting from COVID-19, it may be a misconception that implant-based reconstruction is associated with substantially less resource and personnel utilization compared to autologous reconstruction.

Another implication of implant-based reconstruction, specifically tissue expander reconstruction, is the need for serial filling that is typically performed on a weekly basis by clinic staff. In their study, Lemaine et al discovered that implant-based reconstruction was associated with more office visits compared to autologous reconstruction.<sup>6</sup> This frequent need for travel is concerning given the importance of social distancing in preventing the spread of the coronavirus. For example, a recent study from the Harvard School of Public Health found a link between infection rates in neighborhoods in New York City with a high prevalence of the COVID-19 disease, and the number of trips taken by its residents into and out of the neighborhood.<sup>7</sup> From a public health standpoint, this has significant implications when performing tissue expander reconstruction because women who need to undergo weekly expansions will interact with at least one healthcare provider each time. For women commuting, and for family members commuting

with patients, these multiple trips increase the risk of contracting COVID-19. In addition, for women with tissue expanders who cannot commute because of various restrictions, the process of reconstruction is stalled for an indeterminate period of time, which may result in unnecessary psychological harm.

We believe that both implant-based and autologous breast reconstruction are important for women after mastectomy and that the ultimate decision regarding which approach to pursue should be made between the patient and plastic surgeon. In the setting of the COVID-19 pandemic, it is the plastic surgeon's responsibility to provide breast reconstruction without placing undue burden on the healthcare system or risk to the patient. While the current national guidelines are helpful, they appear to unfairly restrict autologous reconstruction without bearing in mind the implications of potential complications associated with implant-based reconstruction, such as hospital readmissions for infection, additional surgery, and in-person clinic visits.

Organizations such as the ASPS, ACS, and SSO provided timely guidance during the onset of COVID-19, but with the pandemic entering into a new phase, there is a need to issue updated guidelines that reflect the available evidence supporting the importance of breast reconstruction while simultaneously promoting resource conservation and safe public health practices that minimize the risk of coronavirus transmission. Without these important changes to the national recommendations, some patients who would otherwise choose autologous reconstruction will face the difficult decision and consequences of either forgoing any immediate reconstruction after mastectomy or reluctantly undergoing implant-based reconstruction.

## REFERENCES

1. Committee APE. ASPS Statement on Breast Reconstruction in the face of COVID-19 Pandemic. 2020; <https://www.plasticsurgery.org/documents/medical-professionals/COVID19-Breast-Reconstruction-Statement.pdf>. Accessed May 14, 2020.
2. Consortium TC-PBC. COVID-19 Pandemic Breast Cancer Consortium's Considerations for Re-entry. 2020; [https://www.surgonc.org/wp-content/uploads/2020/05/COVID-BC-Reentry-Paper-May15\\_0100P\\_Clean.pdf](https://www.surgonc.org/wp-content/uploads/2020/05/COVID-BC-Reentry-Paper-May15_0100P_Clean.pdf). Accessed May 15, 2020.
3. Surgeons ACo. COVID-19 Guidelines for Triage of Breast Cancer Patients. 2020; <https://www.facs.org/covid-19/clinical-guidance/elective-case/breast-cancer>. Accessed May 15, 2020.

4. Al-Ghazal SK, Sully L, Fallowfield L, Blamey RW. The psychological impact of immediate rather than delayed breast reconstruction. *Eur J Surg Oncol*. 2000;26(1):17-19.
5. Toyserkani NM, Jorgensen MG, Tabatabaeifar S, Damsgaard T, Sorensen JA. Autologous versus implant-based breast reconstruction: A systematic review and meta-analysis of Breast-Q patient-reported outcomes. *J Plast Reconstr Aesthet Surg*. 2020;73(2):278-285.
6. Lemaine V, Schilz SR, Van Houten HK, Zhu L, Habermann EB, Boughey JC. Autologous Breast Reconstruction versus Implant-Based Reconstruction: How Do Long-Term Costs and Health Care Use Compare? *Plast Reconstr Surg*. 2020;145(2):303-311.
7. Kissler SM, Kishore, N., Prabhu, M., Goffman, D., Beilin, Y., et al. Reductions in commuting mobility predict geographic differences in SARS-CoV-2 prevalence in New York City. 2020; <https://dash.harvard.edu/handle/1/42665370>. Accessed May 16, 2020.