

Triclosan: A Potential Allergen in Suture-Line Allergic Contact Dermatitis

Letter to the Editor:

Because the suture knot is believed to be the principal site of bacterial colonization in the wound,¹ coated polyglactin 910 suture with triclosan (Vicryl Plus Antibacterial Suture, Ethicon, Somerville, NJ) was developed to imbue the suture material with antibacterial activity against the most common pathogens causing surgical site infections. In vitro² and in vivo³ studies have demonstrated that this type of suture material effectively prevents the colonization of methicillin-sensitive and -resistant *Staphylococcus aureus*, as well as *S. epidermidis*.

The active component in Vicryl Plus Antibacterial Suture is triclosan (Irgacare MP, Ciba-Geigy, Basel, Switzerland), a broad-spectrum antiseptic agent. It has been used for more than 30 years in the health-care setting in low concentrations⁴ and most commonly in antimicrobial hand soaps. In the United States, it can also be found in a number of other consumer products such as liquid dishwashing soaps, deodorants, and toothpastes.^{5,6}

According to Johnson & Johnson, the umbrella company for Ethicon, the use of this product is steadily increasing. According to Michelle Bauman at Ethicon Global Communications, "One out of three Coated Vicryl (polyglactin 910) Sutures sold in the US is Coated Vicryl Plus Antibacterial (polyglactin 910) Suture" (T. Bhutani, personal communication, Sept. 11, 2008). Frequent applications include "general closures, orthopedic surgery, and plastic surgery," with "a good percentage of this suture used to close skin."

Reports of contact allergy to triclosan are uncommon. In 1989, the Swiss Contact Dermatitis Research Group conducted a large 1-year study to examine the frequency of sensitization to commonly found preservatives in patients with suspected allergic contact dermatitis (ACD).

Triclosan was shown to have a low sensitizing potential, with only 0.8% of the 2,295 patients tested having positive reactions.⁷ Nevertheless, ACD to triclosan-containing products (soaps, deodorants, and toothpastes) has been reported and sensitization confirmed with patch testing at a concentration of 2% in petrolatum.^{8–12}

Although these cases have confirmed the potential for contact allergy to triclosan, a review of the English-language literature revealed no case reports of delayed-type allergic reactions to coated polyglactin suture containing this allergen. One author (SEJ) had two cases of patients who developed presumed ACD 5 days postoperatively in the suture line where Vicryl Plus Antibacterial Suture had been used (unpublished). Their dermatologic surgeon had patch tested both patients in the community with the standard TRUE test containing 23 common allergens and bacitracin ointment 0.5% and found them to be negative.

These patients were referred for patch testing with an extended-series patch testing, including a vehicle series (including triclosan 2% petrolatum) and a modified North American Contact Dermatitis Group Standard (which includes bacitracin 20% petrolatum). In addition, Vicryl Plus Antibacterial Suture was tested in two ways—as a patch test on top of the skin, as well as being sutured in the normal skin. Both patients showed a positive patch test [one 2 + and one 1 +] to triclosan and one patient to the bacitracin [1 +] (suggesting that the prior patch with the 0.5% ointment concentration was a false negative and had challenged below the elicitation threshold or, less likely, that the patient had become more reactive). Both patients tested negative to the suture placed against the skin. The patient with the triclosan [2 +] and bacitracin [1 +] reactivity had macular erythema at the site of the sutured-in test of the skin at day 7. Despite numerous attempts to elicit responses to a variety of suture materials in different

patients, this case was the only time the author (SEJ) has seen any type of response to a suture placed for patch test reactivity testing. The patch test results suggest that the suture reaction could be valid, although a physiologic response to the suture was also entertained.

Our experience, along with previously reported cases, suggests that practitioners consider the potential for delayed-type hypersensitivity reactions to triclosan (through contact with soaps, toothpastes, or deodorants or to suture materials). Given that testing with the suture against the skin was negative in both patients (and only minimally responsive in the sutured-in skin of one patient), these patch test results may only suggest a potential causative effect between the triclosan and the wound reaction, and these cases are presumed to be incidences of allergic contact dermatitis to triclosan. Furthermore, because triclosan itself can be a mild irritant when applied directly to the skin, we acknowledge that a low-grade patch test result may sometimes be difficult to interpret.⁵

The simultaneous exposures during surgical procedures¹³ often make it difficult to determine a cause in suture line ACD. We present this topic to highlight the importance of considering triclosan as an allergen. Because triclosan is not on the commercially available patch test series, a contact allergy to this substance could be missed and would only be confirmed through extended patch testing. We believe that it is important to consider triclosan as a potential allergen and to consider patch testing and sutured-in testing (sewn through the skin as opposed to placing against the skin) as methods of discerning the etiology of suture-line ACD.

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