

# Long-Term Blue Discoloration after Intradermal Injection of Blue Dye for Sentinel Lymph Node Biopsy

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The incidence of malignant melanoma in Israel has increased significantly in the last two decades. This trend is true worldwide [1]. Since the introduction of sentinel lymph node biopsy by Morton et al. [2] for staging the adjacent lymph node basin, this technique became the standard of care for intermediate or thick tumors (> 1 mm). Initially the SLNB technique involved the injection of blue dye around the tumor biopsy scar, followed by dissection of lymph nodes through a small incision at the nearest basin and identifying the sentinel node visually by its bluish color

SLNB = sentinel lymph node biopsy

Bluish skin discoloration nine months after intradermal injection of patent blue



[2]. Later, the addition of preoperative lymphoscintigraphy using radioactive colloid with an intraoperative gamma-probe detector was suggested and shown to be as effective as blue dye. This was most helpful in cases of aberrant lymph nodes where the basin location was not anatomically obvious [3]. The combination of those two methods raised the sensitivity and specificity of SLNB and became the standard of care [1]. However, injecting a foreign material for diagnosis or treatment carries the potential for an adverse effect and indeed some have been reported for SLNB [4]. We report the effect of long-term discoloration of skin due to blue dye injection for SLNB.

## PATIENT DESCRIPTION

A 33 year old woman with dysplastic nevus syndrome was diagnosed with malignant melanoma on her left elbow region by excisional biopsy. Since Breslow tumor thickness was 1 mm and Clark level IV, it was decided to perform a wide excision with linear closure and SLNB. One day prior to surgery lymphoscintigraphy was performed using intradermal injection of Tc99-labeled colloid and mapping of the sentinel node using a gamma radiation-sensitive camera. The following morning, in the operating room, 0.5 ml of patent blue dye was injected intradermally around the biopsy scar. SLNB in the axilla was undertaken using visual confirmation as well as the gamma radiation probe detector in the standard manner. The scar with a 1 cm margin was then removed and the skin was closed.

The postoperative period was unremarkable, and sentinel lymph node was found to be negative. The patient visited the plastic surgery clinic every 3 months for follow-up. It was noticed that even after 9 months the patient still has blue discoloration around the scar on her elbow [Figure], and according to the patient this has not changed much since 2 weeks after surgery.

## COMMENT

Since its introduction SLNB has become the standard of care for intermediate malignant melanoma. This is attributed to the relatively low morbidity of SLNB compared to traditional lymph node dissection. Complications of lymph node dissection include lymphedema, immediate and long-term infections, seroma formation, and sensory nerve injury. The rates of these complications were reported to be much lower after SLNB. However, some specific adverse effects related to SLNB have been noted. These include allergic reaction, mild cyanosis, and misreading of oxygen saturation by pulse oxymeter [4].

We report a case of long-term blue discoloration of skin after intradermal injection of patent blue dye to the elbow region. This adverse effect was previously reported by Giuliano [5] after injection in the breast area due to breast cancer. Skin discoloration is distressing for the patient when visible, especially on sites such as the face and neck followed by the upper extremities and upper chest. Although it has been suggested that accuracy of sentinel node detection using a combination of radioactive and blue dye is

better than using only one modality, after a learning period the additional accuracy of blue dye to lymphoscintigraphy and gamma-probe sentinel node detection is minor. We would like to emphasize this less discussed adverse effect of blue dye injection. We recommend avoiding the use of blue dye for SLNB in the head and neck region and discussing with the patient the pros and cons of using it on less visible areas of the body.

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