



# Lecture 12

Subject

# Management for Patients with Burn

Theoretical

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# Burns

A burn is an injury to the skin or other organic tissue caused by heat, radiation, electricity, friction or contact with chemicals.

## **Causes and symptoms**

- 1- Heat (causing a sunburn), hot liquids, steam, fire
- 2-Electricity, friction.
- 3- Chemicals

## **Signs of the burn**

- 1- localized redness
- 2- swelling, pain, blister and shock

# *Types of Burn Injury*

- 1. Thermal**
- 2. Chemical**
- 3. Electrical**
- 4. Radiological**

# **Classification of Burn Injuries**

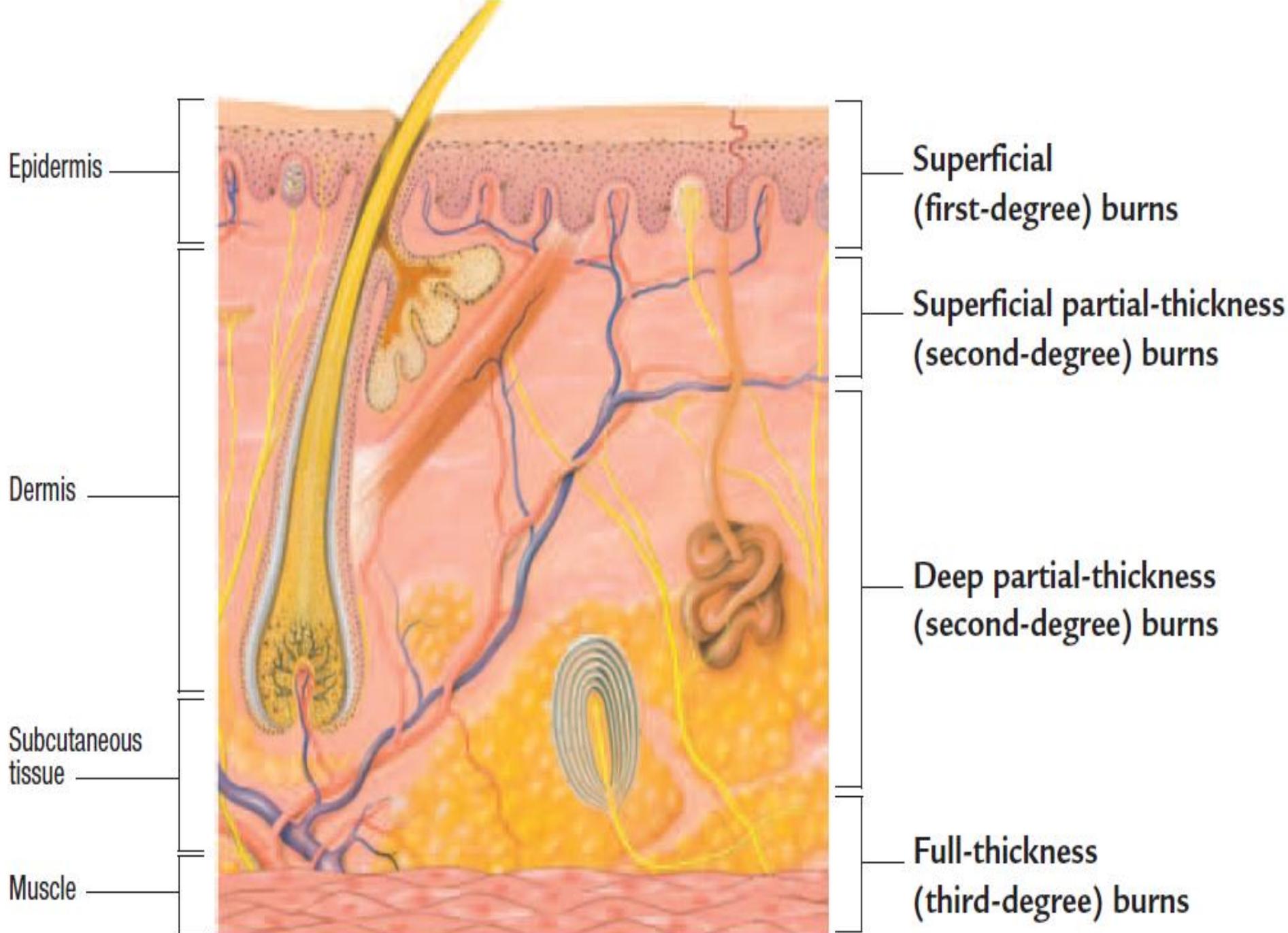
Burns are classified according to the depth of tissue destruction

**A. First-Degree**

**B. Second-Degree**

**C. Third-Degree**

**D. Fourth Degree**



Epidermis

Dermis

Subcutaneous tissue

Muscle

Superficial (first-degree) burns

Superficial partial-thickness (second-degree) burns

Deep partial-thickness (second-degree) burns

Full-thickness (third-degree) burns

**First-degree burns** are superficial injuries that involve only the outermost layer of skin. These burns are **erythematous**, **only the epidermis is intact**; if rubbed, the burned tissue does not separate from the underlying dermis. Complete recovery within view days.



**Second-degree burns:** involve the entire epidermis and varying portions of the dermis. They are painful and with **blister** formation. Healing time depends on the depth of dermal injury and typically ranges from 2 to 3 weeks. Hair follicles and skin appendages remain intact.







## **Third-degree (full-thickness) burns:**

- 1- Destruction of the epidermis and dermis
- 2- Wound color ranges widely from pale white to red, brown, or charred.
- 3- The burned area lacks sensation because nerve fibers are damaged.
- 4- The wound appears leathery; hair follicles and sweat glands are destroyed.
- 5- The severity of this burn is often deceiving to patients because they have no pain in the injury area.







**Figure 62-1 • Third-degree (full-thickness)**

**Fourth-degree burns** (deep burn necrosis) are those injuries that extend into deep tissue, muscle, or bone.



## **Severity of burn injury**

The severity of each burn injury is determined by multiple factors.

- 1- Age of the patient.
- 2- Depth of the burn.
- 3- Amount of surface area of the body that is burned.
- 4- The presence of inhalation injury; presence of other injuries.
- 5- Location of the injury in areas such as the face, the perineum, hands, or feet.
- 6- The presence of a past medical history.

# Rule of 9's

- ❖ The “Rule of 9's” is commonly used to estimate the burned surface area in adults.
- ❖ The body is divided into anatomical regions that represent 9% (or multiples of 9%) of the total body surface.

# Estimating the burned surface area in adults

## The Rule of 9's

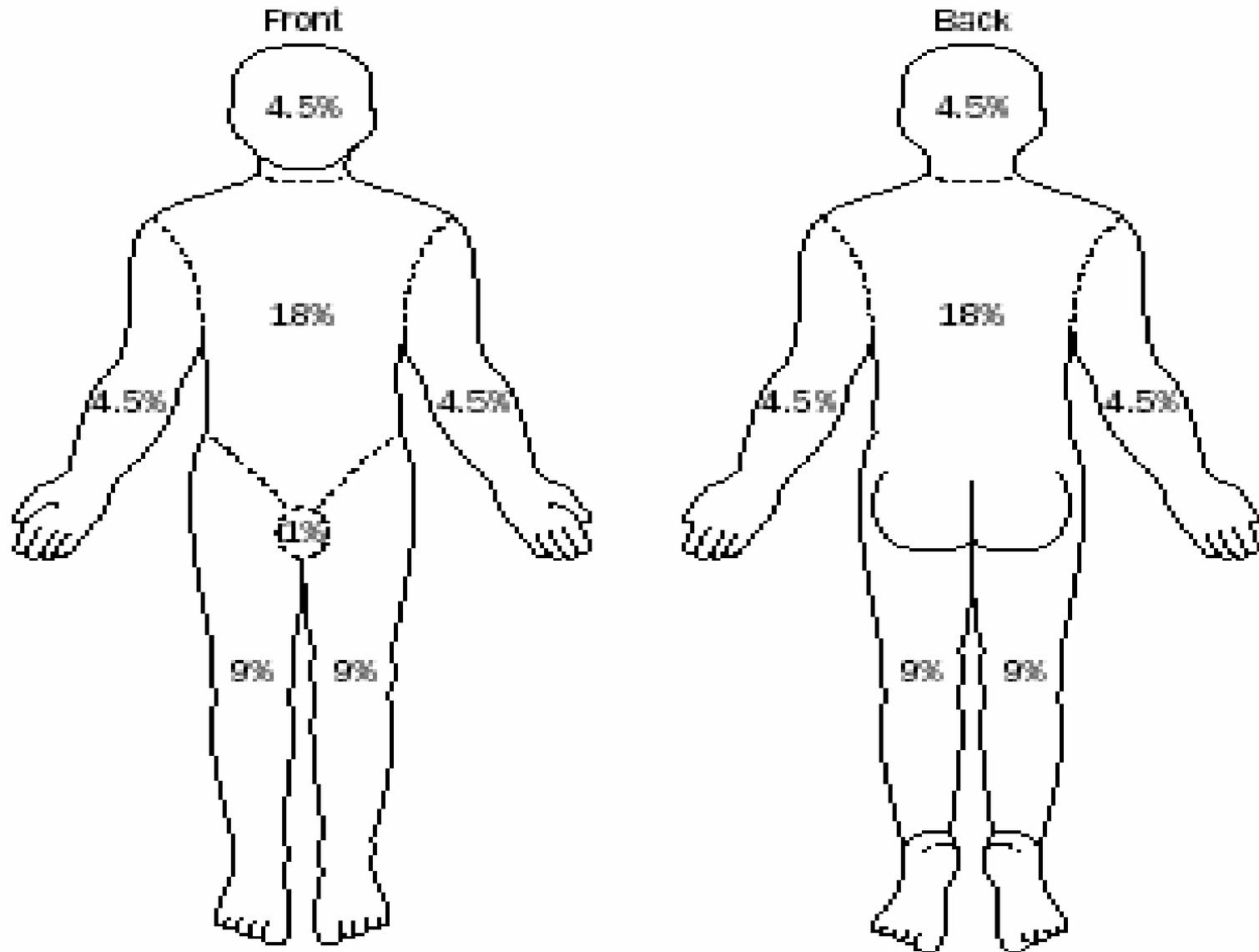
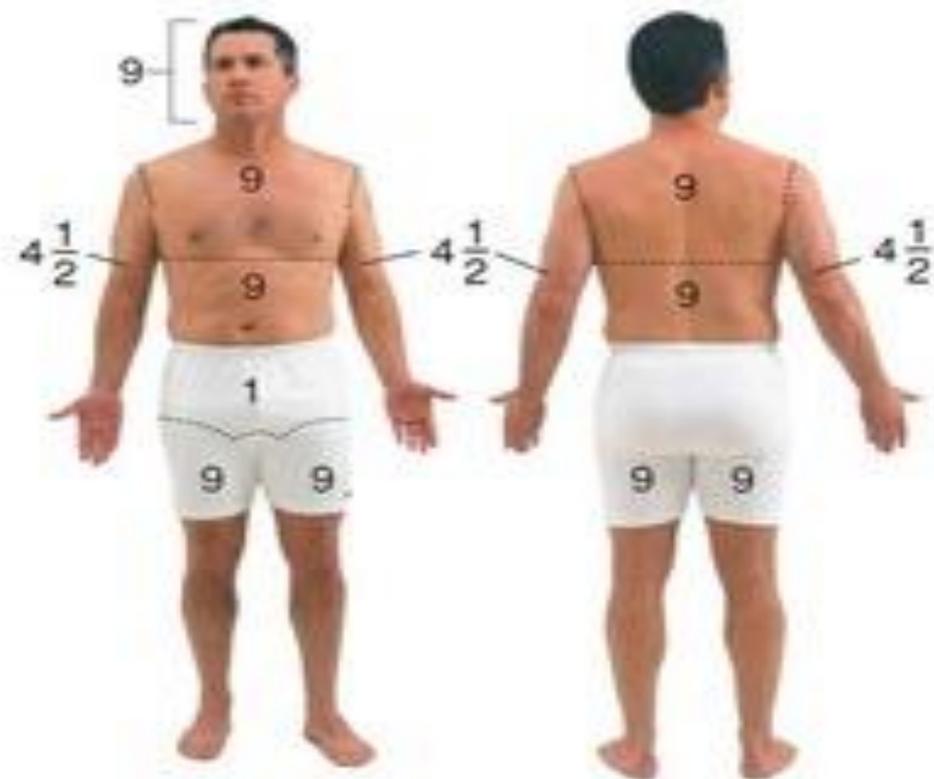


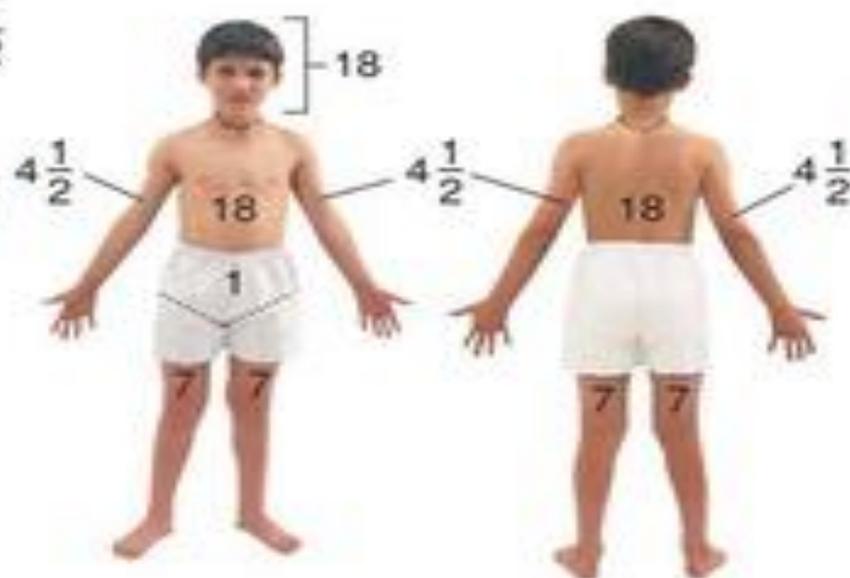
Figure 7

# The Rule of Nines

Adult



Child



Note: Each arm totals 9% (front of arm  $4\frac{1}{2}\%$ , back of arm  $4\frac{1}{2}\%$ )

**The Parkland formula** for the total fluid requirement in 24 hours is as follows:

- $4\text{ml} \times \text{TBSA} (\%) \times \text{body weight (kg)}$ ;
- **So:** 50% given in first eight hours;
- 50% given in next 16 hours.

## **Out put:**

- Urine – adults: 0.5–1.0 ml/kg/hour;
- Urine – children: 1.0–1.5 ml/kg/hour.

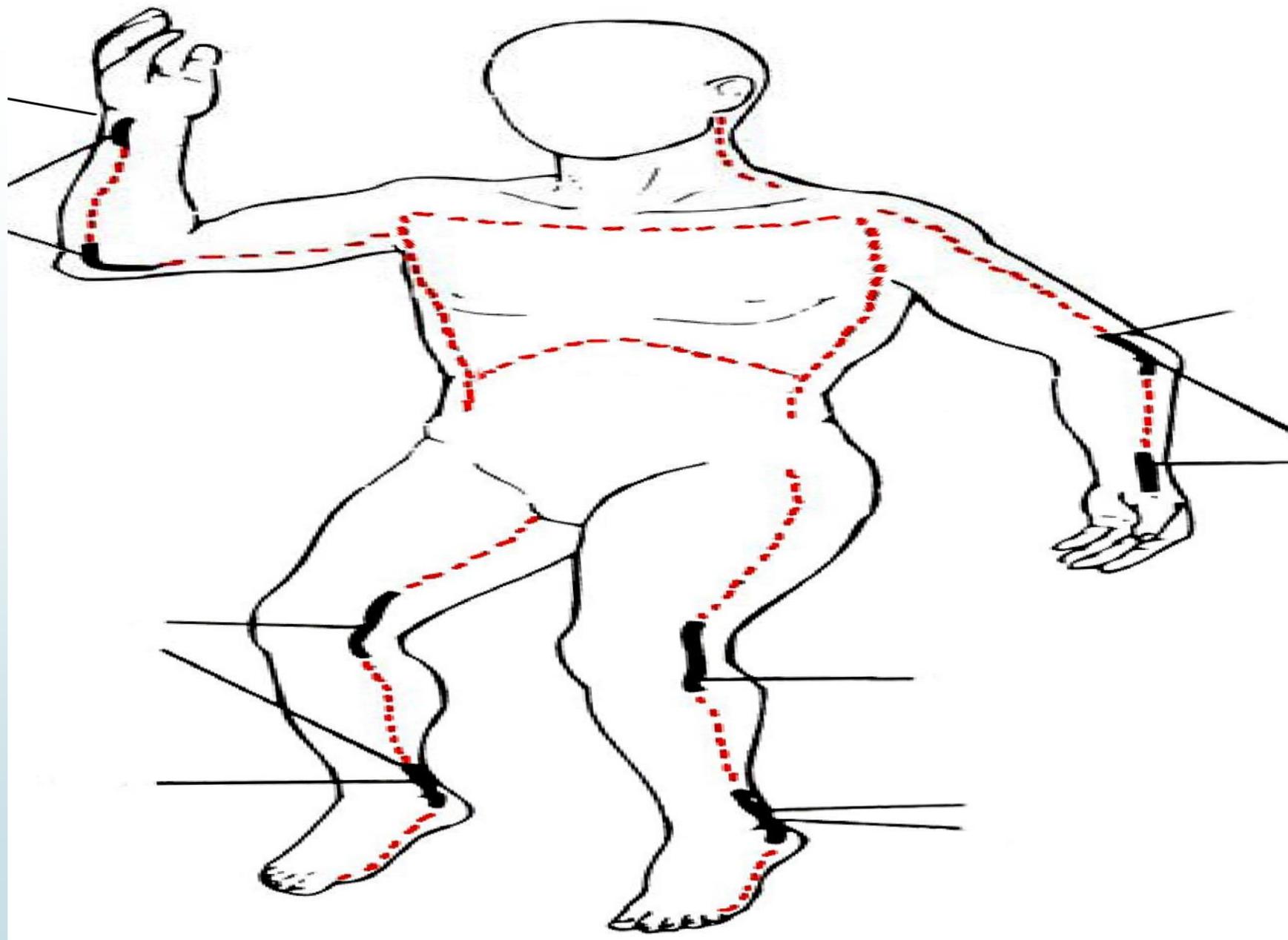
# ❖ **Escharotomy**

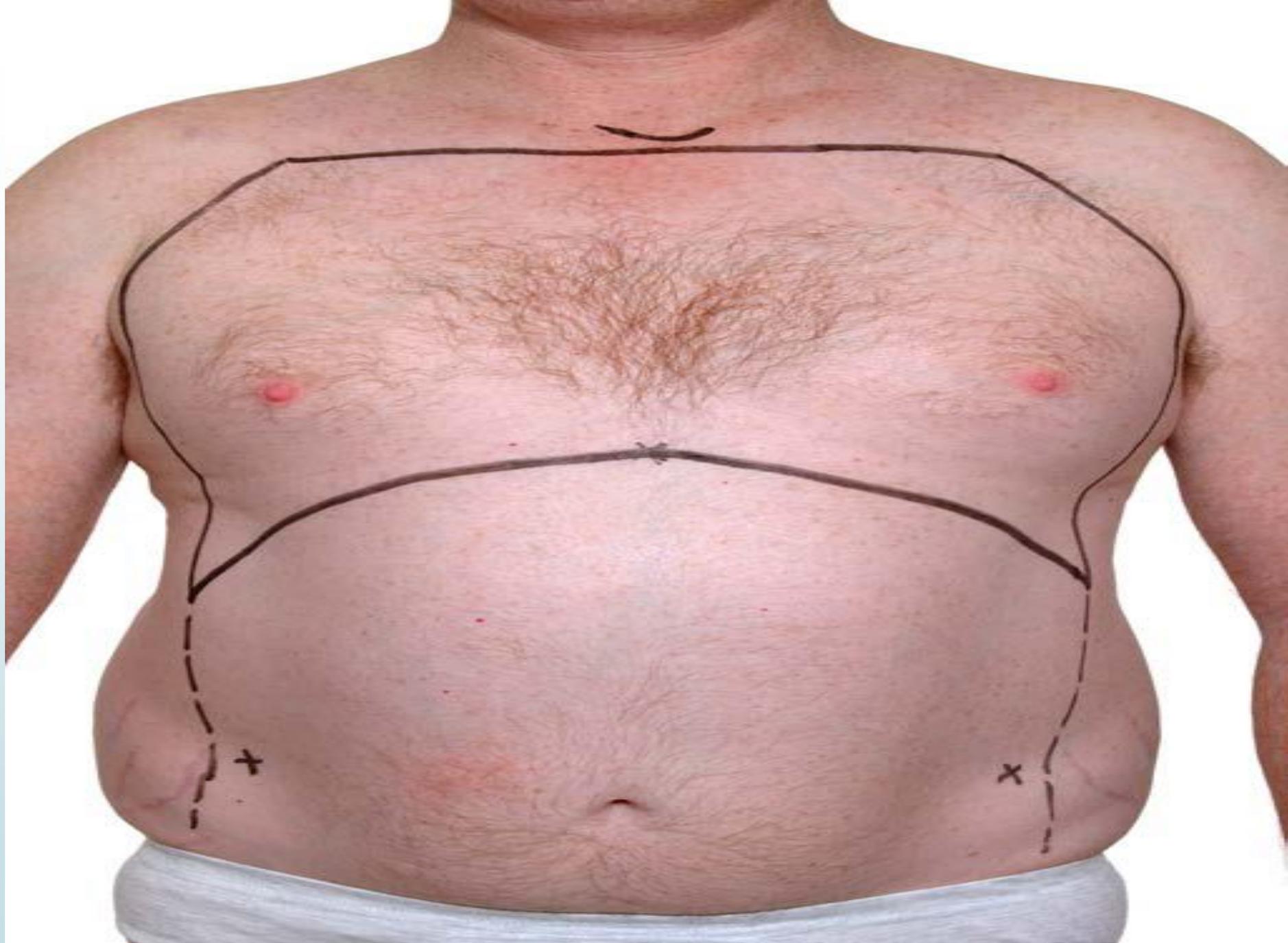
Incision to release rigid and inelastic skin (eschar) to allow:

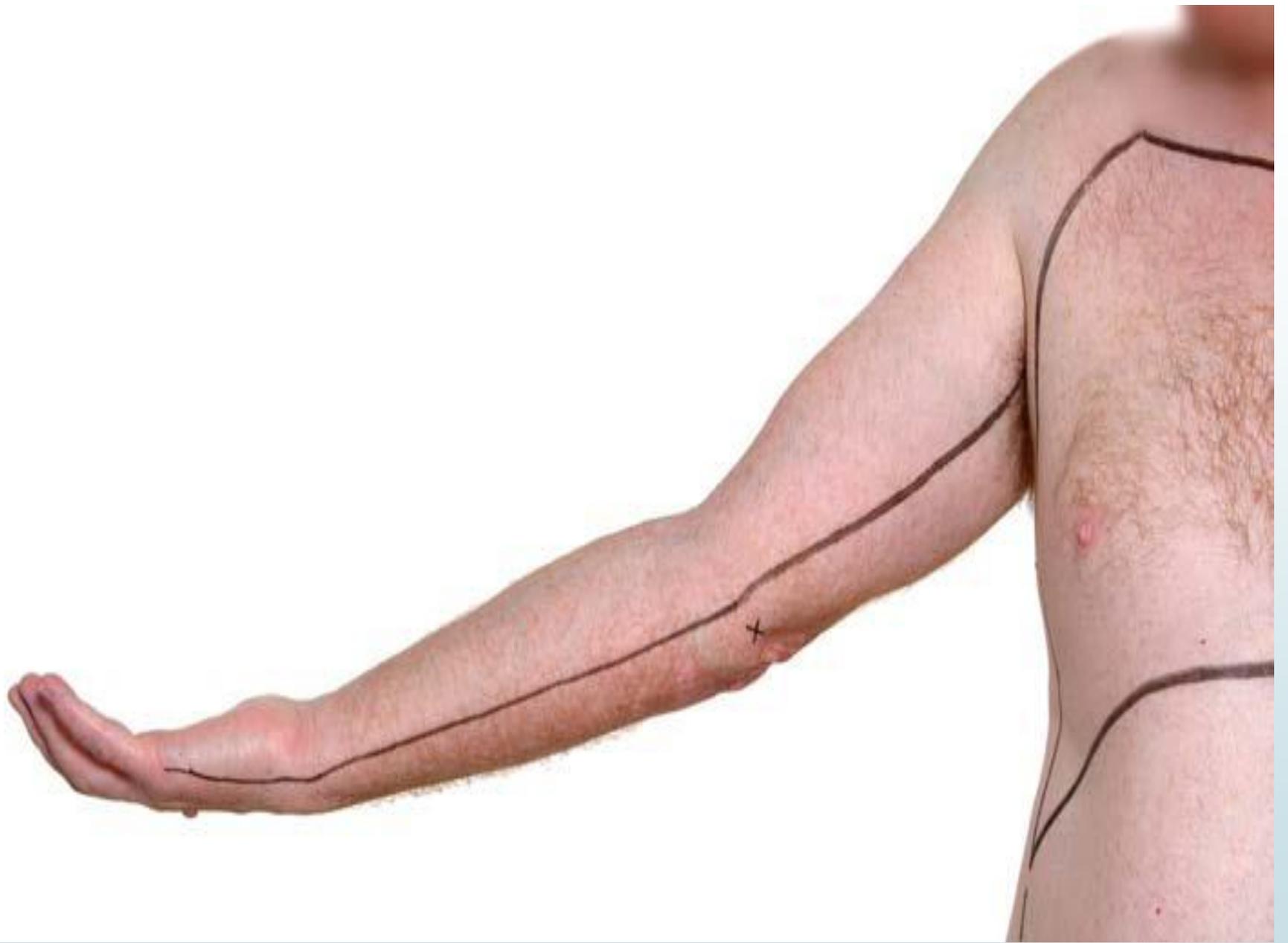
1. Circulation (in a limb)
2. Breathing (when chest involved)

## ❖ **PROCEDURE**

1. Limbs – release both medial and lateral sides
2. Chest – release entire breast plate













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**Figure 62-5** • Escharotomy of forearm.

# ► Complications

1. Sepsis
2. Shock
3. Scars.
4. Deformity and contracture of muscle.
5. Death

# *Management of Burns*

## **Essential management points:**

1. Stop the burning
2. ABC
3. Determine the percentage area of burn (Rule of 9's)
4. Good IV access and early fluid replacement

# *Initial treatment*

1. Initially, burns are sterile
2. Administer tetanus prophylaxis
3. Gently cleanse the burn
4. Remove the loose necrotic tissue
5. Dress the burn
6. Patient's energy and protein requirements will be extremely high due to the catabolism of trauma, heat loss, infection and demands of tissue regeneration

# Skin graft meshing

A skin graft may be meshed to provide coverage of a greater surface area at the recipient site









**Figure 62-7** • Split-thickness sheet graft.



**Figure 62-8** • Split-thickness meshed graft.

THANK YOU