Surgical versus conservative treatment in pediatric thermal burns

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Our burn center has more than 30 years of experience in treating pediatric burns and over 17000 in-patient treated children.

The concept of an interdisciplinary Burn and Plastic Surgery unit for children:

- Provide optimal acute care for burn and trauma patients.
- Complex and devoted team for the pediatric patient and his special needs, which works with the patient and his family, from reanimation, through reconstruction, to rehabilitation.
- Wide experience in burns, trauma and reconstructions (at least 300 burns per year, and 30-50 major cases).
- The unit must be a part of a large, complex, emergency and teaching hospital.

The **objective of acute burn care** is the closure of the burn wound. It can be achieved:

- Spontaneously, for partial superficial and partial intermediate burn wounds, by means of numerous strategies of local and general care. There is no medicine alone able to heal the burn (most of our patients receive a conservative local treatment)
- Surgically, by excision and auto-grafting, for deep burns (partial deep and full thickness); it is common practice to initiate surgery as quickly as possible, even in massive burns (about 15% of our cases benefit from early excision and grafting for treating extensive or special location deep burns)

Acute surgical care - removing dead or partially devitalized tissue save lives and improves form and function.

Value of a burn center – prompt wound closure improves survival in moderate and massive burns, decrease the length of stay in hospital, reduces complications and sepsis, reduces the costs, improve the quality of life

The tangential excision can be performed, according to the expertise of the surgeon, with the Watson knife, Goulian knife, electro-dermatome, Versajet water dissector, until the viable tissue. Early extensive tangential excision and skin covering with meshed autografts.

Fig.1. 3 years old male patient, scalds 55% TBSA, admission, after 1 year, at age 15

Fig. 4. Number of burn cases per year

Fig. 5. General mortality 1988-2018

Fig. 3. Severity of cases by TBSA

Fig. 6. Mortality by TBSA

Fig. 2. 3 days old male newborn, contact with hot incubator in maternity, EG 1 day postburn, after 1 mo, after 2 years

Conservative treatment implies burn dressings that give comfort for the patient, reduce pain, enable motion and/or splinting, absorb the drainage of the wound. It has metabolic role: reduce the evaporative heat loss and the metabolic reaction, provide protection against bacterial invasion.

Meticulous but gentle local care, eliminating the thin pseudo-eschar, drainage, the necrotic tissue, without supplementary pain or distress, preserving as much as possible the viable tissues.

The rehabilitation program for scar and contracture prevention has to be initiated as soon as the patient's state allows. It includes positioning, splinting, mobilization and occupational therapy, physiotherapy, scar laser therapy, scar massage, use of pressure garments and silicone sheets and gels, used for both surgically and conservatively treated patients.

Conclusions

- The golden standard in extensive deep burns, especially in children and teenagers, is the early surgical approach, frozen allo-grafts from the skin-bank (when available) and auto-grafting
- The real state of the art is to ensure decent survival rate, to avoid systemic complications and to cover as soon as possible the excised wounds, promoting the regeneration of the dermis, as well as good joint functioning and social reinsertion.
- For the best outcome of the patients it is highly useful reaching the optimal tinge of treatment between the surgical option which includes its specific risks for certain long term complications and adjusted local conservative treatment which may lead to similar results, in a similar time period for certain patients.