Synopsis of Original Research Paper

## A new method for diagnosis of pigmentary skin lesions.

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The management of skin pigmentation is an important field in cosmetology. Usually, management of pigmentation in cosmetology deals with benign skin conditions like lentigines, freckles, and post-lesional pigmentation. Among these benign pigmentary conditions, one must differentiate malignant lesions such as melanomas. Eary diagnosis of melanoma is important because advanced melanoma has poor prognosis. Recently, our group developed a personal computer-based three-dimensional (3D) reconstruction system, which can visualize 3D structure of dermatopathological specimens. In this report, I employed this method to a pigmentary skin lesion, nevus pigmentosus, combined with clinical detailed observation of the lesion by digital microscopy, to investigate if this method is useful in the diagnosis of pigmentary lesions. Thirty serial sections from each block were stained with H&E. Serial images were registered using a graphics program Photoshop. After extracting the region of interest, three-dimensional images were projected using NIH-Image program. Biopsy specimens obtained from normal shoulder skin showed net-like structure of rete ridges and dermal papillae fit to each opening of the net, and biopsy specimens from normal palmar skin showed wide incurved structure of epidermis, which corresponded to the skin surface creases. In nevus pigmentosus of the sole, dermoepidermal junction area was irregularly depicted corresponding to the presence of junctional nevus cell nests. Relationship between the distribution of nevus nests and surface structure of the epidermis was also visualized. Further study is now under investigation to show the relationship between detailed clinical observation with digital microscopy and the histological three-dimensional structures of nevus pigmentosus.