Board of Regents, 1998

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Executive Secretary | Annette G. Tolentino
The Philippine College of Surgeons was born on September 12, 1963, when a group of renowned surgeons led by Dr. Gregorio L. Singian, a respected surgeon and teacher at that time, met at the San Juan de Dios Hospital for an organizational meeting. The By-Laws of the College was drafted by Drs. Carmelo M. Reyes, Antonio Villarama, and Herminio E. Velarde, Sr. This was approved on October 10, 1936. This installed the PCS as the national pillar of Philippine surgery.

The College included a small group of thirty five distinguished and venerable pioneers. Its avowed purposes were:

to elevate the standards of surgical practice in the country
to choose members through a strict screening procedure
to zealously promote the highest standards in medical education and ethical practice in surgery.

Its direction was aimed at the attainment of greatness through unselfish men dedicated to service, especially in the healing of patients, in the further unceasing search for the elusive surgical secrets that benefit mankind, and the continuous professional update of its members.

Regular meetings were held by the Board of Regents of the College. But during World War II and the Japanese occupation of the Philippines, all scientific activities were temporarily deferred. This was resumed scientific meeting held on March 30, 1946 at the Guazon Memorial Hall of the Philippine General Hospital.

In July 1946, the first medical specialty journal, the Philippine Journal of Surgery, was published by the College. This journal underwent many name changes. When it was finally named the Philippine Journal of Surgical Specialties, a name that is being used up to the present.

The first Surgical Congress was held on December 10-13, 1947 at the PGH with Pres. Manuel A. Roxas as the guest speaker.

On December 1949, the Board of Regents elected Dr. Baldomero L. Roxas as the first Filipino Honorary Fellow. This was followed by the election of other honorary fellows, all renowned in their own surgical specialties. Membership to the College has steadily increased through the years. In 1996, membership was at 1,621 distributed among the 10 chapters.

During the last three decades, the PCS has achieved rapid headways in the training of surgeons in our country with the establishment and accreditation of several residency training programs, a total of 64 all over the country. These programs provide structured and graduated methods of learning in addition to escalating responsibilities and operative experiences to trainee as they set the fifth year of residency. Importance is directed toward research and the resident's performance in the certifying Philippine Board of Surgery annual examinations. Acade mic preparedness, clinical knowledge, surgical skill, and ethical attitudes are emphasized in the programs.
Algorithm for the Management of Burn Patients

1. **History PE ABC’s if needed**

2. **First degree?**
   - **Yes** → **Small area involved?**
     - **Yes** → **No treatment**
     - **No** → **Second degree (partial thickness) Third degree (full thickness)**
   - **No** → **Rule of Nines**

3. **Rule of Nines**

4. **MILD BURNS**
   - Partial thickness: <15% adults? <10% in children? Full thickness <2%?
   - **Yes** → **Tetanus Prophylaxis Clean wound Bland ointment & dressings Analgesics**
     - **No** → **Outpatient management**

5. **MODERATE BURNS**
   - Partial thickness: 15-25% adults? 10-20% in children Full thickness 2-10%
   - **Yes** → **Stop burning process Restore hemodynamic stability Check for other injuries Pain control; Clean wound Tetanus prophylaxis**
     - **No** → **Admit or transfer to a Burn Unit for management**

6. **SEVERE BURNS**
   - Partial thickness: >25% adults; >20% children Full thickness >10% Major burn in face, neck, hands, feet, perineum, joints Inhalation injury High voltage burns
Victims of severe burns are unlike any group of critically ill patients. Fortunately, with the present era of rapid burn wound excision and early wound closure, the survival rate has increased. It is important that their care be supervised by experienced clinicians working in proper facility. Fortunately, most burn injuries are not critical and can be adequately managed by every physician.

What are the three types of tissue destruction that can occur when the skin burns?

a. In areas where the tissue coagulates and dies, a central zone of coagulation results.
b. The central zone of coagulation is surrounded by an area with severely restricted or decreased blood flow known as zone of stasis.
c. Around the area of stasis is a zone of inflammation. Cells are minimally injured and will recover within 7-10 days.

The viability of tissue in the zone of stasis is critical. If its balance is disturbed by infection, dessication or tissue death, a more extensive zone of necrosis will result. However, studies had shown that damage to tissue in the zone of stasis can be reversed if the blood flow is quickly restored so that oxygen and other nutrients can be transported to the healing wound.

Before treatment begins, what are some of the important factors to be considered?

Effective treatment for burns, whether mild, moderate or severe, requires some basic information:

1. Etiology - scald, flame, electrical, chemical, radiation, or cold injuries.
2. Burn Size
3. Burn Depth
4. Age - Patients younger than 2 years or older than 60 years are likely to suffer greater complications.
5. Nutritional deficiencies
6. Co-morbid Factors - such as diabetes, chronic lung, liver, renal, or heart disease.
7. Inhalational injuries
8. Associated injuries
9. Location - face, neck, hands, feet, perineum and joints are the primary areas that may cause special problems and warrant careful attention.

How do we assess the extent of burn?

The extent of the injury is defined by the total area of burn. Estimation of total body surface area (TBSA) burned is necessary for immediate fluid replacement and for determining the severity of thermal injury.

The Rule of Nine's is a uniformly recognized system used to evaluate the extent of a burn injury, under this system the body is divided into multiples of nine percent as shown in the diagram. Small areas of damage can be calculated using the principle that the palmar surface of the hands of the patient represents approximately 1%.

In making this calculation, only areas of partial and full thickness burns are included. First degree burns are NOT included in TBSA estimation.

The Lund and Browder Chart is another specific tool for assessing burn damage. In this system, the patient's age, weight and degree of burn are all factored into the total burn picture. The Lund and Browder Chart divides the body into smaller proportions giving emergency teams a more precise, measure of burn damage.

How are burns classified according to depth?

Traditionally, burn injuries were classified simply as first, second, 3rd or 4th degree. Recent knowledge indicate that the situation is more complex. First degree burns are still described as first degree. Second degree burns are now referred to as "superficial partial" or "deep partial" thickness burns. The term partial thickness means that the remnants of healthy skin from which the burn can heal remain under the wound surface. Third degree burns are known as "full thickness" burns.

So, what are first degree, superficial partial, deep partial, full thickness and fourth degree burns?

First degree burns can be recognized as reddish skin and are very painful. There are no blisters. Sunburn is a typical example. Superficial partial thickness burns are characterized by blisters, although these may be broken by the time the wound is examined. Under the blistered skin, the wound surface is moist, pinkish, red and extremely painful.

Deep partial thickness burns have mottled appearance with areas of waxy white color. The surface is dry and slight! v anesthetic. Although it will heal spontaneously in about 4 to 6 weeks, it unfortunately heals with unstable epithelium, late hypertrophic scarring and marked formation. Current treatment prefers excision and skin grafting.
Fig. 1 Estimation of burn size using the Rule of Nines
In full thickness burns, the surface appearance vary. If due to very hot liquid, the wound is dry and white. If due to flame, the wound is charred and with firm, leathery texture. It requires skin grafting if larger than 2-3 cm or in an area of potential cosmetic deformity.

Fourth degree burns involve deeper tissues like muscles and bones.

How do we treat first degree burns?

For small first degree burns, no treatment is required. For larger burns anesthetic ointments and oral analgesics are helpful. After cooling, the burn should be cleansed. Gentle and thorough washing with antiseptic soap (povidone-iodine, chlorhexidine, hexachlorophene) and water will suffice.

Why do we have to categorize burns?

The category will determine the treatment. A frequently employed triage policy refers patients with minor burns (those patients with less than 15% TBSA) to the nearest hospital, while patients with larger burns, are sent to a bigger general hospital or burn unit immediately. Delay in referring these major burns will likely increase the incidence of morbidity and mortality.

How do we categorize burns?

Minor Burns: Outpatient treatment
- Partial thickness - <15% adults, <10% children
- Full thickness - <2% TBSA
- Primary areas - not involved
- Inhalation injury - not suspected
- Associated injuries - not present
- Co-morbid factors - not present

Moderate Burns:
- Partial thickness - 15 - 25% (adults), 10-20% (children)
- Full thickness - 2-10% TBSA
- Primary areas - not involved
- Inhalation injury - not suspected
- Associated injuries - not present
- Co-morbid factors - not present

Severe (Major) Burns:
- Best managed by a Burn Team in a Burn Unit
- Partial thickness - >25% (adults), >20% children
- Full thickness - >10%
- Primary areas - major burns in face, neck, hands, feet, perineum & major joints.

Inhalation injury - present or suspected
Associated injury - present
Co-morbid factors - severe
High voltage electrical burns

What are the things to be considered during file transport of burn patients?

1. The ABCDE of initial management of all injured patients.
2. Special precautions are needed to minimize contamination and this can be accomplished by using a clean sheet and avoiding contact with the damaged area by ungloved hands. Remove all smoldered clothes or those soaked with chemicals before wrapping the patient in a sterile sheet.
3. To prevent rapid cooling of the patient, adequate insulation in the form of multiple layers of blankets is important.
4. All patients with chemical burns and damaged skin should be copiously irrigated prior to transport. This can be accomplished with shower or hose facilities.
5. Since major burns require large volumes of intravenous fluids, particularly during the initial phase of resuscitation (the first 8-10 hours post-burn), securing an adequate number of intravenous routes is important. Another consideration is the fact that the height of the intravenous column may be limited in an ambulance or airplane, therefore, 2 IV sites are necessary to assure adequate volume replacement. Plain Lactated Ringers solution should be administered according to the Parkland Formula.
6. Placement of a nasogastric tube is important during patient transfer, particularly by air. Ileus is a common sequel of burn injury (>20%) and may be associated with vomiting and potential aspiration pneumonia.
7. The patient should be adequately secured to the transporting stretcher by crossbody straps to minimize additional injury.
8. An endotracheal tube should be placed before moving a patient who has:
   a. upper airway burn injuries (smoke inhalation);
   b. deep facial burns especially of the lips, mouth, oropharynx;
   c. massive body burns greater than 50% TBSA especially those with circumferential chest burns.

Even in the most skilled hands, endotracheal intubation is hard to perform during transport, particularly in a confined or moving space. The endotracheal tube should be well secured and the use of umbilical tape placed around the tube and tied circumferential 1V around the head can eliminate unexpected accidental removal of the tube during transport phase.
9. Oxygen should be administered to all patients with
thermal accidents because of the potential of carbon monoxide poisoning.

10. All patients with electrical injury should have cardiac monitoring during the transport since dysrhythmias are common with these patients.

11. Since transport may involve long distances and time intervals, it is important to anticipate supplies, including medication and resuscitative fluids, that will be required.

12. Whenever feasible patients with major burns should be accompanied by a physician or an experienced nurse trained in life support techniques.

13. The burn wound should be gently debrided or should be covered with clean, dry dressing if transferred immediately, or with silver sulfadiazine if there is any delay in transfer.

14. Tetanus prophylaxis should be given if required.

15. All pertinent information should be written legibly, including a body diagram of burnt area and medications given.

What are the relative and absolute contraindication, to the use of the helicopter and airplane as a means of evacuating burn patients with multisystem injury?

Aero-evacuation of patients with pneumonia and congestive heart failure is hazardous because it may involve alterations in atmospheric pressure. Lower atmospheric pressures may result in decreased availability of oxygen and hypoxia. In transporting patients with these complications it is mandatory to intubate them prior to evacuation and to accompany them with portable respiratory equipment.

Cardiac arrhythmias and traumatic abdominal injuries should be diagnosed and treated prior to movement.

Recent gastrointestinal bleeding may be considered a relative contraindication to evacuation unless large volume of matched blood are transported. Also significant hyperthermia (>39.4°C and hypothermia <34°C) are contraindication to aeroevacuation.

How do we treat mild burns?

A. Cool the wound - place under tap water and wrap in clean cloth.

B. Initial Medical Management:

1. Administer tetanus prophylaxis. A tetanus toxoid booster is given for any patient who has not received a booster dose in the past 5 years or who cannot recall the date of last immunization. Patients not previously immunized should receive 250 units of tetanus human immune globulin and the first of a series (usually 3) of active immunization with tetanus toxoid.

2. Clean wound with diluted antiseptic cleanser and water.

3. Debride dead tissue. Rough scrubbing of the wound should be avoided to prevent further harm to the injured tissue. Small blisters can be left for 2-3 days but should be aspirated if too big. If there is a question of reliability of a patient or of the wound, it is generally more practical and safer to debride the blister.

4. Wound Care. Apply bland ointment (bacitracin, vaseline), nonstick porous gauze (xeroform, sofrotulle, adaptic) and wrap with gauze, the closed dressing technique is preferred because pain, heat, and fluid loss are decreased if a dressing is applied.

5. Systematic prophylactic antibiotics are not given.

6. Pain medications are usually necessary when the wounds are being cleaned. Oral or IM analgesics may be adequate.

C. Follow-up Care

1. Daily (or twice daily) wash with soap and water, apply ointment or nonstick gauze and wrap.

2. Encourage vigorous range of motion exercises.

3. Return to clinic as needed.

What are the medical criteria for determining whether a patient is already safe for discharge and can be followed as an out-patient patient?

1. No existing complications of thermal injury, such as inhalation injury.

2. Fluid resuscitation completed.

3. Stable hospital course.

4. Adequate pain tolerance.

5. Adequate nutritional intake.

6. No anticipated septic complications.

How do we treat moderate and severe burns during the first 24 hours?

If there is a delay in referring the patient with moderate to severe burns to a burn unit the following measures must be done:

1. Stop the burning process. This helps limit the extent and depth of injury and relieve the pain.

- remove burnt clothing

- irrigate chemical burns with tap water

2. Check the airway. Suspect inhalation injuries in:

a. burn to the face

b. if patient develops hoarseness

c. if patient has sooty cough

d. if burn occurred in an enclosed space

e. in circumferential chest burn

- Administer 90 - 100% oxygen if carbon monoxide toxicity is suspected. Symptoms are nausea, headache, dizziness, disorientation, shock.

- Intubate with big bore endotracheal tube: a. with
burns
- Do escharotomy for circumferential full thickness chest burns. Incisions are placed along anterior axillary lines connected by subcostal incisions.

3. Restore hemodynamic stability.
- Insert 1-2 large peripheral vein catheters and start resuscitation with plain Lactated Ringer's solution using Parkland Formula (4 ml/kg/% TBSA),
- Insert foley catheter in burns greater than 20%.

How will you assess the adequacy of fluid resuscitation?

The adequacy of fluid resuscitation must be continuously assessed by a variety of clinical parameters beginning with urine output, which should be maintained at 1 mL/kg/hr. The state of sensorium, pulse, pulse pressure, and the adequacy of capillary filling are usually sufficient parameters to determine whether acidosis is occurring. In only very complicated cases are central venous pressure and pulmonary artery pressure monitoring required.

When do you feed burn patients?

In moderate burns, feeding is initiated as early as 6-8 hours after burn injury in order to diminish the hypermetabolic response and to maintain intestinal mucosal integrity. For big burns (>50% TBSA) a feeding tube is used to facilitate continuous delivery of nutrients. Parenteral hyperalimentation should be avoided because of the potential infectious complications and increased mortality associated with its use.

What are the commonly used topical antimicrobials?

Silver sulfadiazine (Flammazine, Silvadene), silver nitrate (0.5% solution), and silver sulfadiazine plus cerium nitrate (Flammacerium) are the commonly used topical agents. Sodium hypochlorite (the ordinary chlorox used in laundry) can be prepared by mixing 1 tablespoon of chlorox and 1 liter of sterile water. This can be used in cleaning the wound and as a continuous wet dressing.

What about biologic dressings?

Cadaver skin, pig skin, and amnion are some of the most commonly used biologic dressings. Amnion is widely available here and easy to prepare and store. After removing the amnion from the placenta, it is cleansed with ordinary tap water. All the blood clots and debris are removed until a very clean amnion is left. Prepare a solution of 500 ml of sterile water mixed with 1 tablespoon of silver sulfadiazine (or 1 tablespoon of chlorox) and let the amnion stay for at least one hour.

When is fluid resuscitation life-saving?

All patient with moderate or severe burns will require vigorous fluid resuscitation. Inadequate fluid and electrolyte therapy is the major cause of death in the first few days following burns.
Before you apply it to the burn wound, wash it with sterile NSS using aseptic technique.

**How do you apply amnion?**

First clean the wound with antiseptic cleanser. Use sterile NSS to remove the cleanser and then dry with sterile gauze. Cover the area with the amnion and blow dry it with a hairdryer, at least 1 foot away from the wound.

**What is the advantage of amnion dressing over the conventional dressing with topical antibacterials?**

Amnion is a single application dressing and therefore lessens the pain of daily dressing with topical antibacterials. It is cheap, widely available and easy to handle, prepare and store. If it will not be used at once, just keep it in the chiller area of the refrigerator.

**What danger signs indicate a serious complication?**

If the previously pinkish, wet wound suddenly become whitish, dry and does not blanch, then the partial thickness burn is now converting to a full thickness burn.

Also, if a previously full thickness white and dry wound becomes blackish o: it is now with some blackish spots (ecthyma gangrenosum), then your wound is now infected and must be excised as soon as possible.

**Burn Sepsis** is manifested by one or more of the following: a change in sensorium. sudden hypothermia or hyperthermia, ileus occurring after 48 hours postburn, hypotension and decreased urinary output, hyperhyponoglycemia, azotemia, thrombocytopenia, development of respiratory distress.

**Aside from sepsis, what are other dire complications of burns?**

Gastrointestinal bleeding in burns (Curling's Ulcer) is more likely in burns greater than 40% TBSA. Early feeding, antacids and FL blockers will prevent this complication.

Renal failure is more likely after electrical burns than thermal burns.

**Adult Respiratory Distress Syndrome (ARDS)** will require intubation and ventilatory support.

**What about cosmetic and functional sequelae?**

Wound contracture and hypertrophic scarring are largely preventable. Since a burn wound will contract until it meets an opposing force, splinting is necessary as early as possible, even when the burn wound is STILL OPEN. Timely wound closure with adequate amount of skin would largely eliminate these problems. Postoperative splinting and elastic pressure garments are of value in the remodelling of collagen with prevention of hypertrophic scars.

**What is the special difference in managing a chemical burn from a thermal burn?**

In chemical burns, the tissue destruction continues as long as contact is maintained and unless the agent is inactivated by its reaction with the tissue. Initial treatment is dilution of the chemical with water and is done by continuous running water or prolonged hydrotherapy for 12 hours. Chemical burns are always deeper than they initially appear and may progress with time.

Oftentimes, fluid resuscitation is underestimated. After 12 hours of initial dilution, the local care of the wound is the same as for thermal burns. What are the special differences in managing an electrical burn from a thermal burn?

In electrical burns there is a higher risk of renal failure compared to thermal burns because of hemoglobin and myoglobin deposits in renal tubules. They require higher urine flow (75 - 100 mL/hour in adults or 1.5 -2 mL/kg/hr) and osmotic diuretics may be used to clear the heavy protein load in the renal tubules.

In electrical burns, no fluid formula is reliable because injury is more extensive than can be predicted by skin damage. Mannitol and sodium bicarbonate may be administered if significant hemoglobinuria and myoglobinuria are present.

Major amputation are frequently required in electrical burns. Escharotomy and/or fasciotomy may be required in compromised limbs. Early debridment and wound closure is needed to prevent sepsis.

Fractures are not unusual especially in the spine, because tetanic muscle contractions may be strong enough to cause fractures. **Spinal cord** damage can occur secondary to fracture or demyelinating effect of electric currents. **Bowel perforation** and other intraperitoneal damage can occur secondary to electric current. **Cataract** can develop from days to months after injury. Delayed rupture of major vessels can also occur. **Early anoxia and ventricular fibrillation** may cause sudden death and delayed rhythm and ECC abnormalities may occur.

Prepared by:

The Editorial Board, Philippine Journal of Surgical Specialties, 1995
## Drugs Mentioned in the Treatment Guideline

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