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CASE REPORT

# Use of clamping to enhance intralesional bleomycin therapy for nodular basal cell carcinoma

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Regional chemotherapy usually involves using intra-arterial or intracavitary drug infusion to increase drug concentration within tumor-containing tissue while minimizing systemic toxicity.[1] It has long been used as a treatment modality for various malignancies including melanoma, soft tissue sarcoma, and primary brain tumors.[1] Analogous to regional chemotherapy, intralesional chemotherapy has been used to maximize drug concentrations within tumor-containing cutaneous tissues for the treatment of basal cell carcinoma. However, intralesional chemotherapeutic agents usually require multiple injections over time to achieve histologic clearance of basal cell carcinoma. For example, 9 to 10 injections of interferon alfa-2b and 6 injections of sustained-release 5-fluorouracil were used to achieve histologic cure rates of 67% to 86%[2] and 91%,[3] respectively. Electroporation has been used to increase the efficacy of intralesional bleomycin therapy so that a single injection can result in a 94% clearance rate of basal cell carcinoma.[4] However, electrochemotherapy requires expensive equipment that may not be accessible to most physicians. A more practical method of reducing the number of injections required to achieve therapeutic cytotoxicity is to increase the duration of exposure to chemotherapy by mechanically isolating the area around the basal cell carcinoma.

## CASE REPORT

A 69-year-old white man presented to our dermatology clinic with a 1-year history of an asymptomatic 8-mm × 8-mm papule on his left ear lobe. The diagnosis of nodular basal cell carcinoma was made based on clinical presentation and the results of a shave biopsy of part of the visible tumor. The patient refused surgical therapy, so we decided to treat the basal cell carcinoma with intralesional bleomycin. To minimize the number of injections and amount of bleomycin injected, a chalazion clamp was used to isolate the tissue surrounding the basal cell carcinoma. One unit (1.0 mL x 1 U/mL) of bleomycin in 1% lidocaine with 1:100,000 epinephrine was injected into the clamped basal cell carcinoma entering the clamped area between the 2 sides of the clamp to prevent leakage. The injected bleomycin remained within the clamped area as evidenced by a localized raised and stretched area of skin (Fig 1, *A*). After 20 minutes, an 18-gauge needle was used to remove most of the injected fluid from clamped area and the chalazion clamp was removed. Aside from minor discomfort, no other adverse effects were observed or reported by the patient. One year after treatment, the basal cell carcinoma appeared clinically cured (Fig 1, *B*). The clinical result was confirmed by step sections from a 4-mm punch biopsy.

## DISCUSSION

In this case, a chalazion clamp was used to enhance the efficacy of intralesional bleomycin therapy for a nodular basal cell carcinoma in a patient who refused surgery. The clamp isolated the area around the basal cell carcinoma to increase the concentration of bleomycin to which the tumor cells were exposed. The increased duration of exposure to the lidocaine may have also enhanced bleomycin's cytotoxic effects through interaction with tumor cell membranes.[5] We also suspect that stretching of the skin caused by injecting bleomycin into a confined area may have increased cellular

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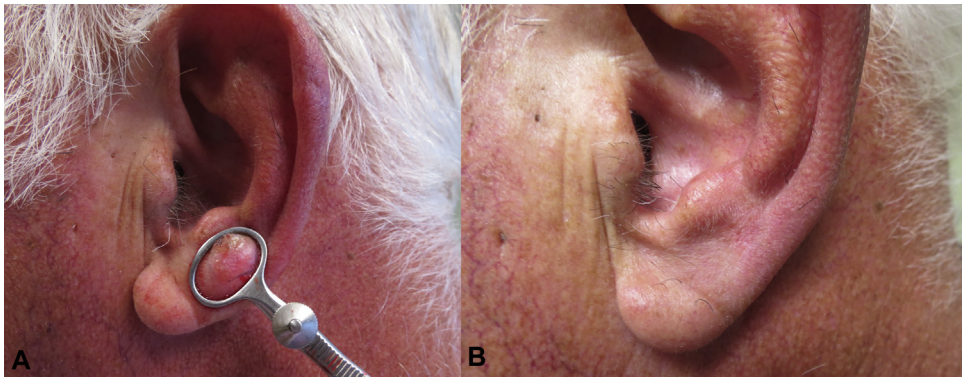


**Fig 1.** **A**, Nodular basal cell carcinoma on the left ear mechanically isolated with a chalazion clamp during intralesional bleomycin therapy. **B**, One year after treatment.

membrane permeability to this poorly permeable drug. Furthermore, by isolating the area around the basal cell carcinoma, therapeutic cytotoxicity could be achieved with a relatively low total dose of bleomycin, and most of the injected chemotherapeutic drug could be removed after the treatment. Thus, there was a reduced risk of potential systemic side effects, such as flagellate hyperpigmentation,[6] from the intralesional bleomycin. The use of the chalazion clamp ultimately enabled a single dose of 1.0 U of bleomycin to result in a histologic cure of the patient's nodular basal cell carcinoma.

There are potential limitations to this case. The choice of the 20-minute treatment duration was somewhat arbitrary, as there are no studies of intralesional bleomycin therapy with mechanical isolation to suggest the duration of chemotherapy exposure necessary to achieve tumor cytotoxicity without permanent damage to normal tissues. It is possible that an interval less than 20 minutes could achieve tumor cytotoxicity. However, as the duration is increased, there is an increased risk of damage to normal tissue. Studies are needed to determine the optimal duration of mechanically isolated intralesional bleomycin therapy.

Another potential limitation is the possibility that the pretreatment shave biopsy removed the tumor. This is unlikely given only part of the tumor area was shaved, and visible tumor was present at the time of the intralesional therapy. It should also be noted that the chalazion clamp technique is limited to areas of skin that permit clamping, such as the ear. However, it is possible that other methods of mechanical isolation could provide similar therapeutic enhancement in areas that cannot be isolated by a chalazion clamp. Despite potential limitations, this case suggests that mechanical isolation may be a practical, inexpensive method for enhancing the efficacy of intralesional bleomycin for patients with nodular basal cell carcinoma who desire a nonsurgical therapy.

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