

# 14-Gauge Coaxial Bone Needle Leads to Superior Results When Injecting Calcinosis Cutis

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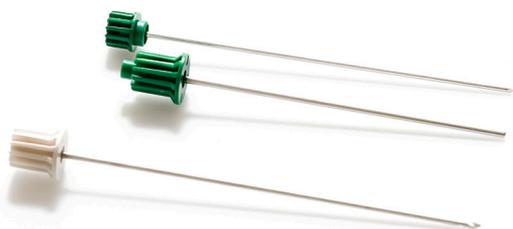
Dear Editor,

Calcinosis cutis can occur idiopathically or be associated with injury, metabolic disease, and different rheumatologic diseases such as scleroderma and dermatomyositis. Calcinosis cutis is often treatment-resistant and leads to decreased quality of life and pain. Medical therapies, such as bisphosphonates, warfarin, tetracyclines, calcium channel blockers, colchicine, laser therapy and surgery, lithotripsy, and even stem cell transplantation have been used with varying success.<sup>1</sup> Lesions of calcinosis cutis can persist even when systemic disease is adequately controlled leaving the patient with a painful reminder of their underlying disease.

Injections of sodium thiosulfate (STS) 250 mg/ml have been effective in treating calcinosis cutis in a handful of case series.<sup>2,3,4</sup> The authors have noted that side effects of intralesional sodium thiosulfate are minimal but include pain, ulceration, and local soft tissue infection. Densely mineralized deposits can be nearly impenetrable with a standard needle. A standard needle can fail to adequately infiltrate STS to a calcified lesion and lead to blunted or even broken needles resulting in treatment failure, increased pain experienced by the patient, or retained needle fragments.

We describe a technique that uses a 14-gauge hollow coaxial bone biopsy set (Figures 1 and 2). This needle is traditionally utilized for osseous lesional biopsies but can be used to drill into the calcium using a stylet (Figure 3). The penetration cannula and stylet are drilled into the calcium nodule with a twisting motion, following cutaneous lidocaine injection, or

**FIGURE 1 AND 2.** Bonopty 14-gauge Bone Penetration Kit.



**FIGURE 3.** Drilling 14-gauge hollow needle into deposit of calcinosis cutis.



**FIGURE 4.** Injecting sodium thiosulfate into the hollow portion of the needle directly into the core of the calcium deposit.



general anesthesia. Upon achieving appropriate depth, the threaded stylet is removed and replaced with a syringe of STS for injection through the cannula (Figure 4). We have found that this is an effective delivery technique that has led to increased treatment efficacy and reduced pain for the patient.

One of our patients with calcinosis cutis secondary to dermatomyositis has experienced injections with a standard 27-gauge needle and with the 14-gauge coaxial needle. She experienced greater improvements with the coaxial needle and greater softening of the calcium lesions. After three rounds of injections spaced one week apart, she noted decreased pain and size of the lesions.

Limitations to this data are a sufficient way to quantify the extend of calcium lesions as they are often deep and confluent which makes measuring them difficult. In the future ultrasonography or radiography could be used to further evaluate a response.<sup>5</sup> Head-to-head studies comparing sodium thiosulfate injections using both techniques are required.

STS administration into calcinosis cutis is complicated by nodule firmness leading to insufficient STS infiltration. By utilizing a 14-gauge coaxial bone marrow biopsy introducer needle, we can maximize the drug delivery into these lesions, enhance safety, and improve outcomes for our patients. We suggest that the delivery technique of this novel therapy be modified to benefit our patients and maximize results.

### DISCLOSURES

The authors have no conflicts of interest to disclose.

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### REFERENCES

1. Reiter N, El-Shabrawi L, Leinweber B, Berghold A, Aberer E. Calcinosis cutis: part II. Treatment options. *J Am Acad Dermatol*. 2011;65(1):15-24.
2. Gunasekera NS, Maniar LEG, Lezcano C, et al. Intralesional Sodium Thiosulfate Treatment for Calcinosis Cutis in the Setting of Lupus Panniculitis. *JAMA Dermatol*. 2017;153(9):944-945.
3. Winter AR, Klager S, Truong R, et al. Efficacy of intralesional sodium thiosulfate for the treatment of dystrophic calcinosis cutis: A double-blind, placebo-controlled pilot study. *JAAD Int*. 2020;1(2):114-120.
4. Goossens J, Courbebaisse M, Caudron E, et al. Efficacy of intralesional sodium thiosulfate injections for disabling tumoral calcinosis: Two cases. *Semin Arthritis Rheum*. 2017;47(3):451-455.
5. López-Sundh AE, Quintana-Sancho A, Durán-Vian C, et al. Clinical and ultrasound response to intralesional sodium thiosulfate for the treatment of calcinosis cutis in the setting of systemic sclerosis. A case-based review. *Clin Rheumatol*. 2021;40(7):2985-2989.

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