

(Figs. 1.40 and 1.42-2). The sweat duct contains two cell layers, consisting of intraluminal cells and peripheral cells, and it lacks myoepithelial cells. The sweat that is produced in secretory areas (as precursor sweat) is slightly hypertonic; therefore, sodium ions and chlorine ions are re-absorbed by intraluminal cells in the coiled ducts, and hypotonic sweat is finally secreted.

2. Apocrine sweat glands ★

Apocrine sweat glands, which number fewer than eccrine glands, are degenerated pheromone-producing mammary glands found in the armpits, external ear canals, areola mammae, external genitals and anus. They develop in conjunction with hair apparatuses, temporarily slow in development after birth, and accelerate with development again during puberty. Perspiration from these glands is considered to be adrenergic and is caused mostly by emotional stimulation. Mammary glands and Moll's glands are kinds of apocrine sweat glands. Although sweat is viscous and odorless, its components such as glycoproteins and fat are broken down by microbes resident on the skin surface, which produces odor. Glandular development is associated with sex hormones; the glands are thought to be involved with sexual function.

The secretory portion of the apocrine gland is larger than that of the eccrine gland. Secretory cells are aligned as a single-layer epithelium surrounded by myoepithelial cells (Fig. 1.43). The part of the cytoplasm that faces the lumen of the sweat duct bulges, blebs and separates from the cell (apocrine secretion; Figs. 1.41 and 1.44).

The sweat ducts do not open to the skin surface directly, but open on to the upper parts of the sebaceous glands (Fig. 1.40).

e. Nail

The nail is a portion of keratinized epithelial tissue and composed of the nail plate, nail matrix, nail folds and nail bed. Each of these parts comprises several more detailed structures (Fig. 1.45). The nail differentiates from the epidermis in the third month of fetal development. Recent studies have shown that the nail has characteristics of both dermis and hair. The fingernail grows 0.1 mm per day, and it takes about 6 months to re-grow an entire nail plate. The growth of nails is slower in the elderly, whose nails tend to be thick and brownish. Nails are important in protecting the digits and in assisting subtle sensation in the fingertips.

1. Nail plate ★

The nail plate is a rectangular horny plate on the dorsal tip of the digits consisting of top nail, middle nail and undernail. In the proximal area, the nail plate is ingrown and covered by the

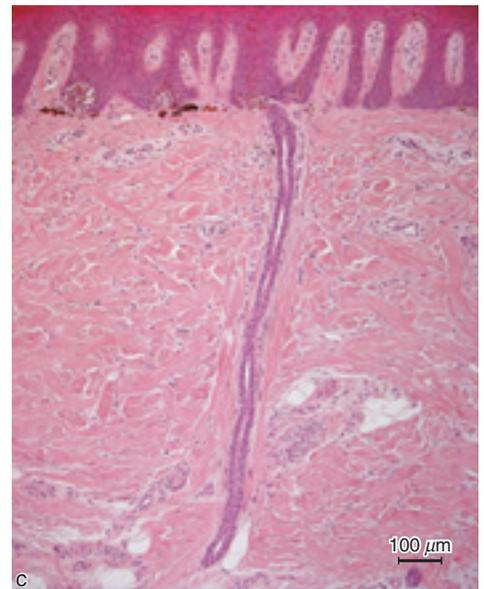
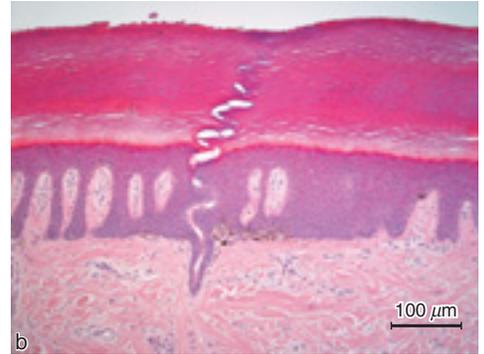


Fig. 1.42-2 Eccrine sweat gland.

b: Longitudinal section (epidermis). c: Longitudinal section (dermis).

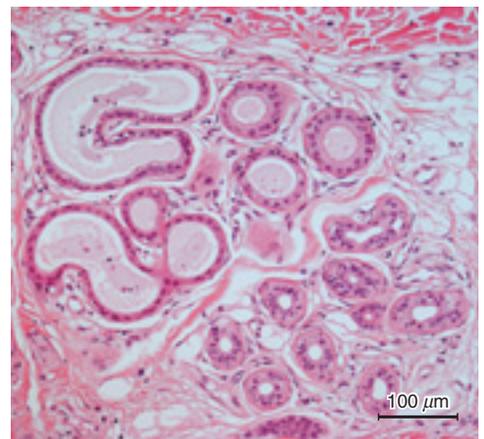


Fig. 1.43 Apocrine sweat gland (cross section).

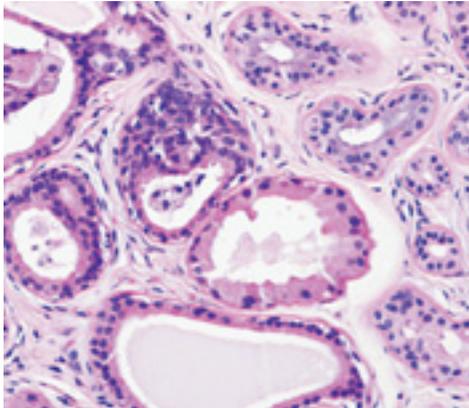


Fig. 1.44 Apocrine secretion of the sweat gland.

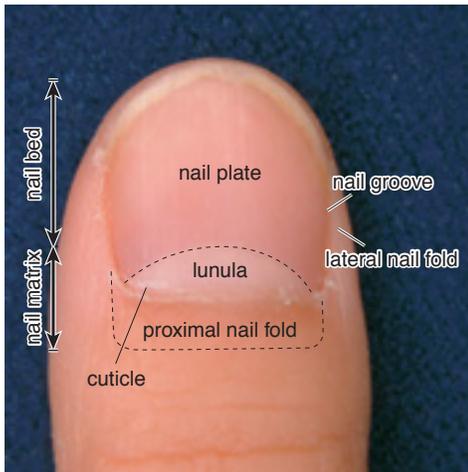


Fig. 1.45 Anatomy of the nail.

proximal nail fold, where the nail matrix exists. Cells that proliferate are keratinized in the nail matrix to form the nail plate. Keratohyaline granules are not involved in this keratinization. An opaque white half moon shape (lunula) may appear at the root of the nail plate from inadequate keratinization.

2. Nail matrix

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Keratinocytes are produced in the nail matrix. The cells that differentiate and proliferate in the nail matrix extend and keratinize to form the nail plate; however, the undernail of the nail plate is considered to form in the nail bed.

3. Nail fold

The nail folds are the skin lesions that cover both sides of the nail plate and nail bed. The cuticle is the horny layer that extends and partly covers the nail plate.

4. Nail bed

The nail bed is seen at the bottom of the nail plate. Its components are the same as those of the epidermis, except that it lacks a granular layer and is continuously keratinized to connect with the nail plate.

Bleeding in cuticle

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Hemorrhagic punctums in the cuticle may be found in collagen diseases (e.g., systematic lupus erythematosus, dermatomyositis, scleroderma). It is thought to be caused by the mechanism of angiitis in the microvessels. It may be a risk factor for systemic angiitis.