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The use of cassettes for the collection of nail biopsy specimens

Nail biopsy is a safe and useful diagnostic procedure for many nail disorders when routine clinical and laboratory methods fail to produce a diagnosis. For an accurate diagnosis, laboratory technicians and pathologists require an adequate nail unit specimen that is sufficient for diagnosis, particularly in the context of primary nail unit tumours.[1] Currently, there are significant challenges in providing a reasonable sample due to the often small and fragmented nature of nail specimens, as well as a possible lack of orientation at the microscopic level when examining a diseased nail unit.[1] By preparing a nail unit specimen in a way that preserves orientation and prevents loss of tissue, the specimen may thus be processed and interpreted with better success.

Previously proposed techniques for nail specimen collection have included marking the epithelial surface with fixed ink to help with orientation, as well as placing the specimen on cardboard with a nail diagram.[2] It has been suggested that the use of a cassette be used to hold nail specimens in place, thus adhering to the paper and avoiding possible architectural distortion.[1] We outline the use of a modified approach, with the use of cassettes for the collection of nail biopsy specimens in the Australian setting.

When a nail biopsy specimen is taken for diagnostic purposes we propose first marking the proximal end of the nail with permanent dye to allow for orientation. Application of tissue marking dye can be applied using a tapered applicator tip (Fig. 1A). The dye will permanently bind to the surface of the nail specimen in 1-2 minutes when dried at room temperature. The tissue is then placed between two foam pads and then securely held within a tissue cassette (Fig. 1B). The cassette is then closed and adequately submerged in 10% neutral

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buffered formalin solution (Fig. 1C). The placement of the dye should be adequately described on the pathology request form and communicated to the pathologist assessing the specimen. Tissue specimens are submitted for softening in NAIR™ solution (potassium thioglycolate 10%) to improve microtomy of keratotic tissues.[3]

Placing the entire biopsy immediately into a cassette prevents loss of small tissue pieces in fragmented biopsies. It also ensures tissue structure is maintained while in formalin. Inking the specimen before laboratory submission can help with the evaluation of margins for nail unit neoplastic disorders, such that complete histologic views of the nail bed and matrix are obtained.[4] This technique, allows nails to be cut longitudinally, as well as permitting visualisation of the nail matrix, which aids in diagnosis of onychopapillomas and melanocytic nail unit tumours.[5]

Evaluating the benefit of this technique within our nail surgery clinic, it was noted that of the excisional nail biopsy specimens, none had architectural distortion with cassette use. Furthermore, inking of cassette specimens yielded 100% identification of anatomical location and provided adequate identification of histopathological features for diagnosis. We conclude that the use of this modified technique for **submission of tissue** aids in providing the most suitable specimen for histopathology.

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FIGURES:

Figure 1: A. Marking of the nail biopsy specimen with permanent dye to allow for orientation during analysis. **B.** Nail specimen is placed on a foam mattress within a plastic cassette to secure and preserve nail architecture and orientation. **C.** Nail specimen within the cassette is completely submerged within formalin before being sent to the laboratory.

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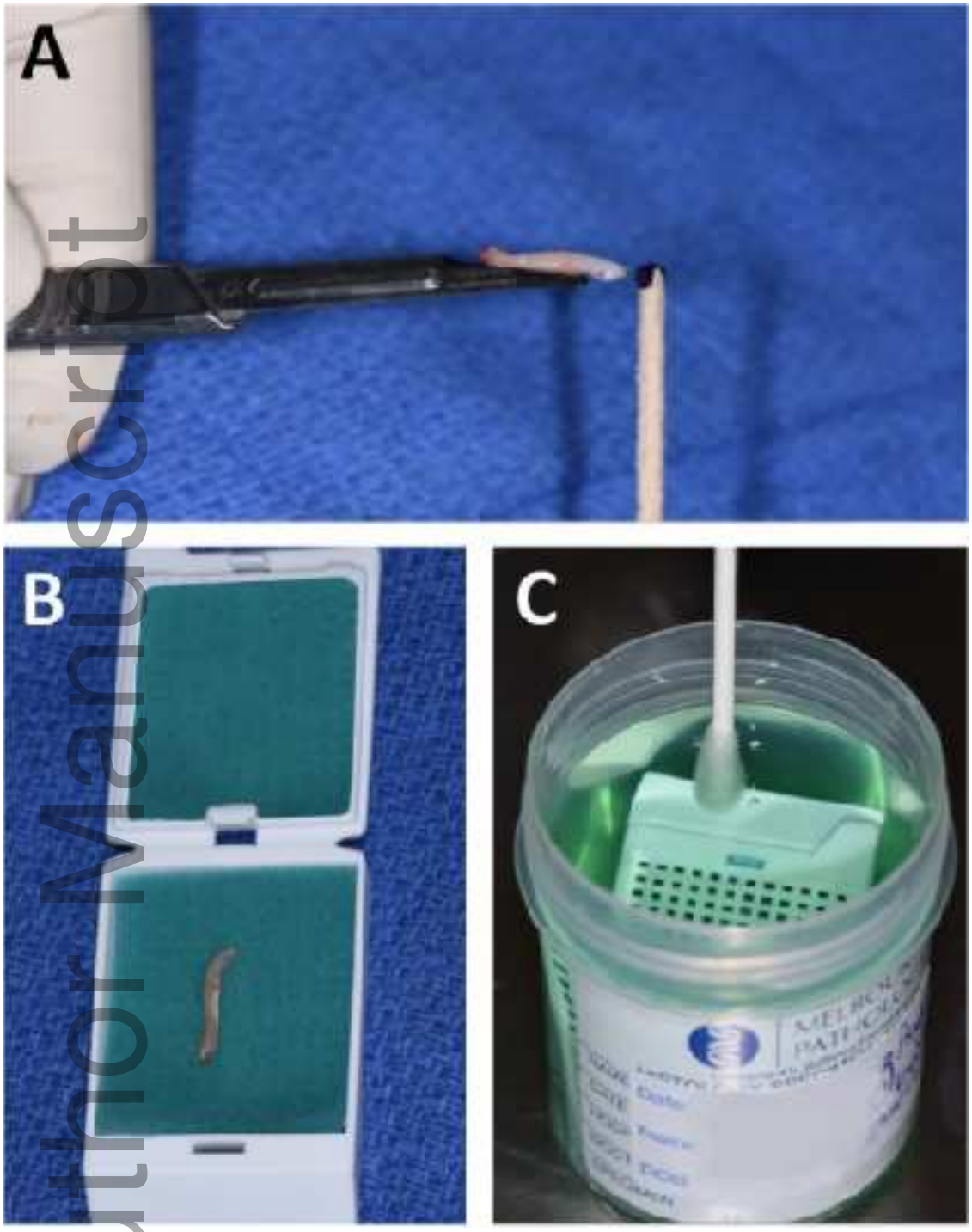

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