

8.K2 laser applications




※ **A**: Anesthesia / **(A)**: Non-Anesthesia




Contact with initiated tip



Non-contact with non-initiated tip (new tip or newly cleaved fiber)

	Applied Technique	Anesthesia	Laser Irradiation Mode	Power Output	Contact / Non-Contact	How to use
Endodontics (Endo tip)	Root Canal Therapy	A (A)	Pulse	0.3W±0.5	Non-Contact  	Simply put the fiber in the canal and you can irradiate the laser 2~3mm away from the blocked part. Irradiate the laser, moving up, down, left and right. It is convenient to adjust the length if you use a stopper. It is appropriate to irradiate for 30 seconds in total per tooth.
	Pulpotomy	A (A)	Pulse	0.3W±0.5	Contact 	For primary teeth: Remove the pulp first. After putting the fiber for hemostasis, irradiate for sterilization. For Adults: Remove the lesion tissue and put Calcium Hydroxide. Irradiate with Biostimulation mode.

- Half of the pulse power(Gentle mode) is the same as CW (standard mode)
For example) 4W pulse (gentle mode) is the same as 2W CW(standard mode)

Periodontics (General tip)	Sulcular debridement	Mild	A (A)	CW	0.6W±0.2	Contact 	<p>Remove the diseased epithelium by putting the fiber inside the pocket and Irradiate to the pocket wall rather than the root side for 30~60 seconds per tooth. Use a little higher power while bleeding. When bleeding stops, lower the power. Higher power can be used for quick response, but thermal damage may occur to the tissue. Adjust the power accordingly. During the first procedure, carbonized tissue lesions may stick on the fiber end. Wipe it with alcohol gauze at this time (If you use cotton, it may catch fire). *Tartar can not be removed by laser, remove it by conventional method like scaler etc. *For details, please refer to in 'Laser Curettage Manual.'</p>
				Pulse	1.2W±0.2		
		Moderate		CW	0.9W±0.2		
				Pulse	1.8W±0.2		
		Severe		CW	1.2W±0.2		
				Pulse	2.4W±0.2		









K2 laser applications








Contact with initiated tip



Non-contact with non-initiated tip (new tip or newly cleaved fiber)

	Applied Technique	Anesthesia	Laser Irradiation Mode	Power Output	Contact / Non-Contact	How to use
Implant (General tip)	Implant Recovery	A (A)	CW	1.8W±0.5	Contact 	Perform the same procedure as laser surgery. Contacting to the implant surface may cause no harm.
			Pulse	2.8W ±1.0		
Surgery (General tip)	Biopsies	A (A)	CW	1.4W±0.5	Contact 	Place the optic fiber at the soft tissue to be removed, and irradiate the laser in moving motion. Remove the debris with alcohol gauze during the soft tissue removal. When lowering the output power by 3~4 levels than specified, the procedure can be performed without anesthesia. When doing so, irradiate at the 1~2mm apart for about 10~20 seconds before the procedure for better anesthesia effect. (Attach optic fiber at the carbon paper for use: Tip initiation) * Laser surgery may not work well if there is blood or saliva on the surgical site. In this case, dry the surgical site and increase the output by 2~4 levels. Recommended) Dry rather than increasing the power.
			Pulse	2.8W±1.0		
	Crown lengthening	A (A)	CW	1.2W±0.5	Contact 	
			Pulse	2.4W±1.0		
	Exposure of unerupted teeth	A (A)	CW	1.4W±0.5	Contact 	
			Pulse	2.8W±1.0		
	Fibroma removal	A (A)	CW	1.4W±0.5	Contact 	
			Pulse	2.8W±1.0		
	Frenectomy	A (A)	CW	1.2W±0.5	Contact 	
			Pulse	2.4W±1.0		
	Gingivectomy	A (A)	CW	1.4W±0.5	Contact 	
			Pulse	2.8W±1.0		
	Gingivoplasty	A (A)	CW	1.2W±0.5	Contact 	
			Pulse	2.4W±1.0		

Surgery (General tip)	Operculectomy	A (A)	CW	1.4W±0.5	Contact		<p>* Laser treatment is a completely different method from using a scalpel that requires physical force. Do not force the laser fiber. The principle of laser is that the light energy is transferred to the tissue and the temperature of the tissue is instantaneously raised to coagulate and vaporize the tissue.</p> <p>* It is effective to use the specified output by adjusting up and down. Especially, lowering the power output as much as possible will result in faster healing and less pain after surgery.</p> <p>* Use the possible gentle mode(pulse mode)</p>
			Pulse	2.8W±1.0			
	Papilectomy	A (A)	CW	1.2W±0.5	Contact		
			Pulse	2.4W±1.0			
	Reduction of gingival hypertrophy	A (A)	CW	1.4W±0.5	Contact		
			Pulse	2.8W±1.0			
	Vestibuloplasty	A (A)	CW	1.2W±0.5	Contact		
			Pulse	2.4W±1.0			
	Incision and drainage of abscess	A (A)	CW	1.5W±0.5	Contact		
			Pulse	2.8W±1.0			

- Contact : touch to the tissue when lasing
- Non-contact : At about 5~20mm apart from the desired area, irradiate in a motion of drawing 2~5mm circle.
No anesthesia is required for non-contact treatment.
<We recommend to use the Tip only for the non-contact procedures(refer to the "Prepare to use optic fiber")>
- Standard mode : CW(continuous wave mode) Laser is irradiated constantly.
- Gentle mode : Laser is repeatedly irradiated for a very short time: Recommended mode.

K2 laser curettage protocol

Definition of Laser Curettage

Laser curettage is the instantaneous vaporization of the lesion tissue after the laser irradiation that raises the temperature of the target tissues above 120 degrees.

Principal of Laser Curettage

When the laser is irradiated to the lesion tissue and the inflammation in the periodontal lesion, the laser evaporates the watery lesion tissue first because the lesion tissues contain more water than the healthy tissues. This minimizes damage to the healthy tissues. The laser selectively removes the lesion tissues and promotes the regeneration of the new tissues.

Method of Laser Curettage

After placing the G Tip optic fiber at the paradental cyst, irradiate the laser from the bottom to top and right to left. One thing to note here is that the optic fiber must be irradiated towards the pocket wall rather than the roots so that tissue of the pocket wall is removed.

- Irradiation time: Within 30~60 seconds on each teeth (time varies depending on output power)
- Laser Curettage trial cycle: more than 2 weeks apart.

Process of Laser Curettage

1. Measure the pocket depth by probing
2. Irradiate each tooth per 20 seconds in the pocket with 0.4W/Pulse Mode
3. Scaling and Root Planning (depending on the situation) -> Existing Method
4. Perform a laser curettage

Case 1) Pocket Depth 6mm

- First Visit

Laser Curettage Process (previous page): perform 1~3 processes Perform a laser curettage from 6mm because the pocket depth is 6mm. (You can use a stopper at this time.)

Perform the laser curettage method (previous page) with 1.0W / CW Mode (after dabbing it on the Carbon Paper) for less than 1 minute per tooth. On the first performance, a black lesion tissue may appear at the end of the optical fiber. If so, wipe it with an alcohol gauze and perform continuously. If you perform 2 or more times, the lesion tissues may already be removed and do not appear on the fiber end.

For your reference, a patient with poor gums may bleed during laser curettage. In this case, it can be effective to irradiate 10 ~ 20 seconds more per tooth or to 1 ~ 2 higher energy.

- Second Visit - 0.8 W / CW Mode (within 1 minute) + 20 seconds Pulse Mode Additional irradiation (healing promotion mode) / from 5 mm, follow the Laser Curettage Method (previous page)
- Third Visit - 0.6 W / CW Mode (within 1 minute) + 20 seconds Pulse Mode Additional irradiation (healing promotion mode) / from 4 mm Laser Curettage Method
- Fourth Visit - 0.4 W / CW Mode (within 1 minute) + 20 seconds Pulse Mode Additional irradiation (healing promotion mode) / from 3 mm Laser Curettage Method
- Fifth Visit - 0.4 W / CW Mode (within 1 minute) + 20 seconds Pulse Mode Additional irradiation (healing promotion mode) / from 2 mm Laser Curettage Method
- Patients need at least 3~6 months of healing time. After 3 months, please check to see how much healed by using X-Ray machine. No probing during the healing process.

Case 2) If the pocket depth is 4mm, Perform a laser curettage 3 times in 4mm, 3mm, 2mm /
Same method as Case 1

Notes on Laser Curettage

- If bleeding is severe during laser curettage, it is recommended to increase the energy by 2 or 3 levels. After hemostasis, decrease the energy to the original level.
- When the optical fiber is inserted into the pocket, be careful since the optical fiber may break. When the optical fiber is broken, it can be carried out with water by irrigation.
- Please be careful when doing the procedure since the optic fiber end may touch the patient's socket when inserted into the pocket.
- When performing a laser curettage, patients may feel sensitivity of the teeth. In this case, lower the energy level.
- When you perform a laser curettage, you may smell the tissues burn. At this time, perform it with suctioning.

K2 laser applications














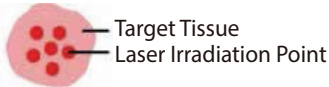
Contact with initiated tip



Non-contact with non-initiated tip (new tip or newly cleaved fiber)

Others (General Tip)

Applied Technique	Anesthesia	Laser Irradiation Mode	Power Output	Contact / Non-Contact	How to use
Gingival troughing	A (A)	CW	1.0W ±0.5	Contact 	Instead of the cord, laser is used to slightly remove the sulcus area for troughing. The procedure is the same as laser surgery.
		Pulse	2.4W ±1.0		
Hemostasis and Coagulation	No Anesthesia	CW	2.0W ±0.5	Slightly Contact 	Slightly contact the blood at the bleeding site and irradiate. Do not touch any tissues other than blood. If not working properly, increase the power until formation of blood clot.
		Pulse	3.0W ±0.5		
Leukoplakia	A (A)	CW	1.0W ±0.5	Non-Contact 	Irradiate the laser for 1 to 3 minutes as if you are drawing a circle slowly about 5mm away from the lesion. *Other method) Use 0.4~1.0 pulse mode to gently pinpointing on the lesion. (contact type)
		Pulse	2.4W ±1.0	Non-Contact 	
			0.6W ±0.4	Contact (Soft Pin-Pointing) 	
Aphtous ulcer and herpetic	A (A)	CW	1.5W ±0.5	Non-Contact 	
		Pulse	0.2W ±0.3	Contact (Soft Pin-Pointing) 	
Laser Assisted Whitening	No Anesthesia	Pulse	2.0W ±1.0	Non-Contact (Fiber) 	After applying the whitening agent to the teeth, irradiate to the teeth in a circular motion for 30 seconds per tooth (1cm away from teeth). Do not remove the whitening agent. Leave tooth with whitening agent for about 20minutes. After 20 minutes, remove it with the metal suction. Please do not wash with water and do the same procedure again. You can wash it with water after the second procedure.
			4.0W ±1.0	Non-Contact (TW accelerator) 	

Temporary relief of minor muscle and joint pain	No Anesthesia	Pulse	2.0W	Non-Contact (2cm) 30 sec (per point)	  LLLT spacer	<p>Definition</p> <p>*Low power laser therapy: It transfers small energy to the tissue which induces micro-circulation and lymphatic drainage of the bloodstream. It is used for stimulating healing, relieving pain, and stimulating the body.</p> <ul style="list-style-type: none"> - Irradiate 2cm from the target tissue without movements. - Distance between target tissues and laser irradiation time are important. - Spot size (laser irradiation diameter) is 15mm (average). The output and time are vary depending on the diameter of the irradiation.  <p>(In case of LLLT spacer, stay irradiating without movement. cf) when using fiber emission, irradiate laser with circular movement)</p> <p>Comparison) When irradiating without LLLT space(directly irradiating with optic fiber); Use the non-contact method to irradiate in a circular motion of drawing 2~5mm circle.</p>
				Contact (LLLt spacer) 30 sec (per point)		