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When is it melanoma?

An update on diagnosis and management

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Early diagnosis and treatment of melanoma are crucial to maximise the chances of a favourable outcome.

Key points

- **Early diagnosis of melanoma is crucial and is enhanced by identification of high-risk groups and appropriate surveillance. In addition to regular full skin examination, total body photography and sequential digital dermoscopic imaging are useful in selected patients.**
- **Dermoscopy significantly improves diagnostic accuracy for melanoma and other skin lesions.**
- **Clinicians should be aware of atypical presentations (e.g. amelanotic, hypopigmented and nodular melanomas), which are often the most aggressive forms.**
- **Excisional biopsy is the ideal biopsy method for suspicious lesions, allowing wide local excision to be based on accurate Breslow thickness.**
- **Referral of patients to a multidisciplinary melanoma unit should be considered.**
- **Careful follow up is important to detect disease recurrence and subsequent primary melanomas.**

Australia has the world's highest incidence of melanoma, and the incidence continues to rise.[1] Melanoma was the fourth most common cancer diagnosed in Australia in 2012 (excluding nonmelanoma skin cancer), with 12,510 new cases reported.[2] As survival strongly correlates with melanoma thickness, early diagnosis is essential. The five-year survival rate is over 95% for patients with tumours thinner than 1 mm, but less than 65% for those with tumours more than 4 mm in thickness.[3]

Clinicians should be aware of both typical and atypical melanomas, the latter often representing the most aggressive forms. Avoiding misdiagnosis of unusual melanomas is important in light of a recent study from an Australian medical defence organisation, which found approximately 60% of claims against primary care clinicians for skin conditions were related to melanoma.[4] This article highlights the diagnosis and treatment of typical and atypical melanomas. Clinical practice guidelines and other useful resources for the diagnosis and management of melanoma are listed in the box on page 45.[1]

RISK FACTORS

Both environmental and genetic factors influence the risk of melanoma development. These factors are listed in the box on page 45.[5,6] Early diagnosis will be improved if clinicians are aware of high-risk groups of patients, and if individuals in these groups are aware of their increased risk.

CLINICAL ASSESSMENT

Fewer than half of melanomas are detected by doctors opportunistically or at the time of a skin cancer check. More than half are detected by patients who notice a new or changing lesion.[7] Clinical assessment of patients for melanoma includes paying close attention to any history of change, even if the lesion shows no typical clinical features of melanoma.[8] Atypical melanomas are often the most aggressive forms and are associated with a history of recent change. Therefore, even if a lesion does not look like a melanoma, if the patient expresses

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RISK FACTORS FOR MELANOMA DEVELOPMENT

Stronger risk factors

- Previous melanoma
- Multiple dysplastic naevi
- Multiple naevi
- Family history (first-degree relative affected)
- Multiple nonmelanoma skin cancers

Weaker risk factors

- History of blistering sunburn
- Type I skin (burns without tanning)
- Freckling
- Red hair
- Blue eyes
- Immunosuppression
- Solarium use

RESOURCES FOR MELANOMA DIAGNOSIS AND MANAGEMENT

- Australian Cancer Network Melanoma Guidelines Revision Working Party. *Clinical Practice Guidelines for the Management of Melanoma in Australia and New Zealand*. Wellington, NZ: Cancer Council Australia, Australian Cancer Network, Sydney and New Zealand Guidelines Group; 2008 (www.nhmrc.gov.au/_files_nhmrc/publications/attachments/cp111.pdf).
- Menzies SW. Using dermoscopy to diagnose pigmented skin lesions. *Medicine Today* 2004; 5(4): 63-71 (www.medicinetoday.com.au/system/files/pdf/MT2004-04-063-MENZIES.pdf).
- Melanoma prognosis online calculator, based on the American Joint Committee on Cancer Melanoma Database (www.melanomaprognosis.org).

concern and gives a clear history of change then referral or excisional biopsy should be considered.

Complete skin examination

A complete skin examination is indicated based on patient concern or skin cancer risk factors. It should be performed under good lighting and should include the scalp, breasts, buttocks, soles of the feet and between the toes. Most melanomas are pigmented and present with an initial flat phase (radial growth phase). The features of these melanomas have been summarised by the acronym ABCD: asymmetry, border irregularity, colour variation and large diameter.[9,10] A lesion with one or more of these features should be considered a possible melanoma.

However, there are limitations to the ABCD system, which applies only to melanomas with a radial growth phase. Aggressive melanomas, such as nodular melanomas, grow vertically from the outset and do not show ABCD features. EFG criteria (elevated, firm and growing progressively for more than a month) may help diagnosis of these lesions.[11]

Dermoscopy

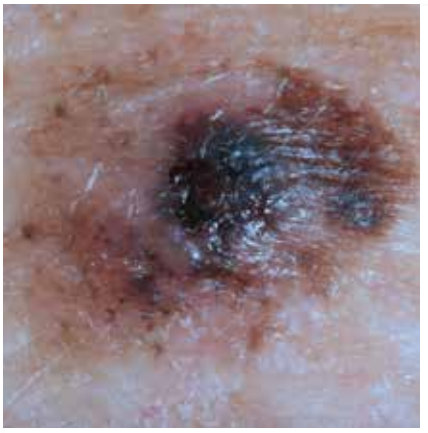
Dermoscopy (epiluminescence microscopy) is a useful diagnostic technique that permits visualisation of morphological features not visible to the naked eye. In experienced hands, it improves diagnostic accuracy of melanoma and other skin lesions.[12] A meta-analysis concluded that the diagnostic accuracy for melanoma, as measured by diagnostic odds ratio, was 15.6 times higher for dermoscopy compared with naked-eye examination.[12] Several studies in a primary care setting have demonstrated that dermoscopy improves diagnostic accuracy after the examiner has undergone a short period of formal training.[13-15] Later in this article, we will detail dermoscopic features suspicious for melanoma. A two-step dermoscopic method to diagnose pigmented skin lesions was described in detail in a previous issue of *Medicine Today*.[16]

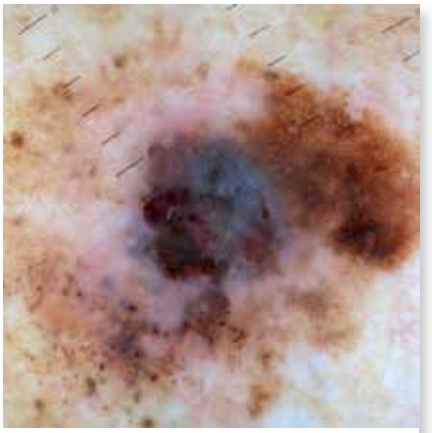
SURVEILLANCE OF HIGH-RISK PATIENTS

It is recommended that high-risk patients undergo increased surveillance to aid earlier melanoma diagnosis. Depending on the individual patient's risk and access to specialist care, full skin examination by a doctor is recommended at six to 12-monthly intervals. Regular skin self-examination should also be encouraged, with the aid of a mirror and if possible a partner.

Total body photography

Total body photography is a useful adjunct to skin surveillance in patients with high naevus counts or multiple dysplastic naevi, in whom detection of new or changed pigmented lesions is difficult. It should be noted that although some melanomas arise in pre-existing naevi, many melanomas arise on normal skin.





Figures 1a and b. a (left). Superficial spreading melanoma (1.0 mm thick). b (right). Dermoscopy shows an asymmetrical pigmentation pattern, broadened pigment network, multiple brown dots and blue–white veil.

Sequential digital dermoscopic imaging

Digital total body photography of the skin surface can be combined with digital dermoscopic imaging of naevi with atypical features. Regular follow-up examinations allow comparison of sequential images over time, and this technique has been shown to detect early melanomas even before they develop specific dermoscopic diagnostic criteria for melanoma.

Sequential digital dermoscopic imaging may be performed in two settings as follows.

- Long-term monitoring involves examination of nonsuspicious pigmented lesions, usually at 12-month intervals.
- Short-term monitoring, usually over three months, examines individual suspicious lesions that lack diagnostic evidence of melanoma. A study in a primary care setting found the combination of dermoscopy and short-term sequential digital dermoscopic imaging reduced the excision rate of benign pigmented lesions by more than half, while nearly doubling the sensitivity for the diagnosis of melanoma.[17]

Sequential dermoscopy should not be used for lesions with features that suggest melanoma or for raised lesions that might already be invasive.

CHARACTERISTICS OF MELANOMA SUBTYPES

Superficial spreading melanoma

Superficial spreading melanoma (Figures 1a and b) is the most common melanoma subtype, accounting for 70% of in situ melanomas (noninvasive melanomas confined to the epidermis) and invasive melanomas (those that have invaded the dermis). Superficial spreading melanomas are archetypal ABCD melanomas, and typically present as gradually enlarging, asymmetrical lesions with variegated pigmentation and irregular borders. Differential diagnoses include dysplastic naevi, seborrhoeic keratosis, dermatofibroma and nonmelanoma skin cancer.

Dermoscopy is useful for differentiating between melanomas and other pigmented lesions, and several algorithms have been developed for this purpose. Among others, the Menzies method is useful to support the decision to biopsy or to refer the patient to a dermatologist, and is outlined in the box on this page.[18] The Menzies method has a sensitivity of 85 to 95% and a specificity of 38 to 78% among examiners with various degrees of experience.[14,18-20]

MENZIES METHOD FOR DIAGNOSIS OF MELANOMA

In the Menzies scoring method for the dermoscopic differentiation of melanoma from benign pigmented lesions, a lesion satisfying both of the following criteria is diagnosed as a melanoma.

- The lesion must have neither of the two negative features:
  - Symmetry of pigmentation pattern
  - Presence of only a single colour
- The lesion must have at least one of the nine positive features:
  - Blue–white veil
  - Multiple brown dots
  - Radial streaming
  - Pseudopods
  - Scar-like depigmentation
  - Peripheral black dots or globules
  - Multiple (five to six) colours
  - Multiple blue–grey dots
  - Broadened pigment network

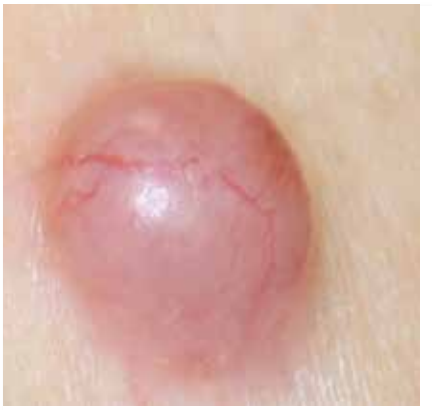
Nodular melanoma

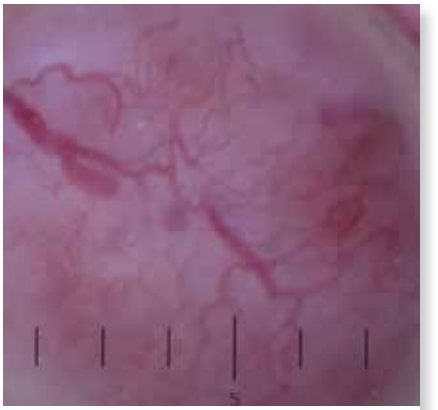
Nodular melanoma comprises only 10 to 15% of melanomas in Australia but is an aggressive subtype that accounts for most thick melanomas and most skin cancer deaths.[21] Nodular melanomas grow vertically from their inception and develop faster than radial growth phase melanomas. They are more commonly seen on the head and neck and in older people.[22] Approximately 50% of nodular melanomas are amelanotic or hypopigmented and appear as pink or red nodules.[8] When pigmentation is present, it is usually evenly distributed throughout the tumour.

Nodular melanomas begin raised and grow progressively as a firm, round nodule (Figures 2a and b). They are often symmetrical and well circumscribed.[8] After a period of growth they may ulcerate, bleed and crust. Because of their atypical presentation, nodular melanomas are frequently misdiagnosed as nonmelanoma skin cancer or benign lesions such as dermatofibroma, pyogenic granuloma, haemangioma or intradermal naevi. As

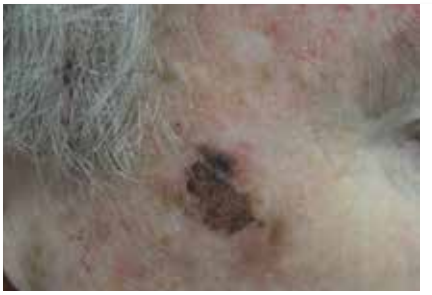
previously discussed, the ABCD features apply poorly to nodular melanomas, and the EFG criteria are more useful.[23]

Dermoscopically, pigmented nodular melanomas may exhibit multiple colours, blue–grey veil and an atypical vascular pattern. Although a typical hypomelanotic nodular melanoma might appear pink or red to the naked eye, subtle pigment may be visualised with dermoscopy in 90% of lesions. Other important dermoscopic clues include milky pink areas and atypical vascular structures.[24,25] However, the diagnosis of completely amelanotic nodular melanomas is especially challenging because they lack both clinical and dermoscopic evidence of pigmentation. As a general rule, a growing firm nodule that has been present long enough to make an inflammatory lesion unlikely (more than one month) should be excised without delay if there is any diagnostic uncertainty.[26]





Figures 2a and b. a (left). Amelanotic nodular melanoma (11.2 mm thick). Clinically this was a rapidly enlarging, firm, symmetrical pink nodule. b (right). Dermoscopy shows atypical vessels and milky pink areas.



Figures 3a and b. a (above). Lentigo maligna melanoma (0.2 mm thick) on the cheek. b (right). Dermoscopy shows rhomboidal structures, asymmetric perifollicular pigmentation and annular granular structures.

Lentigo maligna and lentigo maligna melanoma

Lentigo maligna (Hutchinson's melanotic freckle) and its invasive counterpart, lentigo maligna melanoma, comprise 10 to 15% of all melanomas. This subtype tends to occur on chronically sun-exposed areas such as the head and neck.

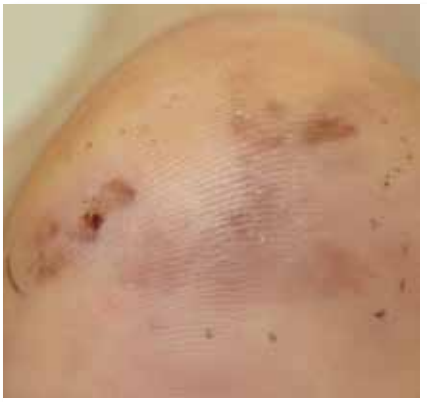
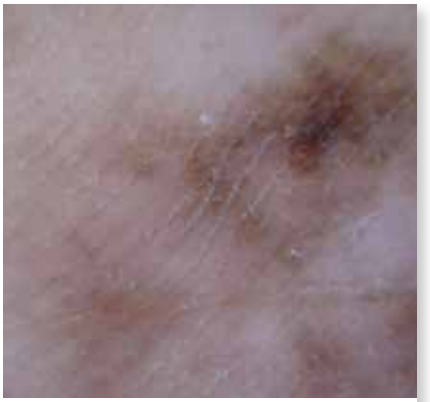
Clinically, lentigo maligna presents as an ill-defined and variably pigmented macule with ABCD features (Figures 3a and b). Diagnosis can be challenging on severely sun-damaged skin, and differential diagnoses include solar lentigo, pigmented solar keratosis, pigmented intraepidermal carcinoma and pigmented seborrhoeic keratosis. Dermoscopy is a valuable diagnostic aid, as lentigo maligna exhibits a number of unique features including asymmetric perifollicular pigmentation, rhomboidal structures and annular granular structures.[27]

Acral lentiginous melanoma

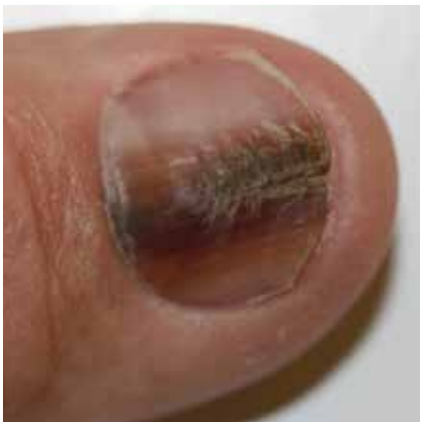
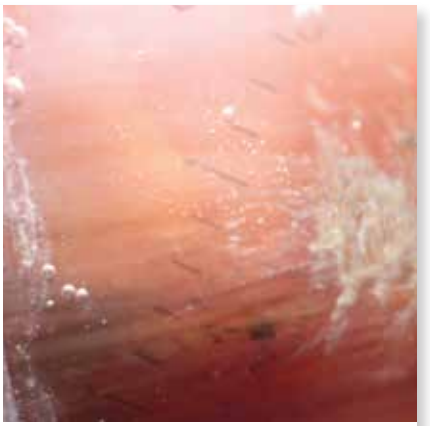
Acral lentiginous melanoma accounts for 0.5 to 1.0% of melanomas in Australia and occurs on the sole, palm and nail apparatus (Figures 4a and b). Uniquely among melanomas, acral lentiginous melanoma is not thought to be related to ultraviolet light exposure.[28] It is the most common subtype of melanoma in people with deeply pigmented or Asian skin.

Clinically, these melanomas present as pigmented macules that appear similar to superficial spreading melanomas. However, they are more often light-coloured or pink.[28] Not uncommonly, they may be mistaken for a wart or fungal infection. Any warty acral lesion or erythematous patch responding poorly to treatment should be biopsied. Although melanomas on acral areas may appear relatively flat, this can be deceiving, and many have invaded to a significant depth histopathologically. Acral lentiginous melanoma is associated with a poorer prognosis because of delayed diagnosis and advanced thickness at diagnosis. A parallel ridge pattern on dermoscopy is highly specific for this type of melanoma.

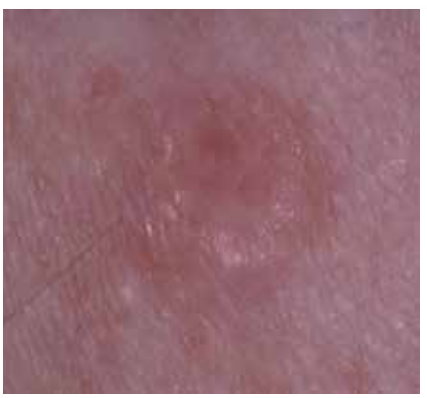
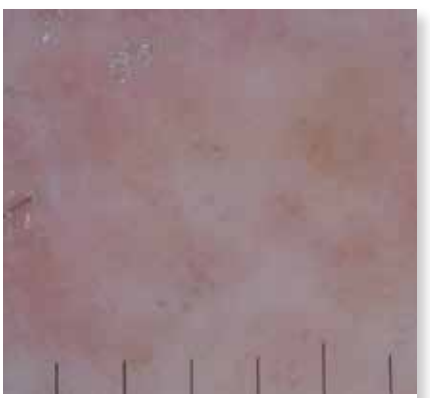
Subungual melanoma, a variant of acral lentiginous melanoma, originates within the nail matrix and presents as a broad and expanding pigmented band, referred to as longitudinal melanonychia (Figures 5a and b).[29] Adjacent nail fold pigmentation may be seen, known as Hutchinson's sign. The major differential diagnosis is subungual haematoma. However, subungual haematoma has a different colour (red through to blue–black) and does not conform to the band-like pattern of melanoma.

Figures 4a and b. a (left). In situ acral lentiginous melanoma on the heel. b (right). Dermoscopy shows an irregular pigment pattern.

Figures 5a and b. a (left). In situ subungual melanoma of the thumb presenting as longitudinal melanonychia with associated nail dystrophy. b (right). Dermoscopy shows the longitudinal pigmented band.

Figures 6a and b. a (left). A desmoplastic melanoma (3.9 mm thick) with a clinically banal appearance, which is easily misdiagnosed. b (right). Dermoscopy shows a completely amelanotic lesion. A history of change was crucial to the diagnosis.

Desmoplastic melanoma

Desmoplastic melanoma is a rare spindle cell melanoma that produces a scar-like tissue reaction and is frequently associated with perineural invasion. It is more common in elderly people and on the head and neck.[30]

Desmoplastic melanoma often appears as an amelanotic plaque or nodule (Figures 6a and b). They typically have a firm, sclerotic or indurated quality and may appear clinically innocuous. As a result, desmoplastic melanomas are frequently misdiagnosed as nonmelanoma skin cancer, dermatofibroma, scar or even dermatitis. Diagnostic delay is common and these tumours may be deeply invasive at the time of diagnosis. A history of recent appearance or change is often crucial to the diagnosis.

MELANOMA MIMICKERS

The clinical and dermoscopic features of common skin lesions that can mimic the appearance of melanoma are listed in the box on page 50. Pigmented lesions such as dysplastic naevi and seborrhoeic keratoses may appear similar to pigmented melanoma, whereas nonmelanoma skin cancers may resemble amelanotic nodular and desmoplastic melanoma. Figures 7 to 13 illustrate some features of nonmelanoma lesions that assist diagnosis.

INITIAL BIOPSY OF SUSPECTED MELANOMA

Excisional biopsy

An excisional biopsy with a 2 mm margin is the ideal biopsy method for lesions suspected of being melanoma.[1] Complete excision allows accurate assessment of overall histopathological architecture, cellular detail and tumour depth.

Even with a confident clinical diagnosis of melanoma, excisional biopsy should be performed rather than immediate wide local excision. Immediate wide excision may compromise margins and the opportunity to perform sentinel lymph node biopsy.

Appropriate surgical planning is important for excisional biopsy. The long axis of an elliptical excisional biopsy should

CLINICAL AND DERMOSCOPIC FEATURES OF COMMON NONMELANOMA CUTANEOUS LESIONS

Melanocytic naevus: symmetrical with regular pigment network or globules and symmetrical structures (Figures 7a and b)

Dysplastic naevus: atypical or irregular pigment network without melanoma specific criteria (Figures 8a and b)

Seborrhoeic keratosis: milia-like cysts, comedo-like openings, fissures and ridges, fingerprint-like structures, well-defined borders, hairpin vessels (Figures 9a and b)

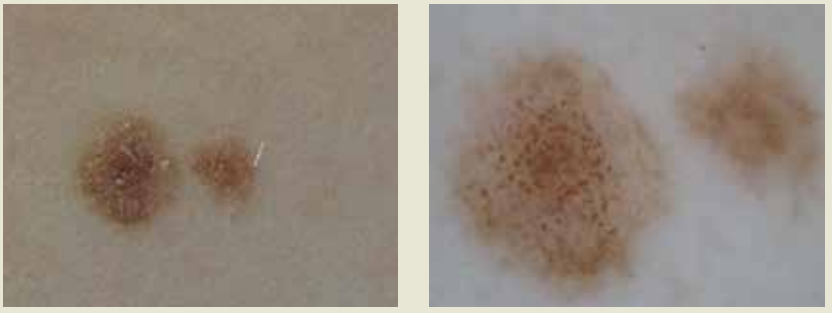
Haemangioma: venous lakes and lacunes (Figures 10a and b)

Dermatofibroma: Fitzpatrick's 'dimple' sign, central hypopigmentation surrounded by delicate pigment network (Figures 11a and b)

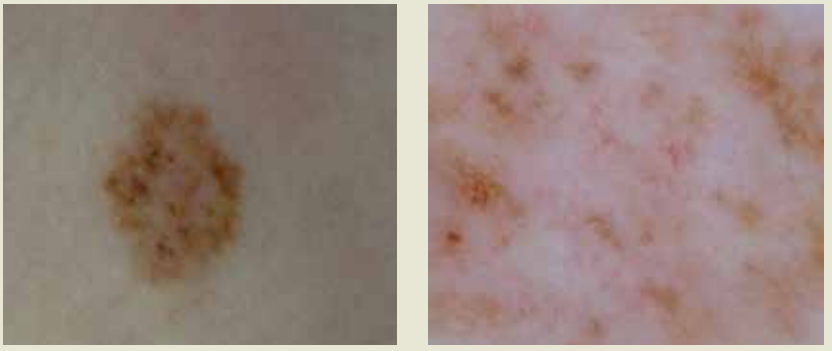
Basal cell carcinoma: arborising vessels, spoke wheel-like structures, leaf-like areas, blue-grey ovoid nests, multiple nonaggregated blue-grey globules, ulceration (Figures 12a and b)

Squamous cell carcinoma: hyperkeratosis, white structureless areas, white circles, white dots, keratin pearls, glomerular vessels, hairpin vessels and serpentine vessels (Figures 13a and b)

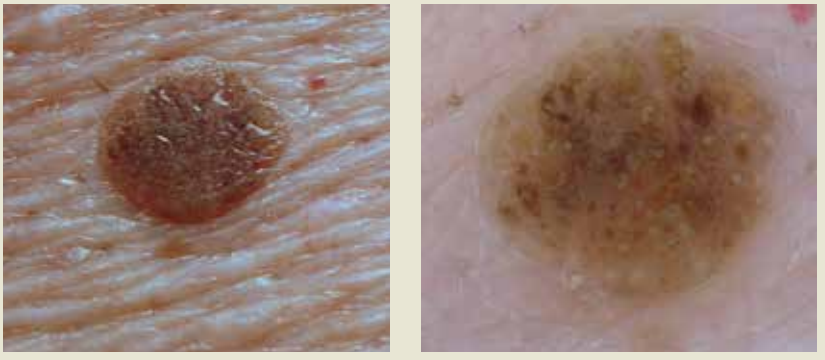
NONMELANOMA LESIONS



Figures 7a and b. a (left). Melanocytic naevus. b (right). Dermoscopy shows a symmetrical lesion with regular pigment network.



Figures 8a and b. a (left). Dysplastic naevus. b (right). Dermoscopy shows an irregular pigmentation pattern but no melanoma-specific features.



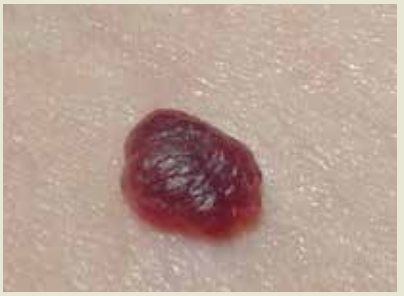
Figures 9a and b. a (left). Seborrhoeic keratosis. This lesion has a 'stuck on' appearance with well-defined borders. b (right). Dermoscopy reveals fissures and ridges, milia-like cysts and irregularly shaped crypts.

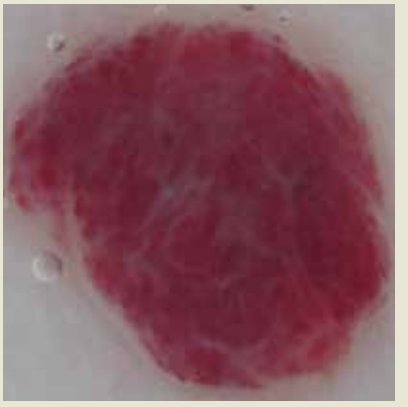
follow the lines of relaxed skin tension as this may allow subsequent re-excision to be closed primarily rather than with a graft or flap. Complicated skin closure with local flaps should be avoided, as flap closure distorts skin architecture and complicates wide local excision. Skin flaps may also interfere with lymphatic drainage and decrease the accuracy of sentinel lymph node biopsy.

Partial biopsy

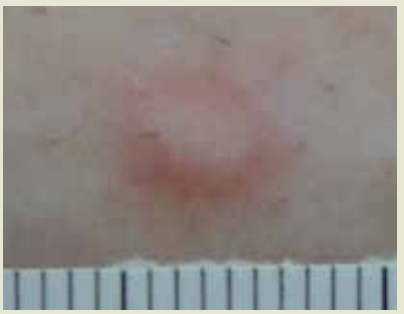
Partial biopsy techniques (punch, shave, curettage or incision) should be avoided if possible. Partial biopsy increases the chance of medical errors, including pathological misdiagnosis through misrepresentative sampling, and can interfere with assessment of tumour thickness and induce pseudomelanoma (a recurrent naevus that mimics melanoma). A recent study showed that 24% of punch biopsies for melanoma failed to detect its presence, and punch biopsies were 20 times more likely to lead to misdiagnosis than excisional biopsies.[31] This is reflected in

NONMELANOMA LESIONS (continued)

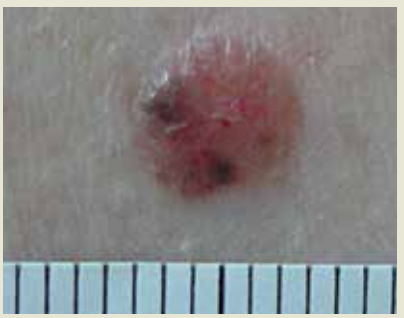


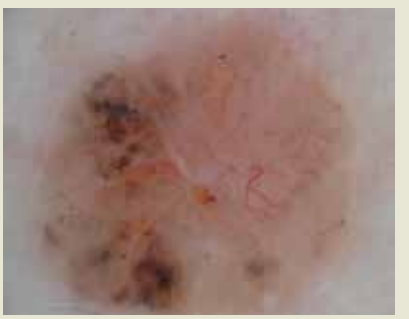


Figures 10a and b.
a (above). Haemangioma.
b (right). Dermoscopy shows vascular lakes.



Figures 11a and b. a (left). Dermatofibroma. b (right). Dermoscopy reveals a central scar-like area.





Figures 12a and b. a (left). Pigmented basal cell carcinoma. b (right). Dermoscopy shows crisply focused arborising vessels, blue–grey ovoid nests and blue–grey globules.

the finding that partial biopsies are a significant cause of litigation.[32]

Nevertheless, an excisional biopsy may not be appropriate in all circumstances. For instance, a partial biopsy may be needed if the lesion is large or located in a cosmetically or functionally important area such as the face or acral skin. A superficial shave biopsy is often used for investigation of an atypical pigmented macule, particularly on the face, to diagnose early lentigo maligna. For superficial melanomas, a well performed shave excision can be used to remove the complete lesion. However, for invasive tumours, saucerisation biopsy commonly transects the base, irreparably compromising assessment of tumour depth, the most important prognostic indicator.

When a partial biopsy is performed, it should include the most suspicious areas of the lesion. Dermoscopy may assist in identifying these areas, and partial biopsies are best undertaken by those with expertise in the clinical diagnosis of cutaneous lesions. As a rule, the smaller the proportion of the lesion that is biopsied, the greater the potential for error. When partial biopsy is performed, histopathological conclusions need to be interpreted cautiously and with full understanding of the limitations of the biopsy method. If there is discordance between the clinical impression and the histopathology, or if there is diagnostic uncertainty, a better sample should be obtained, preferably through excisional biopsy.

TREATMENT OF PRIMARY MELANOMA

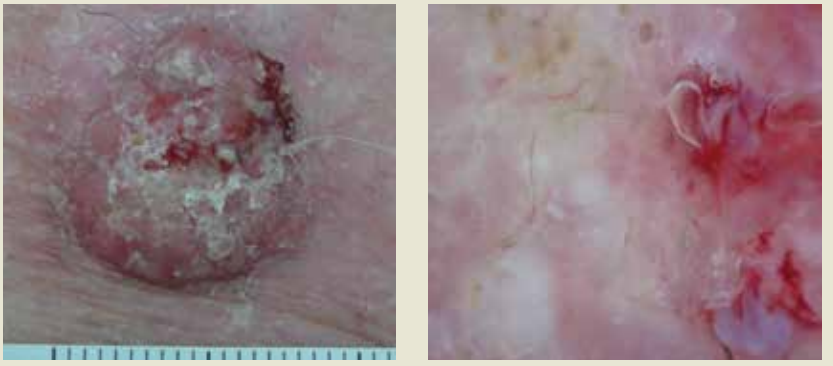
Wide local excision

After initial biopsy, the treatment for histopathologically confirmed primary melanoma is wide local excision of the skin and subcutaneous tissues around the melanoma. The recommendations for minimum radial excision margins are based on the maximum Breslow thickness of the primary melanoma (Table).[1] However, it should be noted that there are inadequate data on whether a margin greater than 1 cm offers any survival advantage or reduces risk of local recurrence.[33-35]

The desired surgical margin is measured preoperatively from the edge of the melanoma or scar, using a ruler and marking pen. Margins should be measured before excision because tissue shrinkage of the biopsy specimen after excision may reduce the measured margin. Excisions should have vertical edges to ensure consistent margins.

If primary closure is expected to be challenging or cosmesis is a concern, the patient should be referred to a surgeon or multidisciplinary melanoma unit. Moh's surgery is generally considered inappropriate for the treatment of melanoma.

NONMELANOMA LESIONS (continued)



Figures 13a and b. a (left). Nodular squamous cell carcinoma. b (right). Dermoscopy shows an amelanotic nodule with hyperkeratosis, white structureless areas, white circles and linear irregular vessels.

TABLE. RECOMMENDED MARGINS FOR RADIAL SURGICAL EXCISION OF PRIMARY MELANOMA

Melanoma Breslow thickness*	Margin
In situ	5 mm
< 1.0 mm	1 cm
1.0 to 4.0 mm	1 to 2 cm
> 4.0 mm	2 cm

* Breslow thickness is measured from the granular layer of the epidermis down to the deepest invasive tumour cell. This is the single most important prognostic factor for clinically localised primary melanoma.

Sentinel lymph node biopsy

A sentinel lymph node is the first lymph node reached by metastasising cancer cells from the primary tumour site. This node can be identified by injecting dye and radioactive tracer at the primary tumour site before wide local excision. During sentinel lymph node biopsy, the sentinel node is located by a gamma probe and confirmed with blue dye staining, then removed for histological analysis. This allows assessment for nodal micrometastases. The status of the sentinel lymph node provides prognostic information additional to that obtained from the primary lesion.[3] However, the results of a large randomised control trial showed no overall survival benefit in patients who underwent sentinel lymph node biopsy.[36] Thus, the role of this procedure is currently an area of great debate.

Current guidelines recommend that patients with a melanoma greater than 1.0 mm in thickness be given the opportunity to discuss use of sentinel lymph node biopsy to provide prognostic information.[1] It is also sometimes offered for thinner melanomas with other high-risk histopathological features, such as ulceration or increased mitotic rate. The decision whether to undergo sentinel lymph node biopsy should be made in conjunction with a specialist in the field before the wide local excision is planned.

Staging investigations

Staging investigations, including blood tests, CT and PET (positron emission tomography) scans, are not recommended in patients who have no clinical evidence of metastatic disease.

Counselling patients about prognosis

The American Joint Committee on Cancer has produced an online prognostic calculator based on analysis of a large dataset of patients with long-term follow up (see the box on page 45). In addition to thickness and sentinel lymph node status, important negative prognostic factors are high mitotic rate, ulceration, male sex, axial location (trunk, head and neck) and older age.

MULTIDISCIPLINARY MELANOMA UNITS

There are several multidisciplinary melanoma units in Australia. These units offer specialist assessment and advice on all aspects of management for biopsy-proven localised melanoma and metastatic melanoma. Services provided by these units are outlined in the box on page 53.

FOLLOW UP

Patients with melanoma are followed up for two main reasons: to detect recurrence and, more importantly, to facilitate early detection of subsequent primary melanomas.

To detect recurrence, an important part of each follow-up consultation involves careful examination of the scar and lymph node status. Lymph nodes containing metastatic melanoma often rapidly increase in size and are firm to hard in consistency. However, studies have shown that three-quarters of patients detect their own recurrences if they have received appropriate melanoma education.[37] Therefore, patient self-examination is also essential and should be taught. Ultrasonography is increasingly being used as an adjunct to clinical examination for patients at higher risk of regional nodal metastasis, but there is insufficient evidence at present to support the inclusion of this technique in routine melanoma follow up.

For recurrence detection, there is little evidence to guide follow-up intervals, but it is generally recommended that patients at greatest risk of recurrence should be

SERVICES PROVIDED BY MULTIDISCIPLINARY MELANOMA UNITS

- Histopathology review by an expert dermatopathologist (this is particularly important for difficult histopathology, because 10% of patients seen in multidisciplinary melanoma units have a significant alteration in diagnosis or microstaging based on pathology review)
- Advice regarding the role of sentinel lymph node biopsy and staging investigations
- Wide local excision (particularly in cosmetically or functionally important sites or where complicated closure is required)
- Surgery for metastatic disease
- Radiation oncology assessment for treatment, adjuvant therapy and palliation
- Medical oncology assessment for patients with metastatic disease, including enrolment in clinical trials
- Full skin surface examination with dermoscopy
- Melanoma risk assessment, prognostication and advice regarding future surveillance and follow up
- Advice and treatment for unusual melanomas or melanomas on unusual sites
- Psychological support and counselling

followed up more often than those with a low risk of recurrence. Recurrences from thicker tumours are likely to present in the early years after diagnosis. Thus, a patient with an invasive melanoma less than 1 mm thick might be seen six-monthly, whereas a patient with a melanoma more than 4 mm thick might be checked every three months for the first two years (when the risk of recurrence is greater), four-monthly for the next two years, then six-monthly for two years and annually thereafter.

Secondly, and more importantly, follow up allows early detection of subsequent primary melanomas.[38] Most patients in Australia with melanoma are at greater risk of a subsequent primary melanoma (0.5 to 3.0% annually) than of metastatic disease. Furthermore, early diagnosis of subsequent primary melanoma leads to higher cure rates, whereas early detection of metastatic disease may have no effect on survival, although it helps minimise morbidity. A full skin examination should be performed by the clinician at least once a year. In addition, regular self-examination by patients is essential. Patients should be taught this process and be active partners in their ongoing management. As discussed previously, a program of increased surveillance should be implemented in patients at high risk of developing new melanomas.

CONCLUSION

Melanoma is one of the most common cancers in Australia and primary care clinicians represent the front line in melanoma management. Prognosis is closely associated with tumour thickness, and early diagnosis and treatment before the melanoma metastasises is crucially important. Clinicians should be aware of both typical and atypical melanoma presentations; the latter often represent the most aggressive tumours. When melanoma is suspected, early excisional biopsy or urgent referral is vital for a favourable outcome. MT

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A list of references is included in the website version (www.medicinetoday.com.au) and the iPad app version of this article.

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When is it melanoma?

An update on diagnosis and management

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