Modified–purse-string closure: A lymphatic channel and tissue sparing technique for biopsy of suspicious pigmented lesions on extremities

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SURGICAL CHALLENGE

Selecting the proper biopsy technique of a suspicious pigmented lesion is one of the most important interventions dermatologists perform, especially those on extremities.[1] Complete excisional biopsy with narrow margins is preferred to prevent inadequate sampling.[1] Typically, a longitudinally oriented fusiform excision with minimal undermining is preferred, as it preserves lymphatic drainage channels necessary for sentinel node mapping while avoiding circumferential scarring of the extremity.[1] However, elliptical excisions require removal of additional perilesional tissue at the time of biopsy and can lead to inadvertent sampling of adjacent pigmented lesions along the ellipse (Fig 1).

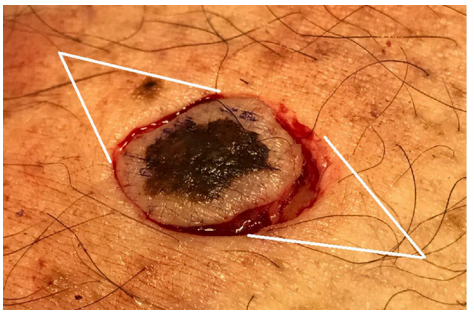

Fig 1. Initial excision biopsy enabling lesion removal en bloc. The white outline demonstrates the tissue encompassed in a fusiform biopsy, should this alternative approach have been selected.

SOLUTION

To overcome pitfalls of a fusiform excision on an extremity, we suggest using a simple excision biopsy with a modified–purse-string closure technique (Fig 2, *A-D*). By recruiting tissue from the entire wound edge, the purse-string technique provides an average 60% reduction in wound size with excellent hemostasis.[2] Additional modifying dermal sutures may be placed to improve wound edge approximation. A final layer of epidermal sutures allows the wound to have a similar cosmetic outcome to a standard excision.

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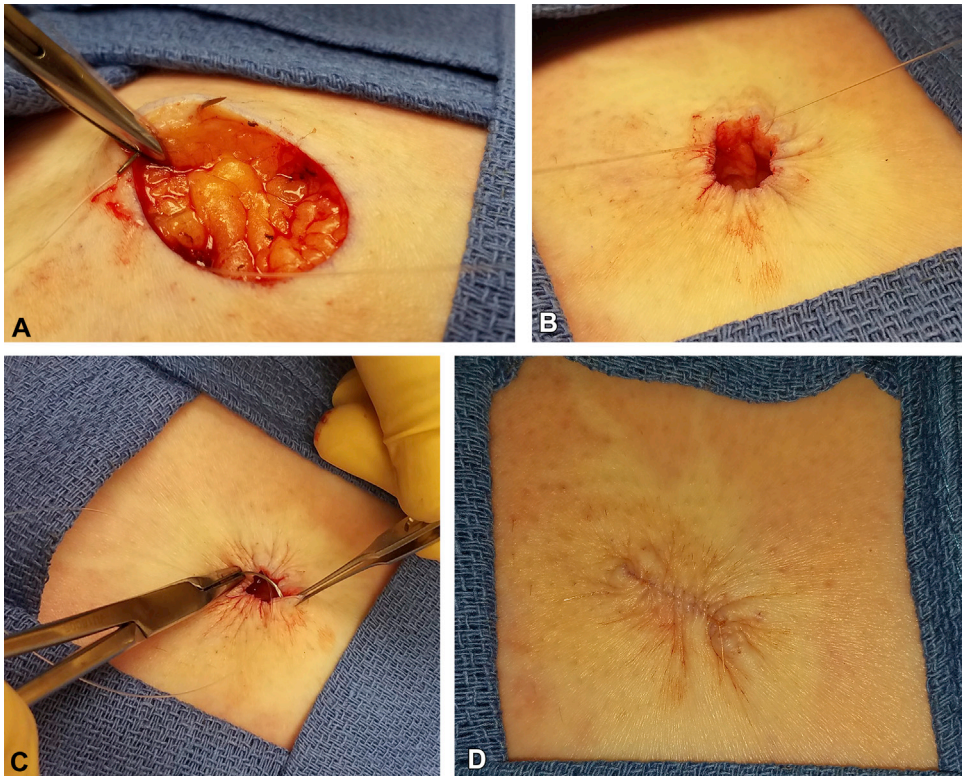

Fig 2. Modified–purse-string closure technique. **A**, After removal of specimen, a 3-0 monofilament polydioxanone suture is used to close the defect. The initial suture throw is placed subcutaneously at a depth of the deep dermis. The needle then enters and exits horizontally through the deep dermis while maintaining a uniform depth around the defect. **B**, Once the suture reaches the point of the initial entry site, the suture around the defect is pulled taut and a surgeon's knot is placed. **C**, After the purse-string suture is secured, a small central defect remains. Two buried vertical mattress sutures are placed to fully approximate the dermis and evert the wound edges. **D**, To align the epidermis, a running epidermal stitch is then placed with 5-0 fast absorbing surgical gut.

This technique spares perilesional tissue at the time of biopsy while preserving lymphatic channels. Tissue sparing at initial biopsy also enables a smaller re-excision if required. There is decreased potential for inadvertent sampling of an adjacent melanocytic lesion, potentially complicating margin evaluation.

The use of a narrow excisional biopsy with a modified–purse-string closure is a well-tolerated and straightforward technique for suspected extremity melanomas that spares tissue, minimizes closure time and length, and preserves lymphatics for future lymph node biopsy.

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