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Dear Editor:

*Serratia marcescens* is a gram-negative rod in the family “Enterobacteriaceae”, well known in the medical fraternity to cause nosocomial infections, particularly in moist environment results such as tracheostomy tubes and the urinary tract. Association of *Serratia* infection with breast implants is uncommon. Our *Serratia* spp (species) infections prompted us to identify cases in the literature of implant infection with *Serratia* spp. and to review the role of antibiotic prophylaxis prior to breast prosthesis insertion. Between 2007 and 2011, our oncoplastic breast reconstruction service experienced four infectious complications with *S. marcescens* following the insertion of expanders. Microbiological parameters were consistent, with all exhibiting resistance to cephalexin, ceftriaxone, and augmentin, and sensitivity to gentamicin. All cases were treated with implant removal and saline lavage, gentamicin and betadine washout, and intravenous gentamicin and cephalexin. New expander placement 1 week later resulted in no further complications.

The literature contains a report of *Serratia* spp. infection following breast expander insertion as early as 1989, describing contamination, poor hygiene, and nonadherence to aseptic principles as the instigating factors (1). Following an epidemiological investigation, *S. marcescens* was cultured from a bag of commercial saline used as the source of expander fluid and was resistant to cefazolin and cefadroxil. Chen et al., in 1996, highlighted further the pathogenicity of *Serratia* in saline-filled implants (2). Of all the pathogens studied, only *S. marcescens* was able to survive in vivo within saline breast implants placed on the dorsum of a white rabbit proliferating 80 fold in 7 days (2). Nahabedian et al.’s review of 168 reconstructions with expanders and implants reported a case of delayed *S. marcescens* infection (day 89) (3). In a retrospective review by Mukhtar et al. (2009), 49% of breast isolates were attributable to gram-negative bacteria, with 1 case (2%) of *S. marcescens* (4). A significant proportion were resistant to cefazolin, and they suggested a range of options such as ceftriaxone/vancomycin/clindamycin plus gentamicin for added gram-negative cover. *S. marcescens* impact in surgical site infections (SSI) is amplified as it is known to be resistant to low concentrations of chlorhexadine solution (5). Mutation confers multidrug resistance as a result of chromosomal β-lactamase possession and outer membrane protein alterations, making it impervious to quinolones and resistant to ampicillin, cephalosporins, and macrolides.

The use of antimicrobial prophylaxis against (SSI) is widespread in plastic surgery, but results from prospective randomized controlled trials in antibiotic use are lacking (6). SSI prophylaxis with one preoperative dose of an intravenously administered antibiotic with antistaphylococcal activity before breast and axillary surgery has been the standard care for many years (7), and a recent review of current antibiotic prophylaxis among plastic surgeons favoured the use of intravenous cefazolin in 97% of cases (8). Brand reported the results of 54,661 implant procedures by 73 cosmetic surgeons with most routinely administering systemic cephalexin for a week (9).

Notably, there is little evidence supporting the use of postoperative prophylactic antibiotics following breast reconstruction surgery in reducing the postoperative SSI rate. A recent retrospective review of 353 breast surgery patients revealed no statistical difference in infection rates between patients who received preoperative antibiotics alone and patients with both pre and postoperative prophylactic antibiotics (8.7% versus 7.4% p = 0.67, respectively) (7). As an extension to the use of antibiotic prophylaxis when having a breast implant inserted (10), some clinicians have proposed incorporation of an antibiotic in the expander.

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fluid (11). Cefalotin and gentamicin placed within the lumen of inflatable breast implants in vitro have been shown to diffuse outward through the silicone shell, and in vivo has been shown to significantly reduce the incidence of capsular contracture after both primary breast augmentation and secondary open capsulotomy (12), but further clinical trials are required before systematic recommendations can be made, particularly in terms of the possible acquisition of resistance (13).

Despite the relatively low reported incidence of Serratia spp. infection in the setting of breast implants, its pathogenicity and its resistance profile suggests the need to consider it while devising antibiotic prophylaxis protocols, and supports the use of gentamicin washout and intravenous administration prior to implant insertion.

DISCLOSURES/CONFLICTS OF INTEREST

None.

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