TYPES OF INJURIES

There are many types of injuries that are possible, but it is important to remember the three most important factors in categorizing injuries: location, location, location! If that sounds flippant, let's explore a few ideas:

1. First of all, the location (as in the **organs involved**) of an injury can, of course, determine whether or not it was the **fatal** injury.

2. Second, the location (as in **depth**) of an injury can help determine the severity of the injury, and the severity of the crime.

3. Third, the location (as in the location on the victim's body **when it was in motion**) of an injury can determine the nature of the interaction between the attacker and the victim.

In terms of the **organs involved**, for example, a gunshot wound need not be fatal. A wound to the chest may provide only a temporary injury, whereas a wound to the arm could be fatal if a major artery is severed. A person may be stabbed multiple times in the back or the abdomen and survive, but a single stab would to the heart would be fatal.

In terms of the **depth**, some injuries are only to the skin, such as bruising or lacerations, whereas a bruise to the skin can also involve broken bones. A bruise on the temple could crack the cranium, thus leading to bleeding in the brain, and death. **Depth** can thus give a great deal of information about the nature of the crime itself.

- **Laceration** is a tearing injury due to friction or impact with a blunt object. The typical laceration has edges which are ragged, bruised, and/or abraded. Generally, surgeons and ER physicians do not make a distinction between lacerations and incised wounds, calling them both "lacerations."
- **Incised wound (incision)** is a cutting injury due to slicing action of a bladelike object. The wound edges are smooth. Serrated blades produce the same smooth edges as do nonserrated blades.

- **Puncture** is a penetrating injury due to pointed object without a blade, such as an ice pick or it can be something not so sharp, such as a fence post.

- **Abrasion** is a friction injury removing superficial layers of skin, allowing serum to exude and form a crust. Abrasions may not be visible on wet skin; therefore, an abrasion not apparent when a body is first examined may appear the next day, after the wet body has had a chance to dry out in the morgue refrigerator.
**Contusion** is a bruise due to rupture or penetration of small-caliber blood vessel walls. Contusions may be seen on the surfaces of internal organs (such as the brain or heart) as well as the skin and mucous membranes.

An **avulsion** involves a chunk of the skin being removed. This type of injury often involves shrapnel from an explosion; the speed of the flying fragments can literally tear a portion of the skin off. The nature of the injuries can thus say a lot about the location of the explosive device.

**Gunshot wounds** represent a special form of trauma very important to forensic pathology. The types of determinations made on bodies include 1) type of firearm used (shotgun, handgun/rifle, or high-powered rifle), 2) distance of the gun from the victim at the time of firing, 3) whether a given wound is an entrance wound or an exit wound, and 4) track of the projectile through the body. Wounds may be classified by distance as follows:

1. **Contact wound**: Muzzle of gun was applied to skin at time of shooting. Classic features include an impression of the muzzle burned around the entrance wound and absence of fouling and stippling (see below). Contact wounds over the skull may have a stellate appearance because of expulsion of hot gases from the barrel which are trapped against the outer table of the skull and blow back toward the exterior, ripping apart the skin around the entrance wound.

2. **Close range** (6 - 8 inches): The entrance wound is surrounded by fouling, which is soot that travels for a short distance from the gun barrel to be deposited on the skin. There may also be stippling (see below).

3. **Intermediate range** (6 - 8 inches to 1.5 - 3.5 feet): This is too far for soot to travel, so there is no fouling, but hot fragments of burning propellant (gunpowder) follow the bullet to the victim and produce stippling by causing pinpoint burns around the entrance wound. Of the two type of propellant, "ball" and "flake," the former will produce stippling at a greater distance.

4. **Distant** (greater than 1.5 - 3.5 feet): This is too far for either soot or burning propellant to travel, so the wound margins are clean, with neither fouling nor stippling. Entrance versus exit wounds represents an important distinction for the forensic pathologist to make. A grand jury may look with more favor on an assailant alleging self defense, if the victim has the entrance wound on the front and the exit wound on the back, rather than vice versa. Classically, the entrance wound has a rim of abrasion surrounding the wound, because the projectile "drags" the surrounding skin into the wound a bit, abrading it along the way. The exit wound lacks this abrasion, unless the victim was braced against a wall or other solid object that may secondarily abrade the margin of the exit wound as the projectile penetrates the skin and pushes it into the wall.