COURSE NAME : **60.42 Initial Wire Insertion**

COURSE DESCRIPTION :

60.42 Initial Wire Insertion Course

Presentation: **25 minutes** Run Time, Knowledge Quiz: **22 Questions**, **2 CE Credits**

Contents of the Initial Wire Insertion Course

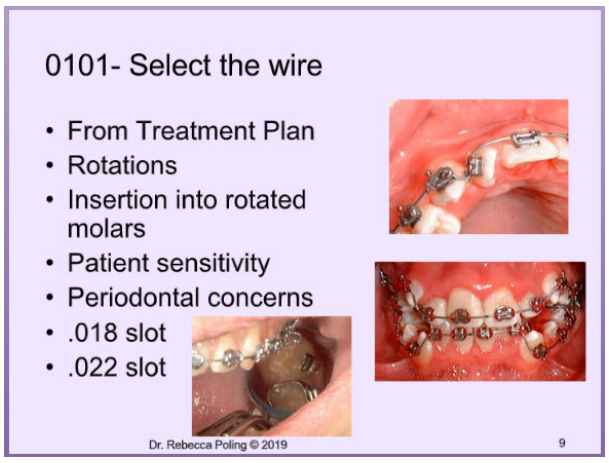
This course teaches many important concepts about inserting the first orthodontic wire after braces have been placed on many of the teeth in the arch.

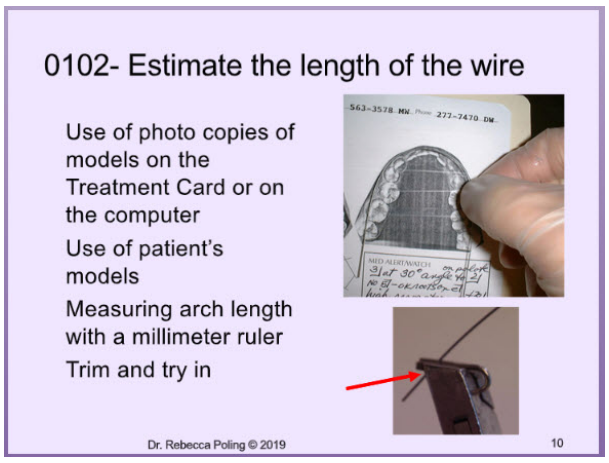
Goal: The goal of this course is share with you the procedures for selection and insertion of the initial alignment wires in a newly bonded patient.

Objectives: At the conclusion of this course, the student will be able to List, describe, and demonstrate each step of selecting, inserting, and tying in an initial wire in a newly bonded patient.

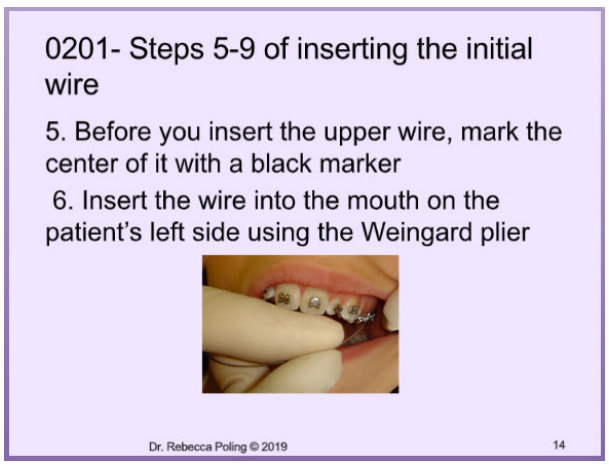
Sections of the Initial Wire Insertion Course

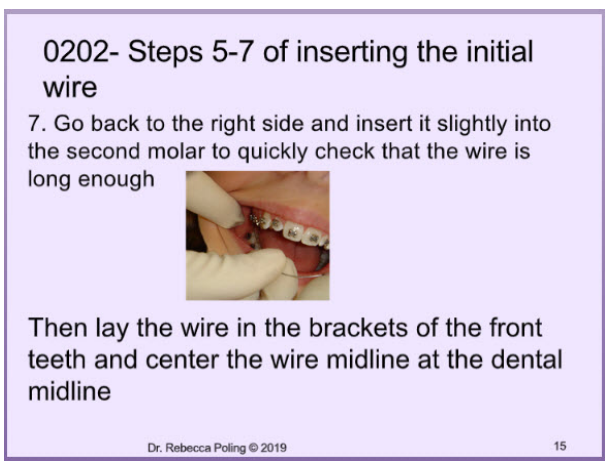
1. Selecting and Preparing the Initial Wire



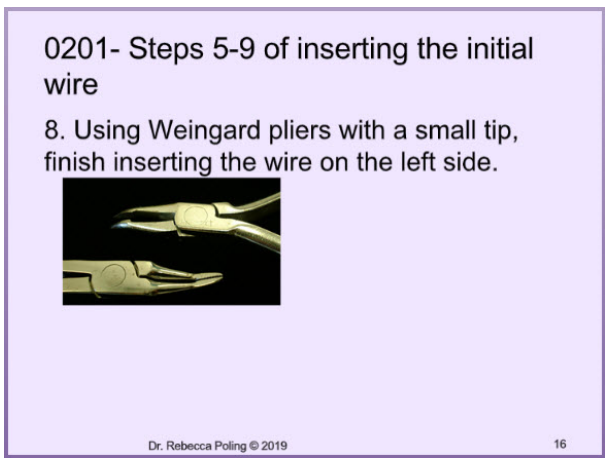


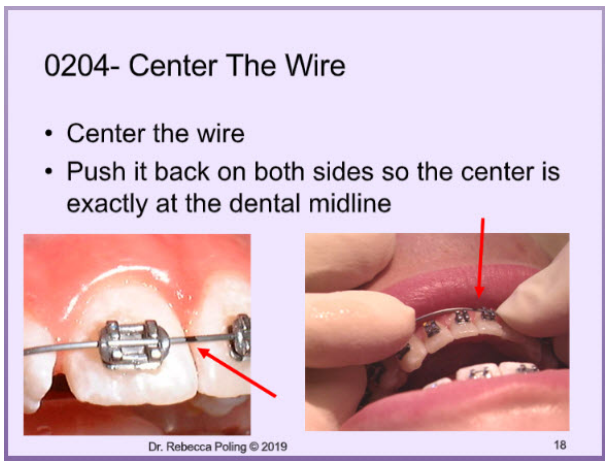
2. Inserting The Initial Wire





3. 0203- Step 8 of inserting the initial wire





4. Wire Engagement Into The Bracket Slot

0301- Wire Engagement

- Put the wire into the most rotated anterior tooth
  - Use of Dentronix wire director
  - Use of snub nose pliers if it is an edgewise wire
  - If the wire is heat sensitive, cool it until it is dead soft
    - Ice
    - "Cool tool"
    - Coolant spray

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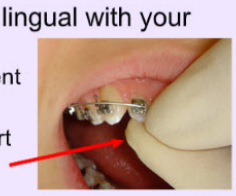
0401- Basics of Tying The Wire Into The Bracket Slot

- Tie in the most rotated tooth first
- Push the wire into the bracket rather than trying to bring the bracket or tooth to the wire
- Support the tooth on the lingual with your fingers
  - For better wire engagement
  - For more control
  - For greater patient comfort



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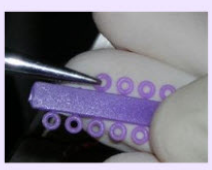
5. Chapter 4: Tying In A Wire With Rubber Ties

0404- Gripping An Alastic Tie

- Position the tips over the rim of the ring but not inside the lumen which will make placement onto the tie wings difficult



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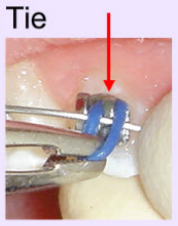
0405- Placing an Alastic Tie

- Hold the instrument near the tips
- Place the ring of the tie over one upper wing of the bracket
- Use a wrist movement to stretch the tie down over the lower wing



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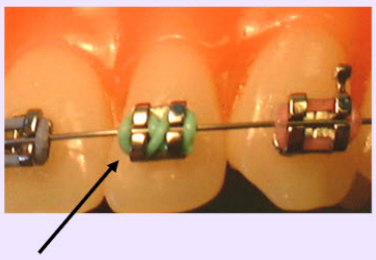
6. Placing a Figure 8 or Butterfly tie

0406- Placing a Figure 8 or Butterfly tie



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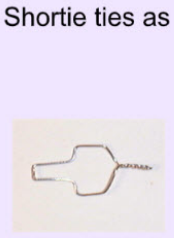
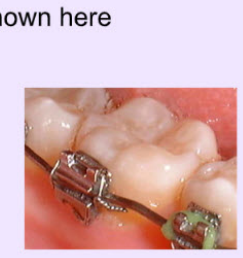
7. Wire Ligature Ties

0501- Types of wire ligature ties

- Long ends used until the 1970s
- Shortie ties as shown here





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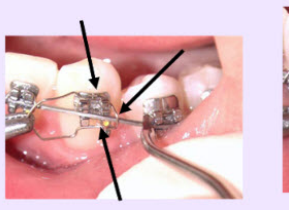
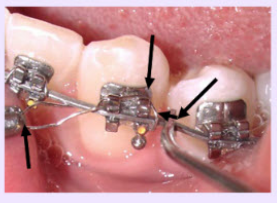
0602- Second steps in placing a wire ligature tie

- Solid section of tie over portion of alignment wire in slot that needs most engagement





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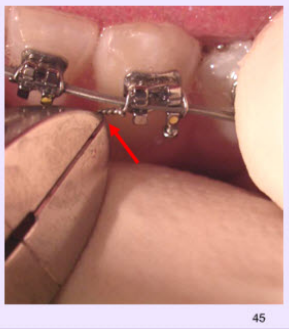
8. Final step in placing a wire ligature tie

0607- Seventh steps in placing a wire ligature tie

- Tuck tail under bracket using ligature cutter tips, wire director or plugger
- Check for excessive sharpness



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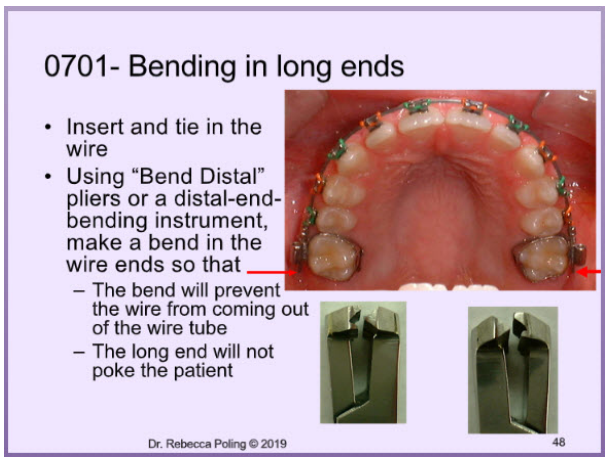
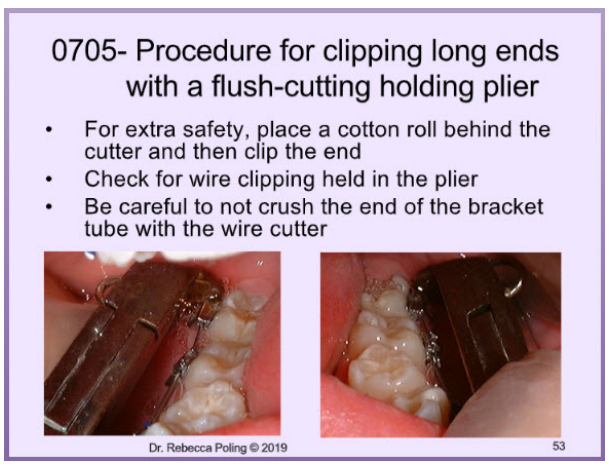
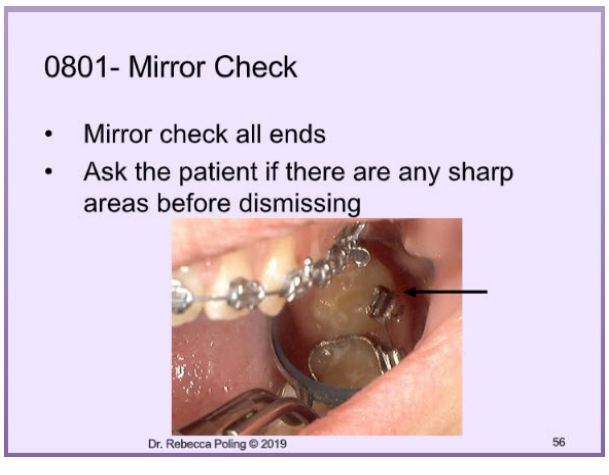
9. Bending, Clipping, and Checking Arch Wire Ends

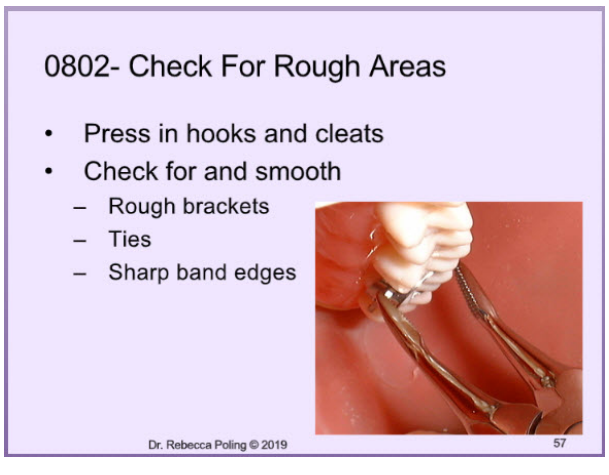


10. Procedure for clipping long ends with a flush-cutting holding plier



11. Final Checks





Course Resources:

This course includes the following resources:

1.Initial Wire Insertion-Script of the narration of each slide of this presentation.

2.IW-01: Initial Wires Insertion and Tie in Steps Checklist

3.IW-02 Initial Wire Engagement and Tie-in Quality Checklist

These resource documents are provided to help the student learn and retain the important concepts of the course. The checklists are designed for the student to learn a standard of selecting, inserting, and tying in an initial orthodontic wire. Also, the student needs to know when the steps have resulted in the highest standard of performance, and if not, what are the problems the student should correct to achieve a high standard.

Learning Activities of the Course

The learner views this course presentation as many times as it takes to understand the important concepts, which may be measured by answering the 22 embedded quiz questions correctly. These quiz questions help the learner focus on the important points. Then the learner rests his/her brain so the learning can be transferred to long term memory. Then the learner takes the Knowledge Quiz for the course to measure his/her learning of the objectives of the course. There is one Steps Checklist and one Quality Results Checklist to help the student learn the steps of this procedure and evaluate the quality of the results of the procedure.

SCORM Tracking of Each Student's Learning Activities and Recording on the Student Dashboard Report

Each student's learning activities such as correctly answering presentation embedded quiz questions, presentation viewing time, Knowledge Quiz completion time, Knowledge Quiz Score, and other learning data, are tracked so that a "learning analysis" can be done for each student and for the quality of each course. This data documents student performance and reports it on the Student Dashboard as well as in the Gradebook. This holds the student accountable for learning. In the future, student performance of this procedure in the clinic may be used to identify students who have not learned to actually perform the procedure, so that intervention can be made to help the student become proficient. No data is share with any entity. If data is ever used for learning research, all data will be de-identified following research protocol.

Who should take this course?

All orthodontists, orthodontic residents, and orthodontic assistants should learn and perform this procedure when they are in training.

COURSE NAME : 60.41 Orthodontic Wire Basics

COURSE DESCRIPTION :

60.41 Orthodontic Wire Basics Course

Presentation: **30 minutes** Run Time, Knowledge Quiz: **24 Questions**, **2 CE Credits**

Contents of the Orthodontic Wire Basics Course

This course teaches the important concepts for selecting the appropriate wire to insert based on the phase of treatment and the preferences of the doctor.

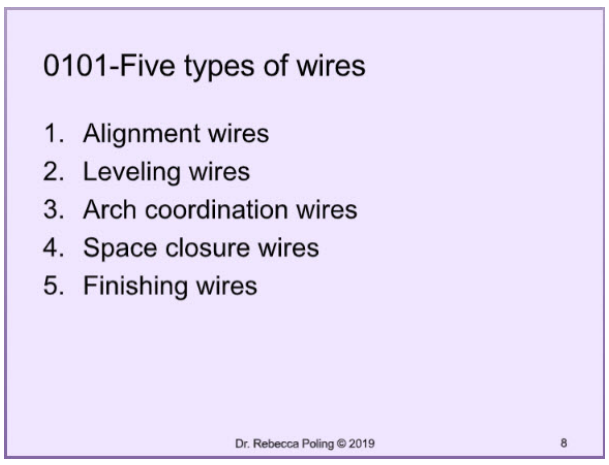
Goal: The goal of this course is to share information about different types of wires used in orthodontics and the purposes of these different wire types.

Objectives: At the conclusion of this course, the student will be able to:

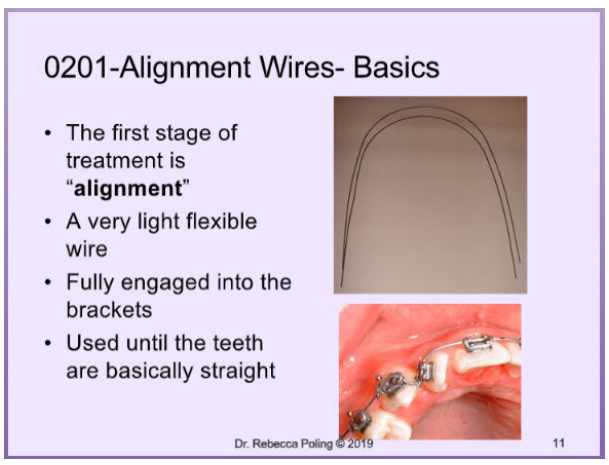
1. Describe 5 types of orthodontic wires and the phase of orthodontic treatment in which each type is used.
2. Describe the purpose of each wire type
3. Describe the characteristics of each wire type

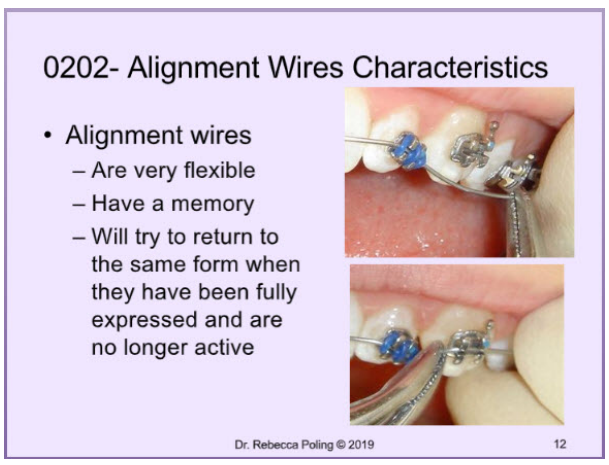
Sections of the Orthodontic Wire Basics Course

1. Types of Wires- Five types of wires and **five phases** of orthodontic phases of treatment.

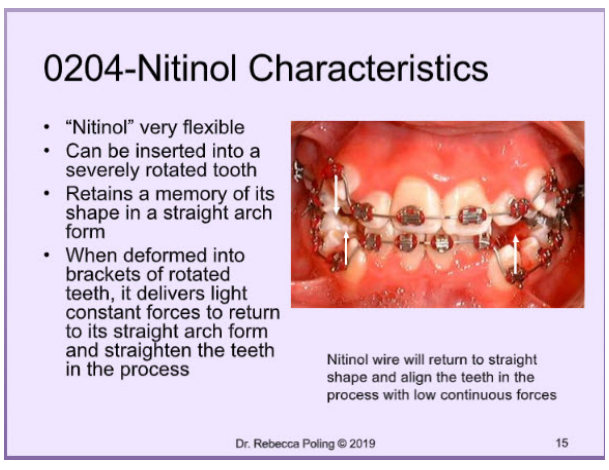


2. **Alignment Wires**





3. **Nitinol**



4. **Thermal Copper Nitinol**

0207-Thermal Nitinol History

- Copper Nickel Titanium or Copper NiTi
  - When the body heats the wire up, the memory of the wire activates, the wire wants to straighten and moves the tooth in the process
  - Initially developed as antennae on satellites by NASA so some orthodontists explain to patients that they use “space age” wires

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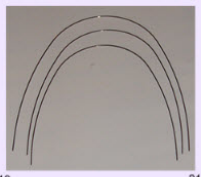
5. **Superelastic Nitinol**

0209-Superelastic Nitinol

- “Superelastic Nitinol” has the range of force between the original Nitinol and Thermal Nitinol
- Variations in wire properties allow the orthodontist to select the best wire for the individual patient relative to degree of rotations and patient sensitivity to force loads



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6.**Making a “Bend Back” in Nitinol**

0210-Making a “Bend Back” in Nitinol

- When Nitinol is inserted over a long span, a “bend back” may need to be placed in the end of the wire to prevent the wire from slipping out of the last tube
- Heat the end of the wire with the flame of a lighter where the bend back will be placed
- Bend in the bend back on each side
- Insert the bent wire end through the last tube
- Check that the bend back is not impinging on the tissue

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7. Selecting the Best Alignment Wire

0213-Selecting the Best Alignment Wire

- Selection based on
  - degree of rotations
  - patient’s sensitivity to pain
  - expected degree of hyalinization of the cells in the socket
    - Recent research indicates that just enough pressure in the cells to allow continued blood flow without causing excessive cellular death is better and the living cells will cause the tooth to move faster with less pain

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8. Leveling Wires Characteristics and Types

0303-Leveling Wires Characteristics and Types

- Wires used for leveling are usually heavier
- Usually edgewise or rectangular for torque changes when leveling the Curve of Wilson
- Can use “memory” wires with a curve built into the flexible edgewise wire for delivery of constant gentle leveling forces

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9. Leveling Wires Basics

0301-Leveling Wires Basics

- The second stage of treatment is called "**leveling**"
- Curve of Spee is flattened out in the mandibular arch as well as in the maxillary arch
- Curve of Wilson also is flattened
  - The occlusal surfaces of the posterior molars are flat
  - Teeth are not torqued inward in the mandibular arch
  - Nor torqued outward in maxillary arch

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10. Typical Leveling Wires

0305-Typical Leveling Wires

- Flat edgewise stainless steel

- Reverse curve superelastic Memory wires

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11. **Arch Coordination Wires**

0401-Arch Coordination Wires Basics

- The third stage of treatment may be arch coordination and skeletal manipulation
- Wires to use when manipulating the arches in the sagittal or anterior-posterior plane
  - headgear
  - removable growth appliances
  - fixed growth appliances
  - orthognathic surgery
  - dentoalveolar compensations for compromise treatment such as with elastics

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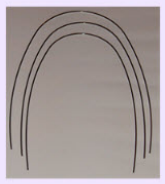
12. Arch Coordination After Expansion

0402-Arch Coordination Wires after arch expansion

- Wires to use during and after expansion or constriction in the transverse plane of space
  - Heavier wires to hold the expansion and maintain arch coordination



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13. Arch Coordinate, Space Closure, Friction

0502-Space Closure Wires and Friction Factors

- There are many factors that affect friction and space closure such as:
  - Bracket materials
  - Design of self-ligating brackets
  - Wire materials, size, and shape
  - Method of tying in the wire if not self-ligating
  - Method and degree of space closure forces
  - Bone, tooth, periodontal, and cellular factors

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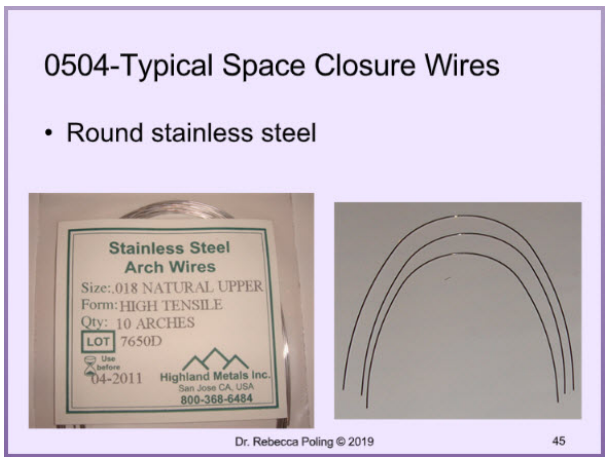
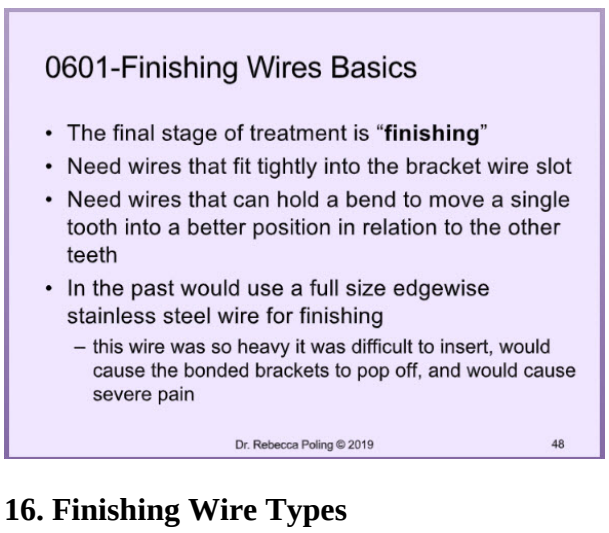
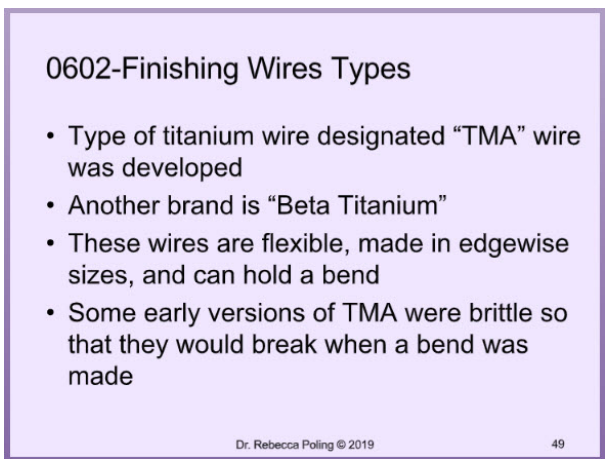
14. **Typical Space Closure Wires**



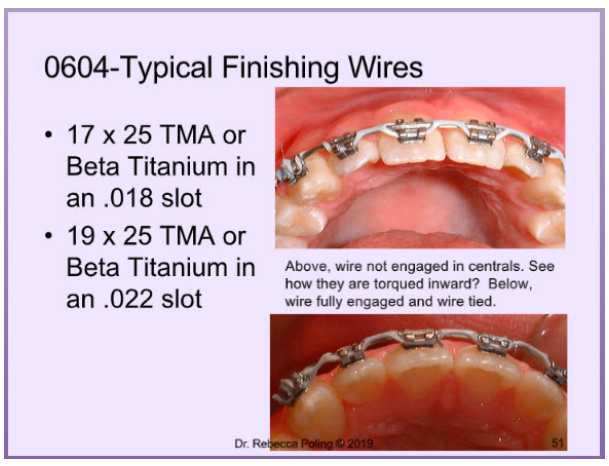
15. **Finishing Wires**



16. Finishing Wire Types



17. **Typical Finishing Wires**



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