

## Burns: First Aid

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### ABSTRACT

Burns are common occurrence and often the patient is rushed to a nearby medical practitioner or hospital for first aid. Some patients may receive first aid from their relatives or friends in correct or incorrect manner. Most of the time the first respondents in case of burns are family members, friends, by standers. Properly instituted first aid reduces the morbidity and even mortality in burn patients. Many simple interventions can make a great difference in the course of burns and improve patient outcome.

This article is aimed to educate primary health care providers, accident and emergency departments, paramedicals and even the general public so that treatment for burn patients can start early.

**Key Words:** First aid, Burns, What to do, Immediate treatments

### INTRODUCTION

Burns are common occurrence and often the patient is rushed to a nearby medical practitioner or hospital for first aid. Some patients may receive first aid from their relatives or friends in correct or incorrect manner. Therefore it is imperative that the public is made aware of the proper first aid as it does limit further burn morbidity. As many of our patients come from a rural background, so are initially treated by home remedies, some of which include ink, ash, mud, turmeric and even cow-dung. Use of peacock feathers is also rampant. The scientific base of these treatments has eluded the authors and has no place in first aid or treatment.

Most common type of burns in which properly administered first aid is useful are -

1. Scalds in the pediatric population,
2. Thermal burns in farmers and daily wage workers, who still utilize kerosene lamps for illumination or cooking and accidentally get burnt by it.

3. Electrical injuries occur due to inadvertent coming in contact with the electrical cables, most patients are not electrical workers hence, do not have any protective devices for the same.
4. Chemical burns, mostly in factory workers and as in a case of vitriolage.

### Administration of First Aid:

Most of the time the first respondents in case of burns are family members, friends, by standers. They have to be made aware about the proper administration of first aid, along with, not to injure themselves while saving the patient.

### Thermal burns:

One must always try to put out the fire first. The stop and drop policy should be followed. Prevent the victim from running which would only fan the flames and make them burn faster. The victim should be instructed to lie down on the floor immediately with the burning side

uppermost. As the flames always burn upwards, lying flat prevents the fire from going around the body. Rolling should be avoided as it would burn the previously unburnt areas and may result in other injuries. [1]

To stop the victim from burning he/she may be doused with water or covered with a heavy cotton cloth. Use of synthetic textiles should be avoided, as that would ignite and stick to the victim and do more harm. Once the fire is extinguished the garment should promptly be removed, as it tends to trap heat. If water is not available any clean, packaged drink can be used eg. Milk. [2]

Water, which is being used to douse the patient should be cool (around 15°C) and not too cold, running and should be used for at least 10 minutes. This should be applied as soon as possible after injury. [3] This can be continued longer till the pain eases. But, care must be taken to prevent development of hypothermia, especially in children and the elderly. [4] Application of a clean towel dampened with cool tap water should be done afterwards as it helps in reducing pain. [5]

In addition to improved healing, cold water also has an excellent analgesic effect. Modulation of pain related inflammatory mediators may be one mechanism by which properly administered first aid influences healing afterwards. [5] Use of ice, very cold water is to be avoided as it may cause further injury to the already injured tissues, and if used in large quantities hypothermia may also occur. Hence, early appropriate first aid to partial thickness burn wounds has been shown in an experimental animal model to be associated with earlier healing and eventually less scarring. [3,6] The use of raw eggs and flour has also been mentioned. The proponents of raw eggs claim that the proteins in the egg form a layer over the burnt skin and prevent contamination.

Rings, bracelets, bangles, watches, jewelry or other tight items should be removed from the burnt parts. This is to be done quickly and gently, before the swelling

develops in the burnt part. Then removal becomes difficult, painful and it might even result in loss of the digit.

Ointments, creams, lotions, powders, grease, ghee, gentian violet, calamine lotion, toothpastes, butter, 'local doctor' formulations etc., should not be applied over the burn wound. They make the formal assessment of the nature, depth and extent of the burn wound difficult. Moreover, eventual removal of such substances might also be difficult and painful to the patient. Furthermore, the potential of these applicants contaminating the wound always exists and so, should be avoided. Mud, dirt, sand should not be applied either for dousing the flames or afterwards. [2]

For transport, the burnt part should be covered in a clean dry sheet/ cloth. This prevents soiling of the wound, reduces pain caused by the air draft and reduces infection. Plasticized polyvinyl-chloride (PVC) film available as a food-wrap is a good alternative to cover the burned areas. Being pliable, it molds to the contours of the wound and forms an impermeable, non-adherent barrier. Its application and removal is easy and painless. Moreover, being transparent, it also permits inspection of the wound. [7]

#### **Inhalation injury:**

If there is a lot of smoke, as in a case of fire in an enclosed space, the nose and mouth should be covered with a wet cloth and the victim should be removed from those premises by dragging along the floor, if possible, as smoke tends to rise upwards and collect towards the ceiling.

Such patients are critical; oxygen should be administered immediately, if possible and must be rushed to the nearest medical facility. These patients may also need intubation and ventilatory support.

#### **Electrical burns:**

The electric current can injure in several ways – current its self, flame burns, arc burns, fall resulting in other injuries. [8] These types of burns tend to injure deeper structures more than overlying skin. The injury to deeper structures manifests later as

necrosis of tissue. When attending to such a patient make sure the source of current is off, check that it is off and then help the patient. Avoid using water to douse flames at the site of injury as the current can flow up to the rescuer also. Use a dry wooden stick/ pole/ wooden chair to remove the victim from the site. Edema (swelling) sets in faster in these injuries so limb elevation should be done immediately and maintained. Immediate cardiopulmonary resuscitation may be needed for such patient; hence, the patient should be rushed to a tertiary center.

#### **Chemical burns:**

In case of chemical burn, which could be alkali or acid burn, first and foremost reaction should be to remove all clothing, ornaments immediately and rigorous washing continuing for prolonged time. The time period could be up to an hour or two. Chemical burns tend to be common in factory workers, laborers or as in a case of vitriol age. Acid burns cause less damage than alkali, which penetrates deeply by liquifactive necrosis.<sup>[9]</sup> Common acid burns are due to sulphuric/ hydrochloric/ nitric acid. Washing with running water is to be continued till the pH is neutralized as shown by litmus paper test. If eyes are involved, as in facial burns, the eyes should continuously irrigated with Ringer Lactate/ normal saline in the hospital and the patient should be reviewed by an ophthalmologist along with a burns specialist.

In a few cases, solid particles of sodium, potassium, calcium may be present, these should be brushed off or picked off, as these particles react with water, which, can cause further damage. Once all the particles are removed then washing should be commenced that too with jet/ high flow systems after taking care of eyes and other sensitive areas.

Common points in first aid irrespective of type

- Stop the burning process, ie. remove the offending agent.
- Be careful not to injure yourself.

- Cool the burn area.
- Elevate the burn area.
- Jewelry, including bracelets, rings and necklaces should be removed.
- Do not try and remove adherent burnt clothing.
- In hot liquid burns (scalds) all wet clothes are to be removed.
- Wrapping the burn wounds with a clean cloth is sufficient during transfer to the nearest emergency department.

After the first medical attention, the following information must be provided to the nearest burn unit/ medical facility before transfer:

1. Age of the patient
2. Gender
3. The place and means of injury
4. Burning agent
5. Time of injury
6. Width and depth of the burn including involved body area
7. Associated injuries
8. Co-morbidities if any
9. General medical status of the patient and any medical interventions performed

#### **CONCLUSION**

This article is aimed at health care providers, especially those who offer their services at the primary level, accident and emergency departments, paramedics and even the general public, as proper and timely institution of first aid in burns can significantly reduce the subsequent morbidity and even mortality.

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