Forensic Dentistry: Role of the Dental Hygienists & Bitemark Protocol

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SCDHA

Complimentary New CE’s
- Xylitol and Oral Health
- The Dry Mouth Dilemma
- You can do what with this stuff?
- CaMBRA: Creating Better Outcomes
- Probiotics and Xylitol…You want me to do what?

Conduct Learn Over Lunch
WEBINARS for 1-8 CE’s
rhoda@xylitoleducators.com

XYLITOL PROTOCOL

Gum Lovers Protocol
Mint Lovers Protocol
Dry Mouth Protocol
Spry GEMS
Dental Professionals
SPIN TO WIN

Goals
- Define Forensic Dentistry
- List roles of the dental hygienist in forensics
- Identify protocol for mass disasters
- Name state and local agency that utilizes forensic dentists.

Forensic Dentistry
Forensic dentistry: the science that deals with the application of dental knowledge to certain questions of civil or criminal law; dental jurisprudence.

**Historical Perspective**

Multi-disciplines in forensic science have helped:

- Identify
- Implicate
- Convict
- Exonerate

Dental ID and DNA

Adam Walsh: Florida
Ted Bundy: Florida
Roy Brown: NY
Willie Jackson: LA
Ray Krone: AZ

*Innocence Project convictions overturned due to new DNA Evidence.

**Forensics: Identification (ID)**

Law enforcement & Medical Examiners can:

1. Visualize
   - A relative present at time of death
   - Government Issued Picture ID

2. Fingerprints
   - ID if person has prints on file

**Forensics: ID**

If an individual can *not* be identified then Medical Examiners call the Forensic Dentist:

3. Dental Autopsy
   - (must be signed off by Dentist)

4. DNA- takes 2-3 months
As quoted from Dr. Motte assistant ME Palm Beach Medical Examiners on March 14, 08.

17 Forensic and Dentistry

I. IDENTIFICATION OF UNKNOWN PERSON
II. EXPERT WITNESS TESTIMONY
   Bite mark
III. MALPRACTICE

18 Duties of Forensic Odontologist

Identification (Autopsy)
Mass Disaster
Age Estimation
Domestic Violence/Child Abuse
Forensic Art
Expert Witness
Bitemark

19 CHILD ABUSE

20 CHILD ABUSE

21 CHILD ABUSE

22 Dental Hygienist and Forensics

- Mass Disaster
- Radiography
- Forensic photography
- Sexual Assault Center
- Lecture Circuit

23 Personal Protection Equipment (PPE) at Dental ID

- Tyvek Suits
- Hairnet
- Boots
- Safety Glove
  *duct-taped to sleeve
- Second Glove
  *on top of safety glove
- Safety goggles
- MASK
  *protects against TB
- Vicks Vapor Rub
  *under nose
PPE for the JOB
Dr. Needell and Lori Allen

Set up computer

WPB Morgue Today

Dental Autopsy
Clean the teeth well.

Medical Examiner Sets Dental Protocol
ID number with photos

Limitations to Equipment
X-ray machine

Limitations Without NOMAD
In order to take radiographs first remove the jaw:

- Cut muscles off mandible with scalpel
- Remove the maxilla with clippers

Before Radiographs and Photos
- Clean the excess tissues off the mandible and maxilla
- Remove debris from dentures and partials

*Removal of the jaws will no longer be necessary with NOMAD.

Original Radiographs

Radiograph: Dexis Digital

Sensor Set-up for Dexis

Data Discrepancy

Radiographs for ID
- ANTEMORTEM
  - Original radiographs
  - Most recent full-set of radiographs
POSTMORTEM

- Position closely to antemortem
- Place loose teeth carefully into socket
- Compare the amount of similarities for hits

37 Anatomical Positioning
   Note rotation of lateral anteriors

38 Anatomical Positioning: Antemortem vs. Postmortem

39 Limited Number of Teeth

40 ID by Sinus

41

42 Limitation to Dental ID

43 ID by Sketch Artist

44 Pink Teeth Syndrome?

45 Labeling of Removable Appliances

46 Technology of future

47 Bitemark Protocol

48

49

50 Photographic Documentation of the Bite Site
   - Orientation and close-up photographs
   - Photographs of the bitemark with and without a scale in place.
   - When the scale is used, it should be on the same plane and adjacent to the bitemark.
     Split the bite.
   - Attempt to take the photograph with the victim in the same position as when the injury occurred
   - In the case of a living victim, it may be beneficial to obtain serial photographs of the bitemark

51 BITEMARK

52

53 BITEMARK

54
BITEMARK

Descriptions and Terms Used to Relate a Suspected Biter to a Bitemark
The Biter
The Probable Biter
Not Excluded as the Biter
Excluded as the Biter
Inconclusive

All opinions stated to a reasonable degree of dental/medical certainty

BITEMARK TEST

Tiered Response System

MASS DISASTER

MORGUE EXERCISE

“MORGUE HUMOR”

Mass Disaster Identification Team
Data Antemortem vs. Postmortem

Plane Crashes

Sift to find ID

Clean up debris

Traffic Fatalities

Probabilities

WinID

Dexis Set-up for WinID

Dexis with WinID

Best Match in WinID

WinID Coding

<table>
<thead>
<tr>
<th>Primary Codes</th>
<th>Secondary Codes</th>
</tr>
</thead>
<tbody>
<tr>
<td>M - Mesial</td>
<td>A - Annotation</td>
</tr>
<tr>
<td>O - Occlusal</td>
<td>B - Deciduous</td>
</tr>
<tr>
<td>D - Distal</td>
<td>C - Crown</td>
</tr>
<tr>
<td>F - Facial</td>
<td>E - Resin</td>
</tr>
<tr>
<td>L - Lingual</td>
<td>G - Gold</td>
</tr>
<tr>
<td>I - Incisal</td>
<td>H - Porcelain</td>
</tr>
<tr>
<td>U - Unerupted</td>
<td>N - Non-Precious</td>
</tr>
<tr>
<td>V - Virgin</td>
<td>P - Pontic</td>
</tr>
<tr>
<td>X - Missing</td>
<td>R - Root Canal</td>
</tr>
<tr>
<td>J - MissCr</td>
<td>S - Silver Amalgam</td>
</tr>
<tr>
<td>/ - No Data</td>
<td>T - Denture Tooth</td>
</tr>
<tr>
<td></td>
<td>Z - Temporary</td>
</tr>
</tbody>
</table>

Sample Chart in WinID

National Crime Information Center (NCIC)

Florida Emergency Mortuary Response Operations System (FEMORS)

Mission

The FEMORS mission is to assist and support the local District Medical Examiners Office, Florida Department of Law Enforcement and other responding agencies, in the event of a mass fatality incident as directed by the Florida Department of Health.

What is FEMORS?

Forensic Specialists (359)
FEMORS Can Provide Aid For:

- Search and recovery
  - Victim information center
  - Antemortem data collection
  - Mobile Morgue Operations
  - Forensic examinations
  - Postmortem data collection
  - DNA Acquisition

- Personal effects processing
  - Remains identification
  - Coordination of release of remains
  - Records management
  - Database administration
  - Medical/psychology support

Training Requirements

- One disaster-related training every two years
- Specialty team training
  - VIC
    - Victim Identification Center
  - Odontology
  - DPMU
  - Disaster Portable Morgue Units Team

Dental Hygienists Roles

- Victim Information Center Team
- Evidence Specialist
- Photographer
- Administrative Specialist
- Dental Assistant
97 Dental Hygienists: VICs
✓ Victim Information Center Team
Mass Fatality Disaster Response Experience
Management and Administrative Experience
➢ Interview families
➢ Obtain personal data
➢ Counsel to gather DNA
➢ Track missing persons list
➢ Request antemortem dental x-rays

98 Dental Hygienists: Evidence Specialists
✓ Evidence Specialist
   Scene search and recovery
➢ Assists photography, personal effects, pathology (as scribe), anthropology (as scribe), odontology (as scribe), or DNA sections
➢ Serve as section leader for Disaster Site Center or Transport, Remains Holding, Photography, Personal Effects, or Remains Storage.

99 Dental Hygienists: Photographers
✓ Photographers
   Take three to four photos
➢ morgue stations
➢ disaster site

   *Forensic Photography Experience*

➢ Photographs personal effects
➢ Documents personal effects after pathology

100 Florida Statutes: Dale Earnhart

101 Dental Hygienists: Administrative Specialists
✓ Administrative Specialist
   Helps in any clerical capacity
➢ data entry
➢ records clerk
➢ morgue scribe
➢ verification entry
Dental Hygienists: Dental Assistants

- Dental Assistant
- Assist odontologists at table
- clerical capacity
- body transport
- scribe
- *Dental Hygienist or Assistant*
- Antemortem or Postmortem

Identification

Dental Equipment

Disaster Mortuary Operational Response Team (DMORT)

DMORT federal level response team

- provide mortuary assistance
  - Mass fatality incident
  - Cemetery related incident
- work under the local jurisdiction
  - Coroner/Medical Examiners
  - Law Enforcement
  - Emergency Managers

*closed to personnel since 9-11*

Temporary Morgue

- Antemortem collects data
  - Victim information core team
- Postmortem gathers data
  - Morgue workers:
    - Cutter may have to dissect
    - Shooter holds NOMAD
    - Enter data in WinID
- Verification Team
  - Compares antemortem and postmortem radiographs
  - *two odontologist signs off*

Katrina Morgue Processing

*Clerical skills with basic computer skills*
Katrina Morgue Stations

Katrina St. Gabriel Morgue

Are you ready to serve?

Why are the teeth white?

Postmortem Radiographs
   Radiographs from unknown ID

Life-long Learning
   In forensics if they call you drop everything and go...
   Professional Associations to contact:
      www.asfo.com
      www.afip.com
      www.aafs.com
   Be involved and educated in your career.