



Round : General surgery

Group no : B3

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Burns:

🌟🌟 **Third largest cause of accidental death**

Depth	Level of Injury	Clinical Features	Result/Treatment
Superficial (first degree)	Epidermis	Dry, red; blanches; painful	Healing time 3-6 days, no scarring
Superficial partial thickness (superficial second degree)	Papillary dermis	Blisters; moist, red, weeping; blanches (waxy) pain to touch <i>Capillary refill ✓</i>	Cleaning; topical agent; sterile dressing; healing time 7-21 days; hypertrophic scar rare
Deep partial thickness (deep second degree)	Reticular dermis; most skin appendages destroyed	Blisters; wet or waxy dry; reduced blanching; depressed pain sensation to touch, pain present to deep pressure <i>Pale-white or yellow in 2-3 wks</i>	Cleaning; topical agent; sterile dressing; possible surgical excision and grafting; scarring common if not surgically excised and grafted; earlier return of function with surgery
Full thickness (third degree)	Epidermis and dermis; all skin appendages destroyed <i>leathery, waxy, black appearance</i> <i>* No capillary refill</i>	Waxy white to leathery dry and inelastic; does not blanch; absent pain sensation; pain present to deep pressure; pain present in surrounding areas of second-degree burn	Treatment as for deep partial-thickness burns plus surgical excision and grafting at earliest possible time; scarring and functional limitation more common if not grafted
Fourth degree	Involves fascia and muscle and/or bone <i>Epi + dermis</i>	Pain to deep pressure, in the area of burn; increased pain in surrounding areas of second-degree burn	Healing requires surgical intervention <i>heal in more than 3 wks</i>

Superficial thickness and superficial partial thickness managed non-surgically unlike deep partial thickness and full thickness burns need surgery(debridement and grafting)

🔥 thermal burn:

🌟 **Most common type of burns**

🌟 Most common type of thermal burn is scalds injury(usually from hot water)

🔥 Inhalational injury:

🌟 Best test for inhalation burn is laryngoscope

🌟 Suspect inhalation induced airway obstruction:

(هذول لو شكيت انه عندهم inhalational burn عطو وول لازم اعمل intubation)

Facial burns .

Singed nasal hairs .

Carbonaceous sputum .

Tachypnea.

Progressive hoarseness due to edema

From history:closed space , long exposure time,exposed to large amounts of CO2

🌟 **Supraglottic injury:** injury from high temperatures result in **immediate** edema of pharynx and larynx

🌟 **Subglottic injury:** injury to lung parenchyma usually due to superheated steam respiration of scalding liquids

🔥 Chemical burns:

🌟 First step in management is continuous washing with water

🌟 Acids: immediate coagulation type necrosis

🌟 Alkali: liquefactive necrosis with continued penetration into deeper tissue resulting in extensive injury.

🌟 Note that in **dry** chemicals burn we **don't use water** (بزيد الحرق اصلا , لانه بالكيميا ممنوع منع بات)
(اضافاه الماء الى الحمض و لكن اضافاه الحمض الى الماء عادي)

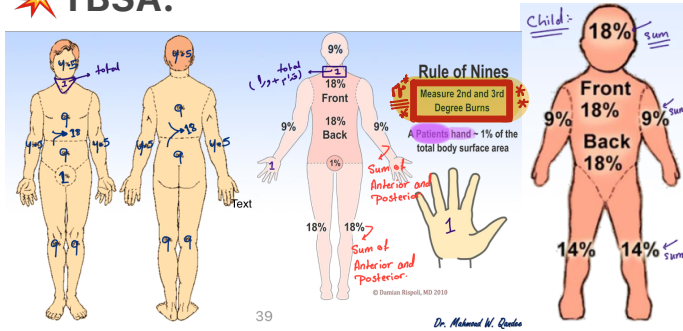
🌟 Hydrofluoric acid burns can cause severe deep liquefaction necrosis, you should deal with it by copious irrigation and then neutralize it with calcium or magnesium.

🌟 In Chemical burn management don't attempt neutralization.

🔥 Electrical burns:

- Any patient with an electrical burn regardless of how trivial it looks needs admission to ICU Because of its adverse effect like rhabdomyolysis, cardiac arrhythmia, compartment syndrome.
- Can cause rhabdomyolysis (how to treat?) by fluids to prevent AKI + Alkalinizing the urine by HCO_3^- helps to keep the myoglobin in a soluble form preventing it to precipitate + mannitol + dopamine
- In flash burns patient will probably not need an artificial airway just give him humidified oxygen
- Long term complication of electrical burn is cataract

🔥 TBSA:



- We can add topical antimicrobial agent (broad-spectrum and good penetration) in burned patients (while systematic we give it for immunocompromised or comorbidities)

🔥 Resuscitation:

Consider the fluid therapy for:

- >10% BSA third degree
- >15% BSA second degree
- >30-50% BSA first degree accompanying second degree

Parkland Formula

$$\text{Volume of Ringer's lactate} = 4 \text{ mL} \times \% \text{ BSA} \times \text{weight (kg)}$$

هذه بداية الحرق
وليس هذه بداية
admission

1/2

First 8 hours

1/2

Next 16 hours

we avoid colloids like albumin in the first 24 hrs. due to ↑ capillary permeability.

Antimicrobial agent	Coverage	Advantages	Disadvantages
Silver sulfadiazine	Broad spectrum especially <i>Pseudomonas</i>	Soothing, no metabolic complication	Poor eschar penetration May impede epithelial cell migration (post-burn neutropenia)
Mafenide acetate	Broad spectrum including <i>Clostridium</i>	Good eschar penetration, excellent for both treatment and prophylaxis	Carbonic anhydrase inhibition with secondary metabolic acidosis, painful
Silver nitrate	Broad spectrum (gram positive and negative)	Excellent prophylaxis	Poor eschar penetration, hyponatremia, methemoglobinemia, black staining
Bacitracin	Gram-positive bacteria	Good for shallow facial burns	Expensive
Mupirocin	Methicillin-resistant <i>Staphylococcus</i>	Excellent for methicillin-resistant <i>Staphylococcus</i>	Very expensive
Acticoat	Broad coverage	Good for shallow burns, grafts and donor sites	Hides wound, non-adhesive and slips from wound

خفتوي
Silver
جانبه مزج مع مطهر
يعطيه

🔥 Criteria of hospital admission:

- Partial-thickness burns greater than 10% BSA.
- Any full-thickness burn.
- Burns that involve the face, hands, feet, genitalia, perineum, or major joints + Neck + Axilla.

4. Any inhalation, chemical, or electrical injury (including lightning).
5. Burn injury in patients with pre-existing medical conditions
6. Burns in combination associated mechanical trauma.
7. Burned children/adult in hospitals without qualified personnel or equipment
8. Patients requiring specialized rehabilitation, psychological support, or social services (including suspected neglect or child abuse).
9. Extreme ages <12 and >50 +10% of TBSA
10. Circumferential burn

Notes:

-  compartment syndrome: pressure builds up within a closed muscle compartment, reducing blood flow and potentially causing permanent damage to muscles, nerves, and blood vessels.
-  escharotomy is an emergency procedure done for circumferential burns
-  Signs of compartment syndrome: pain, paresthesia, paralysis, pallor, pulselessness, coldness
-  to assess patient if they are getting better look at their urine output (in adults 0.5-1 // in children 1-2)
-  Escharotomy: full-thickness incision through the eschar, exposing the subcutaneous fat.
-  Fasciotomy is an incision through skin, fat, and muscle fascia, exposing the underlying muscle compartment.
-  composition of ringer lactate: NA, Cl, K, Ca, lactate

1. A patient receives a scald burn to his arm after spilling hot tea. The burn is red and blistered and is painful to touch. What is the depth of this burn?

- a. First degree
- b. Second degree**
- c. Third degree
- d. Fourth degree

1. Answer: b. Burn-Specific Secondary Survey, [Table 14-1](#). First-degree burns are red but have no blisters. Second-degree burns have blisters and are painful. Third- and fourth-degree burns are insensate.

2. A 42-year-old patient presents with second-degree burns to the anterior surface of both legs and anterior torso. What is his total percentage body surface area burn?

- a. 18%
- b. 36%**
- c. 45%
- d. 54%
- e. 63%

2. Answer: b. The "rule of nines" helps determine the percent body surface area. The anterior surface of each leg is 9%, and the anterior torso is 18%. Note, children have a different percentage distribution.

3. What is the most common organism to cause burn sepsis?

- a. *Escherichia coli*
- b. Group A streptococci
- c. *Staphylococcus epidermidis*
- d. Enterococcus
- e. Pseudomonas**

3. Answer: e. Pseudomonas and fungi are the most common causes of burn wound sepsis.

5. A 42-year-old man city worker presents after sustaining an electrical burn. He has contact burns on his hands and feet. His EKG shows normal sinus rhythm. What is this patient at risk for?

- a. Respiratory distress
- b. Renal failure**
- c. Hyperthermia
- d. Hypothermia
- e. Infection

5. Answer: b. Patients with electrical burns are at risk for renal failure due to rhabdomyolysis. The release of myoglobin from injured cells can lead to precipitation in the renal tubules.

4. What is a side effect of mafenide acetate?

- a. Metabolic acidosis**
- b. Neutropenia
- c. Hyponatremia
- d. Thrombocytopenia
- e. Gastrointestinal upset

4. Answer: a. Mafenide acetate can lead to a metabolic acidosis due to carbonic anhydrase inhibition.