



## 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: 30):

```
[  
{'point_2d': [722, 698], 'tooth_id': '45', 'score': 0.96},  
{'point_2d': [641, 694], 'tooth_id': '46', 'score': 0.94},  
{'point_2d': [1226, 664], 'tooth_id': '36', 'score': 0.94},  
{'point_2d': [600, 470], 'tooth_id': '16', 'score': 0.93},  
{'point_2d': [670, 471], 'tooth_id': '15', 'score': 0.93},  
{'point_2d': [555, 664], 'tooth_id': '47', 'score': 0.93},  
{'point_2d': [522, 456], 'tooth_id': '17', 'score': 0.92},  
{'point_2d': [764, 483], 'tooth_id': '13', 'score': 0.92},  
{'point_2d': [1146, 683], 'tooth_id': '35', 'score': 0.91},  
{'point_2d': [1038, 671], 'tooth_id': '33', 'score': 0.91},  
{'point_2d': [786, 701], 'tooth_id': '44', 'score': 0.91},  
{'point_2d': [993, 468], 'tooth_id': '22', 'score': 0.91},  
{'point_2d': [875, 480], 'tooth_id': '11', 'score': 0.91},  
{'point_2d': [933, 485], 'tooth_id': '21', 'score': 0.9},  
{'point_2d': [466, 449], 'tooth_id': '18', 'score': 0.89},  
{'point_2d': [990, 654], 'tooth_id': '32', 'score': 0.89},  
{'point_2d': [819, 496], 'tooth_id': '12', 'score': 0.89},  
{'point_2d': [1316, 630], 'tooth_id': '37', 'score': 0.88},  
{'point_2d': [1145, 443], 'tooth_id': '25', 'score': 0.88},  
{'point_2d': [839, 701], 'tooth_id': '43', 'score': 0.88},  
{'point_2d': [889, 676], 'tooth_id': '42', 'score': 0.87},  
{'point_2d': [1308, 422], 'tooth_id': '27', 'score': 0.87},  
{'point_2d': [953, 668], 'tooth_id': '31', 'score': 0.86},  
{'point_2d': [722, 483], 'tooth_id': '14', 'score': 0.85},  
{'point_2d': [1091, 451], 'tooth_id': '24', 'score': 0.84},  
{'point_2d': [1085, 685], 'tooth_id': '34', 'score': 0.84},  
{'point_2d': [1222, 434], 'tooth_id': '26', 'score': 0.84},  
{'point_2d': [1045, 461], 'tooth_id': '23', 'score': 0.82},  
{'point_2d': [919, 668], 'tooth_id': '41', 'score': 0.8},  
{'point_2d': [468, 650], 'tooth_id': '48', 'score': 0.6}  
]
```

Wisdom teeth detection (total: 2):

```
[  
{'box_2d': [421, 372, 510, 525], 'tooth_id': '18', 'is_impacted': false, 'score': 0.89},  
{'box_2d': [415, 571, 521, 730], 'tooth_id': '48', 'is_impacted': true, 'score': 0.6}  
]
```

Dental Pathological Findings (total: 6):

```
[  
{'box_2d': [892, 385, 1010, 556], 'tooth_id': '22', 'label': 'calculus', 'score': 0.36},  
{'box_2d': [414, 571, 520, 730], 'tooth_id': '48', 'label': 'impacted', 'score': 0.79},  
{'box_2d': [1347, 535, 1430, 680], 'tooth_id': 'unknown', 'label': 'impacted', 'score': 0.8, 'near_tooth': '37'},  
{'box_2d': [1310, 323, 1390, 421], 'tooth_id': 'unknown', 'label': 'root-stump', 'score': 0.78, 'near_tooth': '27'},  
{'box_2d': [701, 505, 739, 553], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.67, 'near_tooth': '14'},  
{'box_2d': [702, 637, 724, 660], 'tooth_id': 'unknown', 'label': 'caries', 'score': 0.3, 'near_tooth': '45'}  
]
```

Historical Treatments (total: 1):

```
[
```

```
{'box_2d': [1258, 550, 1322, 591], 'tooth_id': 'unknown', 'label': 'restoration', 'score': 0.61, 'near_tooth': '37'}  
]
```

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## Medical Report

### Teeth-Specific Observations

#### 1. General Condition

A total of 30 teeth were visualized, with all primary dentition units accounted for. Wisdom teeth status:

- **#18 (left maxillary third molar):** Fully erupted, non-impacted.
- **#48 (left mandibular third molar):** Suspicious for impaction due to low confidence in localization (FDI #48).

#### 2. Pathological Findings

- **#22 (left maxillary lateral incisor):** Areas of concern noted for calculus deposition.
- **Near #37 (right mandibular first molar):** Shows evidence of impacted tooth.
- **Near #27 (left mandibular second molar):** Suspicious for residual root fragment (root stump).
- **Near #14 (right maxillary canine):** Suspicious for early carious lesion.
- **Near #45 (left mandibular first molar):** Areas of concern for carious involvement.

#### 3. Historical Interventions

- **Near #37 (right mandibular first molar):** Presence of dental restoration.
- 

### Clinical Summary & Recommendations

#### Priority Concerns

1. Suspicious carious lesions near #14 and #45 require immediate evaluation for potential restorative intervention.
2. Impacted tooth near #37 and suspicious impaction of #48 warrant surgical assessment.
3. Residual root fragment near #27 poses a risk for infection or cystic development.

#### Preventive Measures

- Reinforce oral hygiene protocols to mitigate calculus progression on #22.
- Patient education on dietary modifications and fluoride application for caries-prone areas (#14, #45).
- Monitor radiographic changes in the region of #48 during follow-up imaging.

#### Follow-up Protocol

- **6-month recall** for clinical and radiographic reassessment of carious and impacted sites.
- **Referral to oral surgeon** for definitive management of impacted #48 and root fragment near #27.
- **Consultation with restorative/endodontic specialist** for carious lesions near #14 and #45 to determine treatment urgency.