

**Making the Most of the
Academy of Laser Dentistry's
28th Annual Conference and Exhibition:
A Practical Orientation for Attendees**

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**Academy of Laser Dentistry
28th Annual Conference and Exhibition
Virtual Conference**

April 5, 2021

Checklist for Evaluating Lasers

- A. Determine Your Specific Clinical Needs
 - 1. Experience
 - 2. Preferences
- B. Clinical Applications of Specific Device
 - 1. Regulatory Marketing Clearances
 - 2. Range of Applications
 - 3. Speed of Performance
 - 4. Precision and Controllability
- C. Design
 - 1. Specifically Designed for Intraoral Use?
 - 2. Operational Noise Level
- D. Limitations
 - 1. Electrical Power Requirements
 - 2. External Cooling System Requirements
 - 3. Inadvertent Interaction with Infrared-Controlled Office Devices
- E. Safety
 - 1. Built-In Features
 - 2. Adjunct Measures Necessary for Safe Performance
 - 3. Concerns, including:
 - a. Is it possible to defeat the safety interlock?
 - b. Is it possible to activate the laser at zero power setting?
 - c. Is the laser adequately protected from spills?
- F. Cleaning, Sterilization, and Disinfection
 - 1. Instrument
 - 2. Delivery System
- G. Device-Specific Supporting Research
 - 1. Scientifically Rigorous?
 - 2. Peer-Reviewed?
- H. Device-Specific Training
 - 1. Adequacy
 - 2. Convenience
 - 3. Frequency
 - 4. Cost
 - 5. Credentials and Disclosures
 - 6. Ongoing Support
- I. Documentation - Organization, Illustrations, Comprehensiveness, Ease of Use, Troubleshooting
 - 1. Operator Manual
 - 2. Clinical Applications Manual
 - 3. Service Manual
- J. Ergonomics
 - 1. Ease of Set-Up
 - 2. Ease of Use
 - 3. Control Panel
 - 4. Visibility and Usefulness of Displays
 - 5. Ease of Display Navigation
 - 6. User-Controllable Presets
 - 7. Activation Force of Foot Pedal

Checklist for Evaluating Lasers

- K. Portability
 - 1. Size
 - 2. Weight
 - 3. Maneuverability
 - 4. Storage of Accessories
- L. Controllability
 - 1. Power
 - 2. Pulse Frequency
 - 3. Pulse Duration
 - 4. Pulse Interval
 - 5. Air
 - 6. Water
 - 7. Spot Size
 - 8. Cutting Speed
 - 9. Timer for Duration of Exposure
- M. Features
 - 1. Appropriateness for Dentistry
 - 2. Output Power
 - 3. Aiming Beam
 - a. Available?
 - b. Attenuated by Safety Glasses?
 - c. Type?
 - d. Controllable?
 - 4. Plume-Clearing Gas for Delivery System Optics and Waveguides
 - 5. Evacuation
 - 6. Emission Indicators
 - a. Visual
 - b. Audible
 - 7. Delivery System
 - a. Flexibility
 - b. Reach
 - c. Efficiency in Energy Transmission
 - d. Maintenance and Accessibility for Cleaning
 - e. Damageability
 - f. Storage and Fit Through Doorways
 - g. Counterbalance
 - h. Ease of Adjustment
 - i. Ease of Mirror Alignment (If Articulating Arm)
 - j. Calibration of Output Power to Compensate for Energy Loss Through Delivery System
 - k. Cooling
 - 8. Galvanometers
 - 9. Water Reservoir
 - a. Ease of Removal, Refill, Replacement
 - b. Capacity
 - 10. Battery
 - a. Function
 - b. Life
 - c. Ease of Replacement
 - 11. Built-In Printer for Treatment Record
 - 12. Video Compatibility

Checklist for Evaluating Lasers

- N. Accessories
 - 1. Safety Eyewear
 - 2. Optic Fibers
 - 3. Waveguides
 - 4. Handpieces
 - 5. Micromanipulators
 - 6. Focusing Lenses
 - 7. Disposable Tips
 - 8. Tip Shape Configurations
 - 9. Diffusing Handpieces
 - 10. Scanning Handpieces
 - 11. Interchangeable Connectors
 - 12. Fiber Strippers
 - 13. Fiber Cleavers
 - 14. Fiber Inspection Microscope
 - 15. Laser Safety Signs
- O. Delivery System Components
 - 1. Longevity
 - 2. Autoclaveable
 - 3. Ease of Use
 - 4. Ease of Change
 - 5. Disposable
 - 6. Cost
- P. Quality of Construction
 - 1. Ruggedness
 - 2. Beam Alignment
 - 3. Calibration
- Q. Reliability
- R. Service
 - 1. Factory
 - 2. On-site
 - 3. Packaging
 - a. Durability
 - b. Reusability
 - c. Cost
 - d. Ease of Repacking
- S. Cost
 - 1. Initial
 - 2. Maintenance
 - 3. Replacement Parts
- T. Upgradeability
 - 1. Hardware
 - 2. Software
- U. Warranty
 - 1. Duration
 - 2. Parts
 - 3. Labor
 - 4. Shipping

Checklist for Evaluating Lasers

- V. Track Record
 - 1. Number of Installations
 - 2. Availability for Follow-Up
 - 3. Performance
 - 4. Safety
 - a. Incident Report History and Policy
 - 5. Service
 - a. Response Time
 - b. Hours of Operation
 - c. Reliability of Repair
 - d. Loaner Policy
 - 6. Parts and Accessories
 - a. Available When Needed
 - b. Delivery
 - c. Ease of Ordering (Telephone, Fax, Online)
 - d. Warranty
 - 7. Customer Satisfaction
 - 8. Repeat Customers

Critically Evaluating the Dental Literature and Health Information on the Internet

Suggested Resources

1. Gordon Guyatt, Drummond Rennie, Maureen O. Meade, Deborah J. Cook. *Users' Guides to the Medical Literature: Essentials of Evidence-Based Clinical Practice*. (Third edition.) New York: McGraw-Hill Professional Publishing, 2015. ISBN 978-0-07-179415-2
2. Trisha Greenhalgh. *How to Read a Paper: The Basics of Evidence Based Medicine and Healthcare*. (Sixth edition.) Hoboken, N.J.: John Wiley & Sons, 2019. ISBN 978-1-119-48474-5
3. Julie Frantsve-Hawley, editor. *Evidence-Based Dentistry for the Dental Hygienist*. Chicago: Quintessence Publishing, 2014. ISBN 978-0-86715-646-1
4. Dan Mayer. *Essential Evidence-Based Medicine*. (Second edition.) Cambridge, UK: Cambridge University Press, 2009. ISBN 978-0-521-71241-5
5. Koch GG, Paquette DW. Design principles and statistical considerations in periodontal clinical trials. *Ann Periodontol* 1997;2(1):42-63.
6. Springer Nature Publishing AG. *EBD. Evidence-Based Dentistry*. Available at: <http://www.nature.com/ebd/>.
7. Elsevier. *The Journal of Evidence-Based Dental Practice*. Available at: <http://www.jebdp.com>.
8. JAMA evidence[®]. Using Evidence to Improve Care. Available at: <http://www.jamaevidence.com/>.
9. Cochrane Oral Health. Available at: <http://www.ohg.cochrane.org/>.
10. CEBD. Centre for Evidence-Based Dentistry. Available at: <http://www.cebd.org/>.
11. U.S. Department of Health & Human Services. Agency for Healthcare Research and Quality. Assessing the Quality of Internet Health Information. June 1999. Available at: <https://archive.ahrq.gov/research/data/infoqual.html>.
12. Dalhousie University Libraries. Evaluation of Health Information on the Web. March 26, 2021. Available at: <https://dal.ca.libguides.com/c.php?g=257155>.
13. U.S. Department of Health and Human Services. National Institutes of Health. U.S. National Library of Medicine. MedlinePlus Guide to Healthy Web Surfing. April 20, 2015. Available at: <https://medlineplus.gov/healthywebsurfing.html>.
14. ADA. American Dental Association[®]. Center for Evidence-Based Dentistry[™]. Available at: <https://ebd.ada.org/en>.

Critically Evaluating the Dental Literature and Health Information on the Internet

15. Brignardello-Petersen R, Carrasco-Labra A, Glick M, Guyatt GH, Azarpazhooh A. A practical approach to evidence-based dentistry: Understanding and applying the principles of EBD. *J Am Dent Assoc* 2014 Nov;145(11):1105-1107.
16. Brignardello-Petersen R, Carrasco-Labra A, Booth HA, Glick M, Guyatt GH, Azarpazhooh A, Agoritsas T. A practical approach to evidence-based dentistry: How to search for evidence to inform clinical decisions. *J Am Dent Assoc* 2014 Dec;145(12):1262-1267.
17. Brignardello-Petersen R, Carrasco-Labra A, Glick M, Guyatt GH, Azarpazhooh A. A practical approach to evidence-based dentistry: III: How to appraise and use an article about therapy. *J Am Dent Assoc* 2015 Jan;146(1):42-49.e1.
18. Brignardello-Petersen R, Carrasco-Labra A, Glick M, Guyatt GH, Azarpazhooh A. A practical approach to evidence-based dentistry: IV: How to use an article about harm. *J Am Dent Assoc* 2015 Feb;146(2):94-101.e1.
19. Brignardello-Petersen R, Carrasco-Labra A, Glick M, Guyatt GH, Azarpazhooh A. A practical approach to evidence-based dentistry: V: How to appraise and use an article about diagnosis. *J Am Dent Assoc* 2015 Mar;146(3):184-191.e1.
20. Carrasco-Labra A, Brignardello-Petersen R, Glick M, Guyatt GH, Azarpazhooh A. A practical approach to evidence-based dentistry: VI: How to use a systematic review. *J Am Dent Assoc* 2015 Apr;146(4):255-265.e1.
21. Carrasco-Labra A, Brignardello-Petersen R, Glick M, Guyatt GH, Neumann I, Azarpazhooh A. A practical approach to evidence-based dentistry: VII: How to use patient management recommendations from clinical practice guidelines. *J Am Dent Assoc* 2015 May;146(5):327-336.e1.
22. Sale JEM, Amin M, Carrasco-Labra A, Brignardello-Petersen R, Glick M, Guyatt GH, Azarpazhooh A. A practical approach to evidence-based dentistry: VIII: How to appraise an article based on a qualitative study. *J Am Dent Assoc* 2015 Aug;146(8):623-630.
23. Abrahamyan L, Pechlivanoglou P, Krahn M, Carrasco-Labra A, Brignardello-Petersen R, Glick M, Guyatt GH, Azarpazhooh A. A practical approach to evidence-based dentistry: IX: How to appraise and use an article about economic analysis. *J Am Dent Assoc* 2015 Sep;146(9):679-689.e1.
24. Carrasco-Labra A, Brignardello-Petersen R, Azarpazhooh A, Glick M, Guyatt GH. A practical approach to evidence-based dentistry: X: How to avoid being misled by clinical studies' results in dentistry. *J Am Dent Assoc* 2015 Dec;146(12):919-924.

The preceding Web sites were accessed on April 5, 2021.

U.S. FDA Marketing Clearances by Indication for Use (Applies to Certain Models Only)

Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating)

- Carbon Dioxide
- Nd:YAG
- Argon
- Ho:YAG
- Er:YAG
- Nd:YAP
- Er:YSGG
- Diode
- Frequency-Doubled Nd:YAG
- Diode-Pumped 2.01-micron

Curing of Composite Materials

- Argon

Aphthous Ulcer Treatment

- Er,Cr:YSGG
- Carbon Dioxide
- Nd:YAG
- Diode
- Er:YAG
- Frequency-Doubled Nd:YAG

Tooth Whitening

- Carbon Dioxide
- Argon
- Diode
- Frequency-Doubled Nd:YAG

Sulcular Debridement

- Nd:YAG
- Diode
- Er:YAG
- Er:YSGG
- Carbon Dioxide

Caries Removal, Cavity Preparation, Enamel Roughening

- Er:YAG
- Er:YSGG

Illumination for Caries Detection

- Argon

Illumination for Endodontic Orifice Location

- Argon

Soften Gutta Percha

- Argon
- Frequency-Doubled Nd:YAG

Removal of Coronal Pulp, Adjunct to Root Canal Procedures

- Nd:YAG
- Diode

U.S. FDA Marketing Clearances by Indication for Use (Applies to Certain Models Only)

Pulpotomy as Adjunct to Root Canal Procedures

- Diode
- Nd:YAP
- Nd:YAG
- Er,Cr:YSGG
- Er:YAG

Selective Removal of Enamel (First Degree) Caries

- Nd:YAG

Removal of Filling Materials as Adjunctive Treatment during Root Canal Retreatment

- Nd:YAP
- Nd:YAG
- Diode

Aid in Diagnosis of Dental Caries

- Diode

Treatment of Herpetic Lesions

- Er,Cr:YSGG
- Nd:YAG
- Frequency-Doubled Nd:YAG
- Diode
- Er:YAG

Blood Flow Measurements

- Diode

Tooth Preparation to Obtain Access to Root Canal, Pulp Extirpation, Root Canal Debridement and Cleaning, Root Canal Preparation including Enlargement

- Er,Cr:YSGG
- Er:YAG

Enameloplasty, Excavation of Pits and Fissures for Placement of Sealants

- Er,Cr:YSGG
- Er:YAG

Cutting, Shaving, Contouring and Resection of Oral Osseous Tissues (Bone)

- Er,Cr:YSGG
- Er:YAG

Apicoectomy Surgery

- Er,Cr:YSGG
- Er:YAG

Coagulation of Extraction Sites

- Diode
- Carbon Dioxide

Ostectomy, Osteotomy, Osseous Crown Lengthening, Osteoplasty

- Er,Cr:YSGG
- Er:YAG

U.S. FDA Marketing Clearances by Indication for Use (Applies to Certain Models Only)

Laser-Assisted New Attachment Procedure (cementum-mediated periodontal ligament new-attachment to the root surface in the absence of long junctional epithelium)

- Nd:YAG
- Carbon Dioxide
- Er,Cr:YSGG
- Diode

Cutting Bone to Prepare a Window Access to the Apex (Apices) of the Root(s)

- Er:YAG
- Er,Cr:YSGG

Root End Preparation for Retrofill Amalgam or Composite

- Er:YAG
- Er,Cr:YSGG

Reduction of Bacterial Level (Decontamination) and Inflammation

- Diode

Aid in Detection and Localization of Subgingival Dental Calculus

- Diode

Root Canal Disinfection after Endodontic Instrumentation / Treatment

- Er,Cr:YSGG
- Er:YAG

Removal of Subgingival Calculi in Periodontal Pockets

- Er:YAG
- Er,Cr:YSGG

Removal of Highly Inflamed Edematous Tissue Affected by Bacterial Penetration of the Pocket Lining and Junctional Epithelium

- Diode
- Er,Cr:YSGG

Removal of Pathological Tissues (i.e., Cysts, Neoplasm or Abscess) and Hyperplastic Tissues (i.e., Granulation Tissue) from around the Apex

- Er,Cr:YSGG
- Er:YAG

Ablation of Hard Tissue for Caries Removal and Cavity Preparation

- Carbon Dioxide

Diagnostic Aid for Detection of Open or Incipient Caries Lesions Above the Gingiva and for Monitoring the Progress of Such Lesions, includes Detection of Cracks

- Diode

Ablation of Hard Tissue for Caries Removal and Cavity Preparation

- Carbon Dioxide

Root Canal Cleaning and Debridement

- Diode

Periodontal Regeneration – True Regeneration of the Attachment Apparatus (New Cementum, New Periodontal Ligament, and New Alveolar Bone) on a Previously Diseased Root Surface When Used Specifically in the LANAP® Protocol

- Nd:YAG

U.S. FDA Marketing Clearances by Indication for Use (Applies to Certain Models Only)

Photoinitiation of Gingival Barriers and Dams

- Diode

Facilitation of Subgingival Calculus Removal

- Nd:YAG

Modification of the Dentin Surface, Including Increasing the Mineral and Decreasing the Organic Composition of the Dentin Surface, Reducing Bacteria on the Dentin Surface, Improving the Shear Bond Strength of Composite Resin, Reducing the Adhesive Failure of Composite Resin, and Removing Demineralized Dentin Surface

- Nd:YAG

Removal of Porcelain and Ceramic Crowns and Veneers

- Er,Cr:YSGG
- Er:YAG

Curing Photoactivated Dental Restorative Materials and Adhesives

- Diode

U.S. FDA Marketing Clearances by Wavelength (Applies to Certain Models Only)

Carbon Dioxide

- Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating)
- Aphthous Ulcer Treatment
- Tooth Whitening
- Sulcular Debridement
- Coagulation of Extraction Sites
- Laser-Assisted New Attachment Procedure (cementum-mediated periodontal ligament new-attachment to the root surface in the absence of long junctional epithelium)
- Ablation of Hard Tissue for Caries Removal and Cavity Preparation

Nd:YAG

- Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating)
- Aphthous Ulcer Treatment
- Sulcular Debridement
- Removal of Coronal Pulp, Adjunct to Root Canal Procedures
- Selective Removal of Enamel (First Degree) Caries
- Pulpotomy as Adjunct to Root Canal Retreatment
- Removal of Filling Materials as Adjunctive Treatment During Root Canal Retreatment
- Treatment of Herpetic Lesions
- Laser-Assisted New Attachment Procedure (cementum-mediated periodontal ligament new-attachment to the root surface in the absence of long junctional epithelium)
- Periodontal Regeneration – True Regeneration of the Attachment Apparatus (New Cementum, New Periodontal Ligament, and New Alveolar Bone) on a Previously Diseased Root Surface When Used Specifically in the LANAP® Protocol
- Facilitation of Subgingival Calculus Removal
- Modification of the Dentin Surface, Including Increasing the Mineral and Decreasing the Organic Composition of the Dentin Surface, Reducing Bacteria on the Dentin Surface, Improving the Shear Bond Strength of Composite Resin, Reducing the Adhesive Failure of Composite Resin, and Removing Demineralized Dentin Surfaces

Argon

- Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating)
- Curing of Composite Materials
- Tooth Whitening
- Illumination for Caries Detection
- Illumination for Endodontic Orifice Location
- Soften Gutta Percha

Ho:YAG

- Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating)

Er:YAG

- Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating)
- Caries Removal, Cavity Preparation, Enamel Roughening
- Aphthous Ulcer Treatment
- Sulcular Debridement
- Pulpotomy as Adjunct to Root Canal Retreatment
- Tooth Preparation to Obtain Access to Root Canal, Pulp Extirpation, Root Canal Debridement and Cleaning, Root Canal Preparation including Enlargement
- Enameloplasty, Excavation of Pits and Fissures for Placement of Sealants

U.S. FDA Marketing Clearances by Wavelength (Applies to Certain Models Only)

Er:YAG (continued)

- Cutting, Shaving, Contouring and Resection of Oral Osseous Tissue (Bone)
- Treatment of Herpetic Lesions
- Apicoectomy Surgery
- Ostectomy, Osteotomy, Osseous Crown Lengthening, Osteoplasty
- Cutting Bone to Prepare a Window Access to the Apex (Apices) of the Root(s)
- Root End Preparation for Retrofill Amalgam or Composite
- Removal of Subgingival Calculi in Periodontal Pockets
- Removal of Pathological Tissues (i.e., Cysts, Neoplasm or Abscess) and Hyperplastic Tissues (i.e., Granulation Tissue) from around the Apex
- Removal of Porcelain and Ceramic Crowns and Veneers
- Root Canal Disinfection after Endodontic Treatment

Er,Cr:YSGG

- Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating)
- Aphthous Ulcer Treatment
- Cavity Preparation, Caries Removal, Tooth Etching
- Sulcular Debridement
- Treatment of Herpetic Lesions
- Pulpotomy as Adjunct to Root Canal Retreatment
- Tooth Preparation to Obtain Access to Root Canal, Pulp Extirpation, Root Canal Debridement and Cleaning, Root Canal Preparation including Enlargement
- Enameloplasty, Excavation of Pits and Fissures for Placement of Sealants
- Cutting, Shaping, Contouring and Resection of Oral Osseous Tissues (Bone)
- Apicoectomy Surgery
- Ostectomy, Osteotomy, Osseous Crown Lengthening, Osteoplasty
- Cutting Bone to Prepare a Window Access to the Apex (Apices) of the Root(s)
- Root End Preparation for Retrofill Amalgam or Composite
- Root Canal Disinfection after Endodontic Instrumentation
- Removal of Highly Inflamed Edematous Tissue Affected by Bacteria Penetration of the Pocket Lining and Junctional Epithelium
- Removal of Pathological Tissues (i.e., Cysts, Neoplasm or Abscess) and Hyperplastic Tissues (i.e., Granulation Tissue) from around the Apex
- Laser- Assisted New Attachment Procedure (Cementum-Mediated Periodontal Ligament New-Attachment to the Root Surface in the Absence of Long Junctional Epithelium)
- Removal of Subgingival Calculi in Periodontal Pockets
- Removal of Porcelain and Ceramic Crowns and Veneers

Diode

- Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating)
- Aphthous Ulcer Treatment
- Sulcular Debridement
- Removal of Coronal Pulp, Adjunct to Root Canal Procedures
- Pulpotomy as Adjunct to Root Canal Retreatment
- Tooth Whitening
- Aid in Diagnosis of Dental Caries
- Blood Flow Measurements
- Treatment of Herpetic Lesions
- Coagulation of Extraction Sites
- Reduction of Bacterial Level (Decontamination) and Inflammation

U.S. FDA Marketing Clearances by Wavelength (Applies to Certain Models Only)

Diode (continued)

- Aid in Detection and Localization of Subgingival Dental Calculus
- Removal of Highly Inflamed Edematous Tissue Affected by Bacteria Penetration of the Pocket Lining and Junctional Epithelium
- Laser- Assisted New Attachment Procedure (Cementum-Mediated Periodontal Ligament New-Attachment to the Root Surface in the Absence of Long Junctional Epithelium)
- Diagnostic Aid for Detection of Open or Incipient Caries Lesions Above the Gingiva and for Monitoring the Progress of Such Lesions, includes Detection of Cracks
- Root Canal Cleaning and Debridement
- Photoinitiation of Gingival Barriers and Dams
- Curing Photoactivated Dental Restorative Materials and Adhesives

Nd:YAP

- Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating)
- Pulpotomy as Adjunct to Root Canal Retreatment
- Removal of Filling Materials as Adjunctive Treatment During Root Canal Retreatment

Frequency-Doubled Nd:YAG

- Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating)
- Tooth Whitening
- Aphthous Ulcer Treatment
- Treatment of Herpetic Lesions
- Soften Gutta Percha

Diode-Pumped 2.01-micron

- Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating)

Selected U.S. FDA Marketing Clearances Lasers for Intraoral Use by Company and Device May 1990 – February 26, 2021

This list generally designates laser instruments cleared by the U.S. FDA for intraoral use and generally available in the United States between May 1990 and February 26, 2021. It therefore is not intended to be comprehensive. Some devices are no longer marketed. Some are designed specifically for dentistry, while others are medical lasers with some intraoral applications. Information is accurate at date of compilation based upon available resources including www.fda.gov. Substantiated additions and revisions are respectfully solicited. Interested parties are advised to consider the clinical, risk, legal/regulatory, and ethical issues related to off-label use of medical devices.

Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating)

- Nd:YAG
 - Sunrise Technologies – dLase 300, 8 Watt Pulsed Dental Laser, Upgraded Package for dLase 300
 - Pfizer Laser Systems – Pegasus
 - Laser Endo Technic – Laser 35, Laser 6, Laser 12
 - Excel Technologies – Excel DuoPulse
 - Incisive Technologies – PulseMasters, dLase 300 Upgrade
 - Sciton – Contour Profile
 - Incisive LLC – InPulse, PinPointe FootLaser
 - Millennium Dental Technologies – PerioLase
 - Lares Research – SunLase 800 P (PocketPro)
 - Fotona – Fidelis Plus, Fidelis III, Fotona XP, LightWalker, Dynamis, Dynamis Pro
 - Cynosure – Smart File Laser
 - Quanta System – Ultrawave III EX 1320, MDK Multi-Applications, Chrome
 - PathoLase – PinPointe and PinPointe FootLaser
 - PinPointe USA – PinPointe FootLaser
 - Nuvolase – PinPointe FootLaser
- Carbon Dioxide
 - NIIC USA – NIIC Laser System
 - Satelec – Lasersat CO₂
 - Luxar – Model LX-20 CO₂ Laser
 - Ion Laser Technology – ILT CO₂ Surgical Laser
 - Jamar Medical Systems – Chrys XX CO₂ Surgical Laser System
 - Clinicon Corporation – C4 CO₂ Laser, C-LAS, SureLase
 - Medical Laser Technologies – MLT 30 CO₂ Laser
 - OpusDent – Opus 20, Spectrum, OpusDuo EC
 - Lumenis – UltraPulse Encore
 - Lumenis – UltraPulse SurgiTouch, UltraPulse, UltraPulse DUO
 - Cynosure – Smart CO₂, Smart US 20 D, UltraSpeed, Smart Clinic, Affirm CO₂ and Affirm CO₂ HP, Cortex
 - PhotoMedex – LaserPro CO₂
 - Diamond Age Systems – Azuryt Model CTL 1401
 - Lumenis – OpusDent Family
 - MAX Engineering – Spectra-SP
 - Asclepion Laser Technologies – MultiStar
 - Lasering – SLIM Evolution Family, SLIM Evolution II
 - El.En. Electronic Engineering – SmartXide, Smart US20D, Smartxide 50 HS/MS, DEKA SmartXide², DEKA Smartxide Ultraspeed, DEKA Smartxide Touch, DEKA Smartxide Punto, DEKA SmartXide² Trio CO₂
 - Alma – ThermoXEL, Pixel CO₂
 - Lumenis – AcuPulse 30 and 40, AcuPulse 30/40ST and 40WG, UltraPulse, UltraPulse DUO, AcuPulse, AcuPulse DUO
 - Advanced Technology Laser – ATL-150, ATL-250, eBeam
 - OmniGuide – OmniGuide BeamPath FELS 25A, Beacon
 - Lutronic – DENTA III, DENTA III+, Spectra DENTA II
 - Beijing Syntech Laser – Trixel, Trixel II
 - Quanta System – YOULASER
 - LightScalpel – LightScalpel LS-10, LightScalpel LS-1005, LightScalpel LS-2010, LightScalpel LS-2010 SX, LS-2010 DX

**Selected U.S. FDA Marketing Clearances
Lasers for Intraoral Use
by Company and Device (continued)
May 1990 – February 26, 2021**

Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating) (continued)

- Carbon Dioxide (continued)
 - Yoshida Dental Mfg. Co. – OPELASER PRO II and OPELASER Lite II
 - Convergent Dental – Solea
 - Whitecap Technologies – CYMA
 - Syneron Medical – CO₂RE Laser System
 - Shanghai Wonderful Opto-Electrics Tech. Co. – Matrix LS-40 CO₂ Laser System
 - Beijing Adss Development – CO₂ Laser Therapy Machine
 - Jeisys Medical – EdgeOne CO₂ Laser
 - Ilooda – Fraxis CO₂ Laser
 - Bio-Med USA Cellene CO₂ Laser
 - Shangdong Huamei Technology – CO₂ Laser Therapy System
 - Beijing Superlaser Technology – CO₂ Laser System
 - Zhuolu Jontelaser Manufacturing Technology – Dermatological CO₂ Laser Systems
- Argon
 - HGM Medical Systems – Argon Ion Lasers
- Ho:YAG
 - Excel Technologies – Excel DuoPulse
- Er:YAG
 - Pfizer Laser Systems – Centauri YAG Laser
 - Continuum Electro-Optics – Multilite
 - Laserscope – Laserscope Erbium Laser
 - Xintec – Protégé, Protégé LP, Protégé II
 - KaVo America – KEY Laser 1242, KEY Laser 1242, 1243+
 - Fotona – Fidelis, Dualis Laser System, Fidelis III, LightWalker, Dynamis, Dynamis Pro, SkyPulse
 - Innotech USA – Friendly Light
 - Sciton – Contour Profile, Profile 3000
 - American Dental Technologies – PulseMaster Erbium
 - Asclepion-Meditec – Dermastar
 - OpusDent – OpusDuo EC
 - Cell Robotics – Ultra-Light Laser System
 - International Biophysics – Laser Peel System
 - Cynosure – Smart 2940D
 - HOYA ConBio – VersaWave
 - Cynosure – MCL 30 Dermablate
 - Lumenis – OpusDent Family
 - MSq(M²) – Lovely II and Lovely III
 - WaveLight Laser Technologie – Burane XL, Burane
 - Light Instruments – LiteTouch, LiteDuo
 - Alma Lasers – Harmony XL
 - Global USA Distribution – LaserPeel Soft-MET Modified Erbium Laser
 - Asclepion Laser Technologies – Dermablate Effect, MCL 31 Dermablate
 - LaserOptek – Lotus II, Lotus III
 - J. Morita Mfg. Corp. – AdvErL EVO MEY-1-A
 - Sheumann Laser – NeoLas Er:YAG
 - Bios – Superbium Er:YAG
 - Focus Medical – Lite Touch
 - Lutronic – Action II
 - LightMed Dental Technology – LightMed
- Nd:YAP
 - Lokki – Lokki DT

**Selected U.S. FDA Marketing Clearances
Lasers for Intraoral Use
by Company and Device (continued)
May 1990 – February 26, 2021**

Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating) (continued)

- Er,Cr:YSGG
 - BioLase Technology – Elmer, WaterLase Millennium, Waterlase 3.0, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase iPlus S, Waterlase Express
- Diode
 - Premier Laser Systems – Aurora Surgical Diode Laser, Aurora HL Diode Laser System
 - American Dental Technologies – PulseMaster 1000 ST DioLase ST
 - CeramOptec – Ceralas Diode Model D15, Ceralas Diode Model D10
 - Dentek-Lasersystems – Dentek LD-15 Dental Laser
 - BioLase Technology – Twilight Dental Diode Laser
 - OpusDent – Opus 10
 - CAO Group – DenLaser, DenLaser 800 Plus, Pilot Diode Laser, Precise SHP Diode Laser, Pioneer Elite Diode Laser, Pilot Elite, Pilot Ultra, Pilot Pro, Sterling Diode Laser, Sterling Supreme Diode Laser
 - Zap Lasers – SoftLase, SoftLase G2, Styla MicroLaser, StylaOrtho, SoftLase Pro/OrthoLase/HygieneLase
 - Continuum Electro-Optics – DioDent Dental Laser System
 - American Dental Technologies – DioLase 980 D
 - BioLase Technology – LaserSmile, EZLase, ezlase 10W, iLase, EPIC 10, Diolase 10S, Epic 10S, Epic Pro, Epic Pro 940, Epic 980
 - MSq(M²) – Dio-Dent 10
 - Biolitec – Ceralas D810, Ceralas D980, Ceralas D100, Ceralas D150, Ceralas D15, Ceralas D25, Ceralas E 980 (E15/980, E30/980), 50W Ceralas D 1950, 180W Ceralas D 980 (D180), Ceralas Multiwavelength 980/1470 nm Diode Laser System, Ceralas D50, Ceralas D120, Ceralas D180, Evolve HPD 980, Evolve 980/1470 nm Multiwavelength Diode Laser (Evolve Dual)
 - HOYA ConBio – LVI Lase, DioDent II
 - PhotoMedex – LaserPro 810, 940 and 980
 - Ivoclar Vivadent – Odyssey 2.4G
 - Diomed – Delta 15, Delta 30
 - Sirona Dental Systems – SIROLaser, SIROLaser Advance, SIROLaser Advance+, SIROLaser Blue
 - Vision Lasertechnik – MDL-10/15
 - Asclepion Laser Technologies – QuadroStar 980, Orion
 - ProSurg – LaserTx
 - Xintec – Vectra
 - INTERmedic Arfran – INTERmedic, INTERmedic Diode Laser 980 nm System
 - Spectrum International – Prometey
 - B&W Tek – BWF-5
 - Lasering – Velure S9/7D, Velure S9/15D
 - Elexxion – Claros Dental Laser System, Claros Nano
 - Hoya ConBio – DioDent Micro 810, DioDent Micro 980
 - Ivoclar Vivadent – Odyssey Navigator
 - Quanta System – Diode Medical Laser Family (808, 940, 980 nm), Polysurge Diode Laser Family (808, 940, 980, 1064)
 - KaVo America – GENTLEray 980
 - A.R.C. Laser – Fox Q-810, Q-980, Q-1064, Wolf 445nm
 - Valam – Fox 940
 - Light Instruments – LiteDuo
 - OroScience – Curative 980
 - Fotona – XD Diode Laser, SkyPulse
 - AMD Lasers – Picasso, Picasso Lite, Picasso Perio, Picasso Plus, Picasso Lite Plus
 - Lambda Scientifica – Doctor Smile A-810, B-980
 - QuickLase – QuickLase DUAL+, 810, 980 Dental Lasers
 - Light Instruments – D-STORM
 - LiteCure – BWF-5 Medical Laser Series (810, 930, 980, 1080, 1320 nm)
 - Eufoton – Lasemar 800, 1000, 1500

**Selected U.S. FDA Marketing Clearances
Lasers for Intraoral Use
by Company and Device (continued)
May 1990 – February 26, 2021**

Intraoral Soft Tissue Surgery (Ablating, Incising, Excising, Coagulating) (continued)

- Diode (continued)
 - Focus Medical – NaturaLase 980
 - China Daheng Group – DenLase-810/7, DenLase-980/7, PenLase
 - Dental Photonics – stLase
 - Lambda – Doctor Diode (810, 940, 980, 1064 nm)
 - Discus Dental – SL3
 - Den-Mat Holdings – Sapphire ST, Sapphire Plus STM, SOL Portable Diode Laser
 - MedArt, Medart 720
 - Mira Lasers – Zeno 2, Zeno 4
 - El.En. – S DEKA SmartXide² 940 and 980, DEKA SmartXide² Trio 940 and 980
 - Zolar Technology – Photon/Photon Plus
 - G.N.S. neoLaser – neoV Diode Laser Family (neoV810, neoV980, neoV1064, neoV1470)
 - Azena Medical – ELUMI 810 + 980, Gemini 810 + 980
 - Sheumann Laser – NeoLas 810 nm
 - Wuhan Gigaa Optronics Technology – VELASII-30A/30B
 - VIAX Dental Lab – Lucerna VDL980-1
 - Bio-med USA – Dental 5 Multi Diode Laser
 - Lazon Medical Laser SOLASE-808, SOLASE-976
 - Shanghai Apolo Medical Technology HS-890Z 980 Diode Laser Therapy Device
 - HULASER – K2 Module
 - DentLight – Ultrafast, Ultrafast Plus, Ultrafast Lite
- Frequency-Doubled Nd:YAG
 - Fisma – Corium 200, Corium 400
 - Lumenis – Novus Spectra
 - Cynosure – SmartLite D
 - Quanta System – MDK Multi-Applications, Chrome
- Diode-Pumped 2.01-micron
 - AllMed Systems – RevoLix, RevoLix Jr.

Curing of Composite Materials

- Argon
 - HGM Medical Laser Systems – HGM Argon Ion Laser
 - ILT Systems – ACL-5500, CL-5500, Argon HP
 - LaserMed – AccuCure 3000, AccuCure 1000, Pulstar
 - Premier Laser Systems – Argon Curing Laser, Arago II
 - ICS Clinics of North America – Cyber-Lase 2000
 - Fisma – Dental 200, Dental 300, Dental 400

Tooth Whitening

- Carbon Dioxide
 - ILT Systems – ILT Genesis 2000
 - Sharplan Lasers – Model 15F CO₂ Laser
 - LightScalpel – LightScalpel LS-1005, LightScalpel LS-2010 SX, LS-2010 DX
- Argon
 - ILT Systems – ACL-5500
 - Fisma – Dental 200, Dental 300, Dental 400
 - LaserMed – AccuCure 3000, AccuCure 1000, Pulstar
 - Premier Laser Systems – Arago II
 - ICS of North America – Cyber-Lase 2000
- Diode
 - CeramOptec – Model D15 Cerelas
 - BioLase Technology – Twilight Dental Diode Laser

**Selected U.S. FDA Marketing Clearances
Lasers for Intraoral Use
by Company and Device (continued)
May 1990 – February 26, 2021**

Tooth Whitening (continued)

- Diode (continued)
 - OpusDent – Opus 10
 - Zap Lasers – SoftLase G2, Styla MicroLaser, StylaOrtho, SoftLase Pro/OrthoLase/HygieneLase
 - Continuum Electro-Optics – DioDent
 - American Dental Technologies – DioLase 980 D
 - BioLase Technology – LaserSmile
 - MSq(M²) – Dio-Dent 10
 - HOYA ConBio – LVI Lase, DioDent II
 - Biolitec – Ceralas D100, Ceralas D150, Ceralas D15, Ceralas D25, Ceralas D980, Ceralas E 980 (E15/980, E30/980), 180W Ceralas D 980 (D180), Ceralas Multiwavelength 980/1470 nm Diode Laser System, Evolve HPD 980, Evolve 980/1470 nm Multiwavelength Diode Laser (Evolve Dual)
 - ProSurg – LaserTx
 - Xintec – Vectra
 - INTERmedic Arfran – INTERmedic, INTERmedic Diode Laser 980 nm System
 - Spectrum International – Prometey
 - Lasering – Velure S9/7D, Velure S9/15D
 - Ellexion – Claros Dental Laser System, Claros Nano
 - Hoya ConBio – DioDent Micro 810, DioDent Micro 980
 - Quanta System – Diode Medical Laser Family (808, 980 nm), Polysurge Diode Laser Family (808, 980)
 - KaVo America – GENTLEray 980
 - Light Instruments – LiteDuo
 - OroScience – Curative 980
 - BioLase Technology – ezlase, EPIC 10, Epic Pro, Epic Pro 940, Epic 980
 - Fotona – XD Diode Laser, SkyPulse
 - AMD Lasers – Picasso, Picasso Lite, Picasso Perio, Picasso Plus
 - Lambda Scientifica – Doctor Smile A-810, B-980
 - QuickLase – QuickLase DUAL+, 810, 980 Dental Lasers
 - Light Instruments – D-STORM
 - Dental Photonics – stLase
 - Lambda – Doctor Diode (810, 980 nm)
 - Discus Dental – SL3
 - Den-Mat Holdings – Sapphire ST
 - Asclepion Laser Technologies – Orion
 - Mira Lasers – Zeno 2, Zeno 4
 - Zolar Technology – Photon Plus, Photon
 - CAO Group – Precise SHP Diode Laser, Pioneer Elite Diode Laser, Pilot Elite, Pilot Ultra, Sterling Supreme Diode Laser
 - Azena Medical – ELUMI 810 + 980
 - VIAX Dental Lab – Lucerna VDL980-1
 - Bio-med USA – Dental 5 Multi Diode Laser
 - Dentsply Sirona – SIROLaser Advance+, SIROLaser Blue
 - Lazon Medical Laser SOLASE-808, SOLASE-976
 - HULASER – K2 Module
- Frequency-Doubled Nd:YAG
 - Fisma – Corium 200, Corium 400
 - Lumenis – Novus Spectra
 - Cynosure – SmartLite D

Aphthous Ulcer Treatment

- Er,Cr:YSGG
 - BioLase Technology – Elmer, WaterLase Millennium, Waterlase 3.0, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express

**Selected U.S. FDA Marketing Clearances
Lasers for Intraoral Use
by Company and Device (continued)
May 1990 – February 26, 2021**

Aphthous Ulcer Treatment (continued)

- Carbon Dioxide
 - ILT Systems – ILT Genesis 2000
 - Lumenis – UltraPulse Encore
 - Lumenis – UltraPulse SurgiTouch, UltraPulse, UltraPulse DUO
 - PhotoMedex – LaserPro CO₂
 - Lumenis – OpusDent Family
 - MAX Engineering – Spectra-SP
 - Cynosure – Smart US 20 D, UltraSpeed, Smart Clinic
 - Alma – ThermoXEL, Pixel CO₂
 - Lumenis – AcuPulse 30 and 40, AcuPulse 30/40ST and 40WG, AcuPulse, AcuPulse DUO
 - Advanced Technology Laser – ATL-150, ATL-250, eBeam
 - Lutronic – DENTA III, DENTA III+, Spectra DENTA II
 - Lasering – SLIM Evolution II
 - LightScalpel – LightScalpel LS-1005, LightScalpel LS-2010, LightScalpel LS-2010 SX, LS-2010 DX
 - Syneron Medical – CO₂RE Laser System
 - EL.EN Electronic Engineering – DEKA Smartxide Ultraspeed
 - Bio-Med USA Cellene CO₂ Laser
- Nd:YAG
 - American Dental Technologies – PulseMasters
 - Incisive LLC – InPulse, PinPointe FootLaser
 - Millennium Dental Technologies – PerioLase
 - Lares Research – SunLase 800P (PocketPro)
 - Fotona – Fidelis Plus, Fidelis III, Fotona XP, LightWalker, Dynamis, Dynamis Pro
 - PathoLase – PinPointe and PinPointe FootLaser
 - PinPointe USA – PinPointe FootLaser
 - Nuvolase – PinPointe FootLaser
- Diode
 - American Dental Technologies – PulseMaster 1000 ST DioLase ST
 - Dentek Lasersystems – Dentek LD-15
 - CeramOptec – Ceralas Diode Model D15, Ceralas Diode Model D10
 - BioLase Technology – Twilight, EZLase, ezlase 10W, iLase, EPIC 10, Epic Pro, Epic Pro 940, Epic 980
 - OpusDent Ltd. – Opus 10
 - Zap Lasers – SoftLase, SoftLase G2, Styla MicroLaser, StylaOrtho, SoftLase Pro/OrthoLase/HygieneLase
 - Continuum Electro-Optics – DioDent Dental Laser System
 - American Dental Technologies – DioLase 980 D
 - BioLase Technology – LaserSmile
 - MSq(M²) – Dio-Dent 10
 - HOYA ConBio – LVI Lase, DioDent II
 - Ivoclar Vivadent – Odyssey 2.4G
 - Biolitec – Ceralas D100, Ceralas D150, Ceralas D15, Ceralas D25, Ceralas D980, Ceralas E 980 (E15/980, E30/980), 180W Ceralas D 980 (D180), Ceralas Multiwavelength 980/1470 nm Diode Laser System, Evolve HPD 980, Evolve 980/1470 nm Multiwavelength Diode Laser (Evolve Dual)
 - Sirona Dental Systems – SIROLaser, SIROLaser Advance, SIROLaser Advance+, SIROLaser Blue
 - Vision Lasertechnik – MDL-10/15
 - ProSurg – LaserTx
 - Xintec – Vectra
 - CAO Group – DenLaser 800 Plus, Precise SHP Diode Laser, Sterling Diode Laser
 - Spectrum International – Prometey
 - Elexxion – Claros Dental Laser System
 - Hoya ConBio – DioDent Micro 810, DioDent Micro 980
 - Ivoclar Vivadent – Odyssey Navigator
 - Quanta System – Diode Medical Laser Family (940, 980 nm), Polysurge Diode Laser Family (940, 980)

**Selected U.S. FDA Marketing Clearances
Lasers for Intraoral Use
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Aphthous Ulcer Treatment (continued)

- Diode (continued)
 - KaVo America - GENTLEray 980
 - Light Instruments - LiteDuo
 - OroScience - Curative 980
 - Fotona - XD Diode Laser, SkyPulse
 - AMD Lasers - Picasso, Picasso Lite, Picasso Perio, Picasso Plus, Picasso Lite Plus
 - Lambda Scientifica - Doctor Smile A-810, B-980
 - QuickLase - QuickLase DUAL+, 810, 980 Dental Lasers
 - Light Instruments - D-STORM
 - Dental Photonics - stLase
 - Lambda - Doctor Diode (810, 940, 980 nm)
 - Discus Dental - SL3
 - Den-Mat Holdings - Sapphire ST, Sapphire Plus STM
 - China Daheng Group - PenLase
 - Asclepion Laser Technologies - Orion
 - Mira Lasers - Zeno 2, Zeno 4
 - Zolar Technology - Photon/Photon Plus
 - Den-Mat - SOL Portable Diode Laser
 - Azena Medical - ELUMI 810 + 980, Gemini 810 + 980
 - Sheumann Laser - NeoLas 810 nm
 - VIAX Dental Lab - Lucerna VDL980-1
 - Bio-med USA - Dental 5 Multi Diode Laser
 - Lazon Medical Laser SOLASE-808, SOLASE-976
 - HULASER - K2 Module
 - DentLight - Ultrafast, Ultrafast Plus, Ultrafast Lite
- Frequency-Doubled Nd:YAG
 - Fisma - Corium 200, Corium 400
 - Lumenis - Novus Spectra
 - Cynosure - SmartLite D
- Er:YAG
 - KaVo America - KEY Laser 1242, KEY Laser 1242, 1243+
 - HOYA ConBio - VersaWave
 - J. Morita Mfg. Corp. - AdvErL EVO MEY-1-A

Sulcular Debridement

- Nd:YAG
 - American Dental Technologies - PulseMasters
 - Lares Research - SunLase 800P (PocketPro)
 - Incisive LLP - InPulse, PinPointe FootLaser
 - Millennium Dental Technologies - PerioLase
 - Fotona - Fidelis Plus, Fidelis III, Fotona XP, LightWalker
 - PathoLase - PinPointe and PinPointe FootLaser
 - PinPointe USA - PinPointe FootLaser
 - Nuvolase - PinPointe FootLaser
- Diode
 - American Dental Technologies - PulseMaster 1000 ST DioLase ST
 - Premier Laser Systems - Aurora, Aurora HL
 - CeramOptec - Cerelas Diode Model D15, Cerelas Diode Model D10
 - Dentek Lasersystems - Dentek LD-15
 - BioLase Technology - Twilight
 - OpusDent Ltd. - Opus 10
 - Zap Lasers - SoftLase, SoftLase G2, Styla MicroLaser, StylaOrtho, SoftLase Pro/OrthoLase/HygieneLase

**Selected U.S. FDA Marketing Clearances
Lasers for Intraoral Use
by Company and Device (continued)
May 1990 – February 26, 2021**

Sulcular Debridement (continued)

- Diode (continued)
 - Continuum Electro-Optics – DioDent Dental Laser System
 - American Dental Technologies – DioLase 980 D
 - BioLase Technology – LaserSmile, EZLase, ezlase 10W, iLase, EPIC 10, Epic Pro, Epic Pro 940, Epic 980
 - MSq(M²) – Dio-Dent 10
 - HOYA ConBio – LVI Lase, DioDent II
 - Ivoclar Vivadent – Odyssey 2.4G
 - Biolitec – Ceralas D100, Ceralas D150, Ceralas D15, Ceralas D25, Ceralas D980, Ceralas E 980 (E15/980, E30/980), 180W Ceralas D 980 (D180), Ceralas Multiwavelength 980/1470 nm Diode Laser System, Evolve HPD 980, Evolve 980/1470 nm Multiwavelength Diode Laser (Evolve Dual)
 - Sirona Dental Systems – SIROLaser, SIROLaser Advance, SIROLaser Advance+, SIROLaser Blue
 - ProSurg – LaserTx
 - Xintec – Vectra
 - Spectrum International – Prometey
 - Elexxion – Claros Dental Laser System, Claros Nano
 - Hoya ConBio – DioDent Micro 810, DioDent Micro 980
 - Ivoclar Vivadent – Odyssey Navigator
 - Quanta System – Diode Medical Laser Family (940, 980 nm), Polysurge Diode Laser Family (940, 980)
 - KaVo America – GENTLEray 980
 - Light Instruments – LiteDuo
 - OroScience – Curative 980
 - Fotona – XD Diode Laser, SkyPulse
 - AMD Lasers – Picasso, Picasso Lite, Picasso Perio, Picasso Plus, Picasso Lite Plus
 - Lambda Scientifica – Doctor Smile A-810, B-980
 - QuickLase – QuickLase DUAL+, 810, 980 Dental Lasers
 - Light Instruments – D-STORM
 - Dental Photonics – stLase
 - Lambda – Doctor Diode (810, 940, 980 nm)
 - Discus Dental – SL3
 - Den-Mat Holdings – Sapphire ST, Sapphire Plus STM
 - China Daheng Group – PenLase
 - Asclepion Laser Technologies – Orion
 - CAO Group – Precise SHP Diode Laser, Pioneer Elite Diode Laser, Pilot Elite, Pilot Ultra, Sterling Diode Laser, Sterling Supreme Diode Laser
 - Mira Lasers – Zeno 2, Zeno 4
 - Zolar Technology – Photon/Photon Plus
 - Den-Mat – SOL Portable Diode Laser
 - Azena Medical – ELUMI 810 + 980, Gemini 810 + 980
 - VIAX Dental Lab – Lucerna VDL980-1
 - Bio-med USA – Dental 5 Multi Diode Laser
 - Lazon Medical Laser SOLASE-808, SOLASE-976
 - HULASER – K2 Module
 - DentLight – Ultrafast, Ultrafast Plus, Ultrafast Lite
- Er,Cr:YSGG
 - BioLase Technology – WaterLase Millennium, Waterlase 3.0, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express
- Er:YAG
 - KaVo America – KEY Laser 1242, KEY Laser 1242, 1243+
 - Fotona – Fidelis, Fidelis III, LightWalker, SkyPulse
 - OpusDent – OpusDuo EC
 - HOYA ConBio – VersaWave
 - Lumenis – OpusDent Family

**Selected U.S. FDA Marketing Clearances
Lasers for Intraoral Use
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Sulcular Debridement (continued)

- Er:YAG (continued)
 - Sciton – Profile
 - Light Instruments – LiteTouch, LiteDuo
 - J. Morita Mfg. Corp. – AdvErL EVO MEY-1-A
 - Sheauermann Laser – NeoLas Er:YAG
 - LightMed Dental Technology – LightMed
- Carbon Dioxide
 - OpusDent – OpusDuo EC
 - Cynosure – Smart US 20 D, UltraSpeed, Smart Clinic, PerioPulse
 - Lutronic – DENTA III, DENTA III+, Spectra DENTA II
 - LightScalpel – LightScalpel LS-1005, LightScalpel LS-2010, LightScalpel LS-2010 SX, LS-2010 DX
 - EL.EN Electronic Engineering – DEKA Smartxide Ultraspeed

Caries Removal, Cavity Preparation, Enamel Roughening

- Er:YAG
 - Premier Laser Systems – Centauri
 - Continuum Biomedical – DeL 2940 Dental Erbium Laser, DeLite Dental Erbium Laser
 - Kavo KEY Laser 1242, KEY Laser 1242, 1243+
 - Fotona – Fidelis, Dualis, Fidelis III, LightWalker, SkyPulse
 - OpusDent Ltd. – Opus 20, Spectrum
 - American Dental Technologies – PulseMaster Erbium
 - Cynosure – Smart 2940D
 - HOYA ConBio – VersaWave
 - Lumenis – OpusDent Family
 - Sciton – Profile
 - Light Instruments – LiteTouch, LiteDuo
 - J. Morita Mfg. Corp. – AdvErL EVO MEY-1-A
 - LightMed Dental Technology – LightMed
- Er,Cr:YSGG
 - BioLase Technology – WaterLase Millennium, Waterlase 3.0, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express

Illumination for Caries Detection

- Argon
 - Premier Laser Systems – Arago II
 - Fisma – Dental 200, Dental 300, Dental 400

Aid in Diagnosis of Dental Caries

- Diode
 - KaVo America Corporation – DIAGNOdent Laser Fluorescence Caries Detection Device, DIAGNOdent 2095, DIAGNOdent 2190
 - Quantum Dental Technologies – The Canary System
 - Kaltenbach & Voigt – DIAGNOcam 2170

Illumination for Endodontic Orifice Location

- Argon
 - Premier Laser Systems – Arago II
 - Fisma – Dental 200, Dental 300, Dental 400

**Selected U.S. FDA Marketing Clearances
Lasers for Intraoral Use
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Removal of Coronal Pulp, Adjunct to Root Canal Procedures

- Nd:YAG
 - Premier Laser Systems – Pegasus
- Diode
 - Premier Laser Systems – Aurora

Pulpotomy as Adjunct to Root Canal Retreatment

- Diode
 - CeramOptec – Cerelas D15, Cerelas Diode Model D10
 - Dentek Lasersystems – Dentek LD-15
 - BioLase Technology – Twilight, EZLase, ezlase 10W, iLase, EPIC 10, Epic Pro, Epic Pro 940, Epic 980
 - Premier Laser Systems – Aurora HL
 - OpusDent – Opus 10
 - Continuum Electro-Optics – DioDent Dental Laser System
 - American Dental Technologies – DioLase 980 D
 - BioLase Technology – LaserSmile
 - MSq(M²) – Dio-Dent 10
 - HOYA ConBio – DioDent II
 - Biolitec – Ceralas D810, Ceralas D980, Ceralas D100, Ceralas D150, Ceralas E 980 (E15/980, E30/980), 180W Ceralas D 980 (D180), Ceralas Multiwavelength 980/1470 nm Diode Laser System, Evolve HPD 980, Evolve 980/1470 nm Multiwavelength Diode Laser (Evolve Dual)
 - Sirona Dental Systems – SIROLaser, SIROLaser Advance, SIROLaser Advance+, SIROLaser Blue
 - Vision Lasertechnik – MDL-10/15
 - ProSurg – LaserTx
 - Xintec – Vectra
 - INTERmedic Arfran – INTERmedic, INTERmedic Diode Laser 980 nm System
 - Spectrum International – Prometey
 - Elexxion – Claros Dental Laser System, Claros Nano
 - Hoya ConBio – DioDent Micro 810, DioDent Micro 980
 - Quanta System – Diode Medical Laser Family (808, 940, 980 nm), Polysurge Diode Laser Family (808, 940, 980)
 - KaVo America – GENTLERay 980
 - Light Instruments – LiteDuo
 - OroScience – Curative 980
 - AMD Lasers – Picasso, Picasso Lite, Picasso Perio, Picasso Plus, Picasso Lite Plus
 - Lambda Scientifica – Doctor Smile A-810, B-980
 - QuickLase – QuickLase DUAL+, 810, 980 Dental Lasers
 - Light Instruments – D-STORM
 - Dental Photonics – stLase
 - Lambda – Doctor Diode (810, 940, 980 nm)
 - Asclepion Laser Technologies – Orion
 - Zolar Technology – Photon/Photon Plus
 - CAO Group – Precise SHP Diode Laser, Pioneer Elite Diode Laser, Pilot Elite, Pilot Ultra, Sterling Supreme Diode Laser
 - Azena Medical – ELUMI 810 + 980, Gemini 810 + 980
 - Sheumann Laser – NeoLas 810 nm
 - Bio-med USA – Dental 5 Multi Diode Laser
 - Lazon Medical Laser SOLASE-808, SOLASE-976
 - Fotona – SkyPulse
 - HULASER – K2 Module
 - DentLight – Ultrafast, Ultrafast Plus, Ultrafast Lite
- Nd:YAP
 - Lokki – Lokki DT

**Selected U.S. FDA Marketing Clearances
Lasers for Intraoral Use
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Pulpotomy as Adjunct to Root Canal Retreatment (continued)

- Nd:YAG
 - Incisive LLC – InPulse, PinPointe FootLaser
 - Lares Research – SunLase 800P (PocketPro)
 - Millennium Dental Technologies – PerioLase
 - Fotona – Fidelis Plus, Fidelis III, Fotona XP, LightWalker
 - PathoLase – PinPointe and PinPointe FootLaser
 - PinPointe USA – PinPointe FootLaser
 - Nuvolase – PinPointe FootLaser
- Er,Cr:YSGG
 - BioLase Technology – WaterLase Millennium, Waterlase 3.0, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express
- Er:YAG
 - Continuum Electro-Optics – DELight Dental Laser System
 - OpusDent – OpusDuo EC
 - HOYA ConBio – VersaWave
 - Lumenis – OpusDent Family
 - KaVo, KEY Laser 1242, 1243+
 - Sciton – Profile 2940
 - Light Instruments – LiteTouch, LiteDuo
 - Fotona – Fidelis III, LightWalker, SkyPulse
 - J. Morita Mfg. Corp. – AdvErL EVO MEY-1-A
 - LightMed Dental Technology – LightMed

Selective Removal of Enamel (First Degree) Caries

- Nd:YAG
 - American Dental Technologies – PulseMasters
 - Incisive LLC – InPulse, PinPointe FootLaser
 - Lares Research – SunLase 800P (PocketPro)
 - Millennium Dental Technologies – PerioLase
 - PathoLase – PinPointe and PinPointe FootLaser
 - PinPointe USA – PinPointe FootLaser
 - Nuvolase – PinPointe FootLaser

Removal of Filling Materials as Adjunctive Treatment During Root Canal Retreatment

- Nd:YAP
 - Lokki – Lokki DT
- Nd:YAG
 - Incisive LLC – InPulse, PinPointe FootLaser
 - Lares Research – SunLase 800P (PocketPro)
 - Millennium Dental Technologies – PerioLase
 - Fotona – Fidelis Plus, Fidelis III, Fotona XP, LightWalker
 - PathoLase – PinPointe and PinPointe FootLaser
 - PinPointe USA – PinPointe FootLaser
 - Nuvolase – PinPointe FootLaser
- Diode
 - Fotona – SkyPulse

**Selected U.S. FDA Marketing Clearances
Lasers for Intraoral Use
by Company and Device (continued)
May 1990 – February 26, 2021**

Treatment of Herpetic Lesions

- Er,Cr:YSGG
 - BioLase Technology – WaterLase Millennium, Waterlase 3.0, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express
- Nd:YAG
 - Lares Research – SunLase 800P (PocketPro)
 - Fotona – Fidelis Plus, Fidelis III, Fotona XP, LightWalker, Dynamis Pro
- Frequency-Doubled Nd:YAG
 - Fisma – Corium 200, Corium 400
 - Lumenis – Novus Spectra
 - Cynosure – SmartLite D
- Diode
 - BioLase Technology – LaserSmile, EZLase, ezlase 10W, iLase, EPIC 10, Diolase 10S, Epic 10S, Epic 980
 - Vision Lasertechnik – MDL-10/15
 - Spectrum International – Prometey
 - Elexxion – Claros Dental Laser System, Claros Nano
 - Quanta System – Diode Medical Laser Family (940 nm), Polysurge Diode Laser Family (940)
 - OroScience – Curative 980
 - AMD Lasers – Picasso, Picasso Lite, Picasso Perio, Picasso Plus, Picasso Lite Plus
 - Lambda Scientifica – Doctor Smile A-810
 - QuickLase – QuickLase DUAL+, 810, 980 Dental Lasers
 - Lambda – Doctor Diode (810, 940 nm)
 - Sirona Dental Systems – SIROLaser Advance, SIROLaser Advance+, SIROLaser Blue
 - Zolar Technology – Photon/Photon Plus
 - Azena Medical – ELUMI 810 + 980, Gemini 810 + 980
 - Sheumann Laser – NeoLas 810 nm
 - Fotona – SkyPulse
 - HULASER – K2 Module
 - DentLight – Ultrafast, Ultrafast Plus, Ultrafast Lite
- Er:YAG
 - KaVo America – KEY Laser 1242, KEY Laser 1242, 1243+
 - HOYA ConBio – VersaWave
 - J. Morita Mfg. Corp. – AdvErL EVO MEY-1-A
- Frequency-Doubled Nd:YAG
 - Fisma – Corium 200, Corium 400

Blood Flow Measurements

- Diode
 - Moor Instruments – DRT4 Laser Doppler Perfusion and Temperature Monitor, moorVMS-LDF1 and VMS-LDF2 Laser Doppler Perfusion and Temperature Monitor, moorLDLS-BI Laser Doppler Burns Imager

Tooth Preparation to Obtain Access to Root Canal, Pulp Extirpation, Root Canal Debridement and Cleaning, Root Canal Preparation including Enlargement

- Er,Cr:YSGG
 - BioLase Technology – WaterLase Millennium, Waterlase 3.0, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express
- Er:YAG
 - Continuum Electro-Optics – DELight Dental Laser System
 - OpusDent – OpusDuo EC
 - HOYA ConBio – VersaWave
 - Lumenis – OpusDent Family
 - KaVo, KEY Laser 1242, 1243+
 - Sciton – Profile 2940

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Tooth Preparation to Obtain Access to Root Canal, Pulp Extirpation, Root Canal Debridement and Cleaning, Root Canal Preparation including Enlargement (continued)

- Er:YAG (continued)
 - Light Instruments – LiteTouch, LiteDuo
 - Fotona – Fidelis III, LightWalker, SkyPulse
 - J. Morita Mfg. Corp. – AdvErL EVO MEY-1-A
 - LightMed Dental Technology – LightMed

Enameloplasty, Excavation of Pits and Fissures for Placement of Sealants

- Er:YAG
 - HOYA ConBio – VersaWave
 - Lumenis – OpusDent Family
 - Sciton – Profile
 - Light Instruments – LiteTouch, LiteDuo
 - J. Morita Mfg. Corp. – AdvErL EVO MEY-1-A
 - LightMed Dental Technology – LightMed
- Er,Cr:YSGG
 - BioLase Technology – WaterLase Millennium, Waterlase 3.0, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express

Cutting, Shaving, Contouring and Resection of Oral Osseous Tissues (Bone)

- Er,Cr:YSGG
 - BioLase Technology – WaterLase Millennium, Waterlase 3.0, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express
- Er:YAG
 - HOYA ConBio – DELight Dental Laser System
 - HOYA ConBio – VersaWave
 - Lumenis – OpusDent Family
 - Sciton – Profile
 - Light Instruments – LiteTouch, LiteDuo
 - Fotona – Fidelis III, LightWalker, SkyPulse
 - J. Morita Mfg. Corp. – AdvErL EVO MEY-1-A
 - LightMed Dental Technology – LightMed
- Carbon Dioxide
 - Convergent Dental – Solea

Apicoectomy Surgery

- Er,Cr:YSGG
 - BioLase Technology – WaterLase, Waterlase 3.0, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express
- Er:YAG
 - HOYA ConBio – VersaWave
 - Lumenis – OpusDent Family
 - Sciton – Profile
 - Light Instruments – LiteTouch, LiteDuo
 - Fotona – Fidelis III, LightWalker, SkyPulse
 - J. Morita Mfg. Corp. – AdvErL EVO MEY-1-A
 - LightMed Dental Technology – LightMed

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Coagulation of Extraction Sites

- Diode
 - MSq(M²) – Dio-Dent 10
- Carbon Dioxide
 - PhotoMedex – LaserPro CO₂
 - Lumenis – AcuPulse 30/40ST and 40WG, AcuPulse, AcuPulse DUO
 - LightScalpel – LightScalpel LS-1005, LightScalpel LS-2010, LightScalpel LS-2010 SX, LS-2010 DX
 - Bio-Med USA Cellene CO₂ Laser

Ostectomy, Osteotomy, Osseous Crown Lengthening, Osteoplasty

- Er,Cr:YSGG
 - BioLase Technology – WaterLase Millennium, Waterlase 3.0, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express
- Er:YAG
 - HOYA ConBio – VersaWave
 - Lumenis – OpusDent Family
 - Sciton – Profile

Ostectomy, Osteotomy, Osseous Crown Lengthening, Osteoplasty (Continued)

- Er:YAG (Continued)
 - Light Instruments – LiteTouch, LiteDuo
 - Fotona – Fidelis III, Lightwalker, SkyPulse
 - J. Morita Mfg.Corp. – AdvErL EVO MEY-1-A

Laser-Assisted New Attachment Procedure (cementum-mediated periodontal ligament new-attachment to the root surface in the absence of long junctional epithelium)

- Nd:YAG
 - Millennium Dental Technologies – PerioLase
 - Fotona – Lightwalker
- Carbon Dioxide
 - Cynosure – Smart US 20 D, UltraSpeed, Smart Clinic, PerioPulse
 - Lutronic – DENTA III, DENTA III+, Spectra DENTA II
 - LightScalpel – LightScalpel LS-1005, LightScalpel LS-2010, LightScalpel LS-2010 SX, LS-2010 DX
 - EL.EN Electronic Engineering – DEKA Smartxide Ultraspeed
- Er,Cr:YSGG
 - Biolase Technology – Waterlase MD, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express
- Diode
 - AMD Lasers – Picasso, Picasso Lite, Picasso Perio, Picasso Plus, Picasso Lite Plus

Cutting Bone to Prepare a Window Access to the Apex (Apices) of the Root(s)

- Er:YAG
 - HOYA ConBio – VersaWave
 - Lumenis – OpusDent Family
 - Sciton – Profile
 - Light Instruments – LiteTouch, LiteDuo
 - J. Morita Mfg.Corp. – AdvErL EVO MEY-1-A
 - Fotona – LightWalker, SkyPulse
- Er,Cr:YSGG
 - Biolase Technology – Waterlase, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express

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Root End Preparation for Retrofill Amalgam or Composite

- Er:YAG
 - HOYA ConBio – VersaWave
 - J. Morita Mfg.Corp. – AdvErL EVO MEY-1-A
 - Sheumann Laser – NeoLas Er:YAG
 - Fotona – LightWalker, SkyPulse
- Er,Cr:YSGG
 - Biolase Technology– Waterlase 3.0, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express

Reduction of Bacterial Level (Decontamination) and Inflammation

- Diode
 - BioLase Technology – Twilight, Epic 980
 - HOYA ConBio – DioDent II, DioDent Micro 810, DioDent Micro 980
 - OroScience – Curative 980
 - QuickLase – QuickLase DUAL+, 810, 980 Dental Lasers
 - Azena Medical – ELUMI 810 + 980, Gemini 810 + 980

Aid in Detection (and Localization) of Subgingival Dental Calculus

- Diode
 - KaVo America Corporation – DIAGNOdent Perio Tip, DIAGNOdent 2190 with Periodontal Probe

Root Canal Disinfection after Endodontic Instrumentation/ Treatment

- Er,Cr:YSGG
 - Biolase Technology – Waterlase, Waterlase MD, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express
- Er:YAG
 - Fotona – LightWalker, SkyPulse

Removal of Subgingival Calculi in Periodontal Pockets

- Er:YAG
 - KaVo – KEY Laser III 1243
 - Fotona – LightWalker, SkyPulse
 - J. Morita Mfg.Corp. – AdvErL EVO MEY-1-A
- Er,Cr:YSGG
 - Biolase Technology – Waterlase MD, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express

Removal of Highly Inflamed Edematous Tissue Affected by Bacteria Penetration of the Pocket Lining and Junctional Epithelium

- Diode
 - BioLase – Lasersmile, Epic 980
 - AMD Lasers – Picasso, Picasso Lite, Picasso Perio, Picasso Plus, Picasso Lite Plus
 - QuickLase – QuickLase DUAL+, 810, 980 Dental Lasers
 - Zolar Technology – Photon, Photon Plus
 - CAO Group – Precise SHP Diode Laser, Pioneer Elite Diode Laser, Pilot Elite, Pilot Ultra, Sterling Diode Laser, Sterling Supreme Diode Laser
 - Azena Medical – ELUMI 810 + 980, Gemini 810 + 980
- Er,Cr:YSGG
 - Biolase Technology – Waterlase, Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express

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Removal of Highly Inflamed Edematous Tissue Affected by Bacteria Penetration of the Pocket Lining and Junctional Epithelium (continued)

- Er:YAG
 - J. Morita Mfg. Corp. – AdvErL EVO MEY-1-A
 - Sheumann Laser – NeoLas Er:YAG
 - Fotona – LightWalker, SkyPulse

Removal of Pathological Tissues (i.e., Cysts, Neoplasm or Abscess) and Hyperplastic Tissues (i.e., Granulation Tissue) from around the Apex

- Er,Cr:YSGG
 - Biolase Technology – Waterlase C100, Waterlase MD Turbo Plus, Orthopedic iPlus, Waterlase Express
- Er:YAG
 - J. Morita Mfg. Corp. – AdvErL EVO MEY-1-A
 - Sheumann Laser – NeoLas Er:YAG
- Diode
 - Sheumann Laser – NeoLas 810 nm

Ablation of Hard Tissue for Caries Removal and Cavity Preparation

- Carbon Dioxide
 - Convergent Dental – Solea

Diagnostic Aid for Detection of Open or Incipient Caries Lesions Above the Gingiva and for Monitoring the Progress of Such Lesions, includes Detection of Cracks

- Diode
 - Kaltenbach & Voigt – DIAGNOcam 2170

Root Canal Debridement and Cleaning

- Diode
 - Sheumann Laser – NeoLas 810 nm

Periodontal Regeneration – True Regeneration of the Attachment Apparatus (New Cementum, New Periodontal Ligament, and New Alveolar Bone) on a Previously Diseased Root Surface When Used Specifically in the LANAP® Protocol

- Nd:YAG
 - Millennium Dental Technologies – PerioLase

Photoinitiation of Gingival Barriers and Dams

- Diode
 - VIAX Dental Lab – Lucerna VDL980-1

Periodontal Regeneration – True Regeneration of the Attachment Apparatus (New Cementum, New Periodontal Ligament, and New Alveolar Bone) on a Previously Diseased Root Surface

- Nd:YAG
 - Fotona – Lightwalker

Facilitation of Subgingival Calculus Removal

- Nd:YAG
 - Millennium Dental Technologies – PerioLase

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Modification of the Dentin Surface, Including Increasing the Mineral and Decreasing the Organic Composition of the Dentin Surface, Reducing Bacteria on the Dentin Surface, Improving the Shear Bond Strength of Composite Resin, Reducing the Adhesive Failure of Composite Resin, and Removing Demineralized Dentin Surfaces

- Nd:YAG
 - Millennium Dental Technologies - PerioLase

Removal of Porcelain and Ceramic Crowns and Veneers

- Er,Cr:YSGG
 - Biolase - Waterlase
- Er:YAG
 - Fotona - LightWalker, SkyPulse

Curing Photoactivated Dental Restorative Materials and Adhesives

- Diode
 - CAO Group - Monet Curing Laser