Fundamentals of First Aid: Electrical Burns



What's at Stake?

An electrical burn occurs when skin meets an electrical voltage. It does not always leave a significant burn to the skin, but the electricity can cause significant internal damage to nerves, muscles and internal organs.

What's the Danger?

High voltage electricity creates a lot of heat and takes the most direct route it can find between its point of contact and where it can leave the body. This means it causes significant burns to any muscle, nerves or internal organs it passes through.

If high voltage electricity arcs the heat generated in the arc can be 7000 degrees Fahrenheit, so burns are severe and often fatal.

Low voltage electrical burns are often superficial blisters over a wide area as the electricity disperses. However, if there is only a small contact burn site, there is a risk the current has become quite compact. This increases the heat generated and causes more damage. A small burn site doesn't necessarily the burn is minor.

How to Protect Yourself

First aid for electrical burns

1. Keep yourself safe
   - Call 911 to report the injury and get the utility company to turn off the power, if applicable.
   - Don't touch the injured person if he or she is still in contact with the electrical current.
   - Don't get near energized wires. Stay at least 20 feet (about 6 meters) away – farther if wires are jumping and sparking.
   - Don't move a person with an electrical injury unless the person is in immediate danger.
2. General burn care
   - **FOR ALL BURNS – CALL 911 IF:**
     - The burn penetrates all layers of the skin.

    - The burn covers a large area(s) of the body.
    - The skin is leathery or charred looking, with white, brown, or black patches.
    - The hands, feet, face, or genitals are burned; or
    - The person is an infant or a senior.
- Burned areas swell rapidly so remove jewelry, belts and other restrictive items, especially from around burned areas and the neck, quickly and carefully, before the area swells.
- Don’t break blisters.
- Don’t apply butters or ointments – these may cause infections.
- A Tetanus shot may be needed; booster shots are recommended every 10 years.

3. First-degree burns

- A first-degree burn is the least serious type, involving only the outer layer of skin. It may cause:
    - Redness;
    - Swelling; or
- Hold the burned skin under cool (not cold) running water or immerse in cool water until the pain subsides. Use pads or cloth soaked in cool water if running water isn’t available.
- Cover the area with a sterile, non-adhesive bandage or clean cloth; and
- Use over-the-counter pain relievers for pain.

4. 2nd-degree burns

- A second-degree burn affects the top 2 layers of skin and may cause:
    - Red, white or splotchy skin;
    - Swelling;
    - Pain; and
    - Blisters
- Immerse in cool water for 10 or 15 minutes. Use damp cloths if running water isn’t available.
- Don’t apply ice and don’t immerse large severe burns in cold water.
    - Doing so could cause a serious loss of body heat (hypothermia) or a drop in blood pressure and decreased blood flow (shock).
- Call 911 or emergency medical help.
- Protect the burned person from further harm, if you can do so safely.
    - Move the victim away from smoldering materials, smoke, and heat; and
    - **DO NOT** remove burned clothing stuck to the skin.
- Cover the burn(s) loosely with sterile, non-stick bandage and secure in place with gauze or tape.
- Elevate the burned area – raise the wound above heart level, if possible.

5. 3rd-degree burns

- A third-degree burn involves all layers of the skin and underlying fat. Muscle and even bone may be affected.
- Call for emergency medical help immediately.
- Burned areas may be charred black or white.
- The person may experience:
    - Difficulty breathing.
    - Carbon monoxide poisoning; and the
    - Toxic effects of smoke inhalation.
- Unless the person has a head, neck, or leg injury, or it would cause discomfort:
    - Lay the person flat.
    - Elevate their feet about 12 inches; and
    - Elevate the burn area above the heart level, if possible; and

    - Cover the person with coat or blanket.
- Keep the victim calm and treat for any other injuries and shock until medical help arrives.

Final Word

Electrical burns may have very little effect on the skin, unlike burns from a heat source, however, they are very serious. The electrical current can also cause a burn deep under the skin, where the damage cannot be seen. Anyone who suffers an electrical burn should be seen by a medical professional as soon as possible.