

# **PRACTICAL CLINICAL COURSES**

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Career Development Program

**V1904**

## **Reliable, Simple Treatment of Cracked Teeth**

Gordon J. Christensen, DDS, MSD, PhD

### **Materials Included**

C.E. Instruction Sheet  
Products List  
Clinicians Responsible  
Goals & Objectives  
Overview  
References  
AGD Post-Test

**Gordon J. Christensen**  
**PRACTICAL CLINICAL COURSES**

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*Sources of Products Discussed in*

**V1904 Reliable, Simple Treatment of Cracked Teeth**

Presented by: Gordon J. Christensen, DDS, MSD, PhD

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Local Sporting Goods Store
2. **DEXIS CariVu**  
KaVo Dental  
200 S. Kraemer Blvd., Bldg. E2  
Brea, CA 92821  
(888)275-5286  
(714)516-7400  
[www.kavo.com](http://www.kavo.com)
3. **Endo-Eze MTAFlow Repair Cement Kit**  
Ultradent Products, Inc.  
505 West 10200 South  
South Jordan, UT 84095  
(888)230-1420  
(801)572-4200  
[www.ultradent.com](http://www.ultradent.com)
4. **G5 All-Purpose Desensitizer**  
Clinician's Choice Dental Products  
P.O. Box 1706  
New Milford, CT 06776  
(800)265-3444  
[www.clinicianschoice.com](http://www.clinicianschoice.com)
5. **GC FujiCEM Evolve**  
GC America Inc.  
3737 West 127<sup>th</sup> Street  
Alsip, IL 60803  
(800)323-7063  
(708)597-0900  
[www.gcamerica.com](http://www.gcamerica.com)
6. **GLUMA Desensitizer**  
Kulzer North America  
4315 South Lafayette Blvd.  
South Bend, IN 46614  
(800)431-1785  
[www.kulzerus.com](http://www.kulzerus.com)
7. **LUM**  
Digital Doc LLC  
4789 Golden Foothill Parkway  
El Dorado Hills, CA 95762  
(800)518-1102  
(916)941-8010  
[www.digi-doc.com](http://www.digi-doc.com)
8. **Lumindex 3 LED Transilluminator**  
Practicon Inc.  
1112 Sugg Parkway  
Greenville, NC 27834  
(800)959-9505  
(252)752-5183  
[www.practicon.com](http://www.practicon.com)
9. **Microlux 2 Transilluminator**  
AdDent, Inc.  
43 Miry Brook Road  
Danbury, CT 06810  
(855)211-3413  
(203)778-0200  
[www.addent.com](http://www.addent.com)
10. **MicroPrime G**  
Zest Dental Solutions  
2875 Loker Avenue East  
Carlsbad, CA 92010  
(800)262-2310  
(442)244-4835  
[www.zestdent.com](http://www.zestdent.com)
11. **Occlusal Indicator Wax**  
Kerr Corporation  
200 S. Kraemer Blvd., Bldg. E2  
Brea, CA 92821  
(800)537-7123  
(714)516-7400  
[www.kerrdental.com](http://www.kerrdental.com)
12. **ProRoot MTA**  
Dentsply Sirona  
13320-B Ballantyne Corporate Place  
Charlotte, NC 28277  
(800)877-0020  
(844)848-0137  
[www.dentsplysirona.com](http://www.dentsplysirona.com)
13. **RelyX Luting Plus Cement**  
3M  
3M Center, Bldg. 275-02-SE-03  
St. Paul, MN 55144-1000  
(888)364-3577  
(651)733-1110  
[www.3m.com](http://www.3m.com)
14. **Scotchbond Universal**  
3M  
3M Center, Bldg. 275-02-SE-03  
St. Paul, MN 55144-1000  
(888)364-3577  
(651)733-1110  
[www.3m.com](http://www.3m.com)
15. **Tooth Slooth Fracture Detector**  
Local Dealers
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Practicon Inc.  
1112 Sugg Parkway  
Greenville, NC 27834  
(800)959-9505  
(252)752-5183  
[www.practicon.com](http://www.practicon.com)
17. **VITA Toothguide 3D-MASTER**  
VITA North America  
22705 Savi Ranch Parkway, Suite 100  
Yorba Linda, CA 92887  
(800)828-3839  
[www.vitanorthamerica.com](http://www.vitanorthamerica.com)

***Product names, the products themselves, and company names change rapidly. Please contact the companies shown to confirm current information.***

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## PROGRAM

### **V1904 Reliable, Simple Treatment of Cracked Teeth**

#### CLINICIAN RESPONSIBLE:

**Gordon J. Christensen, DDS, MSD, PhD**

CEO, Practical Clinical Courses

CEO, CR Foundation

Practicing Prosthodontist, Provo, Utah

#### GOALS & OBJECTIVES

At the completion of this video presentation, viewers should be able to:

1. Discuss the incidence of the cracked tooth syndrome (CTS).
2. List the types of cracks.
3. List the signs and symptoms of the CTS.
4. Describe the "bite test" as a diagnostic aid.
5. Discuss the use of transillumination as a diagnostic aid.
6. Discuss the use of conventional radiographs as a diagnostic aid.
7. Discuss the use of cone-beam radiographs as a diagnostic aid.
8. Discuss the use of staining teeth as a diagnostic aid.
9. List potential other oral conditions that could be confused with the CTS.
10. List the 5 types of cracks defined by the American Association of Endodontists.
11. Describe the appearance of craze lines.
12. Describe a fractured cusp.
13. Describe a cracked tooth.
14. Describe a split root.
15. Describe a vertical tooth fracture.
16. List and describe treatment for craze lines.
17. List and describe treatment for a fractured cusp.
18. List and describe treatment for a cracked tooth.
19. List and describe treatment for a split root.
20. List and describe treatment for a vertical root fracture.

## OVERVIEW

### **V1904 Reliable, Simple Treatment of Cracked Teeth**

The cracked tooth syndrome (CTS) is a commonly occurring challenge in dental practice. This syndrome is one of the most difficult to diagnose and treat of any condition encountered in dentistry. The following are factors relating to the CTS:

- The syndrome varies from painless craze lines to teeth cracked in half.
- The articles on CTS often contradict one another.
- The American Association of Endodontists has developed a classification for the CTS.
- Estimates state it occurs at least once per week in studies of full-time practices.
- It is age related; older patients have more cracked teeth.
- Usually CTS occurs in patients over 40 years of age.
- It is occlusion related - excursive movements, bruxers.
- CTS is the third most common cause of tooth loss.
- It is up to three times more likely to occur if marginal ridge is removed vs. marginal ridge present.
- Hard foods are often responsible.
- Usually molars and premolars are affected, seldom anterior teeth.
- Estimates state that complete tooth fracture occurs up to 5 fractured teeth per 100 adults.
- One study showed cracks in nearly 10% of teeth.
- It is estimated that 15% of cracks involve the pulp.
- More frequent in females.
- Mandibular first molar is most frequent, but this is controversial.
- Maxillary first molar is the second most frequent cracked tooth.
- Occurs mostly in restored teeth, but also in non-restored teeth.
- Often related to previously endodontically treated teeth.
- Some cracked teeth need endodontic treatment, while others don't.

## OVERVIEW (CONT'D)

### **V1904 Reliable, Simple Treatment of Cracked Teeth**

The following and other topics are included in this presentation:

- Incidence of the cracked tooth syndrome (CTS)
- Types of cracks
- Signs and symptoms of the CTS
- The “bite test” as a diagnostic aid
- The use of transillumination as a diagnostic aid
- The use of conventional radiographs as a diagnostic aid
- The use of cone-beam radiographs as a diagnostic aid
- The use of staining teeth as a diagnostic aid
- Potential other oral conditions that could be confused with the CTS
- The 5 types of cracks defined by the American Association of Endodontists
- The appearance of craze lines
- Fractured cusps
- Cracked teeth
- Split roots
- Vertical tooth fracture
- Treatment for craze lines
- Treatment for a fractured cusp
- Treatment for a cracked tooth
- Treatment for a split root
- Treatment for a vertical root fracture

## REFERENCES

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1. Christensen GJ. Ask Dr. Christensen: Let's save teeth! Dental Economics. 2020 Mar;110(3)
2. Leong DJX, de Souza NN, Sultana R, Yap AU. Outcomes of endodontically treated cracked teeth: a systematic review and meta-analysis. Clin Oral Investig. 2020 Jan;24(1):465-473. doi: 10.1007/s00784-019-03139-w. Epub 2019 Dec 4.
3. Hilton TJ, Funkhouser E, Ferracane JL, Schultz-Robins M, Gordan VV, Bramblett BJ, Snead RM Jr, Manning W, Remakel JR; National Dental PBRN Collaborative Group. Recommended treatment of cracked teeth: Results from the National Dental Practice-Based Research Network. J Prosthet Dent. 2020 Jan;123(1):71-78. doi: 10.1016/j.prosdent.2018.12.005. Epub 2019 Jun 12.
4. Christensen GJ. Ask Dr. Christensen: When should teeth be removed? Dental Economics. 2019 Apr;109(4):69-71.
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6. Christensen GJ. Ask Dr. Christensen: What is the best type of material for posterior crowns? Dental Economics. 2018 Oct;108(10):79-82.
7. Christensen GJ. Ask Dr. Christensen: Is cone beam really necessary? Dental Economics. 2018 May;108(5):88-90.
8. Krell KV, Caplan DJ. 12-month Success of Cracked Teeth Treated with Orthograde Root Canal Treatment. J Endod. 2018 Apr;44(4):543-548. doi: 10.1016/j.joen.2017.12.025. Epub 2018 Feb 21.
9. Hilton TJ, Funkhouser E, Ferracane JL, Gordan VV, Huff KD, Barna J, Mungia R, Marker T, Gilbert GH; National Dental PBRN Collaborative Group. Associations of types of pain with crack-level, tooth-level and patient-level characteristics in posterior teeth with visible cracks: Findings from the National Dental Practice-Based Research Network. J Dent. 2018 Mar;70:67-73. doi: 10.1016/j.jdent.2017.12.014. Epub 2017 Dec 28.

## POST-TEST

### **V1904 Reliable, Simple Treatment of Cracked Teeth**

1. What is the treatment for craze lines in teeth?
  - a. Orthodontic band to hold tooth segments together
  - b. Remove all previous restorative materials
  - c. Place a crown
  - d. Usually nothing
  
2. What is the treatment for a fractured cusp?
  - a. Usually nothing
  - b. Orthodontic band to hold the tooth segments together
  - c. A crown or onlay
  - d. Endodontic treatment
  
3. What is the initial treatment indicated in this video for a “cracked tooth” using the description of cracked tooth listed by the American Association of Endodontists?
  - a. Immediate endodontic treatment
  - b. Orthodontic band to hold the tooth segments together
  - c. Diagnostic temporary crown or onlay
  - d. Place a bonded composite
  
4. What is the initial treatment for an apparently split root?
  - a. Diagnostic temporary crown or onlay
  - b. Immediate endodontic treatment
  - c. Place a bonded composite
  - d. Orthodontic band to hold the tooth segments together
  
5. What is the usual treatment for a vertical root fracture?
  - a. Diagnostic temporary crown or onlay
  - b. Immediate endodontic treatment
  - c. Extraction
  - d. Orthodontic band to hold the tooth segments together
  
6. When treating a visible crack in a tooth after taking the old restoration out, what is the first step?
  - a. Place a bonding agent
  - b. Place two 1-minute applications of glutaraldehyde
  - c. Place MTA on the crack
  - d. Place a bonded composite restoration
  
7. When treating a visible crack in a tooth after taking the old restoration out, what is the second step?
  - a. Place a bonding agent
  - b. Place two 1-minute applications of glutaraldehyde
  - c. Place MTA on the crack
  - d. Place a bonded composite restoration

**POST-TEST (CONT'D)**

**V1904 Reliable, Simple Treatment of Cracked Teeth**

- 8. When treating a visible crack in a tooth after taking the old restoration out, what is the third step?
  - a. Place a bonding agent
  - b. Place two 1-minute applications of glutaraldehyde
  - c. Place MTA on the crack
  - d. Place a bonded composite restoration
  
- 9. When treating a visible crack in a tooth after taking the old restoration out, what is the fourth step?
  - a. Place a bonding agent
  - b. Place two 1-minute applications of glutaraldehyde
  - c. Place MTA on the crack
  - d. Prepare the tooth for a crown or onlay
  
- 10. What is one of the most important steps when treating the CTS?
  - a. Always place Dycal on the crack
  - b. Place glutaraldehyde on the tooth after the crown has been placed
  - c. Provide thorough informed consent relative to the potential success of the treatment
  - d. Place MTA on the margins after the crown is seated

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