

Dermoscopy Case

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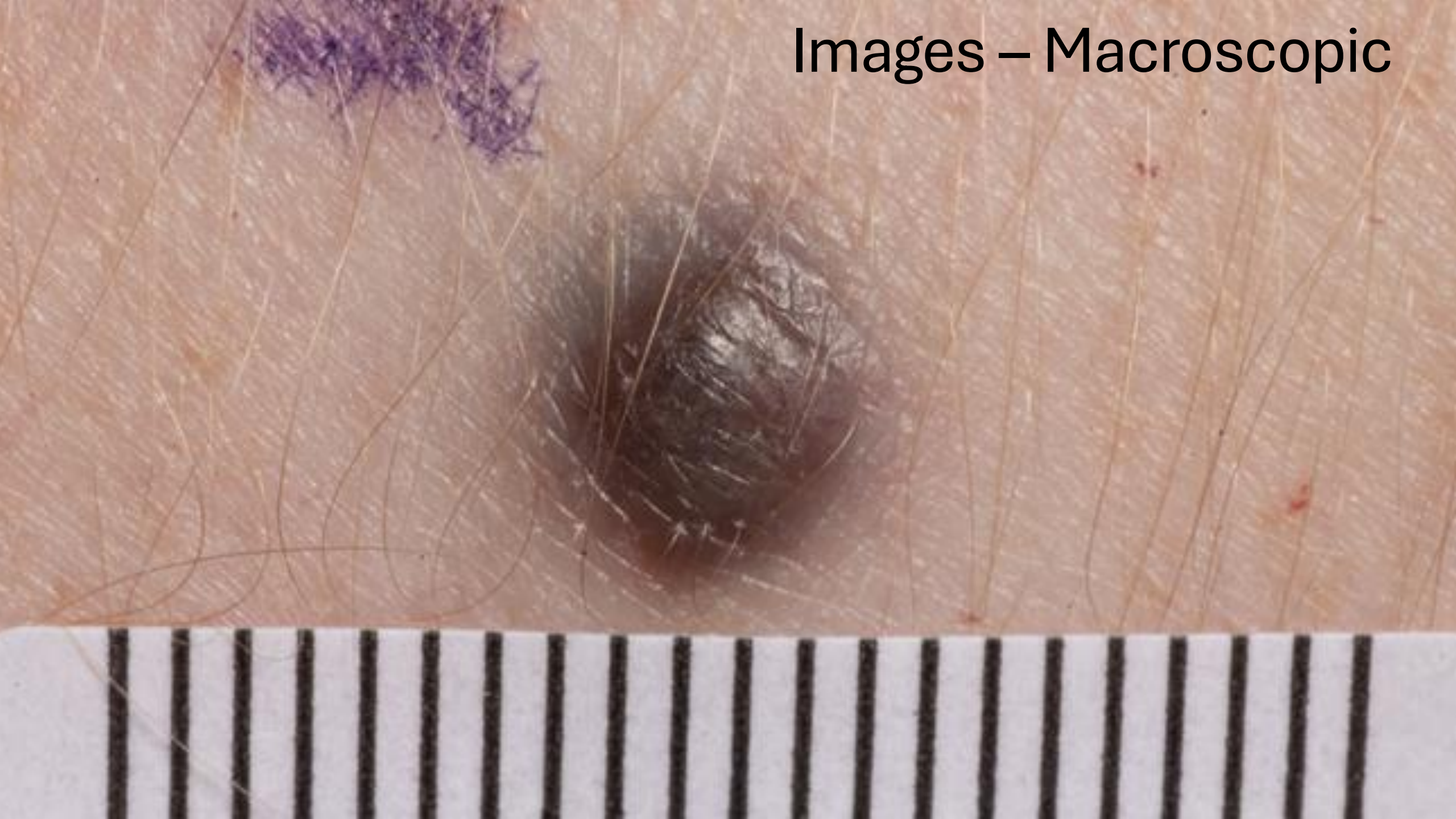
History

- 16 year old female
- Darkly pigmented lesion on right forearm for 3-4 years
- Stable in colour but possible growth reported by mum
- Mum concerned as lesion stood out and was different to her other moles
- No bleeding or itching

- **PMHx:**
- Epilepsy, intellectual disability



Images – Macroscopic



Images – Dermoscopic

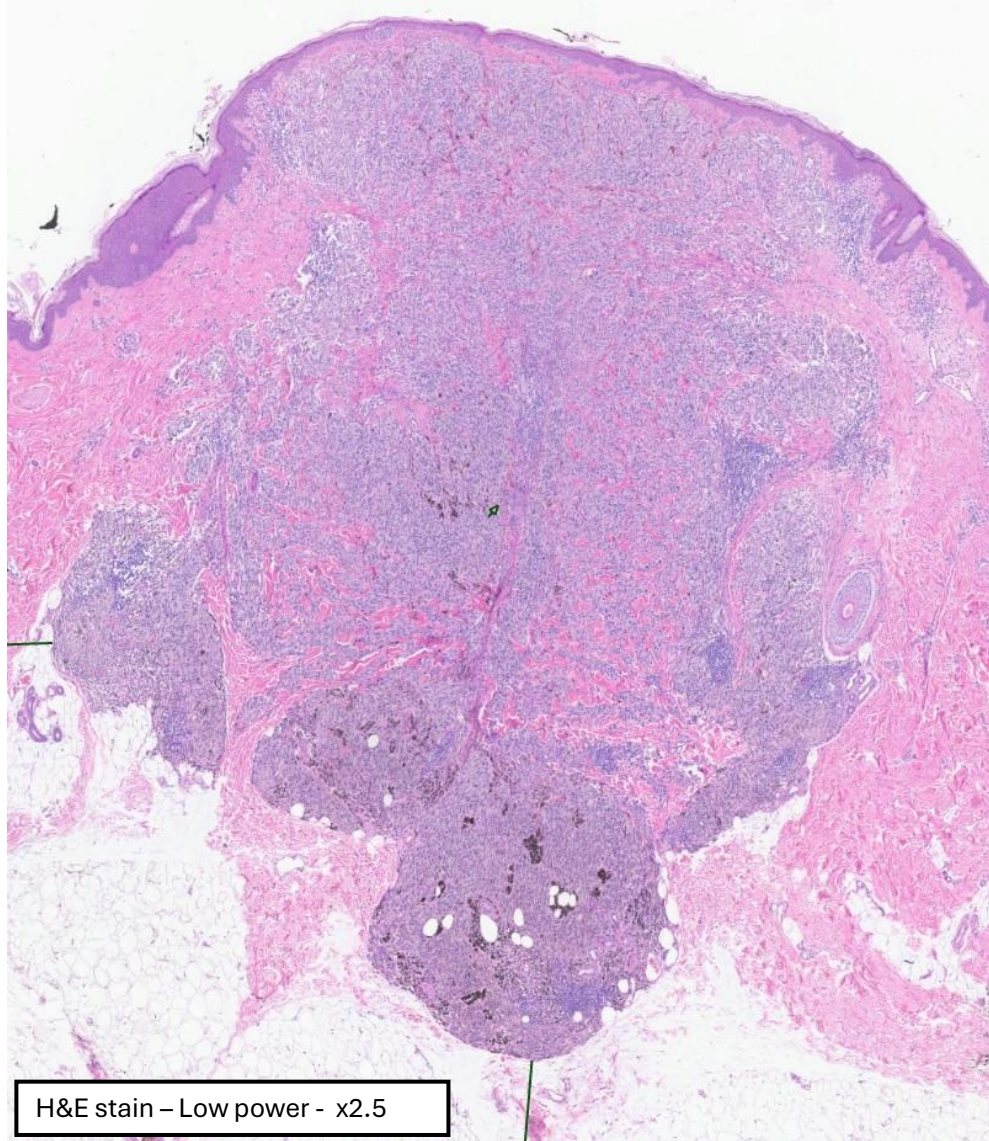




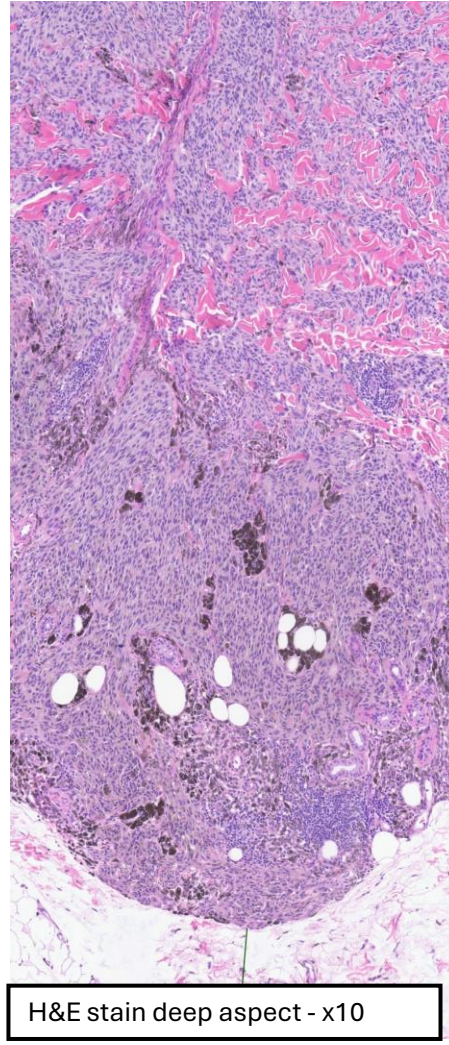
Differential diagnosis

- Deep penetrating naevus/melanocytoma
 - Pigmented epithelioid melanocytoma
 - Melanoma
 - Blue Naevus / Cellular blue naevus
-

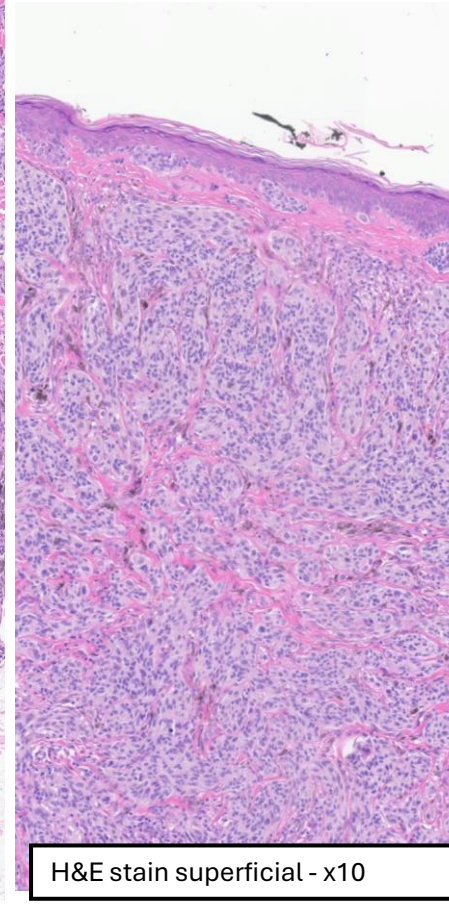
Management – Lesion excised with a 2mm margin



H&E stain – Low power - x2.5



H&E stain deep aspect - x10



H&E stain superficial - x10

Histology

Predominantly intradermal melanocytic lesion comprising of nests and cords of melanocytes which push into the subcutaneous fat with a "dumbbell" silhouette.

Focal junctional nesting
Mildly pleomorphic nuclei
Maturation with depth is not a feature

Many melanophages are admixed and there is a background of stromal sclerosis.

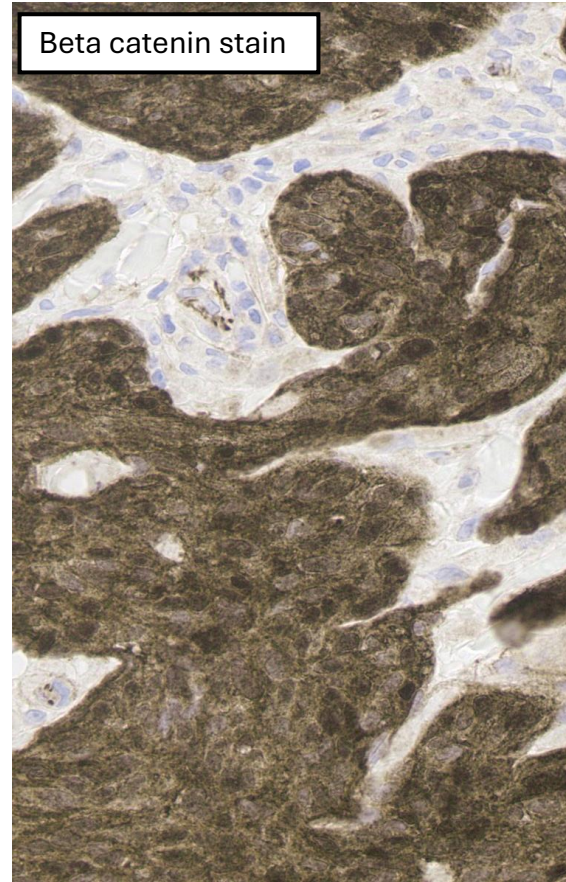
3 mitosis/mm²

Tumour thickness 4.6 mm

Immunohistochemistry/Molecular

Immunohistochemistry/ Molecular

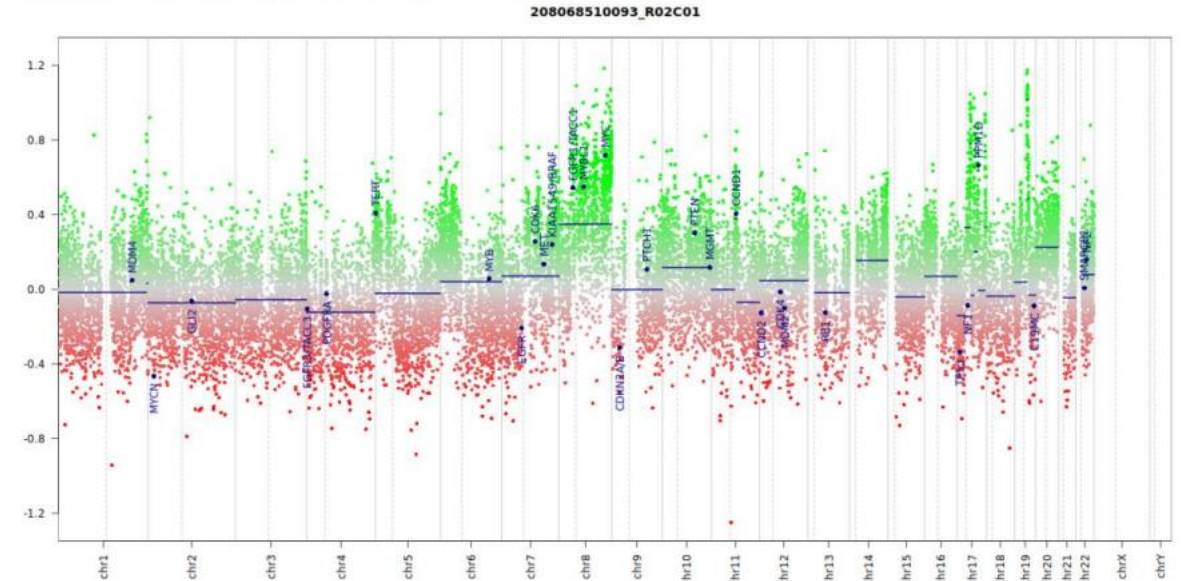
- Patchy expression of p16 and cyclin D1
- Beta-catenin - nuclear pattern of expression
- HMB-45 and PRAME negative.
- Ki-67 < 5%
- Copy Number Variations >3 (11 in total)
- CTNNB1 mutation
- No driver variants detected in BRAF, NRAS or KIT
- MAP2k1 driver mutation



Copy number variation summary:

GAIN: 5p, 6p, 7q, 8q, 11q, 12q, 14, 16p, 17q, 19q, 20

According to the study of Alomari et al. (Modern Pathology 2020;33:1307–1317), a finding more than three segmental CNAs, as seen here, is classified as a 'positive result'.



Diagnosis:

Malignant Deep Penetrating Tumour
in view of copy number variation(ref. 1)

Further management:

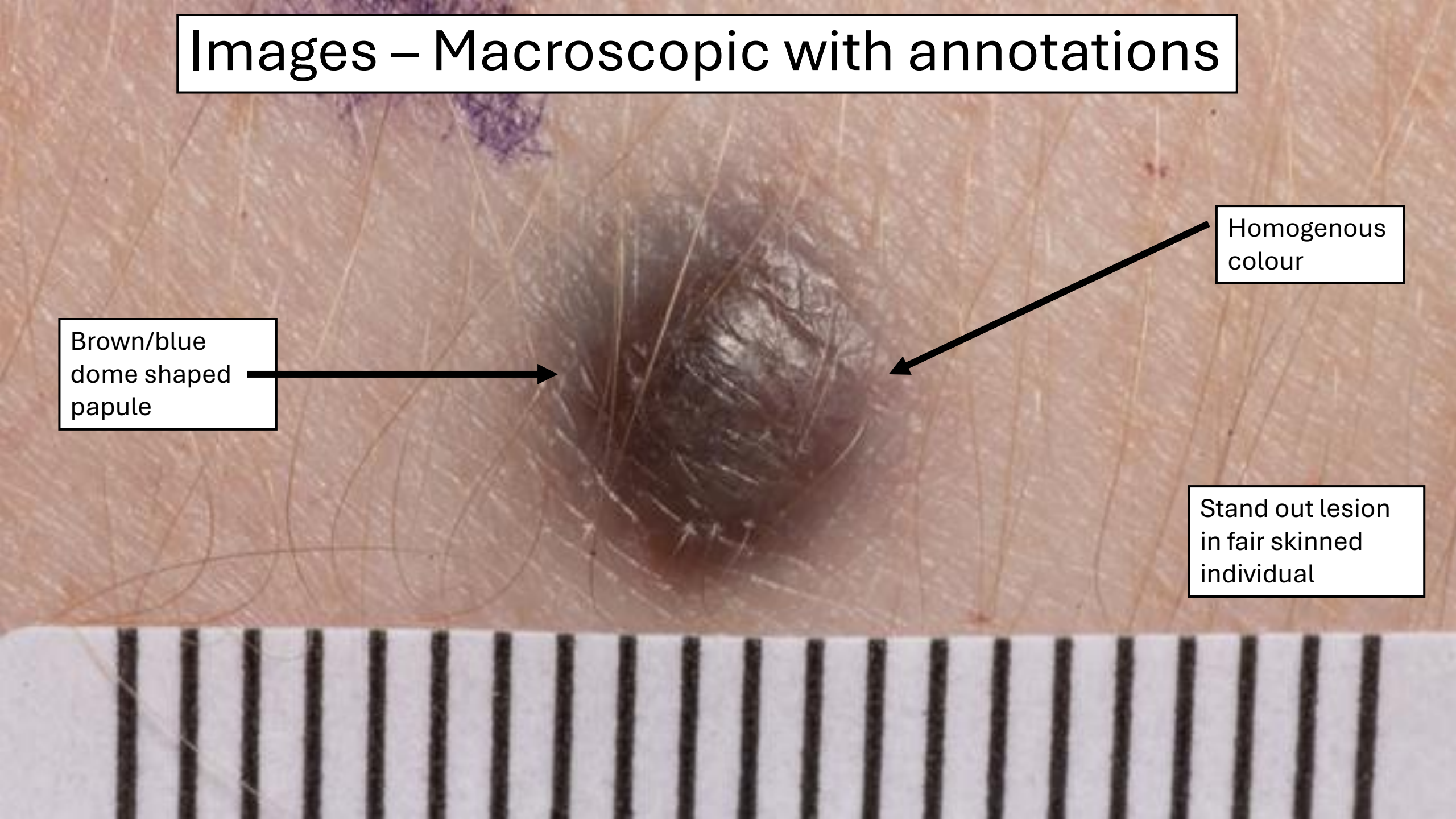
1cm Wide Local Excision
Sentinel lymph node biopsy (negative 0/2 Right axilla)
Under 5-year follow up

Images – Macroscopic with annotations

Brown/blue
dome shaped
papule

Homogenous
colour

Stand out lesion
in fair skinned
individual



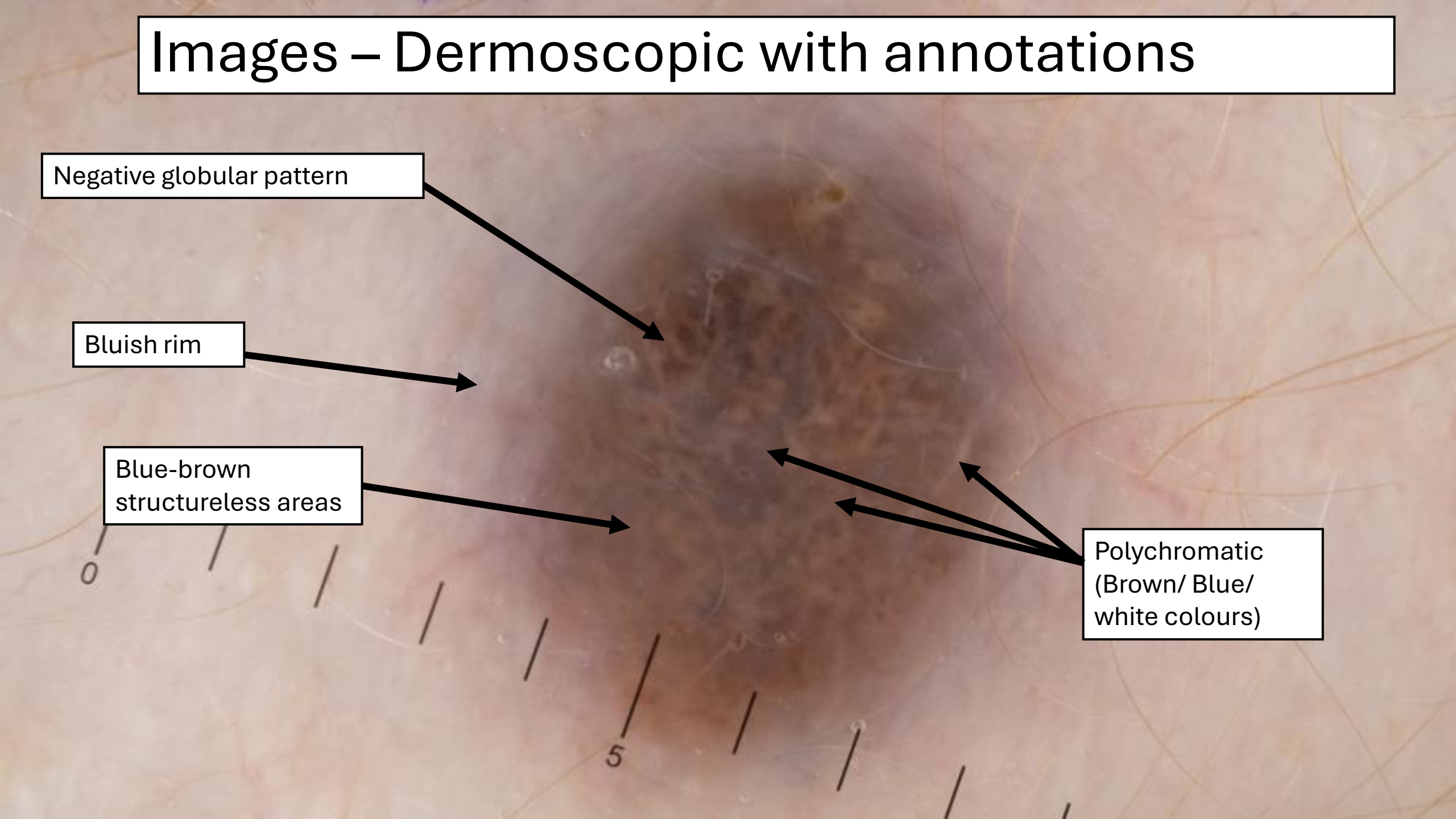
Images – Dermoscopic with annotations

Negative globular pattern

Bluish rim

Blue-brown
structureless areas

Polychromatic
(Brown/ Blue/
white colours)



Brief summary of diagnosis & or associations

- Dermatoscopic features of Deep Penetrating Naevi (DPN) and their malignant counterparts is not widely reported.
- We identified three publications including:

	Published description	Our case
Guadagni et al(ref.2)	Negative globular pattern Underlying blue-brown homogenous pigmentation Dirty-tan cobblestone structures developing over time	Suggestion of a negative globular pattern and a blue-brown background.
Ferrara et al(ref.3)	Two DPNs - polychromatic (3 or more colours)	Present in our case
Robles-Tenorio et al(ref.4)	Rainbow pattern Blue-white structureless areas	Not seen Bluish-brown structureless areas

- Histologically DPN can be identified due to the presence of nuclear staining of beta-catenin. Morphologically they have a wedge shape and a cellular pushing lower border and fail to show maturation. They typically have an ordinary naevus component.
- Even if DPN is suspected clinically, histopathological and molecular assessment is needed to exclude malignant deep penetrating tumour as in our case, particularly if evolving and stand out naevi.

Other learning points

Distinguishing DPN from deep penetrating melanocytoma (DPM) and malignant DPT histologically is challenging.

As per Ebbelaar's recent publication (ref.1), the presence of >3 copy number variations in our case led to the diagnosis of malignant DPT.

Without this we may have favored a diagnosis of DPM, as such it is essential that such lesion undergo the relevant molecular tests.

	DPN (Naevus)	DPM (melanocytoma)	Malignant DPT (Melanoma)
Mitosis	0-2 per mm ²	Often > 2 per mm ² <2 does not exclude DPM	Often > 2 per mm ² <2 does not exclude MDPT
Atypia	Mild-mod	Mild-Mod (can be severe)	Often severe Mild - moderate atypia does not exclude MDPT
Ki65	<5	Mostly <10% <5% does not exclude DPM	Mostly ≥10% <5% does not exclude MDPT
p16	present	Present/Partial loss Expression does not exclude DPM	Absent/partial loss Expression does not exclude MDPT
PRAME	Absent	Usually present	Usually positive
TERT	Absent	Usually absent	Usually present
Copy number	<3	<3	>3 < 3 CNVs does not exclude MDPT

References

1. Ebbelaar, C.F. *et al.* (2022) 'Towards diagnostic criteria for malignant deep penetrating melanocytic tumors using single nucleotide polymorphism array and next-generation sequencing', *Modern Pathology*, 35(8), pp. 1110–1120. doi:10.1038/s41379-022-01026-6.
2. Guadagni, M. and Nazzari, G. (2005) 'Clinical and dermoscopic features of an evolving deep-penetrating nevus', *Archives of Dermatology*, 141(11). doi:10.1001/archderm.141.11.1490.
3. Ferrara, G., Soyer, H.P., Malvehy, J., Piccolo, D., Puig, S., Sopena, J., Zalaudek, I. and Argenziano, G., 2007. The many faces of blue nevus: a clinicopathologic study. *Journal of cutaneous pathology*, 34(7), pp.543-551.
4. Robles-Tenorio, A., Preciado-Aguilar, M.S., Quiñones-Venegas, R. and Salazar-Torres, F.J., 2022. Dermoscopic rainbow pattern in a deep penetrating nevus. *Dermatology Practical & Conceptual*, pp.e2022046-e2022046.

BSDS Consent Form

- Signed BSDS consent form attached