Enzymatic Debridement (ED) at Bedside: Role of Dexmetomidine during its application in Pediatrics with Burn–Induced Compartmental Syndrome: Case Report.

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Avoiding pain and discomfort should be a primary gold standard in management of all burned patients: in Our Centres application / removal of mixture for Enzymatic Debridement (ED) in Adult ones follows our procedural pain relief schedule by ketamine/fentanyl-low-dose/midazolam compound usually used for dressing change/wound debridement, measuring Richmond Agitation-Sedation Scale (RASS), Aldrete Score and VAS in order to set Comfort, Clinical status and Analgesia. Although off-label in Pediatrics , after Informed Consent , mixture for ED was apply in a 20 % TBSA 13 y.o. boy with left forearm burn induced compartment syndrome, measured by ICP monitoring; added to drugs using dexmetomidine, α2- adrenergic agonist allowed comfort in lapsetime of 4 hours between application/removal procedures.

Parameter	Description of patient	Score
Activity level	Moves all extremities voluntarily/on command	2
	Moves 2 extremities	1
	Cannot move extremities	0
Respirations	Breathes deeply and coughs freely	2
	Is dyspneic, with shallow, limited breathing	1
	Is apneic	0
Circulation (blood pressure)	Is 20 mm Hg > preanesthetic level	2
	Is 20 to 50 mm Hg > preanesthetic level	1
	Is 50 mm Hg > preanesthetic level	0
Consciousness	Is fully awake	2
	Is arousable on calling	1
	Is not responding	0
Oxygen saturation as determined by pulse oximetry	Has level >90% when breathing room air	2
	Requires supplemental oxygen to maintain level >80%	1
	Has level <80% with oxygen supplementation	0

Maximum total score is 10; a score of ≥9 is required for discharge.

Patient , Methods and Results : 13 yo boy, 38 Kg, admitted in Burn Intensive Care Unit after primary survey , with 20% TBSA Alcool induced burns, history of low mental delay, no allergies. At bedside , in spontaneous breathing, monitoring Vital Parameters (HR, SpO2%,RR, NIBP) and in left circumferential burned forearm measuring of intracompartmental pressure (ICP) that shows high level of 45 mm Hg. Infusion of dexmetomidine 0.5-0.9 γ/k/h was started to avoid discomfort and prior to application of ED mixture in ketamine/ fentanyl /midazolam (K: 1,5-2 mg/k; F: 0,5-1 mcg/kg; M 0.15mg/kg). Application of debridement mixture was applied on 15% TBSA included on circumferential burned left forearm that shows even after 2,5 h ICP of 10 mmHg. In lapsetime comfort of patient was obtained by increasing dexmetomidine at high level of infusion admitted in patient in spontaneous breathing . Removal of Enzymatic Debridement was implemented at same way of application.

Richmond Agitation Sedation Scale (RASS)		
Scale	Label	Description
+4	Combative	Violent, immediate danger to staff
+3	Very agitated	Pulls or removes tube(s) or catheter(s); aggressive
+2	Agitated	Frequent non-purposeful movement, fights ventilator
+1	Restless	Anxious but movements not aggressive, vigorous
0	Alert and calm	Spontaneously pays attention to care giver
-1	Drowsy	Not fully alert, but has sustained awakening (eye-opening/eye contact to voice ≤10 seconds)
-2	Light sedation	Briefly awakens with eye contact to voice (<10 seconds)
-3	Moderate sedation	Movement or eye opening to voice (but no eye contact)
-4	Deep sedation	No response to voice, but movement or eye opening to physical stimulation
-5	Unarousable	No response to voice or physical stimulation

Observation
Voice
Touch

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Conclusion : Aldrete Score, RASS score and VAS score showed a good comfort and analgesia, showing a gold standard tailored patient therapy for a less invasive surgical technique at bedside .

In young : Burn-induced compartment syndrome is a severe sequela after circumferential burns of the extremities: as the interstitial pressure rises there is initially impairment of venous outflow followed by diminution of arterial inflow exacerbated by tissue edema developed during the acute phase of burn resuscitation in the first 48h after injury. Although the current gold standard is operative escharotomy, this procedure is traumatic, may cause considerable blood loss, and entails possible morbidity and complications. Enzymatic debridement (ED) is considered one promising alternative of non-surgical option for eschar removal and results suggested that the use of this technique reduces need for surgery and escharotomy. The early application of ED can release tissue pressure by timely removing the constrictive eschar, reduce inflammation-associated edema and thus may prevent patients from the need for surgical escharotomy and its possible complications and invasiveness.