

## Secondary Skin Lesions

In this lesson, we are going to discuss secondary lesions found on the skin. Obviously, before we discuss them, we need to know what a skin lesion is! A **lesion** is any abnormal growth or area of skin that differs from the skin around it. Furthermore, skin lesions can be broken down into two major groups: primary and secondary. Primary lesions are abnormalities that result as a direct effect of a disease. Secondary lesions, on the other hand, are abnormalities that are caused by an outside force affecting the skin surface, such as rubbing or scratching, an evolutionary change in a primary lesion, or both.

So, for example, a patient has an acne pustule on his chin. Would this be a primary or secondary lesion? Primary! That's right. The lesion is the direct result of a disease process.

Unfortunately, the patient has a big dance at school this weekend and thinks squeezing the pustule will help resolve it faster, so this is what he does. The next day when he awakes, the pustule is now a scab with surrounding redness, or in medical terminology, a crust with surrounding erythema. The primary lesion has evolved due to an outside force, and thus would now fall into the secondary category.

The distinction between the two categories is not always cut and dry, but rather becomes a 'Which came first, the chicken or the egg?' kind of discussion. However, knowing roughly into what category a skin lesion should be placed helps tremendously when trying to reach an accurate diagnosis. The secondary lesions to be covered in this lesson include scale, crust, erosion, excoriation, abrasion, ulceration, atrophy, lichenification, fissure, laceration, puncture wound, scar, and keloid. It sounds like a lot...because it is! But each lesion is a unique entity representing a singular type of injury to the skin.

### Scale vs. Crust

Now we are going to begin our journey through the land of secondary lesions on flaky ground. In ordinary lingo, you might think of the adjectives 'scaly' and 'crusty' as synonymous, but in medical terminology, a scale and a crust are quite different indeed.

A **scale** is the flaking off of the stratum corneum, which, as you may recall, is the top most layer of the epidermis. Sometimes after an acute injury to the skin, large sheets of the stratum corneum will peel off. This is referred to as desquamation. It can occur following certain disease processes like hand, foot, and mouth virus. Or you may personally have experienced this phenomenon after a severe sunburn. You know those large sheets of dead skin you can't help but peel off? Those are prime examples of scales.

A **crust** is dried sebum, blood or pus on the surface of the skin. In commonplace terminology, a crust is often referred to as a 'scab.' But please keep in mind that not all crusts form from a direct injury to the skin. Sometimes crusts form from a disease process, such as the bacterial infection of the skin known as impetigo.

### Erosion, Excoriation vs. Abrasion, Ulceration, and Atrophy

Next, we are going to tackle the terms erosion, excoriation, abrasion, ulceration, and atrophy. Some of these words may already be familiar to you; we've all heard of erosion when it comes to soil, and a stomach ulcer is a common malady. So, let's see how these terms apply to the skin!

**Erosion** represents a shallow defect in the skin, where some or all of the epidermis has been lost due to friction or pressure. Remember the skin is composed of three major layers: the epidermis (represented by numbers one and two), the dermis (number three), and the subcutaneous tissue

(number four). Now, erosion may sound like an obscure term, but have you ever popped a blister? Well, the resulting shallow depression is the perfect example of erosion.

The two following terms, excoriation and abrasion, are specific types of erosion. An **excoriation** is a linear (line-like) erosion resulting from scratching. An **abrasion** is an erosion resulting from the skin being abraded, meaning rubbed or scrapped away by friction.

Wait, what's the difference? Well, if you had a patient come in with an itchy rash, you would most likely notice line-like scratch marks in the area. These would be termed excoriations. If you had a patient present with a scraped knee from falling on the sidewalk, this would be termed an abrasion. Again, both excoriations and abrasions will just be in the surface layer of the epidermis. Usually, areas of epidermal erosion, excoriations, and abrasions heal without scarring because they are not very deep.

On the other hand, **ulceration** is the total loss of the epidermis and some loss of the dermis or even subcutaneous tissue, meaning it is a deeper wound. Poor blood flow is usually the cause of ulcer formation. For example, pressure ulcers result from a patient lying on one particular body part for an extended period of time, and therefore the skin tissue is deprived of a healthy blood flow. Just as a warning, the following image may be disturbing, but it is a stage four pressure ulcer, the most severe kind that can develop.

Finally, **atrophy** is the thinning of the skin. This usually results in tissue-paper appearing skin - soft and crinkly. Atrophy can occur as a normal part of the aging process, as seen in this first image.

But sometimes it can be the result of disease or medicines. For example, the chronic use of corticosteroid creams on the skin can result in rapid and severe atrophy, resulting in thin skin that is very easily torn, as seen in this image.

#### Lichenification and Fissure

Some other interesting terms which you may come across in the world of dermatology are lichenification and fissure. **Lichenification** is the thickening of the epidermis from prolonged scratching or rubbing. This condition is usually only noted with certain skin diseases, such as eczema, which cause severe itching in the affected areas. In this photo, you can see the reddish raised area is the area of eczema with notable lichenification. If you were able to touch this portion of the skin, it would be raised and extremely rough, like sandpaper.

A **fissure** is a clearly-defined, linear cleavage in the skin, usually extending to the dermis. In layman terms, it is usually called a 'crack.' And if you've ever lived in cold climates, washed your hands a lot, or gone over a year without a pedicure, then you have probably experienced a fissure. Dry, cracking hands or heels are perfect places to find a fissure. The fissures in this photo are from a severe infection with athlete's foot, technically known as tinea pedis.

#### Laceration, Puncture Wound, Scar, and Keloid

The last set of terms that we are going to learn in this lesson is laceration, puncture wound, scar, and keloid. A **laceration** is a tear or cut in the skin, resulting in a defect that is irregular and jagged. So, when you wake up one Saturday morning and think 'Today's the day I'm going to clean up that underbrush in the backyard!' You spend hours yanking, cutting, and hauling away various sticks, leaves, and pernicious ivies.

When you are finished, you are filled with immense pride, and most likely, your forearms are covered in small lacerations. However, if there is a thorny bush which happens to jab you, then you may also experience a puncture wound during this endeavor. A **puncture wound** is when a

sharp object punctures the skin. It is more a vertical wound, whereas a laceration is more horizontal in nature.

If the skin is damaged to the dermal layer or deeper than the body responds by knitting together the defect with fibrous tissue. The area of fibrous tissue created after repairing an injury is known as a **scar**. Certain types of scars are hypertrophic meaning they're thickened and raised over the original damage site but some scars continue lying down fibrous tissue even after the defect has been adequately repaired or a long time after the original wound occurred and these are termed keloids. A keloid is a hypertrophic scar which extends beyond the original margins of the wound.

In summary secondary lesions are skin abnormalities caused by an outside force such as scratching or squeezing, or a primary lesion in which transformative changes are noted. Common secondary skin lesions include scale, crust, intrusion, excoriation, abrasion, ulceration, atrophy, lichenification, fissure, laceration, a puncture wound, scar and keloid formation.

A scale when the stratum corneum, the topmost layer of the epidermis, flakes off the body whereas a crust is locally referred to a scab is an area of dried exudate on the surface of the skin. And erosion is defined as an area where some or the entire top layer of the skin has been removed due to friction or pressure. Furthermore we learned of two types of erosions, excoriation and abrasion. And excoriation is a straight mine like erosion caused by scratching. If the erosion is the result of skin being robbed or scraped away by force then the appropriate term is an abrasion. And ulceration is significantly deeper than an erosion and involves the total loss of the epidermis and some loss of the dermis or even subcutaneous tissue. An example of an ulceration would be a bad sore caused from lack of mobility. Atrophy is the thinning of the skin which can occur as part of the natural aging process or can be the result of certain medications as well. Atrophied skin is especially susceptible to injury as it is so thin. If the patient has an itchy skin disease such as eczema he may develop areas of lichenification or areas of thickened skin due to long-term scratching. Other patients with fungal infections on extremely dry skin may experience fissures or cleavages in the skin that reached the dermal layer. An irregular tear or cut in the skin is termed a laceration on the other hand when a sharp object hooks directly into the skin and creates a wound. It is known as a puncture wound. Secondary skin lesions which reach down to the dermal layer such as ulceration, fissure, laceration and puncture wound can all result in the development of fibrous tissue. The area of fibrous tissue created after repairing an injury is called scar. When scar tissue continues to be made even after the wound is completely repaired and extends beyond the original wound site is called keloid.

So now when you are presented with an injury to the skin you will be able to confidently and accurately describe the lesion before you with the right term. Instead of the scraped knee and a cut you unknowingly dictate an abrasion and laceration noted. In your precise labeling you will be able to capture exactly what was wrong with the patient's skin in that moment so that others will know too. As Mark Twain said 'The difference between the right word and not almost right word is the difference between lightning and the lightning bug.'

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