Commentary on: Microbiologic Safety of the Transareolar Approach in Breast Augmentation

Sophie Bartsich, MD, FACS

The authors of this article systematically evaluate the bacteria present in the surgical field of a breast augmentation procedure in an attempt to dispel the notion that periareolar augmentation mammoplasty yields a higher rate of capsular contracture than do other approaches. The goal is to refute the notion that the breast harbors endogenous bacteria, which are here strictly defined beyond the scope of their original description. The concept of endogenous breast bacteria defines bacterial colonies present in significant concentrations and residing within the breast tissue, as opposed to being skin contaminants in the field. As originally described, these bacteria are present in the presumed-sterile surgical field (after skin sterilization) and are consistently identified across sample subjects. Although their exact location has yet to be proven, it is reasonable to imagine that they reside in the ducts, paths that are in fact exposed to the outside world in a similar fashion to the gastrointestinal and urogenital tracts. Even if the ducts harbor similar bacteria to that found on the skin, if that flora is remote from routine skin preparation, then the field remains contaminated, especially once the breast tissue itself is manipulated.

In order to prove that these bacteria are not present in significant quantities in their field, the authors perform tissue swabs of the skin, the breast tissue, and the ducts. While swab cultures of chronic open wounds are useful as adjunctive and are a more available means of speciating an infection, they are not as effective as tissue cultures in describing deep peri-prosthetic infections. The false-negative rates of surface swabs, regardless of the tissue involved, are not equivalent to quantitative tissue cultures. Tissue specimens may yield different results if able to catch naturally adherent organisms attached to the duct walls. Furthermore, low bacterial concentrations are unlikely to translate into clinical relevancy, given that they are likely easily managed by an otherwise healthy patient’s immune system. It would be useful to understand at what concentration threshold the swab would reveal what the tissue culture can find.

The bulk of information available in the literature on the phenomenon of capsular contracture originates from the United States, where perioperative practices generally involve a betadine or chlorhexidine skin preparation and Cefazolin antibiotic prophylaxis. The authors of this article describe a combination of ethanol and iodine tincture for skin preparation, as well as a preoperative dose of Cefuroxime prior to incision. This second generation cephalosporin has been shown to be more inhibitory to Staphylococcus epidermidis than Cefazolin and to limit bacterial adherence to prostheses. Perhaps this is why the authors chose that medication in particular; and their subsequent results may in fact demonstrate significant decolonization of the breast parenchyma with this perioperative approach.

With regard to nipple cultures, the authors demonstrate that the culture positivity rate of the sealed nipples is significantly higher than that of the breast parenchyma or ductal tissue. This supports the notion that contaminants near the nipple are more likely, in fact, endogenous to the breast itself rather than originating on the skin, as they are otherwise isolated from the surgical environment. The likely source of these bacteria are, in fact, the ducts, which collectively converge at the nipple, and are at the very least challenging to isolate via swab culture. Breast ducts are known to be the cause of various illnesses ranging from mastitis to ectasia, and they also represent the source of the...
vast majority of breast cancers. They are most active during pregnancy and lactation, and a link has been established in the literature between pregnancy and capsular contracture. While the definitive presence of endogenous bacteria in the breast ducts has yet to be demonstrated, the nipple has clearly been shown to be a player in the development of capsular pathology. Extensive breast-tissue manipulation has also been proven to correlate with higher contracture rates, as in the instance of breast reconstruction after mastectomy. In these cases, spillage of ductal contents on the surgical field far exceeds that during a breast augmentation regardless of the approach used; and this may at least in part explain the higher rate of capsule-related complications in these procedures.

In order to refute the effect of breast bacteria on implant-related morbidity, one must refute a body of literature that describes the efficacy of antibiotic irrigation of the implant pocket, the influence of perioperative antibiosis on tissue expander reconstruction, and the measured higher incidence of contracture in breast augmentations performed through a periareolar approach. The results described here are in my opinion difficult to compare to true quantitative tissue cultures taken in the setting of Ancef prophylaxis. Ultimately, it is the clinical result that is of interest in the spirit of doing less harm to our patients, and to that end, I applaud the authors for suggesting the use of Cefuroxime prophylaxis for the placement of breast implants—if they are in fact significantly decontaminating the implant pocket with the use of a different antibiotic. Given their reported rate of 0% capsular contracture, this may be a defining opportunity for practice improvement in the quest to eradicate the complication. Higher patient numbers and longer follow-up would be useful to determine if, in fact, we are now one step closer to this victory.

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**REFERENCES**