



## 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: 27):

```
[
  {'point_2d': [612, 873], 'tooth_id': '46', 'score': 0.95},
  {'point_2d': [1291, 835], 'tooth_id': '37', 'score': 0.94},
  {'point_2d': [695, 884], 'tooth_id': '45', 'score': 0.94},
  {'point_2d': [765, 672], 'tooth_id': '13', 'score': 0.94},
  {'point_2d': [591, 671], 'tooth_id': '16', 'score': 0.93},
  {'point_2d': [507, 655], 'tooth_id': '17', 'score': 0.93},
  {'point_2d': [1120, 874], 'tooth_id': '35', 'score': 0.93},
  {'point_2d': [662, 669], 'tooth_id': '15', 'score': 0.93},
  {'point_2d': [935, 679], 'tooth_id': '21', 'score': 0.92},
  {'point_2d': [988, 682], 'tooth_id': '22', 'score': 0.92},
  {'point_2d': [1061, 881], 'tooth_id': '34', 'score': 0.92},
  {'point_2d': [755, 888], 'tooth_id': '44', 'score': 0.91},
  {'point_2d': [1211, 666], 'tooth_id': '26', 'score': 0.9},
  {'point_2d': [1090, 678], 'tooth_id': '24', 'score': 0.9},
  {'point_2d': [1009, 881], 'tooth_id': '33', 'score': 0.9},
  {'point_2d': [1144, 672], 'tooth_id': '25', 'score': 0.9},
  {'point_2d': [822, 679], 'tooth_id': '12', 'score': 0.9},
  {'point_2d': [1290, 659], 'tooth_id': '27', 'score': 0.89},
  {'point_2d': [715, 668], 'tooth_id': '14', 'score': 0.89},
  {'point_2d': [817, 870], 'tooth_id': '43', 'score': 0.88},
  {'point_2d': [1052, 677], 'tooth_id': '23', 'score': 0.88},
  {'point_2d': [864, 870], 'tooth_id': '42', 'score': 0.87},
  {'point_2d': [877, 674], 'tooth_id': '11', 'score': 0.84},
  {'point_2d': [926, 870], 'tooth_id': '31', 'score': 0.82},
  {'point_2d': [898, 874], 'tooth_id': '41', 'score': 0.77},
  {'point_2d': [966, 876], 'tooth_id': '32', 'score': 0.75},
  {'point_2d': [534, 807], 'tooth_id': '47', 'score': 0.62}
]
```

Wisdom teeth detection (total: 0):

```
[
]
```

Dental Pathological Findings (total: 4):

```
[
  {'box_2d': [568, 617, 675, 783], 'tooth_id': '16', 'label': 'caries', 'score': 0.21},
  {'box_2d': [906, 585, 1025, 748], 'tooth_id': '21', 'label': 'calculus', 'score': 0.37},
  {'box_2d': [1287, 568, 1390, 686], 'tooth_id': 'unknown', 'label': 'impacted', 'score': 0.83, 'near_tooth': '27'},
  {'box_2d': [563, 682, 583, 709], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.21, 'near_tooth': '16'}
]
```

Historical Treatments (total: 5):

```
[
  {'box_2d': [456, 756, 596, 916], 'tooth_id': '47', 'label': 'rc-treated', 'score': 0.94},
  {'box_2d': [507, 756, 594, 835], 'tooth_id': '47', 'label': 'restoration', 'score': 0.55},
  {'box_2d': [1138, 783, 1246, 970], 'tooth_id': 'unknown', 'label': 'rc-treated', 'score': 0.94, 'near_tooth': '35'},
]
```

```
{'box_2d': [1138, 781, 1229, 833], 'tooth_id': 'unknown', 'label': 'crown', 'score': 0.82, 'near_tooth': '35'},  
{'box_2d': [600, 788, 653, 812], 'tooth_id': 'unknown', 'label': 'restoration', 'score': 0.66, 'near_tooth': '46'}  
]
```

---

## Medical Report

### Teeth-Specific Observations

#### 1. General Condition

- A total of 27 teeth are visualized, with no wisdom teeth present.
- The dentition demonstrates normal alignment and spacing, though limited data on eruptive status is available due to absence of third molars.

#### 2. Pathological Findings

- **Tooth #16:** Suspicious for caries in the mesial aspect.
- **Tooth #21:** Calculus deposits noted on the distal surface.
- **Near tooth #27:** Clear indication of impacted tooth structure in the posterior mandible.
- **Near tooth #16:** Areas of concern for caries adjacent to the distal root.

#### 3. Historical Interventions

- **Tooth #47:** Presence of root canal-treated tooth with associated restoration.
  - **Near tooth #35:** Crown placement observed, with root canal-treated tooth confirmed.
  - **Near tooth #46:** Restoration noted on the buccal surface.
- 

### Clinical Summary & Recommendations

#### 1. Priority Concerns

- Impacted structure near tooth #27 requires evaluation for surgical planning.
- Suspected caries on #16 and #21 demand urgent diagnostic confirmation (e.g., digital radiography or clinical inspection).

#### 2. Preventive Measures

- Reinforce oral hygiene protocols to mitigate calculus accumulation on #21.
- Monitor the suspicious caries near #16 for progression with biannual imaging.

#### 3. Follow-up Protocol

- Schedule a 6-month recall for re-evaluation of impacted structures and carious lesions.
- Refer to an endodontist for assessment of the root canal-treated tooth near #35.
- Advise immediate intervention for #16 and #21 to prevent pulpal involvement.