Knowledge Exercises

Principles for Instrumentation

Crossword Puzzle

Across

3 Refers to the hand that is usually used for holding a scaling instrument during treatment
5 To smooth and polish the surface of calculus (usually with an instrument that is not sharp) instead of removing it completely with a well-honed instrument
10 Sharpening stone that is attached to a rotary motor (two words)
11 One of three types of strokes that can be applied against the tooth surface with an instrument; a diagonal stroke
12 Used to sharpen files (two words)
13 Working stroke that is applied parallel to the occlusal surface of the tooth being treated
14 Connects the handle and the working end of a dental instrument
17 Refers to the unique area of each instrument that is used to carry out the purpose and function of that instrument (two words)
18 When you are using the modified pen grasp, the position of the instrument against this digit is extremely important for instrument control (two words)
19 Stroke that applies definite, well-controlled pressure on the surface of a tooth; refers to instrumentation of a tooth to remove calculus
20 Type of instrument that permits exchange or replacement of the working end (two words)
21 Held straight and not bent when working in the neutral position
23 Refers to the stroke that is applied with an instrument to accomplish a task, such as removing calculus
25 An artificial sharpening-stone material (three words)

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27  Refers to the fine line where the face and the lateral surfaces of a well-sharpened dental instrument meet (two words)

28  Refers to the cutting edge of an instrument when it is a fine line, has no width, and does not reflect light

29  Type of scaling instrument that has a single straight cutting edge turned at a 99° angle to the shank

31  Instrument used to dislodge heavy calculus by pushing horizontally from facial to lingual on the proximal surface of teeth
36 Type of stroke used when activating most scaling instruments
38 Refers to a light pressure stroke that disrupts dental biofilm from the root surface of a previously root-planed tooth surface
39 Area of the tooth where treatment is indicated and the stroke of the dental instrument is applied (two words)
41 Refers to an Arkansas stone that has metal particles ground into the surface; it needs to be cleaned by rubbing with emery paper
43 Type of straight scaler
46 The finger rest used so that force can be exerted during scaling
50 Refers to an instrument with paired working ends that may be either mirror images or complementary (two words)
54 Type of scaling instrument that has multiple cutting edges lined up on a round, oval, or rectangular base
55 Thinner type of instrument shank that may provide more tactile sensitivity and is used to remove fine calculus or for maintenance root debridement
56 Refers to the ribbed or knurled designs on the surface of an instrument handle
58 Scaling instrument with a rounded working end; there are two types—universal and area specific
60 Refers to a fine-grained instrument sharpening stone made of natural mineral materials (two words)
61 Refers to the acceptable state for the sharpening stone and testing stick before use for honing dental instruments
62 Term for the sharpened working end of a dental instrument
65 Dental hygiene instrument that is usually held by the nondominant hand using a modified pen grasp (two words)
66 Refers to a scaling instrument in which the relationship of the shank, blade, and handle are in a flat plane; indicates that the instrument is primarily used for anterior teeth
67 Metal particles removed during sharpening that remain attached to the edge of the instrument; sometimes referred to as the bur (two words)
68 Refers to a sharpening stone made with materials other than natural mineral stone
69 Working stroke that is parallel to the long axis of the tooth being treated

**Down**

1 Refers to the instrument stroke that is used to explore; uses a light pressure to magnify tactile sensitivity
2 Type of instrument shank designed to help give better access to very deep pockets
4 Describes the relationship between the working end of the instrument and the tooth surface being treated
6 Refers to a sharpening technique in which the dental instrument is stabilized against the edge of an immovable work area with the nondominant hand and the stone is applied at the appropriate angle (two words)
7 Refers to a stroke that depends on the surface texture of the area being instrumented; lighter pressure is applied progressively as strokes continue and the surface becomes smooth (two words)
8 Digit that establishes a fulcrum when using a modified pen grasp during instrumentation (two words)
9 Type of instrument handle that is lighter weight, enhances tactile sensitivity, and lessens clinician fatigue
14 Refers to any scaling instrument with two cutting edges that meet in a point; can have a curved or straight blade
15 Refers to the size of the instrument handle; usually available in four sizes
16 A body part that is bent at 90º when working in the neutral position
20 Type of instrument shank that is designed to help adapt the instrument to difficult-to-reach areas, such as the distal surfaces of molars (without the hyphen)
22 Relaxed and level when working in the neutral position
24 Type of lateral pressure when scaling that contributes to burnishing of calculus
26 Hand position that is used to hold a dental instrument (three words)
28 Type of instrument with only one working end (two words)
30 Number used to identify a specific instrument (two words)
32 Combined push and pull stroke commonly used to activate a periodontal probe (two words)
33 Artificial sharpening stone that is cleaned by scrubbing with water and repaired by using a Joe Dandy disc to remove groves (two words)
34 Refers to using the mirror to view or provide light to any area of the mouth
35 Sharpening method in which the flat stone is placed on a steady surface and the instrument is moved across the surface of the stone
37 Pressure that is required of an instrument to the tooth during a scaling procedure
40 Thicker, stronger, less flexible instrument shank needed for the removal of heavy calculus deposits
42 Sharpener with a working end made of tungsten carbide steel and a handle made of stainless steel (two words)
44 Refers to the angle formed by the working end of the instrument and the tooth surface; usually 70–80°
45 Single, unbroken movement of the instrument as it is applied against the tooth surface
47 Course-grain sharpening stone useful for preliminary sharpening of an excessively dulled instrument
48 Refers to development of the control, coordination, and strength needed to become proficient in the efficient and effective use of dental instruments
49 Place on a tooth where the third finger of the hand is placed during instrumentation to provide stabilization and control (two words)
51 Type of lateral pressure that can result in gouging of the root surface, patient discomfort, and clinician fatigue
52 Position of wrist, forearm, elbow, and shoulder that prevents occupational pain risk for dental hygienists
53 Refers to the cutting edge of an instrument when it appears rounded and has a shiny surface that reflects light
57 Describes the position of the blade of an area-specific Gracey curet
59 Removal of inflamed soft tissue inside a periodontal pocket
63 Another word for using a sharpening stone to sharpen a dental instrument
64 Cylindrical-shaped sharpening stone that is applied to the face of the instrument rather than angled along the side of the cutting edge

**Equipment and Techniques**

The following questions help you look at each type of instrument from several perspectives. If possible, have real instruments available to look at as you are doing these exercises so you can thoroughly understand the instruments' similarities and differences and visualize their parts.

1. Locate and label each of the following parts on the instrument shown in Figure 36-1.
   - Blade
   - Shank
   - Lower shank
   - Handle
   - Serrated surface of the handle
2. The instrument shown in Figure 36-1 has a relatively ___________ shank shape and is probably intended for use on anterior teeth.
3. Label the instruments shown in Figure 36-2.
   - Scaler
   - Curet
4. Label the following areas of both instruments shown in Figure 36-2.
   - Pointed tip
   - Rounded toe (tip)
   - Cutting edges
   - Area of the cutting edge that is adapted to the tooth during scaling
   - Face of the blade
   - Terminal shank
5. Match each description below to the letter that indicates the appropriate instrument shown in
6. Label the following areas on the working ends of each of the instruments shown in Figure 36-3.

- Rounded toe (tip)
- Pointed tip
- Face of the blade
- Cutting edges
- Area of the cutting edge that is adapted to the tooth when scaling
- Terminal Shank
- Lateral surface and back of the blade

7. Match each description below to the letter that indicates the appropriate instrument shown in Figure 36-4 by writing the correct letter in the space provided.

- Area-specific curet
- Universal curet
- Scaler

8. Label or mark the following areas on the working ends of each instrument shown in Figure 36-4.

- Face of the blade
- Cutting edges
- Terminal Shank
- Lateral surface(s)
- Back of the blade

9. Without looking at the figure in the textbook, draw a straight line on Figure 36-4 to indicate how the face of the sharpening stone would be
placed (and angled) to sharpen each of the cutting edges of each instrument shown. After you draw your lines and label each angle, use a protractor to measure those angles. If your diagram is not correct, erase your lines and redraw them, using the protractor to help you place the angle of your sharpening stone correctly.

10. Imagine that you are using the moving-stone technique to sharpen the instruments shown in Figure 36-4. Draw an arrow to indicate the direction of the stroke in which you would apply the most pressure as you move the stone. (Hint: This is also the direction you would finish each area as you are sharpening.)

11. List the disadvantages of using a power-driven sharpening technique.

12. When you are activating your instruments during dental hygiene treatment, the proper modified pen grasp is controlled and firm, but not tight and rigid. What are the effects of a grasp that is too tight and rigid?

13. What factors can influence your risk for cumulative trauma injury and pain from incorrect use of instruments during dental hygiene procedures?

**Discovery Exercises**

The only real way to become competent in the skills described in this chapter of the textbook is to practice. It is, of course, difficult to help you do that in a workbook format. But here are some exercises you can do on your own to help you become competent in identifying instruments and practicing the principles of instrumentation. If you'd like, work in small groups with two or three of your student colleagues. Using the information and descriptions in Chapter 36 in the textbook, group members can provide feedback about each person's instrument technique.

1. Gather together a variety of instruments and lay them out on a table in front of you. Examine them carefully and thoroughly, identifying the instrument parts, the types, and the adaptation characteristics (such as the angle of the shank) of each instrument you have available. Then practice picking up the instrument in the modified pen grasp, placing a fulcrum on the tip of the thumb of your nondominant hand and adapting the blade of the instrument on your fingernail in the correct position for activation.

2. Examine each instrument to determine its characteristics—such as balance, shank length, fabrication materials, shape and rigidity of the shank. Discuss the purpose and uses of each instrument. Think about area of the mouth the instrument is appropriate for, the technique the instrument is intended for (heavy calculus or root planing, for example), and any other indications/contraindications for use that pertain to the instrument's design.

3. Examine each instrument to determine whether or not the cutting edge is sharp. Practice the correct placement of a sharpening stone to sharpen each instrument.

4. To develop your dexterity, practice each of the strength, stretching, writing, and instrument exercises described in the “Dexterity Development” section of Chapter 36 in the textbook.

5. Sit comfortably in a chair that has no arms. Practice placing shoulders, arms, elbows, and wrists in a neutral position. While you are sitting there, practice each of the exercises in Figures 36-20 and 36-21 in the textbook.

**EVERYDAY ETHICS**

Refer to the ADHA and CDHA Codes of Ethics (Appendices I and II in the textbook) and Framework for Making Decisions (Table 1-2 in the textbook) as you discuss the following scenario with your classmates.

Diane just finished practicing her first month as a registered dental hygienist. She took a moment to reflect on the challenges of seeing a full schedule of patients each day. Overall, Dr. Dakin has been pleased with her work, but Diane recounted one day when she missed two obvious subgingival pieces of calculus on teeth #27 distally and #28 mesially. It wasn’t enough that she accidentally skipped that area, but Dr. Dakin jokingly made a few negative comments that embarrassed Diane. He smiled at the patient and said, “You’ll be fine.”

After he left, the patient turned to Diane and said, “What was that all about?”
Diane simply answered, “Oh, he likes to tease me sometimes.”

Diane pondered what she would do if this situation occurred in the future.

1. Given the hygienist’s neophyte status as a clinician, how could she address Dr. Dakin’s negative comments? Include the terms beneficence and nonmaleficence in the discussion.

2. What should be said to the patient regarding what occurred?

3. Describe Diane’s alternatives to prevent a recurrence.

FACTORS TO TEACH THE PATIENT

Today is your first scaling and root planing appointment with Mrs. Lorna Patel. (You spent a lot of time with her in the assessment chapters of this workbook; see her Patient-Specific Care Plan in Appendix D.) When you open your sterilized instruments and line them up on the tray, Mrs. Patel expresses amazement at the number of them and comments on their different shapes. When you begin to check each instrument for sharpness before using them, she wants to know what you are looking for.

Use the example of a patient conversation in Appendix C as a guide to write a statement explaining to Mrs. Patel why you have so many instruments on your tray and why you need to make sure they are well honed before you begin her treatment. Use the conversation you create to educate a patient or friend who is not a student colleague.

This scenario is related to the following factors:

- Why it is necessary to use a variety of instruments for scaling.
- Benefits of using a finely sharpened instrument for calculus removal.
- Harmful effects of using dull instruments.