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3  **Why Are We Here?**

- Identify & preserve inst shape, sharpness, strength
- Understand inst landmarks & how to use them
- Evaluate, try, compare diff methods & technology
- ????????????????

4  **A Dull Story**

- New (big & fat) inst
- Use it, wear off metal edges (deform)
- Blunt edges harder to control, slip & slide
- Grip & press harder
- Less tactile sensitivity
- More strokes (repetitive motion)
- Burnish calculus, work harder
- Fatigue, possible trauma & risk
- Sharpen: deform it more?

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7  **Sharpening Objectives:**

- Accuracy, consistency, speed, simplicity, comfort
- Maintain original shape
- Remove minimal metal
- Precision sharpness

8  **How often should hygiene instruments be sharpened?**

9  **Before each patient, and at the first sign of dullness**

10  **When To Sharpen**

- During appointment?
  - Risk of injury, exposure (hand stone)
  - Contamination of stones, devices
  - Use back-up pre-sharpened scalers
  - Ergonomics & scaling effectiveness
- Sharpen sterile instruments
  - Autoclave first, may be unwrapped
  - Autoclave after, package

11  **Sharpening Essentials**

- Light
- Magnification
- Sterilized instruments
- Plastic test stick, ring
- Cotton swabs & alcohol
- Gauze
- Stones / Sharpeners
- Lubricant / cleaner
- Table (elbow on table, inst eye-level)
- Gloves, eyewear

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How much are you seeing?

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14  **Hygiene Instruments**

- <sup>1</sup> • Sickle scalers
  - Supra gingival
  - Pointed tip
  - Sharp back
  - Double edged
- Universal cures
- Supra & sub
- Round tip

- Round back
- Double edged

- 2 • Graceys
  - Sub gingival
  - Rounded tip
  - Rounded back
  - Single edged\*

\*Except double bladed Graceys

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16  **Dull Instruments**

17  **Sharp Instruments**

18  **Different Metals**

- High carbon – rust
  - Saturated vapor sterilizers
- Stainless steel
  - Variable qualities
  - Amount of nickel = important
  - Tempering, cryogenics in higher quality
    - EverEdge: honed to higher luster
  - Density affects:
    - Durability
    - Length of time inst stay sharp
- Retipping ?????

19  **Key Instrument Landmarks**

- Terminal shank
- Working end:
  - Blade face
  - Blade heel

- Blade toe / tip
- Lateral surfaces
- Back

20  **Terminal shank = focal point to align blade to stone**

21  **Curved Sickle Scaler**

22  **Sickle Scaler**

23  **Universal Curette**

24  **Gracey Curette**

25  **Curette Labeling**

- Identify working end by number closest to it

26  **Sharpening**

27  **Stones:**

- Composition
  - Natural / synthetic
  - Density varies
- Grit
  - For re-contouring: coarse, follow with fine
  - For frequent honing: med, fine
- Lubrication
  - Oil / water / dry
- Shape
  - Conical & cylindrical: for blade face
  - Flat, wedge: for sides & face, toe

28  **India**

- India (brown, orange)
  - Synthetic (aluminum oxide + dense binder)
  - Moderate cutting speed, slow stone wear
  - Come in fine, med grit: maintenance / re-contouring
  - Oil required

–Flat & Wedge shapes

29  **Arkansas**

- Arkansas
  - Natural
  - Cut slower than synthetic
  - (slowest stone choice)
  - Fine: for maintenance
  - Oil (floats filings makes sludge) or dry
  - All shapes

30  **Ceramic**

- Ceramic
  - Synthetic (aluminum oxide + soft binder)
  - Cuts fastest, stone wears faster
  - Fine & med grit: maintenance
  - Coarse: re-contouring
  - Water (no sludge)
  - Cylindrical & flat shapes

31  **Diamond Stones**

- Industrial diamonds on metal
- Rough stones have spaces btw diamonds
- Smooth stones - continuous diamonds
- Hardest, fastest, stones
- Remove most metal
- Also used to re-flatten worn, grooved sharpening stones

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33  **Honing vs. Re-contouring**

1 Honing

- Remove a small amount of metal
- Extend instrument life
- Preserve shape
- Fine stone
- Hone / each use

- 2 Re-contouring
  - Major change in shape
- 34  **Sharpening Variables**
  - Stone-to-blade face angle
  - Stone-to-blade heal/toe angle
  - Stone pressure
  - Consistency of angles & pressure through stroke
  - Consistency between strokes
  - Fatigue, lighting, mood, time limits and time of day
- 35  **Visualizing Stone-to-Blade Face Angle**
  - Correct      Too vertical      Too Open
- 36  **“Free” Hand Sharpening Variables**
- 37  **Estimating Optimal Angle**
  - Stabilize stone, or one hand
  - Maintain angle while moving instrument or stone in “straight” line
  - Many move both instrument and stone in fluid motion
  - Increases variables
- 38  **Instrument Grasp**
  - Hold in non-dominant hand
  - Brace index finger or thumb near top
  - Counterbalance blade pressure
  - Blade @ 6 o'clock
- 39  **Instrument Position - Sickle Scalers**
  - 1 • Right - Handed
  - 2 • Left - Handed
- 40  **Clock Imagery, Pg. 2 & back**

- Universals & sickles:
  - T shank @ 12:00
  - Face horizontal
  - Stone @ <11:00 / 1:00
- Stationery inst, move stone

41  **Universal Scalers**

42  **Stone – Blade – Face Angles**  
 Right handers      Left handers

43  **Stone Grasp**

- Grasp lower half in dominant hand
- Hold stone @ 12:00
- Thumb on edge towards you
- Fingers on edge away
- Stabilizes stone
- Move entire arm in fluid up / down motion: minimize arm “swing”

44  **Sickle Scalers, Universal Curettes**

- 1 • R-hand: stone @ 4 min after
- 2 • L-hand: stone @ 4 min before

45  **Sharpening Instrument Position – Universal**

- Brace inst – palm grasp, index or thumb
- Elbow on table
- Blade @ 6:00, toe towards you

46  **Stone Position- Universal Curette**

- Place stone vertically, then:
- Open angle, smooth stroke
- Start @ heal, work towards toe
- Long strokes, moderate pressure

- Sludge, filings along whole blade

47  **Sharpening Opposite Cutting Edge – Universal**

- Rotate inst – point toe away
- Secure grasp

48  **Rounding the toe, Universal Curette**

- Align stone with blade face, then tilt up to 2:00, 10:00
- Consistent overlapping motion
- Rotate around toe, maintain shape

49  **Finishing – Universal Curette**

- Toe toward you
- Rotate stone from heel to toe
- Remove wire files

50  **Test Stick**

- 1 • Non-dominant hand
  - Thumb / index finger
  - ½” from top
  - Hold vertical
- 2 • Test cutting edge
  - Test entire blade
  - Sharp edge bites, grabs
  - Metallic sound when removed
  - Dull edge slides
  - Inst slides if T shank = off
  - Shaving stick dulls blades

51  **Test - Instrument Position - Sickle Scaler**

52  **Testing for Sharpness**

- Page 15, 20
- Check full length of blade



- Look for sludge, filings
- Look for facet at edge
- Loupes, light allow visualization of facet along edge
- Bring inst around behind stick, fulcrum on opposite side
- Duplicate scaling angulation
- Sharp edge bites - don't shave

53  **Sharp Blade vs. Dull Blade**

54  **Instrument Position – Testing Universal**

- 1 • Right - Handed
- 2 • Left - Handed

55  **Sharpening Gracey Curettes**

- To get the blade face horizontal, tilt the T shank (large model)

56  **Clock Imagery, Pg. 2 & back**

- Graceys:
  - T shank @ <1:00
  - Face horizontal
  - Stone @ <11:00 / 1:00
- Stationery inst, move stone

57  **Right-handers:  
Blade face to stone angle**

58  **Left-handers:  
Blade face to stone angle**

59  **Gracey Stone – Blade – Face Angle**

60  **Gracey Angles**

Right - handers      Left - handers

61  **Sharpening Gracey – Instrument Position**

- 1 • Right - Handed

- 2 • Left - Handed

62  **Stone Positions - Gracey Curettes**

- 1 • R-hand: stone @ 4 min after
- 2 • L-hand: stone @ 4 min before

63  **Rounding the toe - Gracey**

- 1 • Right - Handed
- 2 • Left - Handed

64  **Testing for Sharpness**

- Page 15, 20
- Check full length of blade
  - Look for sludge, filings
  - Look for facet at edge
  - Loupes, light allow visualization of facet along edge
- Bring inst around behind stick, fulcrum on opposite side
- Duplicate scaling angulation
- Sharp edge bites - don't shave

65  **Testing the Gracey Curette**

- 1 • Right - Handed
- 2 • Left - Handed

66  **Guided Sharpening**

- Stabilizing devices to assist alignment of inst & stone
- Guide hand movement
- Non mechanized:
  - Premier Disc Sharpener
  - PDT Gleason
  - Cutting Edge Technology grinds 2 sides & bottom in groove
  - Suter-Sharp

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- 68  **Sidekick**
- Guideplate with guide channels
    - Gracey guide channel
    - Sickle / universal guide channel
    - Toe guide
  - Stone moves in 1 plane
  - Honing: for maintenance: not re-contouring
  - Sterilizable operating parts
- 69  **Sidekick Guideplate**
- 2 channels & toe guide
  - 2 areas of contact:
    - Back of blade rests against vertical backstop
    - T shank rests on shank guides
- 70  **Sidekick Guideplates**
- “G” for Gracey, “S/U” for Sickle and Universal
- 71  **Positioning Sickle Scaler**
- Grip instrument with one hand, use other hand to hold the sidekick securely.
- 72  **Sharpening Sickle Scaler**
- Turn on
  - Place middle of blade-back in “S/U” channel against backstop
  - Align terminal shank w/ guide
  - Move blade back + forth gently 2 -3 times lightly
- 73  **Sharpening Sickle Scaler**
- Gentle pressure only
  - More pressure runs down motor
- 74  **Sharpening Sickle Scaler - Sidekick**
- Blade side aligned correctly w/ stone
- 75  **Testing Sickle Scaler**
- Sharp blade “bites”

- 76  **Sharpening Universal Scaler**
- Turn on
  - Insert the blade in “S/U” channel guide.
- 77  **Sharpening Universal Scaler**
- Place middle of blade-back against backstop
- 78  **Sharpening Universal Scaler**
- Establish fulcrum near top of sidekick, secure Sidekick with other hand
- 79  **Rounding the toe, Universal Scaler using the Sidekick.**
- Keep blade back against wall of hole
  - Roll & “sweep” 2 – 3 times lightly
- 80  **Sharpening Gracey**
- Use guideplate labeled “G”
- 81  **Blade Angle - Gracey Curette**
- Sharpen “down” side: (towards stone)
  - Turn on
  - Align in G channel (back against backstop, T shank against guide)
  - Stabilize Sidekick, fulcrum, light grasp
  - Gentle pressure, slow back & forth, 2 – 3 times
- 82  **Gracey Curette sharp test**
- Sharp blade will bite into test stick – Don’t shave
- 83  **Non-mechanized Devices**
- Gleason Guide
    - Stone stationary
    - Move instrument
  - Suter Sharp - explorers
- 84  **Sharpening**
- 85  **Testing For Sharpness**

- Press acrylic testing rod in to blade
- Sharp blade “bites” or sticks
- Do not scrape rod
- Loupes and light allow visualization of edge

86  **Mechanical Devices: Benefits**

- Delegation of instrument sharpening
  - Consistent precision sharpening by different staff members
  - More efficient use of staff time
- Recontouring of old hand sharpened instruments
- Easily shared instruments

87  **To Get The Best Results...**

- High quality instruments:
  - Shank to blade face to lateral side relationships = true
  - High quality metal
- Avoid retipping
  - Wide, thick bulky blades
  - “Off” designs
  - Difficult to position
  - May require heavy recontouring

88  **Retipping: Metal Quality**

- Lesser quality steel:
  - Wears
  - Corrodes easily
- Compromises structural integrity
  - Peeling metal
  - breakage

89  **Irregular Angles**

- Retipped or deformed blade angles vary from original design
- Affects scaling angulation
- Affects ergonomics

- Need to recontour

90  **Instrument Balance**

- Unbalanced instruments are harder to use
- Increases hand fatigue
- Reduces precision

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92  **Clock Angles**

**Right-handers**

**Left-handers**