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1 Introduction: The 3-point checklist

The short, easy way to avoid missing a melanoma using dermoscopy

Other names for dermoscopy

Dermatoscopy
Epiluminescence microscopy (ELM)
Skin surface microscopy

Dermoscopy is an in vivo noninvasive diagnostic technique that magnifies the skin in such a way that color and structure in the epidermis, dermoepidermal junction, and papillary dermis become visible. This color and structure cannot be seen with the naked eye. With training and experience, dermoscopy has been shown to significantly increase the clinical diagnosis of melanocytic, non-melanocytic, benign and malignant skin lesions, with a 10–27% improvement in the diagnosis of melanoma compared to that achieved by clinical examination alone. There is, however, a learning curve to mastering dermoscopy, and it is essential to spend time perfecting it—practice makes perfect!

Technique

In classic dermoscopy, oil or fluid (mineral oil, immersion oil, KY jelly, alcohol, water) is placed over the lesion to be examined. Fluid eliminates surface light reflection and renders the stratum corneum transparent, allowing visualization of subsurface colors and structures. Using handheld dermoscopes that exploit the properties of cross-polarized light (polarized dermoscopy), visualization of deep skin structures can be achieved without the necessity of a liquid interface or direct skin contact with the instrument.

The list of dermoscopy instrumentation is long and continues to grow and evolve with the development of better and more sophisticated handheld instruments and computer systems. Depending on the budget and goals for the evaluation and management of patients with pigmented skin lesions, there is a wide variety of products to choose from.

The 3-point checklist

To encourage clinicians to start using dermoscopy, simplified algorithms for analyzing what is seen with the technique have been developed.

For the novice dermoscopist, the primary goal of dermoscopy is to determine whether a suspicious lesion should be biopsied or excised. The bottom line is that no patient should leave the clinic with an undiagnosed melanoma.

For the general physician, dermoscopy can be used to determine whether a suspicious lesion should be evaluated by a more experienced clinician.

Dermoscopy is not just for dermatologists; any clinician who is interested can master this potentially life-saving technique.

Triage of suspicious pigmented skin lesions

The 3-point checklist was developed specifically for novice dermoscopists with little training to help them not to misdiagnose melanomas while improving their skills.

Results of the 2001 Consensus Net Meeting on Dermoscopy (Argenziano G, *J Am Acad Dermatol* 2003) showed that the following three criteria were especially important in distinguishing melanomas from other benign pigmented skin lesions:

- dermoscopic asymmetry of color and structure;
- atypical pigment network; and
- blue-white structures (a combination of the previous categories of blue-white veil and regression structures).

Statistical analysis showed that the presence of any two of these criteria indicates a high likelihood of melanoma. Using the 3-point checklist, one can have a sensitivity and specificity result comparable with other algorithms requiring much more training. In a

preliminary study of 231 clinically equivocal pigmented skin lesions, it was shown that, after a short introduction of 1-h duration, six inexperienced dermoscopists were able to classify 96.3% of melanomas correctly using this method.

This first chapter provides 60 examples of benign and malignant pigmented skin lesions to demonstrate how the 3-point checklist works and the practical value of this simplified diagnostic algorithm.

The 3-point checklist was designed to be used as a screening method. The sensitivity is much higher than the specificity to ensure that melanomas are not misdiagnosed. We recommend that all lesions with a positive test (3-point checklist score of 2 or 3) are excised (Table 1).

Table 1.1 Definition of dermoscopic criteria for the 3-point checklist. The presence of two or three criteria is suggestive of a suspicious lesion

3-Point checklist	Definition
1. Asymmetry	Asymmetry of color and structure in one or two perpendicular axes
2. Atypical network	Pigment network with irregular holes and thick lines
3. Blue-white structures	Any type of blue and/or white color

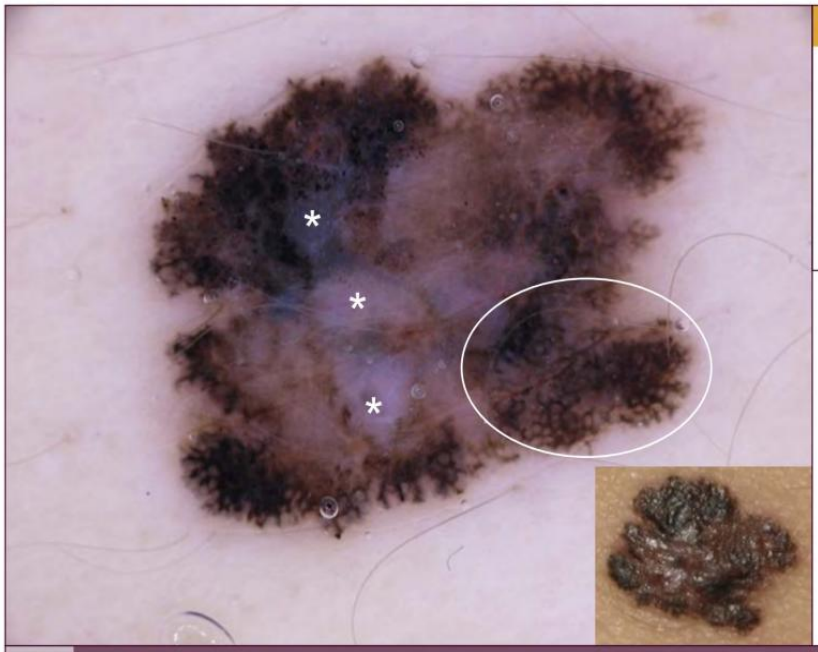


Fig. 1 Melanoma.

Criteria to diagnose melanoma can be very subtle or obviously present as in this case. This lesion clearly demonstrates all of the 3-point checklist criteria, namely asymmetry in all axes, an atypical pigment network (*circle*), and blue-white structures (*asterisks*).

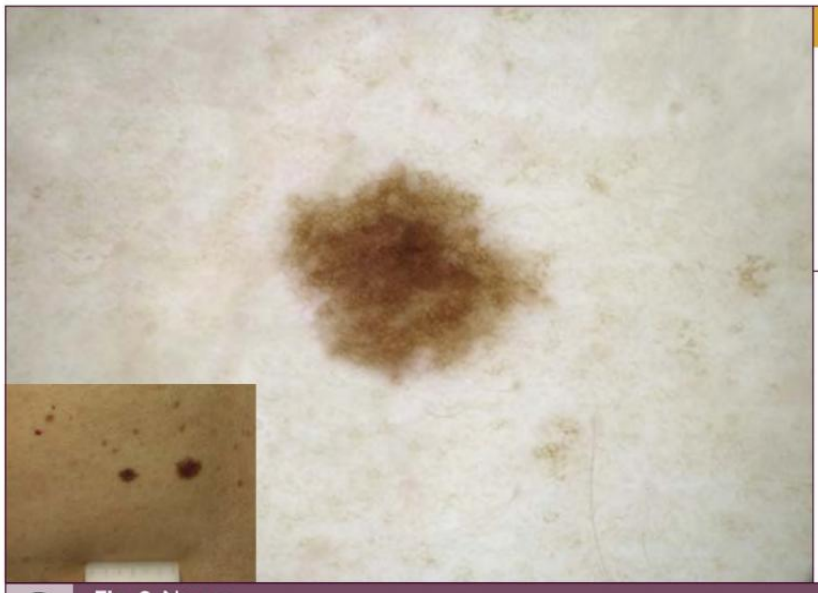


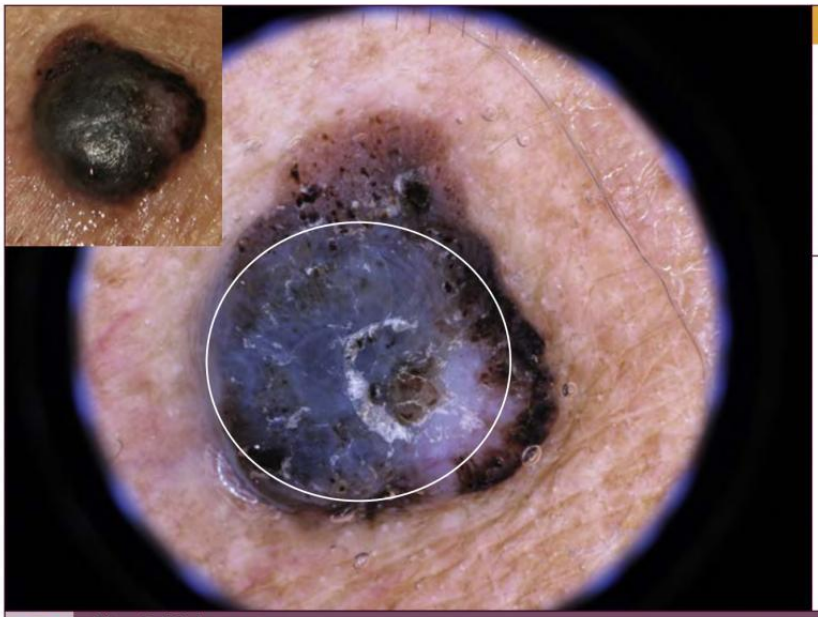
Fig. 2 Nevus.

In contrast to Fig. 1, none of the features of the 3-point checklist are seen in this lesion. The lesion is symmetrical, and the pigment network is regular, although it might seem to be atypical because the line segments are slightly thickened. Also there is no hint of any blue and/or white color.

Checklist	
Asymmetry	☑
Atypical network	☐
Blue-white structures	☐
Total score	**1**

Fig. 3 Nevus.

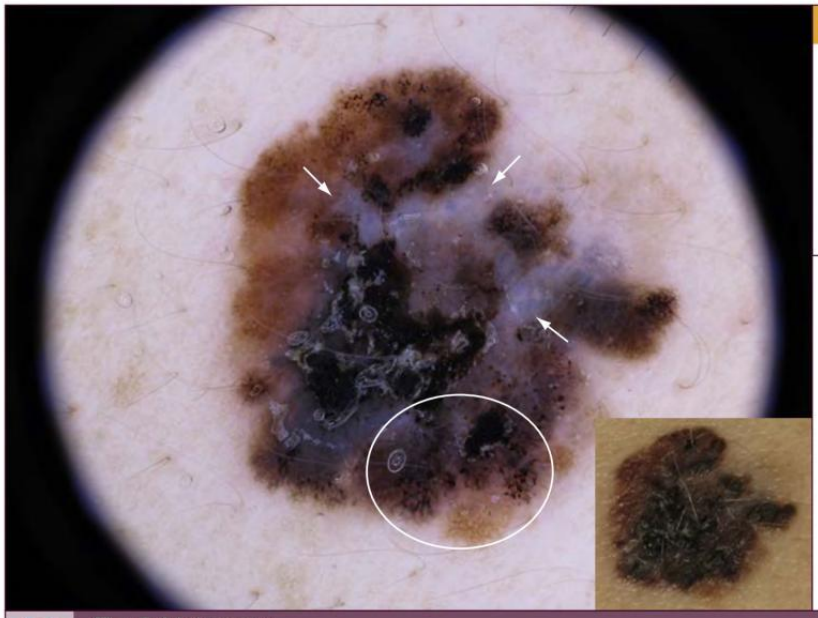
The novice might find this lesion difficult to diagnose. If in doubt, cut it out! With experience, the clinician will excise fewer of these banal nevi. There is asymmetry; however, neither an atypical pigment network nor subtle blue-white structures are present.



Checklist	
Asymmetry	☑
Atypical network	☐
Blue-white structures	☑
Total score	**2**

Fig. 4 Melanoma.

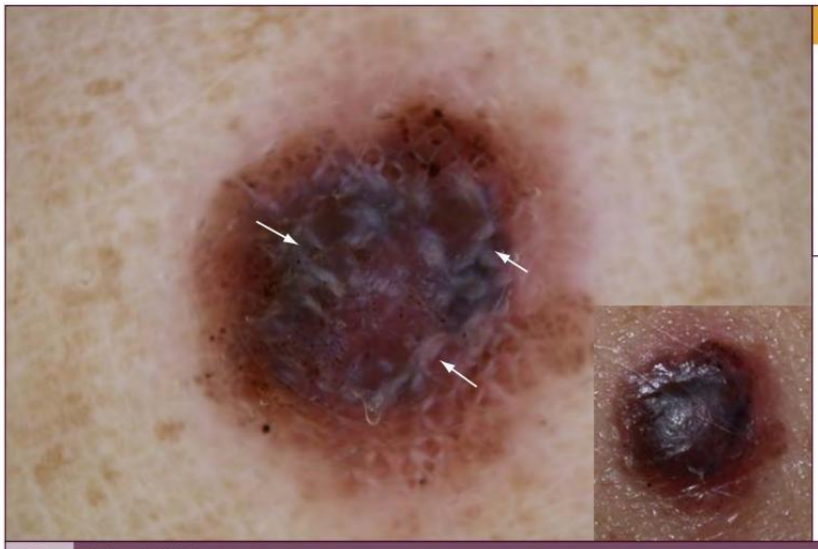
Even for a beginner, the asymmetry of color and structure should be obvious. This asymmetrical lesion also demonstrates blue-white structures (*circle*).



Checklist	
Asymmetry	☑
Atypical network	☑
Blue-white structures	☑
Total score	**3**

Fig. 5 Melanoma.

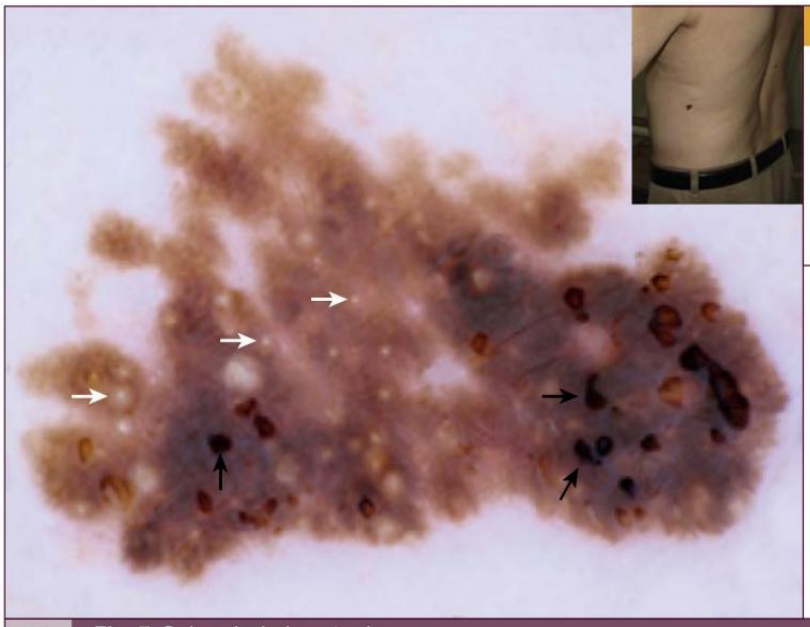
The color and structure in the lower half is not a mirror image of the upper half; therefore, there is asymmetry. An atypical pigment network with thickened and broken-up line segments (*circle*) and a large area of blue-white structures (*arrows*) are also seen.



Checklist	
Asymmetry	☑
Atypical network	☐
Blue-white structures	☑
Total score	**2**

Fig. 6 Melanoma.

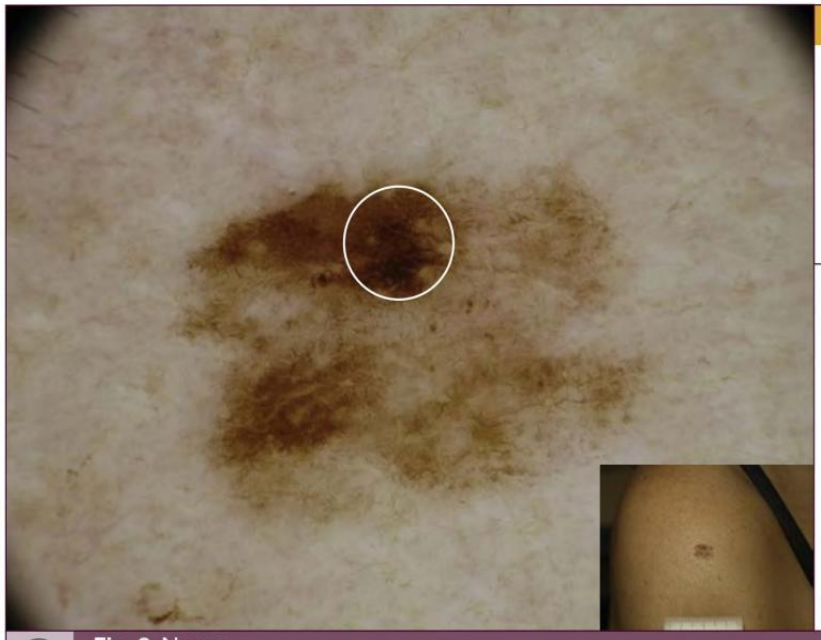
This lesion is slightly asymmetric in shape and more in structure, and therefore, a red flag should be raised. No pigment network is present, but there are numerous shiny white streaks (also called chrysalis-like structures) (*arrows*) representing a variation on the theme of blue-white structures.



Checklist	
Asymmetry	☑
Atypical network	☐
Blue-white structures	☐
Total score	**1**

Fig. 7 Seborrheic keratosis.

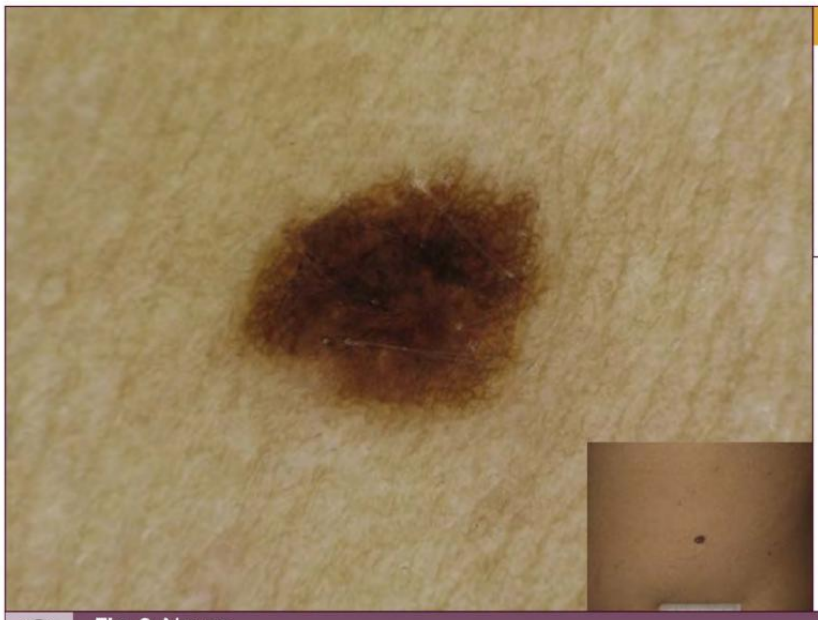
This seborrheic keratosis demonstrates a great deal of asymmetry of color and structure, but the other two criteria needed to diagnose melanoma are absent. If the multiple milia-like cysts (*white arrows*) and the numerous follicular openings (*black arrows*) diagnostic of seborrheic keratosis cannot be recognized, excise the lesion.



Checklist	
Asymmetry	☑
Atypical network	☐
Blue-white structures	☐
Total score	**1**

Fig. 8 Nevus.

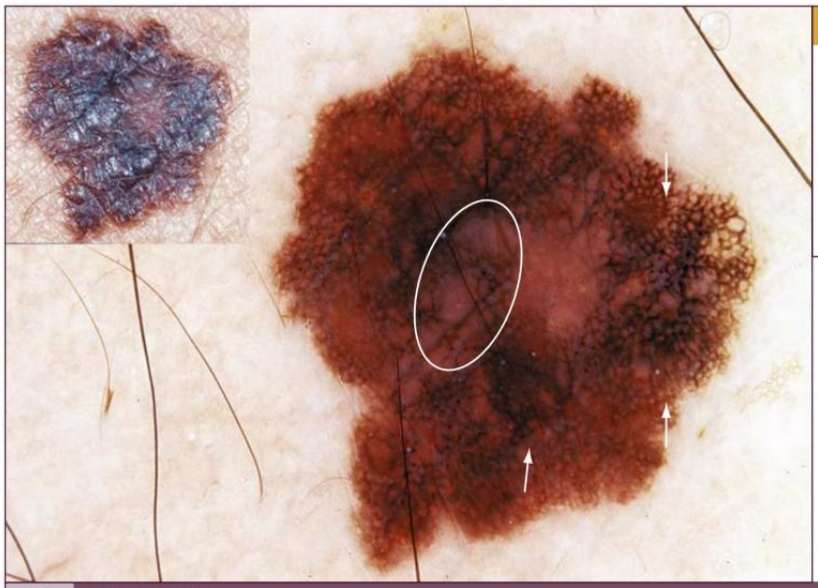
Some melanomas are featureless, so beware! The color and structure in the left upper quarter of the lesion is not a mirror image in any other quarter of the lesion. The presence of an irregular black blotch in the left upper quarter (*circle*) adds to the asymmetry. An atypical pigment network and blue-white structures are not seen. In our estimation this is a nevus warranting careful consideration for its management.



Checklist	
Asymmetry	☐
Atypical network	☐
Blue-white structures	☐
Total score	0

Fig. 9 Nevus.

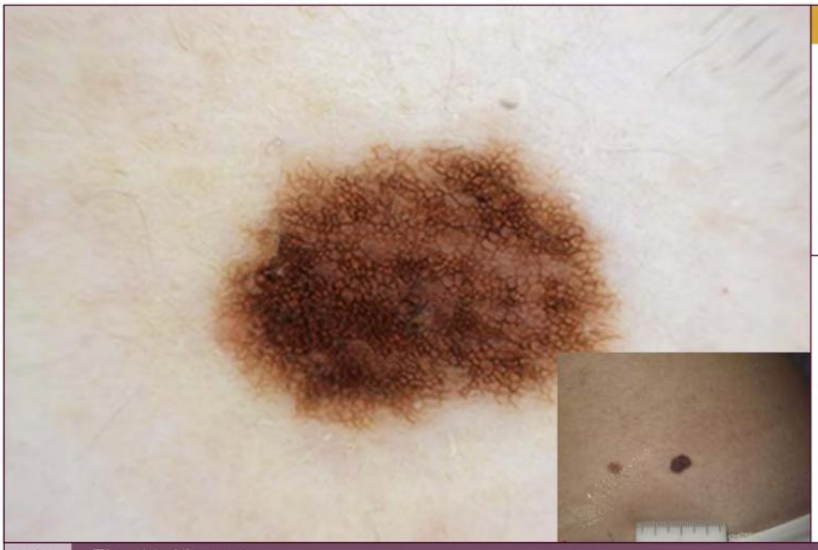
If in doubt, cut it out! With practice, fewer lesions that look like this will be excised. This is rather symmetrical, and there is a great example of a regular pigment network in the periphery of this banal nevus. Do not be fooled by the dark central color—it is not always a sign of malignancy. No blue-white structures are seen.



Checklist	
Asymmetry	☑
Atypical network	☑
Blue-white structures	☑
Total score	3

Fig. 10 Melanoma.

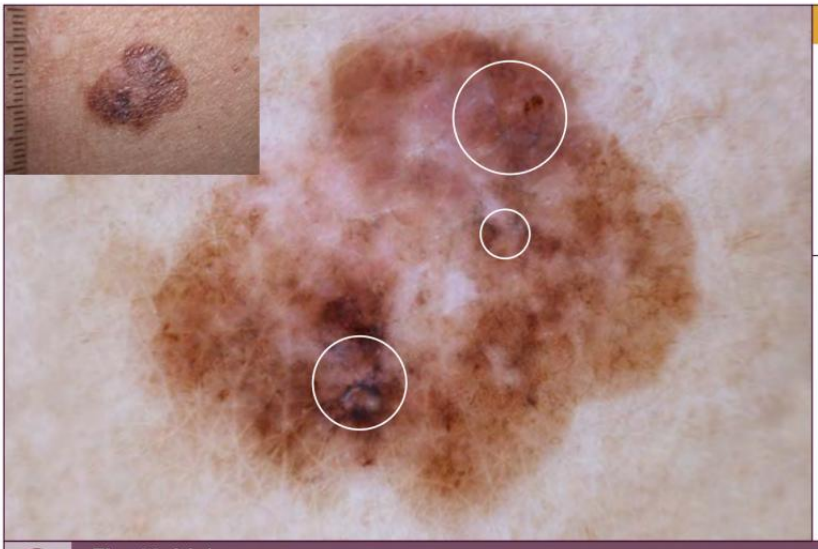
This lesion is a straightforward case of melanoma. The diagnostic criteria are striking, obvious asymmetry of color and structure, a markedly atypical pigment network (*arrows*), and blue-white structures (*circle*).



Checklist	
Asymmetry	☑
Atypical network	☐
Blue-white structures	☐
Total score	**1**

Fig. 11 Nevus.

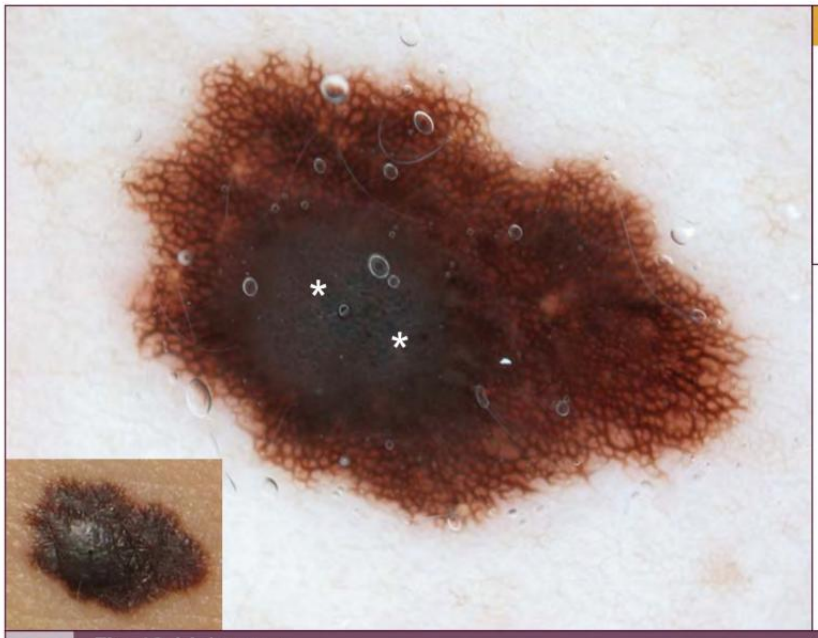
The clinical ABCDs could lead you astray with this banal nevus. There is slight asymmetry, but there is also a typical pigment network fading out at the periphery and blue-white structures are absent.



Checklist	
Asymmetry	☑
Atypical network	☐
Blue-white structures	☑
Total score	**2**

Fig. 12 Melanoma.

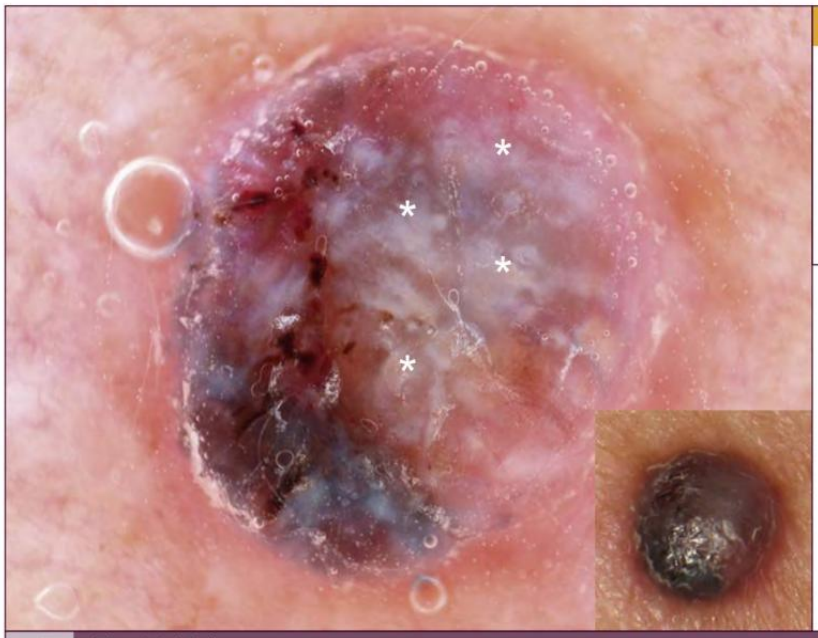
This lesion is clearly asymmetric in color and in dermoscopic structure. No straightforward pigment network is observed; however, blue-white structures (*circles*) are clearly seen throughout the lesion.



Checklist	
Asymmetry	☑
Atypical network	☑
Blue-white structures	☑
Total score	**3**

Fig. 13 Melanoma.

Clinicians might think that this lesion is nothing to worry about until they examine it with dermoscopy. There is asymmetry of color and structure, an atypical pigment network, and blue-white structures (*asterisks*) cover part of the lesion.



Checklist	
Asymmetry	☑
Atypical network	☐
Blue-white structures	☑
Total score	**2**

Fig. 14 Melanoma.

The extensive blue-white structures (*asterisks*) are the first clue to the seriousness of this lesion. Particularly color is clearly asymmetrical. A pigment network is absent, and there are well-developed blue-white structures.