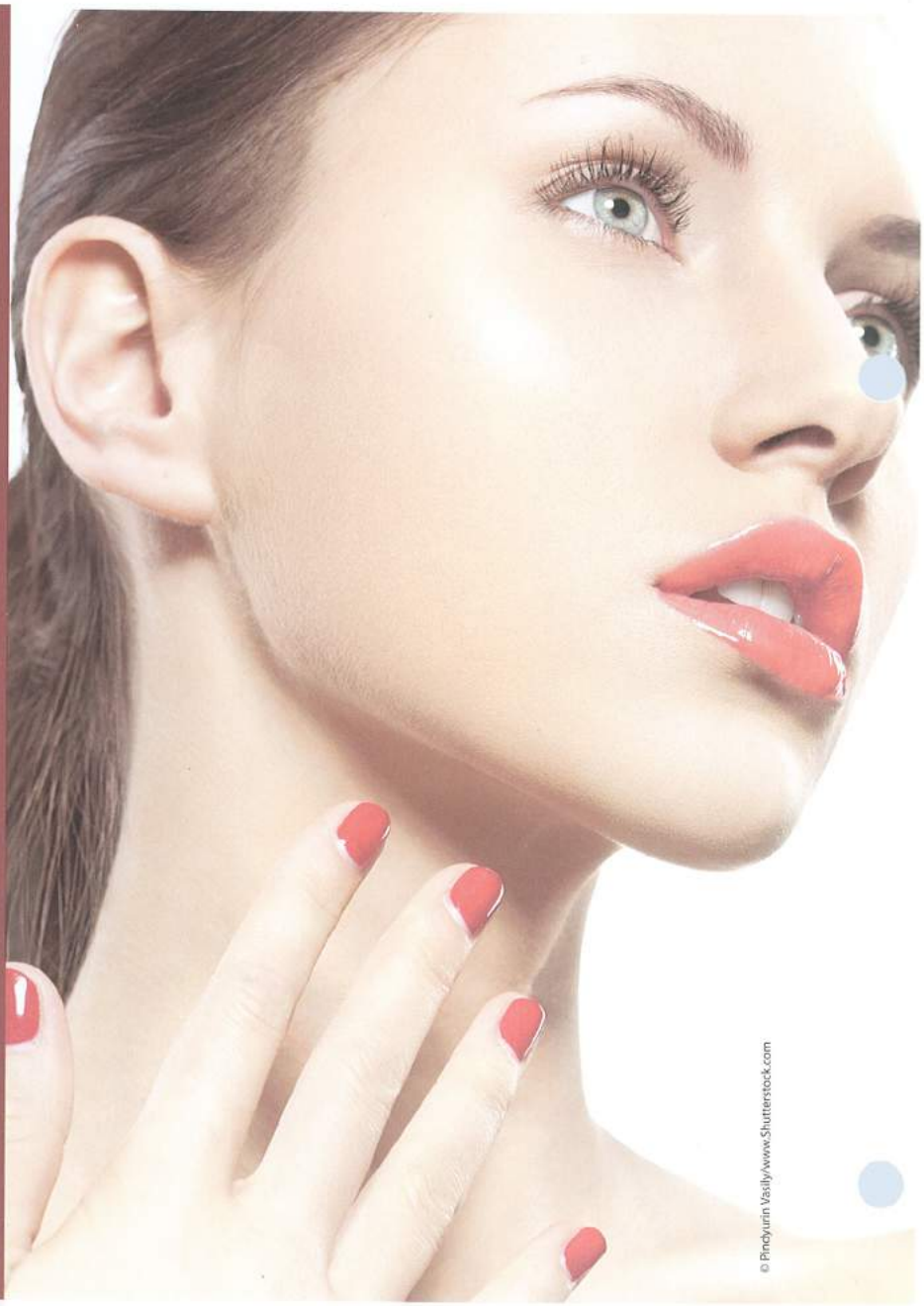
9 Nail Disorders and Diseases

Chapter Outline

- Why Study Nail Disorders and Diseases?
- Nail Disorders
- Nail Diseases



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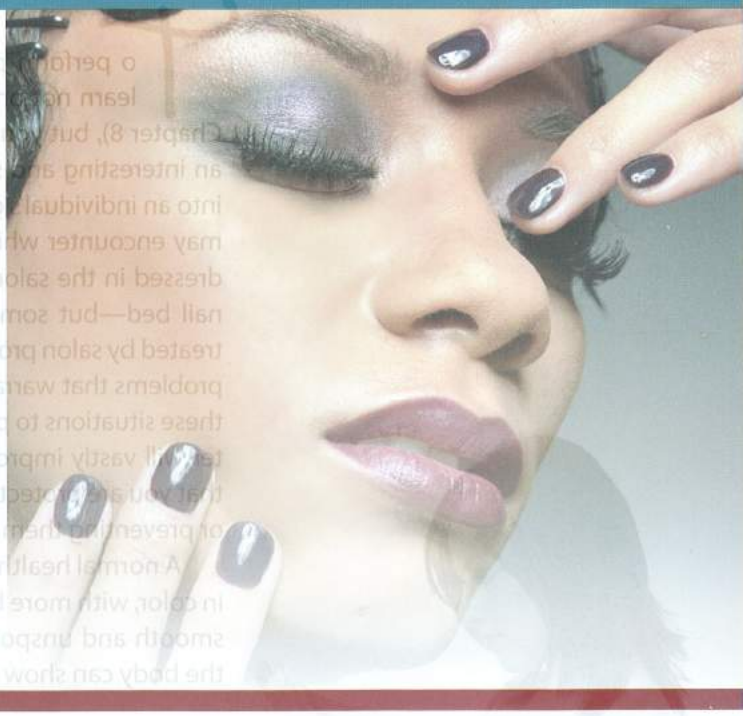
Learning Objectives

After completing this chapter, you will be able to:

- **LO1** List and describe the various disorders and irregularities of nails.
- **LO2** Describe diseases of the nails that should not be treated in the salon.



Key Terms

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To perform professional and responsible service and care, you need to learn not only about the structure and growth of the nail (as you did in Chapter 8), but you must also know when it is safe to work on a client. Nails are an interesting and surprising part of the human body. They are small windows into an individual's general health. You must be able to recognize conditions you may encounter while servicing clients. Some of these conditions are easily addressed in the salon—hangnails, for instance, or camouflaging a bruise on the nail bed—but some are medical conditions and/or infectious and cannot be treated by salon professionals. Some conditions may signal mild to serious health problems that warrant the attention of a doctor. You will need to be able to spot these situations to protect yourself and your clients. Carefully studying this chapter will vastly improve your expertise in caring for nails. It will also help ensure that you are protecting your clients, rather than promoting the spread of disease or preventing them from seeking the advice of a qualified medical professional.

A normal healthy nail is firm and flexible; it should be shiny and slightly pink in color, with more beige/yellow tones in some races. Its surface should be fairly smooth and unspotted, without any pits or splits. Certain health problems in the body can show up in the nails as visible disorders or poor nail growth.

WHY STUDY NAIL DISORDERS AND DISEASES?

Nail technicians should have a thorough understanding of nail disorders and diseases because:

- You must be able to identify those conditions on a client's nails that should or should not be treated in the salon.
- You must be able to identify infectious conditions in order to take the appropriate steps to protect yourself and your clients from the spread of disease.
- You may be in a position to recognize conditions that may signal mild to serious health problems that warrant the attention of a doctor.

NAIL DISORDERS

A **nail disorder** is a condition caused by injury or disease of the nail unit. Most, if not all, of your clients have experienced one or more types of common nail disorder at some time in their lives. You should recognize normal and abnormal nail conditions and understand what to do. You may be able to help your clients with nail disorders in one of two ways.

- You can tell clients that they may have a disorder and refer them to a physician, if required.
- You can cosmetically improve certain nail plate conditions if the problem is cosmetic and *not* a medical condition or disorder.

It is your professional responsibility and a requirement of your license to know which option to choose. A client whose nail or skin is infected, inflamed, broken, or swollen should not receive services. That client should be referred to a

physician—if you determine that is the appropriate recommendation based on the client's condition and your training.

Bruised nail beds are a condition in which a blood clot forms under the nail plate, forming a dark purplish spot. These discolorations are usually due to small injuries to the nail bed. The dried blood is absorbed into the bed epithelium on the underside of the nail plate and grows out with it. Treat this injured nail gently and advise your clients to be more careful with their nails if they want to avoid this problem in the future. Advise them to treat their nails like "jewels" and not "tools"! This condition can usually be covered with nail polish or camouflaged with an opaque nail enhancement.

Eggshell nails are noticeably thin, white nail plates that are much more flexible than normal. Eggshell nails are normally weaker and can curve over the free edge. The condition is usually caused by improper diet, hereditary factors, internal disease, or medication. Be very careful when manicuring these nails because they are fragile and can break easily. Use the fine side of an abrasive board (240 grit or higher) to file them gently; however, only do this if necessary. It would be best not to file a nail plate of this type. A thin protective overlay of an artificial nail enhancement product can be helpful.

Beau's lines are visible depressions running across the width of the natural nail plate **(Figure 9–1)**. These usually result from major illness or injury that has traumatized the body, such as pneumonia, adverse drug reaction, surgery, heart failure, massive injury, or a long-lasting high fever. Beau's lines occur because the matrix slows down in producing nail cells for several weeks or months. This causes the nail plate to grow thinner. The nail plate thickness usually returns to normal after the illness or condition is resolved.

▲ **Figure 9–1** Beau's lines.

Hangnail is a condition in which the living skin around the nail plate splits and tears **(Figure 9–2)**. Dryness of the skin or cutting this living tissue can result in hangnails. If there are no signs of infection or an open wound, advise the client that proper nail care—such as hot oil manicures or use of a skin conditioning lotion or oil—can aid in correcting such condition. Also, never cut the living skin around the natural nail plate, not even if it is dry and looks like it is not living tissue. Other than to carefully remove the thin layer of dead cuticle tissue on the nail plate, you should not cut skin anywhere on the hands or feet. Hangnails can be carefully trimmed, as long as the living skin is not cut or torn in the process. It is against state board regulations to intentionally cut or trim the client's skin, since this can lead to serious infections for which you and the salon may be legally liable. If not properly cared for, a hangnail can become infected. Clients with any symptoms of infections in their fingers, hands, toes, or feet should be referred to a physician. Signs of infection are redness, pain, swelling, or pus.

Leukonychia spots (loo-koh-NIK-ee-ah), or white spots, are a whitish discoloration found inside the nail plate, usually caused by injury to the nail matrix. They are not a symptom of any vitamin or mineral deficiency. Instead, they result from minor damage to the matrix. It is a myth that these are caused by a vitamin or mineral deficiency, e.g., calcium or zinc **(Figure 9–3)**. They appear frequently in the nails but do not indicate disease. As the nail continues to grow, the white spots eventually disappear.

Did You Know?

Clients cannot sign a waiver or verbally give a nail technician permission to disobey state or federal rules and regulations. For example, clients cannot give a nail technician permission to work on a diseased or infected finger or toenail: this is outside the scope of practice for nail technicians.

▲ **Figure 9–2** Hangnail.

▲ **Figure 9–3** Leukonychia spots.

▲ **Figure 9–4** Melanonychia.

▲ **Figure 9–5** Bitten nails.

Other types of white spots that are sometimes found on the surface of the plate are caused by the improper removal of nail coatings. When a nail coating is forcibly peeled or scraped from the nail plate, it usually results in damage to the surface of the nail; an irregularly shaped white spot appears, which is actually a pit or group of pits on the upper surface of the nail plate.

Melanonychia (mel-uh-nuh-NIK-ee-uh) is darkening of the fingernails or toenails. It may be seen as a black band within the nail plate, extending from the base to the free edge. In some cases, it may affect the entire nail plate. A localized area of increased pigment cells (melanocytes), usually within the matrix, is responsible for this condition. As matrix cells form the nail plate, melanin is added within the plate by the melanocytes. This is a fairly common occurrence and considered normal in African Americans or Asians, but could be indicative of a disease condition in Caucasians **(Figure 9–4)**.

Onychophagy (ahn-ih-koh-FAY-jee), or bitten nails, is the result of a habit that prompts the individual to chew the nail or the hardened, damaged skin surrounding the nail plate **(Figure 9–5)**. Advise the client that frequent manicures and proper care of the hardened eponychium can often help to overcome this habit while improving the health and appearance of the hands. Sometimes, the application of nail enhancements can beautify misshapen nails and discourage the client from biting the nails. However, the bitten, damaged skin should not be treated by the nail professional, and if the skin is broken or infected, no services can be provided until the area is healed.

Onychorrhexis (ahn-ih-koh-REK-sis) refers to split or brittle nails that have a series of lengthwise ridges, giving a rough appearance to the surface of the nail plate. This condition is usually caused by injury to the matrix, excessive use of cuticle removers, harsh cleaning agents, aggressive abrasive filing techniques, or hereditary causes. Nail services can be performed only if the nail is not split to expose the nail bed. Nail enhancement product should NEVER be applied if the nail bed is exposed. This condition may be corrected by softening the nails with a conditioning treatment and instructing the client to wear protective gloves when using detergents or cleaners and to avoid overfiling **(Figure 9–6)**. These nail plates are often brittle, so twice-daily treatments with a high-quality, penetrating nail oil can be very beneficial. Nail hardeners should always be avoided on brittle nails, since these products will increase their brittleness and worsen the condition.

▲ **Figure 9–6** Onychorrhexis.

Plicatured nail (plik-a-CHOO-RD) figuratively means "folded nail" **(Figure 9–7)** and is a type of highly curved nail plate often caused by injury to the matrix. This condition may be inherited. Plicatured nails often lead to ingrown nails.

▲ **Figure 9–7** Plicatured nail.

Nail pterygium (teh-RIJ-ee-um) is an abnormal condition that occurs when skin is stretched by the nail plate. This disorder is usually caused by serious injury, such as burns or an adverse skin reaction to nail enhancement products. The terms "cuticle" and "pterygium" do not mean the same thing and should never be used interchangeably. Nail pterygium is abnormal and caused by damage to the eponychium or hyponychium.

Do not attempt to treat nail pterygium; never push the extension of skin back with an instrument. Doing so will likely cause more injury to the tissues and make the condition worse. The gentle massage of conditioning oils or creams into the affected area may be beneficial. If this condition becomes irritated, painful, or shows signs of infection, recommend that the client see a physician for examination and proper treatment if necessary and discontinue providing services until the condition is resolved.

Mild **ridges** running vertically down the length of the natural nail plate are actually grooves, and not ridges at all. They are caused by uneven growth of the nails, usually the result of age. Older clients are more likely to have these ridges, and unless they become very deep and weaken the nail plate, they are perfectly normal. When manicuring a client with this condition, it is best to avoid buffing away these ridges, since this will overly thin and weaken the nail plate, which could lead to nail plate weakness and additional damage. Using a ridge filler is much less damaging to the natural nail plate; it can be used with colored polish to give a smooth appearance to the plate while keeping it strong and healthy, which should be the goal of all nail professionals.

Splinter hemorrhages are caused by physical trauma or injury to the nail bed that damages the capillaries and allows small amounts of blood flow. As a result, the blood stains the bed epithelium, the tissue that forms "rails" to guide the nail plate along the nail bed during growth. This blood oxidizes and turns brown or black, giving the appearance of a small splinter underneath the nail plate. Splinter hemorrhages will always be positioned lengthwise in the direction of growth; in other words, they point toward the front and back of the nail plate. The reason for this is in how the bed epithelium "rails" grow. Splinter hemorrhages are common. The vast majority of the time, they are associated with some type of hard impact or other physical trauma to the fingernail or toenail.

Increased Curvature Nails

Nail plates with a deep or sharp curvature at the free edge have this shape because of the matrix. The greater the curvature of the matrix, the greater the curvature of the free edge. Increased curvature can range from mild to severe pinching of the soft tissue at the free edge. In some cases, the free edge pinches the sidewalls into a deep curve. This is known as **pincer nail** or **trumpet nail**. The nail can also curl in upon itself **(Figure 9–8)** or may be deformed only on one sidewall. In each of these cases, the natural nail plate should be carefully trimmed and filed. Extreme or unusual cases or painful conditions must be referred to a qualified medical doctor or podiatrist. A brief summary of nail disorders is found in **Table 9–1**. LO1

▲ **Figure 9–8** Pincer or trumpet nail.

Table 9–1 OVERVIEW OF NAIL DISORDERS

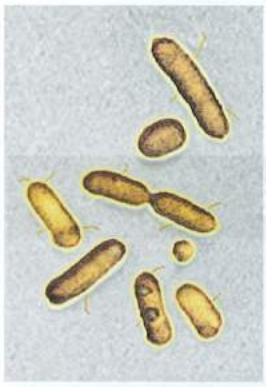
DISORDER	SIGNS OR SYMPTOMS
Beau's lines	Depressions running across the width of the nail plate; a result of serious illness or injury.
Bruised nails	Dark purplish spots, usually due to physical injury.
Discolored nails	Nails turn a variety of colors; may indicate surface staining, a systemic disorder, or poor blood circulation.
Eggshell nails	Noticeably thin, white plate, more flexible than normal; usually caused by improper diet, hereditary factors, internal disease, overfiling with an abrasive, and in unusual instances, medication.
Hangnail	Damaged skin attached to the living skin around the nail plate (often on the eponychium) becomes split or torn.
Infected finger	Redness, pain, swelling, or pus; must be referred to a physician.
Leukonychia spots	Whitish discoloration of the nails; usually caused by minor injury to the nail matrix. Not related to the body's health or vitamin deficiencies.
Melanonychia	Significant darkening of the fingernails or toenails.
Nail psoriasis	Nail surface pitting, roughness, onycholysis, and bed discolorations.
Nail pterygium	Abnormal stretching of the skin around the nail plate; usually from serious injury or an allergic skin reaction.
Onychophagy	Bitten nails.
Onychorrhexis	Abnormal surface roughness on the nail plate.
Pincer nails	A form of dramatically increased nail curvature.
Plicatured nails	Sharp bend in one corner of the nail plate, creating increased curvature.
Ridged nails	Lengthwise grooves in the plate, often mistaken for ridges; seen in normal aging.
Trumpet nails	A form of dramatically increased nail curvature.

Nail Infections

Fungi (FUN-jy) (singular: fungus, FUNG-gus) are parasites; under some circumstances, fungi may cause infections of the feet and hands. Nail fungi are of concern to the nail salon because they are contagious and can be transmitted through contaminated implements. In some cases, fungi may spread from nail to nail on the client's feet; however, they generally are restricted to one or two nails. It is much less likely that these pathogens will cause fingernail infections,

since fungi prefer to grow in conditions that are warm, moist, and dark, as are found inside of shoes. It is extremely unlikely that a nail technician could become infected from a client, but it is possible to transmit fungal infections from one client's foot or toe to another client.

With proper decontamination and disinfection practices, the transmission of fungal infections can be very easily avoided. Clients with a suspected nail fungal infection must be referred to a physician, and no services should be performed until the condition is fully resolved.



▲ **Figure 9–9** *Pseudomonas aeruginosa.*

It Is Not a Mold!

In the past, discolorations of the nail plate (especially those between the plate and artificial enhancements) were generally referred to as "molds", which is a type of fungus. Infections of the toenails are usually fungus but molds can grow on both fingernails and toenails above and below the nail plate. The discoloration is usually a bacterial infection that is caused by a type of bacteria, called ***pseudomonas aeruginosa***. These naturally occurring skin bacteria can grow rapidly to cause an infection if conditions are correct for growth **(Figure 9–9)**. Bacterial or fungal (mold) infections can be caused by the use of implements that are contaminated with large numbers of these bacteria. Water does not cause infections but can support bacterial and fungal growth. Infections are caused by large numbers of bacteria or fungal organisms on a surface where the conditions are right for growth. This is why proper cleansing and preparation of the natural nail plate, as well as cleaning and disinfection or sterilization of implements, are so important. If these pathogens are not present, infections cannot occur. A typical bacterial infection on the nail plate can be identified in the early stages as a yellow-green spot that becomes darker in its advanced stages. The color usually changes from yellow to green to brown to black. Clients with these symptoms should be immediately referred to a physician for treatment. It is against state and federal laws for a nail professional to diagnose a nail infection or to recommend or provide any treatment for any nail infection. Do not remove the artificial nail unless directed to do so by the client's treating physician.

CAUTION:

Nail infection caused by bacteria and fungi can be easily avoided by following state board guidelines for proper cleaning and disinfection. Do not take shortcuts or omit any of the cleaning and disinfection procedures when performing an artificial nail service. Do not perform nail services for clients who are suspected of having an infection of any kind on their nails. If you repeatedly encounter nail infections on your clients' nails, you should re-examine *your* cleaning, disinfection, preparation, and application techniques. Completely disinfect all other metal and reusable implements, throw away single-use nail files and wooden pushers sticks, wash linens or replace with disposable towels, and thoroughly clean the table surface before and after the procedure **(Figure 9–10)**.

▲ **Figure 9–10** Always practice strict cleaning and disinfecting protocol when working with finger or toenails.

Activity

Go to a library or use the Internet to research "scope of practice" for medical doctors, dermatologists, and podiatrists. You should be familiar with what these professionals do as well as the strict limitations placed on nail technicians' "scope of practice" so that you'll better understand what you *cannot* do.

You should never provide any type of nail services to clients with a nail bacterial or fungal infection.

NAIL DISEASES

You may come across any of several nail diseases. A brief summary of nail diseases is found in **Table 9–2**. Any nail disease that shows signs of infection or inflammation (redness, pain, swelling, or pus) should not be diagnosed or treated in the salon. Medical examination is required for all nail diseases; any treatments will be determined by the physician.

Table 9–2 OVERVIEW OF NAIL DISEASES

DISEASE	SIGNS OR SYMPTOMS
Onychia	Inflammation of the matrix and shedding of the nail.
Onychocryptosis	Ingrown nails.
Onycholysis	Separation of the nail plate and bed, often due to physical injury or allergic reactions.
Onychomadesis	Separation and falling off of a nail from the nail bed.
Onychomycosis	Fungal infection of the natural nail plate.
Paronychia	Bacterial inflammation of the tissues around the nail plate, causing pus, swelling, and redness.
Pyogenic granuloma	Severe inflammation of the nail, in which a lump of red tissue grows up from the nail bed to the nail plate.
Tinea pedis	Red itchy patches of skin on the bottom of feet and/or between the toes.

A person's occupation can cause a variety of nail infections. For instance, infections develop more readily in people who regularly place their hands in harsh cleaning solutions. Natural oils are removed from the skin by frequent exposure to soaps, solvents, and many other types of substances. The nail technician's hands are exposed daily to professional products. These products should be used according to manufacturer's instructions to ensure that they are being used correctly and safely. If those instructions or warnings tell you to avoid skin contact, you should take heed and follow such advice. If the manufacturer recommends that you wear gloves, make sure that you do so to protect your skin. Contact the product manufacturer if you are not sure how to use the product safely, and obtain the SDS (formally called MSDS).

Product manufacturers can always provide you with additional information and guidance. Call them whenever you have any questions related to safe handling and proper use.

Onychosis (ahn-ih-KOH-sis) is any deformity or disease of the nails. **Onychia** (uh-NIK-ee-uh) is an inflammation of the nail matrix followed by shedding of the natural nail plate. Any break in the skin surrounding the nail plate can allow pathogens to infect the matrix. Be careful to avoid injuring sensitive tissue, and make sure that all implements are properly cleaned and disinfected. Improperly cleaned and disinfected nail implements can cause this and other diseases, especially if an accidental injury occurs.

Onychocryptosis (ahn-ih-koh-krip-TOH-sis), or ingrown nails, can affect either the fingers or toes **(Figure 9–11)**. In this condition, the nail grows into the sides of the tissue around the nail. Unusual pressure put on the soft tissue surrounding the nail plate while walking can contribute to the problem. If the tissue around the nail plate is not infected, or if the nail is not imbedded in the flesh, you can carefully trim the corner of the nail in a curved shape to relieve the pressure on the nail groove. However, if there is any redness, pain, swelling, or irritation, you may not provide any services. Nail professionals are not allowed to service ingrown nails. Refer the client to a physician, if appropriate.

Onycholysis (ahn-ih-KAHL-ih-sis) is the lifting of the nail plate from the bed without shedding, usually beginning at the free edge and continuing toward the lunula area **(Figure 9–12)**. This is usually the result of physical injury, trauma, or allergic reaction of the nail bed and less often related to a health disorder. It often occurs when the natural nails are filed too aggressively, nail enhancements are improperly removed, or (on the toenails) when clients wear shoes without sufficient room for the toes. If there is no indication of an infection or open sores, a basic pedicure or manicure may be given. The nail plate should be short to avoid further injury, and the area underneath the nail plate should be kept clean and dry. If the trauma that caused the onycholysis is removed, the area will begin to slowly heal itself. Eventually, the nail plate will grow off the free edge, and the hyponychium will reform the seal that provides a natural barrier against infection **(Figure 9–13)**.

Onychomadesis (ahn-ih-koh-muh-DEE-sis) is the separation and falling off of a nail plate from the bed. It can affect fingernails and toenails. In most cases, the cause can be traced to a localized infection, injuries to the matrix, or a severe systemic illness. Drastic medical procedures such as chemotherapy may also be the cause.

Whatever the reason, once the problem is resolved, a new nail plate will eventually grow again. If onychomadesis is present, do not apply enhancements to the nail plate. If there is no indication of an infection or of open sores, a basic manicure or pedicure service may be given.

Nail psoriasis often causes tiny pits or severe roughness on the surface of the nail plate. Sometimes these pits occur randomly, and sometimes they appear in evenly spaced rows. Nail psoriasis can also cause the surface of the plate to look like it has been filed with a coarse abrasive, or may create a ragged free edge, or both. **(Figure 9–14)**.

People with skin psoriasis often experience these nail disorders. Neither skin nor nail psoriasis is an infectious disease. Nail psoriasis can also affect the nail bed, causing it to develop yellowish to reddish spots underneath the nail plate,

▲ **Figure 9–11** Onychocryptosis.

▲ **Figure 9–12** Onycholysis.

▲ **Figure 9–13** Onycholysis caused by trauma.

▲ **Figure 9–14** Nail psoriasis.

called salmon patches. Onycholysis is also much more prevalent in people with nail psoriasis. When all of these symptoms are present on the nail unit at the same time, nail psoriasis becomes a likely cause of the client's problem nails, and the client should be referred to a physician for diagnoses and treatment, if needed.

Paronychia (payr-uh-NIK-ee-uh) is a bacterial inflammation of the tissues surrounding the nail. Redness, pus, and swelling are usually seen in the skin fold adjacent to the nail plate.

Individuals who work with their hands in water, such as dishwashers and bartenders, or who must wash their hands continually, such as health care workers and food processors, are more susceptible, to paronychia: their hands are often very dry or chapped from excessive exposure to water, detergents, and so on. This makes them much more likely to develop infections.

Toenails, because they spend a lot of time in a warm, moist environment, are often also more susceptible to paronychia infections. Use a moisturizing hand lotion to keep skin healthy and feet clean and dry.

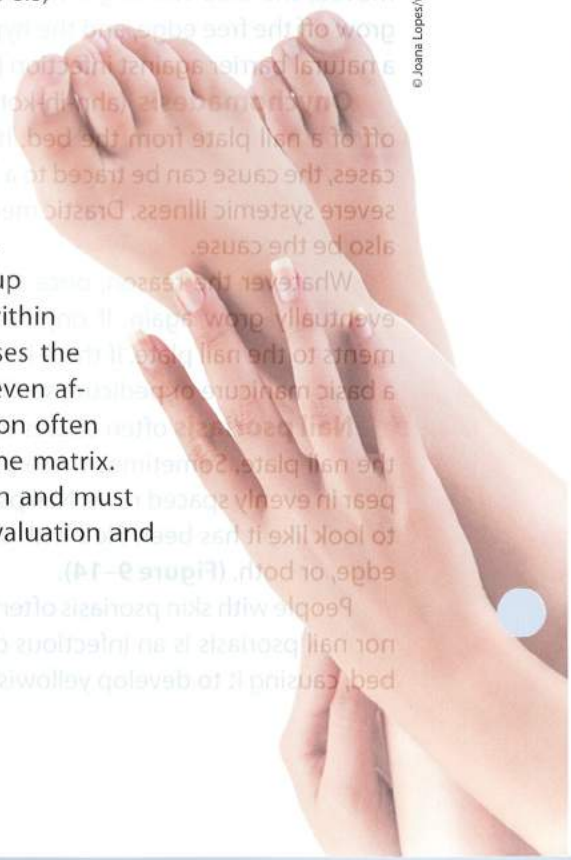
Pyogenic granuloma (py-roh-JEN-ik gran-yoo-LOH-muh) is a severe inflammation of the nail in which a lump of red tissue grows up from the nail bed to the nail plate **(Figure 9–15)**.

▲ **Figure 9–15** Pyogenic granuloma.

Tinea pedis is the medical term for fungal infections of the feet. These infections can occur on the bottoms of the feet and often appear as a red itchy rash in the spaces between the toes, most often between the fourth and fifth toe. There is sometimes a small degree of scaling of the skin. Clients should be advised to wash their feet every day and dry them completely. This will make it difficult for the infection to live or grow. Advise clients to wear cotton socks and change them at least twice per day. They should also avoid wearing the same pair of shoes each day, since it can take up to 24 hours for a pair of shoes to dry completely. Over-the-counter antifungal powders can help keep feet dry and may help speed healing **(Figure 9–16)**.

▲ **Figure 9–16** *Tinea pedis*.

Onychomycosis (ahn-ihkoh- my-KOH-sis) is a fungal infection of the nail plate. A less common form consists of whitish patches that can be scraped off the surface of the nail. This should not be confused with nail surface damage created by improper removal of some nail coatings, which is a more likely reason for surface white spots. Another common type of infection shows up as long whitish or pale yellowish streaks within the nail plate. A third common form causes the free edge of the nail to crumble and may even affect the entire plate. These types of infection often invade the free edge and spread toward the matrix. They cannot be treated by a nail technician and must be referred to a medical professional for evaluation and treatment, if necessary. ☑ LO2



Review Questions

1. What conditions do fungal organisms favor for growth?
2. Name two common causes of onycholysis.
3. In what situation should a nail service not be performed?
4. What is *Pseudomonas aeruginosa*? Why is it important to learn about it?
5. Name at least eight nail disorders and describe their appearance.
6. What is the most effective way to avoid transferring infections among your clients?
7. Can a nail technician offer treatment advice for a client who has developed a nail infection?
8. Can nail technicians treat an ingrown toenail if there is no sign of pus or discharge?