POSITIONING OF THE FACIAL BONES

I. Lateral projection - facial bones
   A. Position of patient
   B. Position of part
   C. Central ray
   D. Structures shown
   E. Criteria for evaluation
   F. Modifications

II. Parietoacanthial projection - Waters method
   A. Position of patient
   B. Position of part
   C. Central ray
   D. Structures shown
   E. Criteria for evaluation

III. Acanthoparietal projection - Reverse Waters method
   A. Position of patient
   B. Position of part
   C. Central ray
   D. Structures shown

IV. Reverse Waters for Trauma Patient
   A. Position of patient
   B. Position of part
   C. Central ray
   D. Structures shown

V. PA axial Projection (Caldwell Method)
   A. Position of patient
   B. Position of part
   C. Central ray
   D. Structures shown

VI. Lateral projection - nasal bones
   A. Position of patient
   B. Position of part
   C. Central ray
   D. Structures shown

VII. Tangential projection - nasal bones
   A. Intraoral projection
      1. Position of patient
      2. Position of part
      3. Central ray
      4. Structures shown
   B. Extraoral projection
      1. Position of patient
      2. Position of part
      3. Central ray
      4. Structures shown
VIII. Submentovertical projection - Schuller method - zygomatic arches
   A. Position of patient
   B. Position of part
   C. Central ray
   D. Structures shown

IX. Tangential projection - zygomatic arches
   A. Position of patient
   B. Position of part
   C. Central ray
   D. Structures shown

X. AP Axial projection - Grashey-Towne method - zygomatic arches
   A. Position of patient
   B. Position of part
   C. Central ray
   D. Structures shown
   E. Criteria for evaluation
   F. Other methods

XI. AP Axial (Extraoral) projection - mandibular symphysis
    A. Position of patient
    B. Position of part
    C. Central ray
    D. Structures shown

XII. PA projection - mandible
     A. Position of patient
     B. Position of part
     C. Central ray
     D. Structures shown

XIII. PA Axial projection - mandible
      A. Position of patient
      B. Position of part
      C. Central ray
      D. Structures shown

XIV. Axiolateral Projections - mandible
     A. Position of patient
     B. Body of mandible
        1. Position of part
        2. Central ray
        3. Structures shown
     C. Symphysis of mandible
        1. Position of part
        2. Central ray
        3. Structures shown
     D. Ramus of mandible
        1. Position of part
        2. Central ray
        3. Structures shown
E. Miscellaneous projections
   1. Submentovertical
   2. AP Axial (Grashey-Towne Method)

XV. Axiolateral Oblique projection - TMJ's
A. General information about TMJ radiography
B. Position of patient
C. Position of part
D. Central ray
E. Structures shown
G. Other methods to demonstrate TMJ's
H. Panorex

POSITIONING OF THE FACIAL BONES

1. In the lateral projection of the facial bones the head rests on:
The MS plane is _______, the IPL is _______, and the IOMBL is ______ to the film.
The CR is enters:
What is demonstrated?
In cases of facial bone trauma, a/an ________ should be obtained to demonstrate ________,
this may indicate the presence of ____________________.

2. In the parietoacanthial projection or _____ method the head rests on the ______. The
   flexion of the head is adjusted so that the OMBL is _______ to the film, and the MMBL
   is ____ to the film. The CR exits the _________. This gives a/an _________projection
   of the ______________. What is the criteria for evaluation?

3. The reverse Waters is a/an _____________projection. The ________ base line is
   perpendicular to the film. The CR is:
   This will demonstrate:
   For trauma patients, if they are able to be positioned, describe how to do a true reverse
   Waters:

4. In the lateral projection for nasal bones, the CR is directed:
   This will demonstrate:
   Why are both lateral obtained?

5. The tangential projection for nasal bones can be obtained:
   What kind of film is used for the intraoral projection?
   How is the CR directed for both projections?
   This will demonstrate:
   If a tangential projection cannot be obtained, the _____ method can be substituted.

6. The Schuller method is a/an ________projection, the head rests on:
   the IOMBL is:
   The CR is directed:
This will demonstrate:

7. In the tangential projection for zygomatic arches, the head rests on the:
   The IOMBL is:
   The head is rotated _______ degrees _________ the side being demonstrated.
   This will demonstrate:
   It is especially useful for person with:

8. The Grashey-Towne method is a/an _____ projection. The head rests on:
   The MS plane is ______, the OMBL is ______ to the film.
   The CR is directed:
   This will demonstrate:
   This method is useful when:
   What other methods will demonstrate zygomatic arches?

9. The AP axial (extraoral) projection will demonstrate:
   The ____ rests on the film. The CR is directed:
   This will demonstrate:

10. In the PA projection of the mandible the head rests on:
    The _____ is perpendicular to the film. The CR is directed:
    This will demonstrate:

11. In the PA axial projection of the mandible, the head rests on:
    The CR is directed:
    This will demonstrate:

12. For the 3 Axiolateral projections, the patient is placed in the _______ position. To demonstrate the body of the mandible, the _____ is placed parallel with the film. The CR is directed:
    To demonstrate the symphysis of the mandible, the head rests on:
    The CR is directed:
    To demonstrate the ramus of the mandible, the head is adjusted so that:
    The CR is directed:

13. The submentovertical projection will demonstrate:

14. No matter what projection is being obtained for TMJ's, always get ____________ views.
    In the Axiolateral oblique projection for TMJ's, the head rests on:
    The AMBL is __________.
    Should the patient be moved between open & closed mouth views?
    Direct the CR:
    Are projections of both sides obtained?
    What is demonstrated in general?
    What does the Closed mouth view demonstrate?
    What does the Open mouth view demonstrate?
What are the best methods to demonstrate TMJ's?

15. What is a Panorex?
What will it demonstrate?
<table>
<thead>
<tr>
<th>PROJECTION</th>
<th>METHOD</th>
</tr>
</thead>
<tbody>
<tr>
<td>Parietoacanthial</td>
<td>Waters</td>
</tr>
<tr>
<td>Acanthoparietal</td>
<td>Waters</td>
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<tr>
<td>Submentovertical</td>
<td>Schuller</td>
</tr>
<tr>
<td>AP Axial</td>
<td>Grashey -Towne</td>
</tr>
<tr>
<td><strong>PROJECTION</strong></td>
<td><strong>HEAD RESTS ON OR IS:</strong></td>
</tr>
<tr>
<td>Lateral - facial</td>
<td>parietal eminence</td>
</tr>
<tr>
<td>Parietoacanthial (Waters)</td>
<td>extended chin</td>
</tr>
<tr>
<td>Reverse Waters for trauma patient</td>
<td>occipital bone</td>
</tr>
<tr>
<td>PA Axial (Caldwell)</td>
<td>forehead &amp; nose</td>
</tr>
<tr>
<td>Lateral - nasal</td>
<td>parietal eminence</td>
</tr>
<tr>
<td>Tangential - nasal</td>
<td>film in mouth</td>
</tr>
<tr>
<td>Submentovertical (Schuller) for zygomatic arches</td>
<td>vertex</td>
</tr>
<tr>
<td>Tangential for zygomatic arches</td>
<td>vertex, rotate head 15 degrees toward side being examined</td>
</tr>
<tr>
<td>AP Axial (Grashey-Towne)</td>
<td>occipital bone</td>
</tr>
<tr>
<td>AP axial for mandibular symphysis</td>
<td>mandibular symphysis</td>
</tr>
<tr>
<td>PA for mandible</td>
<td>forehead &amp; nose</td>
</tr>
<tr>
<td>PA Axial for mandible</td>
<td>forehead &amp; nose</td>
</tr>
<tr>
<td>Axiolateral Oblique - Body of mandible</td>
<td>body of mandible parallel to film</td>
</tr>
<tr>
<td>Axiolateral Oblique - ramus of mandible</td>
<td>on cheek so that ramus is parallel to film</td>
</tr>
<tr>
<td>Axiolateral Oblique - symphysis of mandible</td>
<td>extended chin, nose &amp; zygoma</td>
</tr>
<tr>
<td>Axiolateral Oblique for TMJ&amp;</td>
<td>turn head in 15 degrees from lateral position</td>
</tr>
<tr>
<td><strong>PROJECTION</strong></td>
<td><strong>CENTRAL RAY</strong></td>
</tr>
<tr>
<td>Lateral - facial</td>
<td>perpendicular at zygoma</td>
</tr>
<tr>
<td>Projection</td>
<td>Structures Shown</td>
</tr>
<tr>
<td>------------</td>
<td>------------------</td>
</tr>
<tr>
<td>Parietoacanthial (Waters) or Acanthioparietal</td>
<td>perpendicular at acanthion</td>
</tr>
<tr>
<td>Reverse Waters for trauma patient</td>
<td>30 degrees cepahlad - acanthion</td>
</tr>
<tr>
<td>PA Axial (Caldwell)</td>
<td>15 degrees caudad - nasion</td>
</tr>
<tr>
<td>Lateral - nasal</td>
<td>perpendicular - ½ inch below nasion</td>
</tr>
<tr>
<td>Tangential - nasal</td>
<td>along GML perpendicular to film</td>
</tr>
<tr>
<td>Submentovertical (Schuller) &amp; Tangential for zygomatic arches</td>
<td>perpendicular to IOML</td>
</tr>
<tr>
<td>AP Axial (Grashey-Towne)</td>
<td>30 degrees caudad - glabella</td>
</tr>
<tr>
<td>AP axial for mandibular symphysis</td>
<td>40-45 degrees toward mandibular symphysis</td>
</tr>
<tr>
<td>PA for mandible</td>
<td>perpendicular - acanthion</td>
</tr>
<tr>
<td>PA Axial for mandible</td>
<td>20-25 degrees cephalad - acanthion</td>
</tr>
<tr>
<td>Axiolateral Oblique - Body of mandible &amp; ramus of mandible</td>
<td>25 degrees cephalad</td>
</tr>
<tr>
<td>Axiolateral Oblique - symphysis of mandible</td>
<td>20 degrees cephalad</td>
</tr>
<tr>
<td>Axiolateral Oblique for TMJ's</td>
<td>15 degrees caudad - TMJ</td>
</tr>
</tbody>
</table>

**PROJECTION**

<table>
<thead>
<tr>
<th>Projection</th>
<th>Structures Shown</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lateral - facial</td>
<td>lateral of all facial bones</td>
</tr>
<tr>
<td>Cross table lateral - facial</td>
<td>air/fluid levels for trauma</td>
</tr>
<tr>
<td>Parietoacanthial (Waters) or Acanthioparietal</td>
<td>oblique frontal view facial bones - maxilla, nasal, nasal septum, zygoma, mandible</td>
</tr>
<tr>
<td>Reverse Waters for trauma patient</td>
<td>similar to Waters but some distortion</td>
</tr>
<tr>
<td>PA Axial (Caldwell)</td>
<td>orbital rims, maxillae, nasal septum, zygomatic arches, anterior nasal spine</td>
</tr>
<tr>
<td>Lateral - nasal</td>
<td>nasal bones, cartilage, anterior nasal spine</td>
</tr>
<tr>
<td>Tangential - nasal or Waters for nasal bones</td>
<td>medial or lateral displacement of fragments in fractures</td>
</tr>
<tr>
<td>Submentovertical (Schuller) - zygoma</td>
<td>both zygomatic arches</td>
</tr>
<tr>
<td>Tangential for zygomatic arches</td>
<td>one zygomatic arch, flat cheekbones or depressed fractures</td>
</tr>
<tr>
<td>---------------------------------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>AP Axial (Grashey-Towne)</td>
<td>both zygomatic arches and mandible rami</td>
</tr>
<tr>
<td>AP axial for mandibular symphysis</td>
<td>mandibular symphysis</td>
</tr>
<tr>
<td>PA for mandible</td>
<td>body of mandible, lower portion of rami</td>
</tr>
<tr>
<td>PA Axial for mandible</td>
<td>Medial or lateral displacement of fragments of fractures of rami. Rami and condylar processes of mandible</td>
</tr>
<tr>
<td>Axiolateral Oblique - Body of mandible &amp; ramus of mandible</td>
<td>body, rami, or mandibular symphysis</td>
</tr>
<tr>
<td>Axiolateral Oblique for TMJ's</td>
<td>TMJ's - open mouth - demonstrates mandibular fossa &amp; inferior and anterior excursion of condyle. Closed mouth - demonstrates Fx of neck &amp; condyle of ramus</td>
</tr>
<tr>
<td>Tomography</td>
<td>best way to demonstrate TMJ</td>
</tr>
<tr>
<td>Panorex</td>
<td>entire mandible seen on one film</td>
</tr>
</tbody>
</table>