

## Digital Verrucous Fibroangioma: A New Variant of Verrucous Hemangioma

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**In this article, we report on 4 cases of a dome-shaped nodule on the dorsum of the finger, which had been present since birth and slowly enlarged. On light microscopic examination, these nodules showed similarities to verrucous hemangioma. However, they were characterized by distinct clinical features and proliferation of dermal connective tissue. We consider these tumors to be a variant of verrucous hemangioma and propose to term them digital verrucous fibroangioma.**

(Accepted December 30, 1991.)

Acta Derm Venereol (Stockh) 1992; 72: 303-304.

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We have encountered 4 characteristic cases of a benign neoplasm which revealed a benign, brownish, slightly rough surfaced nodule on the dorsum of the finger, present since birth. They histopathologically resemble verrucous hemangioma. However, they do not only have clinically characteristic features but also show proliferation of dermal connective tissue. We cannot find any report of a similar case and refer to our cases by the term "digital verrucous fibroangioma".

### CASE REPORTS

#### Case 1

A 3-year-old Japanese boy noticed an asymptomatic, dome-shaped, skin-coloured nodule on the central dorsum of the left fourth finger, which had been present since birth. The nodule slowly enlarged and

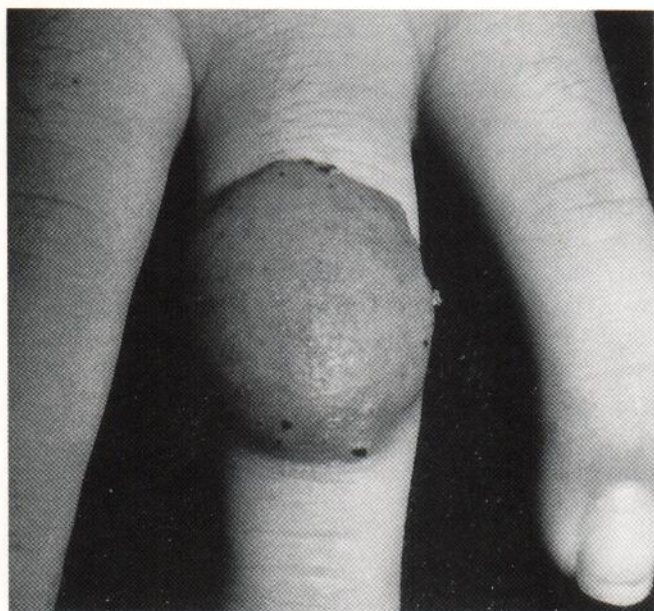


Fig. 1. Case 1.

changed to brown during its growth. The boy visited us to have it removed. The nodule was soft, purplish brown, spherical in shape with a diameter of 12 mm, and located on the dorsum of the middle phalanx of the fourth finger of his left hand (Fig. 1). The surface of the nodule was slightly rough and scattered with black dots. It was movable from the underlying tissue. The lesion was surgically excised. No recurrence was seen. Histological examination revealed moderate hyperkeratosis and acanthosis. Some capillaries in the papillary dermis were markedly dilated (Fig. 2). The dermis, especially the middle and the lower dermis to the subcutaneous tissue, showed numerous dilated blood vessels, which were of varying size and filled with blood. Most of the blood vessels were composed of a single layer of endothelial cells. A proliferation of immature endothelial cells was scattered. Moreover, the dermis showed abundant collagen fibers (Fig. 2), and numerous cells with phagocytized brown granules were distributed around the sweat glands and between the collagen fibers. Numerous positive cells with iron staining were seen in the dermis.

#### Case 2

A 10-year-old Japanese boy was referred to our department. A small nodule had been present on the dorsum of his left third finger since birth. The nodule slowly enlarged as the child grew up. Physical examination revealed a firm, brownish, dome-shaped lesion on the

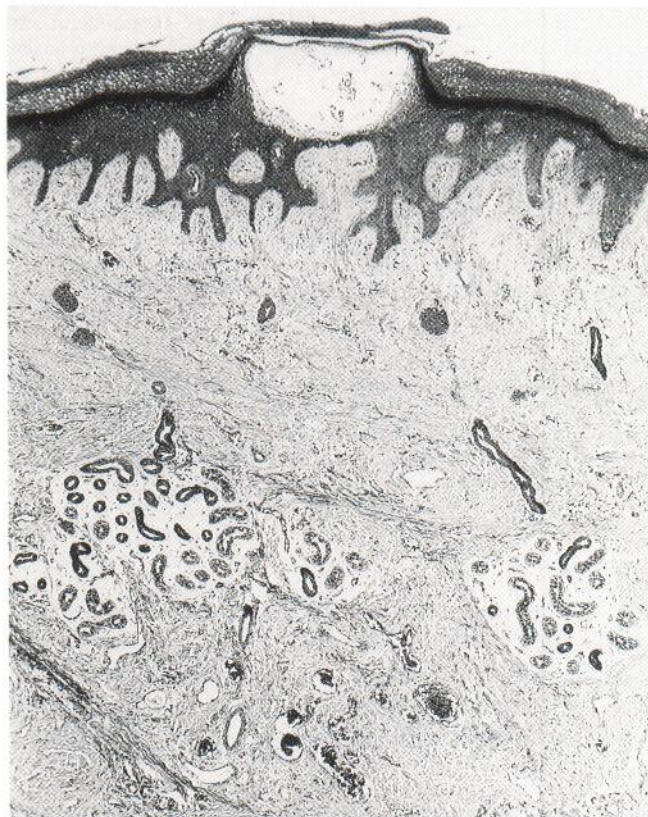


Fig. 2. Markedly dilated capillary is present in the papillary dermis. There are numerous dilated blood vessels filled with blood in the entire dermis associated with abundant collagen fibers. (hematoxylin eosin stain; original magnification,  $\times 30$ ).

Table I. The clinicopathological details of our cases

Patient No.	Age year/sex	Site	Onset	Appearance	Histological changes		
					Epidermis	Blood vessel	Connective tissue
1	3/M	lt. finger (IV) dorsum	at birth	Dome-shaped Black dot (++)	+	+	+
2	10/M	lt. finger (III) dorsum	at birth	Dome-shaped Black dot (one)	+	+	+
3	15/F	lt. finger (I) dorsum	at birth	Dome-shaped Black dot (++)			
4	2/F	lt. finger (III) dorsum	at birth	Dome-shaped Black dot (-)			

dorsum of the middle phalanx of the third finger of his left hand. The surface, with one black dot, was slightly rough. It was movable from the underlying tissue. It was surgically excised. At that time, the nodular lesion was well demarcated, and under the thickening dermis numerous dilated veins were coiled. Histologic examination revealed hyperkeratosis and elongation of the rete ridges. In the papillary dermis, the dilated capillaries were scattered. Numerous dilated blood vessels filled with blood were distributed in the deep dermis. These blood vessels were composed of a single layer of endothelial cells and partially demonstrated the capillary proliferations. Moreover, the thick collagen bundles were increased and numerous cells bearing hemosiderin were present between collagen fibers. Hemosiderin was confirmed by the special iron staining and seen between the collagen fibers and around the sweat glands.

#### Case 3

A 15-year-old Japanese female presented with an asymptomatic, firm nodule on the dorsum of the thumb of her left hand, present since birth. Earlier the lesion had slowly enlarged, but recently there had been no change in size. Physical examination revealed a 16×17×7-mm, brownish, spherical tumor, the surface of which had a small crowded area of black dots. The tumor was freely movable.

#### Case 4

A 4-year-old Japanese girl presented with an asymptomatic small nodule on the dorsum of the middle finger of her left hand, present since birth. The lesion had been enlarging gradually. It was a 11×11×7 mm, firm, well-defined, dome-shaped, brownish nodule. The surface was slightly rough. The mobility was good.

## DISCUSSION

The 4 cases reported here demonstrate identical characteristic clinicopathological features (Table I): 1) The tumor presented at birth. 2) The lesions were restricted to the dorsum of the finger, 3) The tumor was firm or soft (elastic), purplish brown, well-defined, and dome-shaped, and 4) The surface was

slightly rough and showed scattered black dots. On the other hand, the histopathological features did not only consist of epidermal changes but also fibrous stroma and vascular changes, which were composed of 5) dilated capillaries in the papillary dermis, 6) numerous dilated blood vessels filled with blood in the dermis through the subcutaneous tissue, 7) thick collagen bundles in the dermis, and 8) deposition of hemosiderin in the entire dermis.

The findings of the epidermis and the dermis to the subcutaneous tissue are compatible with angiokeratoma and cavernous hemangioma, respectively. Therefore, their histopathologic features seem to correspond to verrucous hemangioma (1) except for the dermal connective tissue change. However, our four cases differ from verrucous hemangioma in clinicopathological features. As to verrucous angioma, the verrucous appearance of the epidermis is considered to be caused by secondary reaction against underlying cavernous hemangioma. In our cases, the thick collagen bundles did not reveal any special arrangement such as a storiform pattern, and lacked proliferation of fibroblast. We speculate that a proliferation of dermal connective tissue seen histologically may be caused by reactive or secondary reaction based upon vascular change or a special anatomical site such as the dorsum of the finger rather than neoplastic change.

On the basis of the comparison made, we believe our cases to be a variant of verrucous hemangioma, a distinct clinical and pathological entity. We cannot find any report of a similar case. Therefore, we propose to refer to our cases by the term "digital verrucous fibroangioma".

## REFERENCE

1. Imperial R, Helwig EN. Verrucous hemangioma, a clinicopathologic study of 21 cases. *Arch Dermatol* 1967; 96: 247-253.