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Paradigm shifts in the management of burn injuries

Stan J Monstrey

Ghent University Hospital, Belgium

In the past decennia, **three important paradigm shifts** have taken place in the management of burn injuries resulting in substantial changes in the therapeutic approach of severely burned patients. The first paradigm shift is called **'The Survival to Quality of Survival Shift'**. Improved resuscitation techniques and optimal treatment in specialized burn centres have resulted in increased survival of patients with extended and deep burns. As a result, emphasis in burn treatment nowadays is shifting towards improving the quality of life after severe burn injury which means towards reducing residual scar tissue formation and contractures. Anti-burn scar therapies should not only be started after the healing of the burn wound, but already be applied very early on: e.g. cooling of acute burns can make the difference between a more superficial and a more deep second degree burn, thus avoiding scar formation, adequate and early systemic fluid therapy can prevent secondary deepening of burn wounds by improving microcirculation in zones of stasis while optimal dressing of open wounds is essential to avoid infection and further tissue damage. But most of all, an exact **assessment of burn depth** which determines the indication to operate will allow us to avoid extra scar formation caused by the unnecessary grafting of superficial wounds or by prolonged conservative treatment of deep burn wounds.

And this brings us to the second paradigm shift of **'Laser Doppler Imaging (LDI)'**. Evaluation of the depth of a burn is usually performed by clinical examination only which has universally been demonstrated to provide an incorrect

diagnosis in up to 35% of the cases. Laser Doppler imaging is a precise and validated technique which provides an exact mapping of the depth of a burn by determining blood flow and wound healing potential. There is now ample evidence in the literature (with accuracies >96%) that a blue area on LDI will take more than 3 weeks to heal and therefore always should be operated to end up with an optimal functional and aesthetic outcome. Most professionals agree that probably nothing has more changed the management of burn injuries than LDI.

More recently, what is now called the **'Nexobrid Paradigm Shift'** further (and dramatically) changed the therapeutic approach of deep burn wounds. Nexobrid is a bromelain-based enzymatic agent that has become available on the market now already several years ago and has been shown in many RCT's to provide for an early and effective, non-surgical eschar removal of deep burns. A recently performed comparative study between LDI and Nexobrid demonstrated that early enzymatic eschar removal allowed for a more precise burn depth assessment of the deep dermal wounds by direct visual assessment of the debrided wound bed resulting in a more informed decision on further treatment options. Advantages of this new procedure include a reduced need for surgery, less blood loss, less donor site morbidity and

surprisingly **decreased scar formation**. Minor disadvantages include: logistic implementations of this new procedure, a 4h-long debridement procedure requiring adequate analgesia and sometimes prolonged wound healing times.

Biography

Dr. Stan J Monstrey is a Professor of Ghent University Hospital, Belgium

stan.monstrey@ugent.be