PERIODONTAL RESIDENT SURGICAL SKILL ASSESSMENT
WHERE IS THE EVIDENCE?

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The Ohio State University
Disclosures

• Dimitris N. Tataakis, DDS, PhD
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  The Ohio State University
  Columbus, OH

• No relevant financial relationships with commercial entities.
Quality of DESIGN + Quality of RAW MATERIAL + Quality of PRODUCTION = Quality of PRODUCTS
Quality Control Throughout Productive Systems

Inputs
- Raw Materials, Parts, and Supplies

Conversion
- Production Processes

Outputs
- Products and Services

- Acceptance Tests
  - Quality of Inputs
- Control Charts
  - Monitoring Quality of Partially Completed Products
- Acceptance Tests
  - Quality of Outputs

QC Cassel 2015
Periodontal Resident Skill Assessment

- Evidence from clinical studies
- Educational Research
Periodontal Resident Skill Assessment

- Evidence from clinical studies – Operator Experience
  - SRP: Brayer et al JOP 1989; Fleischer et al JOP 1989
  - CLS: Herrero et al JOP 1995
  - Dental Implants: Esposito 1998; Al-Khabbaz 2007; Cusken 2013; Rungcharassaeng 2015
Fleischer JOP 1989
Herrero JOP 1995

- Faculty: 1.1 mm
- 2nd Year Residents: 0.8 mm
- 1st Year Residents: 0 mm
<table>
<thead>
<tr>
<th>Time Point</th>
<th>Variable</th>
<th>B (SE)</th>
<th>Adjusted OR</th>
<th>95% CI</th>
<th>P Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>After 24 hours</td>
<td>Placed by resident</td>
<td>3.21 (0.55)</td>
<td>24.86</td>
<td>8.52-72.52</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

Table 5.
Logistic Regression Analysis of Factors Significantly Associated With Pain Perception During Surgery, After 24 Hours, and After 1 Week

Al-Khazzaz JOP 2007
Periodontal Resident Skill Assessment

- Educational Research
  - Lanning et al J Dent Educ 2005
  - Ghiabi & Taylor J Dent Educ 2010
  - Park et al J Periodontal Implant Sci 2012

Survey sent to 58 periodontal program directors
  - Canada (n=4) and US (n=54)
Responses obtained from 34 programs (59% response rate)
  - Canada (n=3; 75%) and US (n=31; 57%)
Table 1. Questions regarding assessment in the survey of North American graduate periodontics programs

A. How frequently are the residents’ surgical skills evaluated?

B. How frequently are the following assessment methods used to evaluate residents’ surgical skills?
   i. Checklist generated by individual instructors
   ii. Standard checklist developed at program level
   iii. Standard checklist generated by the American or Canadian Academy of Periodontology
   iv. Assessment tool combining a checklist and qualitative comments
   v. Qualitative comments only
   vi. Case report submission
   vii. Objective structured clinical examination (OSCE)
   viii. Oral examination
   ix. Written examination
   x. Case-based examination
   xi. Other

C. How frequently do residents receive one-on-one verbal feedback on their surgical skills?

D. How frequently do instructors meet as a group to discuss residents’ surgical skills?
Figure 1. Frequency of evaluation of residents' surgical skills in graduate periodontics programs, by percentage of total responding programs.
Table 2. Frequency and methods used to provide feedback and to document residents’ surgical skills in graduate periodontics programs, by percentage of responding programs

<table>
<thead>
<tr>
<th>Method</th>
<th>Not Used</th>
<th>Daily</th>
<th>Weekly</th>
<th>Monthly</th>
<th>Once a Term</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>One-on-one verbal feedback</td>
<td>0%</td>
<td>85%</td>
<td>6%</td>
<td>6%</td>
<td>0%</td>
<td>3%</td>
</tr>
<tr>
<td>Standard checklist</td>
<td>16%</td>
<td>3%</td>
<td>9%</td>
<td>3%</td>
<td>53%</td>
<td>16%</td>
</tr>
<tr>
<td>Checklist and comments</td>
<td>23%</td>
<td>0%</td>
<td>3%</td>
<td>13%</td>
<td>48%</td>
<td>13%</td>
</tr>
<tr>
<td>Comments alone</td>
<td>34%</td>
<td>0%</td>
<td>21%</td>
<td>3%</td>
<td>21%</td>
<td>21%</td>
</tr>
<tr>
<td>Instructor checklist</td>
<td>61%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>36%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Ghiabi JDE 2010
Table 3. Frequency and methods used to evaluate residents’ surgical skills in graduate periodontics programs, by percentage of responding programs

<table>
<thead>
<tr>
<th>Method</th>
<th>Not Used</th>
<th>Weekly</th>
<th>Monthly</th>
<th>Once a Term</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oral examination</td>
<td>6%</td>
<td>6%</td>
<td>9%</td>
<td>63%</td>
<td>16%</td>
</tr>
<tr>
<td>Case report submission</td>
<td>9%</td>
<td>27%</td>
<td>24%</td>
<td>24%</td>
<td>15%</td>
</tr>
<tr>
<td>Case-based examination</td>
<td>12%</td>
<td>9%</td>
<td>18%</td>
<td>42%</td>
<td>18%</td>
</tr>
<tr>
<td>Written examination</td>
<td>39%</td>
<td>0%</td>
<td>3%</td>
<td>48%</td>
<td>10%</td>
</tr>
<tr>
<td>OSCE</td>
<td><strong>63%</strong></td>
<td>3%</td>
<td>6%</td>
<td>28%</td>
<td>0%</td>
</tr>
</tbody>
</table>

Note: Percentages may not total 100% because of rounding.
Figure 2. Frequency with which instructors meet to evaluate residents’ progress in graduate periodontics programs, by percentage of total responding programs.
Ghiabi & Taylor JDE 2010

- Graduate periodontics programs provide their residents frequent opportunities for daily practice with verbal feedback from instructors.

- Assessment strategies identified in other health professions as beneficial in fostering the integration of clinical skills practices are not employed.
Direct Observation of Procedural Skill (DOPS)

Resident name __________________________ Year of Programme ______________________

Type of clinical case __________________________ Procedure to be done ______________________

Case complexity:     Low     Moderate     High

Patient Details: Name __________________________ Age _______ File no. _______
Medical history ______________________________________________________

Date of treatment: ________________

Please make sure to complete ALL the information on this form.

Standard: The assessment should be judged against the standard expected at COMPLETION of the programme as defined in the learning outcomes.

Scale
Grade 0-3: Insufficient knowledge despite significant prompting, significant input from assessor
Grade 3-6: Borderline knowledge, substantial input from assessor
Grade 6-9: Sufficient knowledge, meets expectations (that of a specialist), minimal assessor input
Grade 9-12: Impressive knowledge, manage independently

Please grade areas below using the scale 0-12
<table>
<thead>
<tr>
<th>Area of assessment</th>
<th>Grade</th>
<th>Unable to Assess</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1. Clinical knowledge</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrates relevant knowledge and understanding of the procedure including indications, contraindications, anatomy, technique, side effects and complications</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>2. Obtains informed consent</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Explains procedure to the patient and obtains valid and adequate informed consent</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>3. Preparation for procedure</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Prepares appropriately for the procedure. Ensures assisting staff are present; check equipment and prepares materials, arranges workspace ergonomically</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade</td>
<td>Unable to Assess</td>
<td></td>
</tr>
<tr>
<td>-------</td>
<td>------------------</td>
<td></td>
</tr>
<tr>
<td>4. Administers effective local anaesthesia</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5. Demonstrates good asepsis and safe use of instruments/sharps</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrates aseptic/clean technique and standard (universal) precautions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6. Performs the technical aspects in line with guidelines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Demonstrates manual dexterity and confidence; demonstrates correct procedural sequence with minimal hesitation and unnecessary actions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grade</td>
<td>Unable to Assess</td>
<td></td>
</tr>
<tr>
<td>-------</td>
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<td></td>
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</table>

7. **Attention to Patient Care and Safety**
   
   *Knows when to seek assistance, abandon procedure or arrange alternative care to prevent harm to patient*

8. **Completes required documentation (written/computerised)**
   
   *Documents the episode including problems and complications.*

9. **Issues clear post-procedure instructions to patient/staff**
   
   *Arranges and documents plans for post procedural care*
<table>
<thead>
<tr>
<th></th>
<th>Grade</th>
<th>Unable to Assess</th>
</tr>
</thead>
<tbody>
<tr>
<td>10. Patient interaction</td>
<td>Provides reassurance and checks for discomfort, concerns and complications</td>
<td></td>
</tr>
<tr>
<td>11. Communicates with staff in a professional manner</td>
<td>Provides clear and concise instructions to assisting staff and conveys relevant information concerning the patient and plans to team members</td>
<td></td>
</tr>
<tr>
<td>12. Overall ability to perform whole procedure</td>
<td>Was the procedure performed with no intervention from supervising clinician</td>
<td></td>
</tr>
</tbody>
</table>
Overall Summative Grade: ________________

Please make sure to give the resident your positive and negative feedback.

Positive points/ Areas of Strength:

Suggestions for development:

Please include an explanation of any rating below ‘meets expectations’:

Action agreed:
<table>
<thead>
<tr>
<th>6. Performs the technical aspects in line with guidelines</th>
</tr>
</thead>
<tbody>
<tr>
<td>Demonstrates manual dexterity and confidence; demonstrates correct procedural sequence with minimal hesitation and unnecessary actions</td>
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Development of the implant surgical technique and assessment rating system

Jung-Chul Park, Ji-Wan Hwang, Jung-Seok Lee, Ui-Won Jung, Seong-Ho Choi, Kyoo-Sung Cho, Jung-Kiu Chai, Chang-Sung Kim

Department of Periodontology, Research Institute for Periodontal Regeneration, Yonsei University College of Dentistry, Seoul, Korea

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Park et al J Periodontal Implant Sci 2012

- Approach based on medical surgical assessment protocols
- Implant placement procedure performed on model
- Resident given instructions detailing what they are being asked to do
- Resident is videotaped and the recordings are later watched by expert surgeons who complete the iSTAR
1. Proper incision design using standard protocol
2. Fluent placement of incision without hesitation
3. Preservation of the keratinized mucosa

*Correctly performed: 5 / Incorrectly performed: 0
1. No tearing of the flap during the reflection
2. Minimal damage to the soft tissue
3. Enough extension for the visual access
1. Proper distance from neighboring implant and teeth
2. Parallel path with the neighboring teeth
3. Stable hand rest during the drilling
4. Fluent change and proper selection of drills
5. Adaptive drilling based on the bone quality
6. Acquisition of primary stability greater than 10 N/cm²
7. Installation of fixture within the bony housing

Park JPIS 2012
1. Bone graft material placement
2. Placement and fixation of membrane
3. Proper application of releasing incisions
4. Proper use of mattress suture for primary closure

Park JPIS 2012
Suture

1. Surgeon's square knot
2. Suture spacing 3-5 mm
3. Minimal tension applied

Park JPIS 2012
Park JPIS 2012
Future goals

- Development of nationally standardized assessment tool
Periodontal Resident Skill Assessment

- Assessment outcomes?
- Feedback effectiveness?
- Other concerns?
  - patient-based examination
San Diego
American Academy of Periodontology
102nd Annual Meeting
in Collaboration with the Japanese Society of Periodontology
and Japanese Academy of Clinical Periodontology