# Pigmented lesions and the perils of partial biopsy

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**This case illustrates a potential pitfall of partial biopsy and highlights the importance of adequate clinicopathological correlation in the assessment of atypical melanocytic lesions.**

MedicineToday 2013; 14(2): 58-59

The ideal mode of biopsy for skin lesions suspected of being mela - noma is a full-thickness excisional biopsy with narrow margins (2 mm). Partial biopsies, such as shave and punch biopsies, are generally not recommended,[1,2] except for certain scenarios where a compromise is acceptable.

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## CASE HISTORY

A 44-year-old woman presented for management of her biopsy-proven melanoma. Her general practitioner had first noticed the lesion during an opportunistic skin check. The patient thought the lesion had been present for months but could not be entirely sure, as the site (lower back) was not easily visualised. Again, she was not clear regarding any history of change.

The treating clinician had initially chosen to take two punch biopsy specimens from the suspicious lesion, one centrally and one at a lateral pole (3 o'clock). Interestingly, the histopathology result of the marginal punch biopsy showed only compound naevus with significant atypia (atypical melanocytes). In isolation, the changes were not conclusive for a diagnosis of melanoma. The histopathology result of the central punch biopsy did show features consistent with invasive melanoma, 0.75 mm in depth, Clark's level III.

On examination the lesion was an asymmetrical, brown–black plaque measuring 12 x 9 mm (Figure 1). Dermoscopy showed multiple colours (brown, black, blue, grey and white), atypical network, asymmetric brown globules and peripherally-based black dots and pseudopods (Figure 2). The sites of two recent punch biopsies could be seen centrally and at the easternmost aspect. Although history was lacking, both the clinical and dermoscopic features were highly suspicious for an invasive melanoma.

A wide local excision was performed with direct closure. The final histopathology result showed superficial spreading melanoma, 0.8 mm in depth, Clark's level III with no ulceration and a low mitotic rate.

## DISCUSSION

The discrepancy between the results of the punch biopsies taken from different parts of the lesion in this case highlights the risks taken when sampling atypical melanocytic lesions. In this case, one of the punch biopsies fortunately allowed a correct diagnosis to be made, although there was substantial discordance between the results of the two initial punch biopsies and the final histopathological diagnosis. Had the clinician only taken one biopsy from what was almost certainly a heterogeneous lesion, there would have been a significant chance of missing the diagnosis.

In this scenario, the clinician should forewarn the pathologist if the suspicion is high, and be willing to have a discussion with the pathologist to reach some degree of clinicopathological correlation.[3] This is even more valuable when the clinical and dermoscopic images are available for review around the microscope with the pathologist. When suspicion is high and the pathology result does not fit with expectations, further intervention is mandatory – i.e. another biopsy rather than observation or complete dismissal of the lesion.

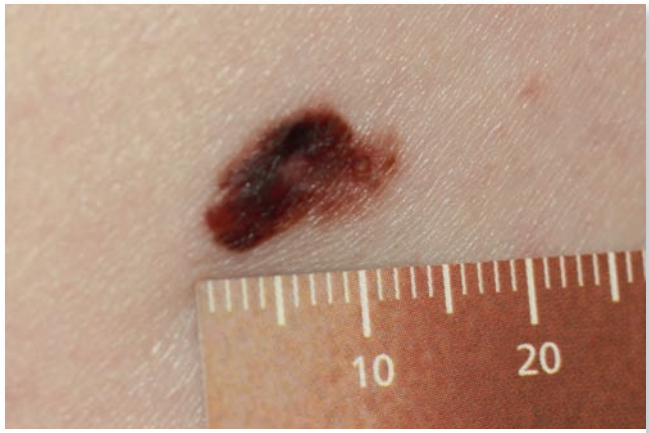


Figure 1. Macrophotograph of the patient's asymmetrical multicoloured plaque on her left lower back (scale in mm).

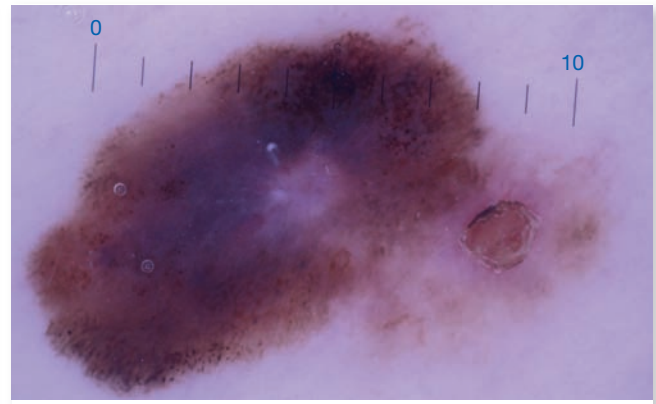


Figure 2. Dermoscopic image showing an atypical pigment network, multiple colours, asymmetric dots and globules, and pseudopods (scale in mm).

The particular pitfall in this case is a form of sampling error. Unfortunately partial biopsies of melanoma may not always be representative, leading to inaccurate microstaging and ultimately influencing management.[4] A large prospective study from Victoria found that punch biopsy was associated with a significant risk of pathological misdiagnosis (odds ratio, 16.6) as well as an adverse outcome (odds ratio, 20).[5] In cases of such adverse outcomes, both the clinician and pathologist are exposed to a substantial medicolegal risk.

Ng and colleagues found that general practitioners were more likely than dermatologists to have patients experience adverse outcomes due to melanoma misdiagnosis.[5] General practitioners may not have the same clinical confidence or clinical acumen as specialists and thus opt for a biopsy. When this biopsy is only partial – e.g. punch, as in this case, or shave – there is a risk of misdiagnosis and misadventure.

Dermoscopy can help to identify more suspicious foci within a heterogeneous lesion, which can be flagged for the special attention of the pathologist with a marking suture or micropunch when the whole lesion has been removed.[6] When partial biopsy is performed, the largest specimen of tissue that can be taken gives the pathologist the best chance of reaching a correct diagnosis – e.g. an incisional biopsy. Punch biopsies should ideally be large – e.g. 4 mm or more in diameter – and multiple. Shave biopsies are only ever appropriate for superficial pathology as they will not adequately sample or will underestimate deep dermal pathology.[7]

The scenarios in which partial biopsy may be required include large lesions on the head and neck, digits or lower limbs, or where the cosmetic outcome of excisional biopsy is undesirable. There should be no reason why a back lesion cannot be excised as there is usually sufficient laxity for direct closure, even at wide local excision. If the clinician is sufficiently inexperienced in excisional biopsy, a semi-urgent referral is probably wiser than carrying out a punch biopsy with its inherent risks.

## CONCLUSION

Excisional biopsy is the standard approach for histopathological diagnosis of suspicious pigmented skin lesions. Partial biopsies of these lesions increase the chance of misdiagnosis, and should be reserved for exceptional cases. The clinician should appreciate the pitfalls of such an approach and be willing to question the diagnosis or repeat the biopsy if there is substantial clinicopathological discordance. MT

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COMPETING INTERESTS. None.