Using Photobiomodulating lasers in Children

Nano-oral medicine
Therapeutic biomodulating laser care

Everyday examples of light therapy

- Jaundice is common in premature infants. Phototherapy acts on unconjugated bilirubin to a depth of 2 mm from the epidermis. Phototherapy changes the bilirubin through structural photosomization into water-soluble lumirubin that is excreted in the urine.
- Photosynthesis is the process by which plants, some bacteria use light energy from sunlight to produce sugar, which cellular respiration converts into ATP, the "fuel" used by all living things.

In the USA:
Off label use

Low Level lasers are considered by the FDA as NSR medical device that poses NONSIGNIFICANT RISK (NSF) to patients

No FDA -IRB (Institutional Review Board) review is required if the off label use is used to treat patients and is not part of a research project involving humans

Lawrence Kotlow DDS

The use of low level lasers remains under the radar screen for the present time, especially in the USA, except for the use of the 680nm red light in caries detection. In the fields of post trauma, oncology, neural pain pathology, and musculo-skeletal management their use is growing.

- Indirect effect: Bistimulation
- Non-Surgical: does not produce heat
- Visible and non-visible wavelengths
- Continuous & gated pulse
- Rigid tips
- Hand held units: very portable
- Painless
- Reduced use of drugs for pain control

Clinical everyday uses

- Analgesia
- Traumatic injuries
- Gag reflex
- Oral lesions
- Traumatic injuries
- Analgesia

Procedures completed in my office using photobiostimulation

- Reducing nausea
- Controls gag reflex
- Reduces the need for numbing
- Improved numbing when local is used
- Maintaining tooth vitality after trauma
- Reduces post-traumatic swelling
- Improves soft tissue healing
- Treatment of herpes & herpes type lesions
- TMJ discomfort
- Muscle trismus: releases tight muscles
- Reduction in bleeding

Chinese Name: Hegu (English translation: Joining Valley)
Location: On the dorsum of the hand, between the 1st and 2nd metacarpal bones, in the middle of the 2nd metacarpal bone on the radial side.

Classifications:
- Yuan-Source point of the Large Intestine Meridian
- Command point of the head and face

- 4-8 Joules
- Between thumb and first finger
- This is the main switching point for acupuncture system

For additional peer reviewed articles

- 8612009 different references in the textbook written by Jan Turner & Lars Hode

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**Acupuncture + Photobiomodulating laser treatment**

**P6 (Nei guan meridian point) = reduce gag reflex**

- 460nm probe, 3-4 pulses one minute at the P6 point reduces gag reflex in many patients.

- Isolite placed on patient with gag reflex problem.

**Photobiomodulation (LLLT) in a Pediatric Dental Practice**

- Using hot (surgical) lasers to produce photobiostimulating effects.

**Viral & herpes like lesions**

- Mode 3-one minute each cheek, intraorally 660nm probe 30 seconds on large lesions.
- Parent said excellent relief that night.
- 4 days later returned almost lesion free.


**Facial trauma Q1000 mode 1 three minutes & 660nm one minute**

- Initial injury

- Trauma to upper anterior teeth

**Creating laser initiated hard tissue analgesia with hot lasers**

- 30 seconds to 2 minutes
- Non-contact Non-thermal

- A photobiostimulating effect
- Reduced local anesthetic requirements
- Allows for using High Speed handpiece
- Success rate 80-90 percent of the patients

**Photobiomodulation (LLLT) in a Pediatric Dental Practice**

- Response of one child

- Initial injury

- Parent said excellent relief that night.
- 4 days later returned almost lesion free.

**Reduction in the need for a mandibular block**

- Increased uptake of anesthetic agent (can also be used to get rid of numbing more quickly).
- Reduction of swelling if you injure a blood vessel during injection.
- Effective patient management.

**Dental and soft tissue trauma benefits**

- Trauma to upper anterior teeth

- 660 nm laser probe for 2 minutes.
Trauma to upper anterior teeth, partially extruded

- 660 nm laser probe for 2 minutes
- 1 month
- 3 months
- 2 years

Maintain tooth vitality (660 nm)

- Traumatic injury to primary teeth
- In many cases, normal effect of trauma causes primary teeth to devitalize in 2-6 weeks after traumatic injury.
- Laser 1 minute (day 1 and day 3) = vitality remains

Initial trauma 5 days post trauma

- 2 months post trauma
- 9 mo post trauma
- 2 years post

Partial avulsion of maxillary central incisor

- Tooth had 660 nm laser placed for 2 minutes on partially avulsed left central incisor. This was repeated on day 4 and day 14 (4.4J)
- Week two
- Week six
- 17 months

Photobiomodulation (LLLT) in a Pediatric Dental Practice

- TMJ pain & long appointments
- Reduces muscle trismus and edema (swelling)
- Stimulates the immune system and brings neutrophils to site of infection for faster healing
- Apply 8J to submandibular lymph nodes

- Laser Application will not preclude use of antibiotics in most cases but will stimulate the effect of the antibiotic by stimulating lymphatic system

Mode 1, three minutes; 660 probe intraorally 1 minute

Mode 3, one minute

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Thank you for your interest and time today