

Keloid histology viewed with an electron microscope

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Purpose: While keloids are a benign disease, they have neoplastic properties, including infiltration of the surrounding normal skin. A few electron microscopy studies of keloid tissues have been conducted, some of which have been combined with hematoxylin-eosin-stained slides. However, the limitations of this approach mean that the microstructure throughout whole keloids largely remains unclear. In the present study, the complete microstructure of whole keloids was obtained by using the world's fastest multi-beam scanning electron microscope, which can photograph wide areas at high speed.

Method: After gaining approval from our hospital's ethics committee, keloid specimens were obtained from patients undergoing keloid resection. Each specimen was fixed in glutaraldehyde and osmium, dehydrated, embedded with resin, cut into 80 nm-thick sections, and subjected to multi-beam scanning electron microscopy.

Result: Many Langerhans cells were observed in the epidermis on the center of the keloids. There were also many fibroblasts with large numbers of rough-surfaced endoplasmic reticula below the epidermis. The fibroblasts were inevitably surrounded by a network of enlarged collagen fibers.

Discussion: Multi-beam scanning electron microscopy successfully delineates the microstructural organization within whole keloids. It is thus a useful method for this purpose, especially because it can be conducted with a wide range of keloids.