

Chapter 9

Nail Structure and Growth

MILADY
STANDARD COSMETOLOGY INSTRUCTOR SUPPORT SLIDES



“Knowing yourself is the beginning of all wisdom.”

– Aristotle

Objectives

- Describe the structure and composition of nails.
- Discuss how nails grow.

The Nail

- An appendage of the skin; the horny, translucent, protective plate that protects the tips of the fingers and toes. It is part of the integumentary system.
- Onyx –the technical term for nail

Composition

- Keratin
- Nail porosity
 - 15 to 25 percent water.
 - Water affects flexibility.
 - Oil-based conditioner reduces water loss.
- Healthy nail

Nail Anatomy: Major Parts

- Nail plate (nail body)
- Free edge
- Nail bed
- Matrix bed (nail root)
- Lunula
- Cuticle
- Eponychium
- Hyponychium
- Specialized ligaments
- Nail folds

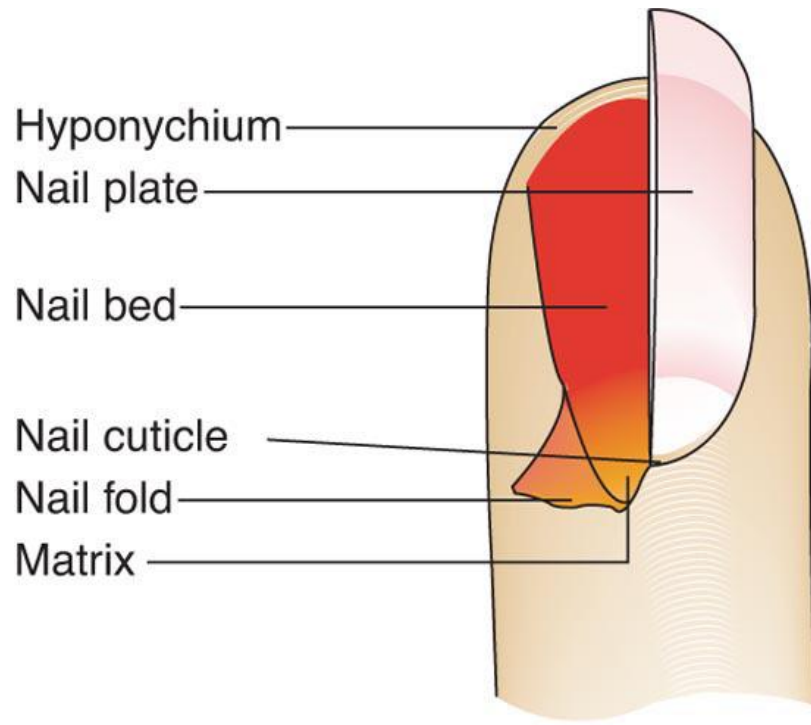
Nail Plate

- The most visible and functional part of the nail unit
- Rests on/slides across nail bed
- Formed by matrix cells
- Constructed in layers
- Free edge extends over tips of finger or toe

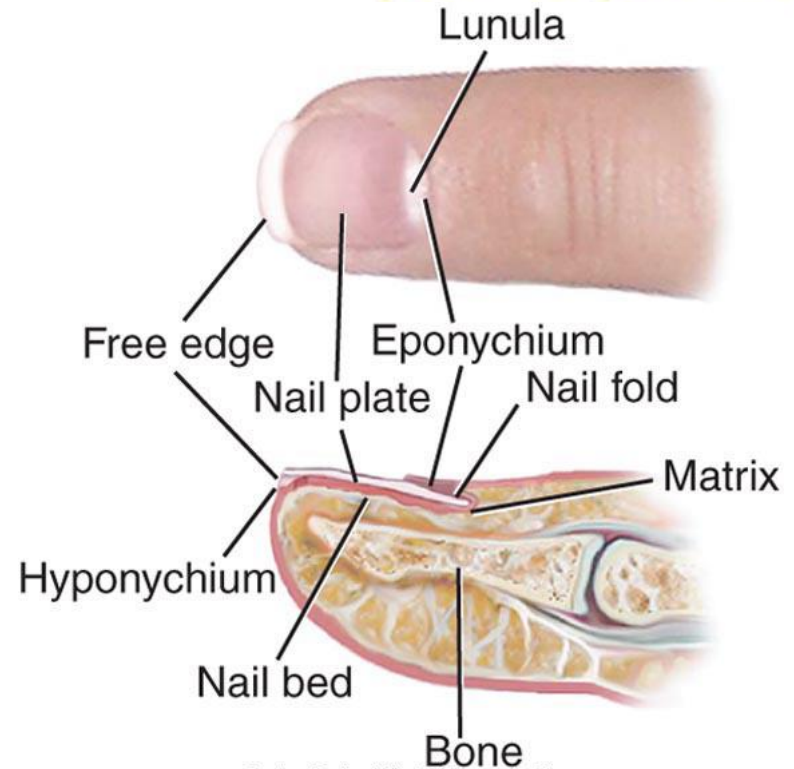
Nail Bed

- Skin supporting nail plate as it grows toward free edge
- Extends from lunula to just before free edge
- Attached to nail plate
- Supplied with many nerves

Nail Structure



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Matrix Bed

- Where nail is formed
- Composed of matrix cells that produce nail plate
- Contains nerves, lymph, blood vessels to nourish nails
- Extends from under nail fold at base of nail plate
- Injury to matrix or poor health affects nail growth

Lunula

- Visible part of matrix
- Whitish, half-moon shape at base of nail
- Color caused by reflection of light off matrix surface.
- Some are hidden under [eponychium](#).

Cuticle

- Dead, colorless tissue attached to nail plate from underside of skin that lies above natural nail plate
- Loose and flexible; difficult to remove from nail plate
- Seals area against foreign material and microorganisms
- Helps prevent injury and infection

Eponychium

- The living skin at base of nail plate covering matrix
- Cannot be trimmed or cut by nail technician

Hyponychium

- The slightly thickened skin that lies between the fingertip and the free edge
- Protective barrier that seals the free edge, preventing external moisture, bacteria, or fungi from getting under the nail

Specialized Ligaments

- Tough bands of fibrous tissue that connect bones or hold an organ in place
- Attach the nail bed and matrix bed to underlying bone
- Located at base of matrix and around edges of nail bed

Nail Folds

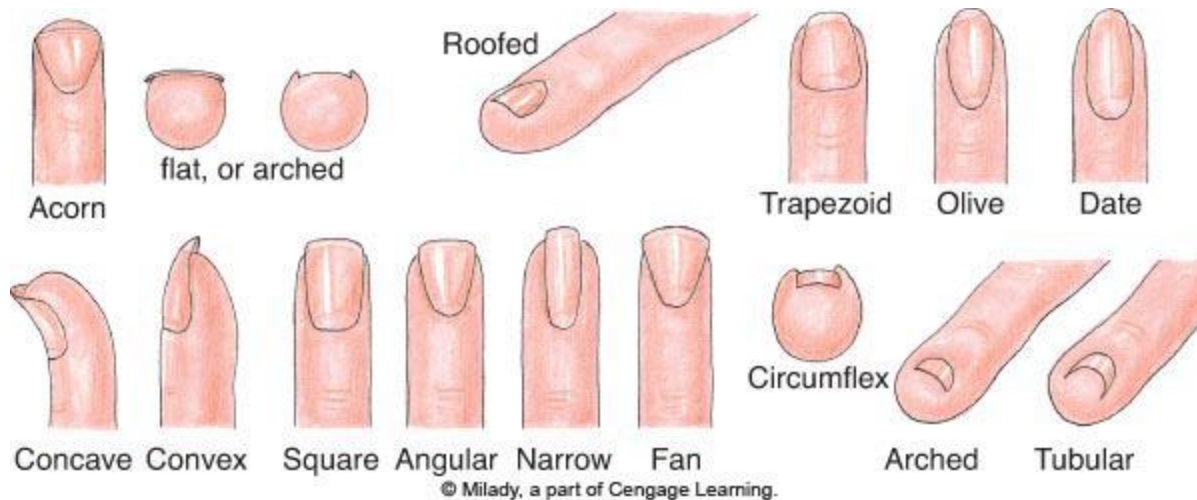
- Folds of normal skin surrounding nail plate
- Form nail grooves on which the nail moves as it grows

Nail Growth Process

- Growth is affected by nutrition, general health, and exercise.
- Nails grow forward, starting at matrix and extending over fingertip.
- Nails grow in a variety of shapes.
- Average growth is 1/10 of an inch per month.
- Growth is faster in summer than winter.
- Children's nails grow faster than adults' nails.

Nail Growth Process (*continued*)

- Middle fingernail grows fastest.
- Thumbnail grows slowest.
- Toenails grow slower than fingernails.
- Nails are not shed automatically like hair is.



Nail Malformation

- Disease, injury, or infection can affect the formation of nails. If the matrix remains in good condition, a normal fingernail will be replaced in 4 to 6 months, a toenail in 9 to 12 months.

Summary and Review

- What is the technical term for the nail?
- What protein is in the nail plate?
- Describe the appearance of a normal, healthy nail.
- Name the basic parts of the nail unit.
- Explain the difference between the nail plate and the nail bed.

Summary and Review (*continued*)

- What part of the nail unit contains the nerves, lymph, and blood vessels?
- What is the difference between the cuticle and the eponychium?
- Why are cosmetologists not allowed to cut the skin around the base of the nail plate?
- What three things can affect the growth of the nail plate?

Congratulations!

You have completed one unit of study
toward course completion.

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