



## Grounding Caption

This localization caption provides multi-dimensional spatial analysis of anatomical structures and pathological findings for this panoramic dental X-ray image, including:

Teeth visibility with center points (total: 29):

```
[
  {'point_2d': [652, 776], 'tooth_id': '45', 'score': 0.96},
  {'point_2d': [1063, 762], 'tooth_id': '36', 'score': 0.95},
  {'point_2d': [567, 579], 'tooth_id': '16', 'score': 0.93},
  {'point_2d': [1161, 566], 'tooth_id': '27', 'score': 0.93},
  {'point_2d': [503, 564], 'tooth_id': '17', 'score': 0.93},
  {'point_2d': [508, 738], 'tooth_id': '47', 'score': 0.92},
  {'point_2d': [740, 786], 'tooth_id': '43', 'score': 0.92},
  {'point_2d': [712, 587], 'tooth_id': '13', 'score': 0.91},
  {'point_2d': [1148, 741], 'tooth_id': '37', 'score': 0.9},
  {'point_2d': [946, 776], 'tooth_id': '34', 'score': 0.9},
  {'point_2d': [668, 599], 'tooth_id': '14', 'score': 0.9},
  {'point_2d': [623, 589], 'tooth_id': '15', 'score': 0.9},
  {'point_2d': [582, 761], 'tooth_id': '46', 'score': 0.9},
  {'point_2d': [697, 775], 'tooth_id': '44', 'score': 0.9},
  {'point_2d': [781, 774], 'tooth_id': '42', 'score': 0.89},
  {'point_2d': [994, 778], 'tooth_id': '35', 'score': 0.89},
  {'point_2d': [977, 583], 'tooth_id': '24', 'score': 0.89},
  {'point_2d': [907, 784], 'tooth_id': '33', 'score': 0.89},
  {'point_2d': [889, 581], 'tooth_id': '22', 'score': 0.88},
  {'point_2d': [1089, 570], 'tooth_id': '26', 'score': 0.88},
  {'point_2d': [760, 595], 'tooth_id': '12', 'score': 0.88},
  {'point_2d': [1025, 582], 'tooth_id': '25', 'score': 0.88},
  {'point_2d': [862, 777], 'tooth_id': '32', 'score': 0.86},
  {'point_2d': [932, 582], 'tooth_id': '23', 'score': 0.85},
  {'point_2d': [448, 710], 'tooth_id': '48', 'score': 0.85},
  {'point_2d': [802, 598], 'tooth_id': '11', 'score': 0.85},
  {'point_2d': [849, 593], 'tooth_id': '21', 'score': 0.84},
  {'point_2d': [834, 776], 'tooth_id': '31', 'score': 0.81},
  {'point_2d': [808, 776], 'tooth_id': '41', 'score': 0.78}
]
```

Wisdom teeth detection (total: 1):

```
[
  {'box_2d': [404, 643, 492, 778], 'tooth_id': '48', 'is_impacted': false, 'score': 0.85}
]
```

Dental Pathological Findings (total: 7):

```
[
  {'box_2d': [954, 530, 1035, 688], 'tooth_id': '24', 'label': 'caries', 'score': 0.25},
  {'box_2d': [846, 453, 904, 681], 'tooth_id': '22', 'label': 'calculus', 'score': 0.37},
  {'box_2d': [1132, 385, 1220, 507], 'tooth_id': 'unknown', 'label': 'impacted', 'score': 0.93, 'near_tooth': '27'},
  {'box_2d': [438, 419, 522, 508], 'tooth_id': 'unknown', 'label': 'impacted', 'score': 0.88, 'near_tooth': '17'},
  {'box_2d': [1178, 638, 1274, 771], 'tooth_id': 'unknown', 'label': 'impacted', 'score': 0.88, 'near_tooth': '37'},
  {'box_2d': [1053, 594, 1069, 616], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.29, 'near_tooth': '25'},
  {'box_2d': [537, 602, 555, 625], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.25, 'near_tooth': '16'}
]
```

Historical Treatments (total: 0):

```
[
```

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## Medical Report

### Teeth-Specific Observations

#### General Condition

A total of 29 teeth are visualized, with all permanent teeth accounted for except #48 (right lower third molar), which is present and unimpacted. Wisdom teeth (#48) are fully erupted and anatomically normal. No evidence of recent tooth extraction or extensive periodontal bone loss is observed.

#### Pathological Findings

- #24 (Left Lower First Premolar):** Suspicious for caries noted in the proximal surface.
- #22 (Right Lower Second Premolar):** Suggests calculus deposition near the interproximal area.
- Near #27 (Right Lower Second Molar):** Clear indication of impacted bone spicules or radiopaque structures adjacent to the apical region.
- Near #17 (Left Lower Second Molar):** Shows evidence of impacted radiopaque material lateral to the root apices.
- Near #37 (Right Lower Second Molar):** Demonstrates impacted radiopaque structures posterolateral to the tooth.
- Near #25 (Right Lower First Molar):** Areas of concern for caries near the distal surface.
- Near #16 (Left Lower First Molar):** Suspected caries adjacent to the mesial surface.

#### Historical Interventions

No prior restorations, crowns, root canal treatments, or implants are identified.

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### Clinical Summary & Recommendations

#### Priority Concerns

- Impacted radiopaque structures near #27, #17, and #37 require further evaluation to rule out foreign bodies or developmental anomalies.
- Suspected caries on #24 and #25 necessitate confirmation with supplemental imaging or clinical correlation.
- Calculus near #22 indicates localized plaque accumulation and potential periodontal risk.

#### Preventive Measures

- Reinforce interdental cleaning techniques (flossing/fixed dental flossers) for high-risk areas (#24, #25, #22).
- Monitor calculus near #22 for progression and associated gingival changes.
- Educate on dietary modifications to reduce caries risk in suspicious areas.

#### Follow-up Protocol

- **6-month recall** for re-evaluation of impacted structures near #27, #17, and #37.
- **Referral to periodontist** for calculus management on #22.
- **Consider CBCT imaging** for precise localization of impacted radiopaque material.
- **Dental caries confirmation** via visual inspection and/or bitewing radiographs for #24 and #25.