Introduction

Survival of severely burned patients has improved substantially over the past 50 years. Before this period, shock, pain, sepsis, and multi-organ failure caused extremely high mortality rates. Mortality for children with burns covering 49% of the total body surface area (TBSA) in the 1940s was as high as 50%. Since that era, advances in burn care have improved survival such that today, a 50% predicted mortality rate is associated with TBSA burns of 98%. This has only been possible through advances in critical care, and the establishment of specialised burn centers.

Burn care, as we know it today, is a relatively new concept. Although its development spans the twentieth century, most progress has been made during the past four decades. In many areas, research data are either too recent to stand the test of time, or too outdated to be mindful of current interests. In caring for burn patients, the precise quantification of the extent of injury is a prerequisite for effective management. The size of the burn site is used in the resuscitation for initial shock, provision for infection control, the management of metabolic, hormonal and nutritional needs, and for adequate and timely skin coverage. Successful management of these events is a key determinant of the outcome in patients with massive burns.

The groundwork for our current strategy of fluid and electrolyte management was developed in 1930. This was followed by identifying the role of fluid movement from the circulatory space into burned tissue, which leads to hypovolemia and hypotension. The first formula for calculating fluid need was introduced in 1947. This was followed by the classic formula developed by Evans in 1952, which established a firm relationship between burn size and fluid requirements. In the UK, Muir and Barclay described another regimen for resuscitation, employing colloids. Currently, the most widely accepted and used protocol is the formula developed by Baxter and Shires. By the end of the 1960s, adequate fluid resuscitation had been established as a requirement for greatly reducing the incidence of early organ failure.

Topical antibacterial agents had been widely accepted by the late 1960s. Moyer introduced silver nitrate solution in 1961 as a prophylaxis for wound colonization and sepsis. This was replaced in 1962 by mafenide acetate (Sulfamylon). In 1964, 1% sulphadiazine (Silvadene) was introduced, and its success in controlling infection in burns has been presented. This has remained the mainstay of modern topical antimicrobial therapy.

Inhalation injury is a major determinant of burn morbidity and mortality. Thus, the management of inhalation injury remains a major challenge in acute burn care. As inhalation injury is a bronchiolar disease, a high frequency volumetric diffusive respirator was introduced in the 1980s, and showed some promise in the management of inhalation injury. Respiratory support at lower peak pressures decreased the incidence of barotrauma. Synchronized ventilatory support in small children, and the prophylactic use of high-frequency percussion ventilation in older children and adults with inhalation injury, has further reduced the mortality of inhalation injury.

In the past three decades, nutrition support of burn patients has gone through a significant and progressive evolution. Per duodenal feeding is now routinely used, and may alter hypermetabolism, bacterial translocation, and toxins during burn shock resuscitation.
However, intravenous hyperalimentation was found to increase mortality. Catecholamines remain the primary mediators of the hypermetabolic response.

Early burn wound closure is one basic principle of critical burn wound care. Excision of deep second degree and full-thickness burns is recommended within 24–48 hours of injury, with skin cover to follow. To cover the post-excision defect in major burns, banked homograft skin, Biobrane, and cultured skin have proven successful; however, the use of the expanded autograft with meshed skin has made the most significant difference in burn care.