Osteosarcoma of the Jaws
Osteosarcoma of the Jaws

- **Work-up procedure**
- TNM staging
- Primary treatment
- Follow-up
- Treatment of recurrent and/or metastatic disease
- Appendix: surgical techniques
- References
### Catholic University of Louvain, St - Luc University Hospital
### Head and Neck Oncology Programme

<table>
<thead>
<tr>
<th>Standard clinical evaluation</th>
<th>Evidence</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Complete history of the disease</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>• Weight and weight loss</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>• Performance status (Karnofsky or WHO scale)</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>• General, Head and Neck examination</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>• Evaluation of cranial nerves V2, V3, VII, XII</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>• Drawing of all lesions on a common template</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>• Biopsy under local or general anesthesia after imaging</td>
<td>Type C</td>
<td>Std.</td>
</tr>
</tbody>
</table>
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Head and Neck Oncology Programme

<table>
<thead>
<tr>
<th>Advanced clinical evaluation</th>
<th>Evidence</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dental examination by oral surgeon</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>Prosthetic rehabilitation (if maxillectomy)</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>Nutritional assessment</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>Laboratory tests</td>
<td>Evidence</td>
<td>Option</td>
</tr>
<tr>
<td>--------------------------------------------------------------------------------</td>
<td>----------</td>
<td>--------</td>
</tr>
<tr>
<td>Hemogram, ionogram, coagulation tests, liver enzymes, kidney function</td>
<td>Type C</td>
<td>Std.</td>
</tr>
</tbody>
</table>
### Local Imaging and metastatic work-up

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Evidence</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Orthopantomogram (+ dental X-Rays if needed)</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>MRI (jaw and neck) + CT Scan (bone window without contrast enhancement)</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>Thoracic spiral CT</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>Bone scintigraphy</td>
<td>Type C</td>
<td>Std.</td>
</tr>
</tbody>
</table>
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## Staging

<table>
<thead>
<tr>
<th>Evidence</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type C</td>
<td>Std.</td>
</tr>
</tbody>
</table>

- TNM classification (AJCC 2002)
TNM/AJCC 2002 Staging

- **TX**: Primary tumor cannot be assessed
- **T0**: No evidence of primary tumor
- **T1**: Tumor 8 cm or less in greatest dimension
- **T2**: Tumor > 8 cm in greatest dimension
- **T3**: Discontinuous tumors in the primary bone site
TNM/AJCC 2002 Staging

- NX: Regional lymph nodes cannot be assessed
- N0: No regional lymph node metastasis
- N1: Regional lymph node metastasis
TNM/AJCC 2002 Staging

- **MX**: Distant metastasis cannot be assessed
- **M0**: No distant metastasis
- **M1**: Distant metastasis
  - **M1a**: Lung
  - **M1b**: Other distant metastasis, including lymph nodes
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<table>
<thead>
<tr>
<th>Treatment</th>
<th>Evidence</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Any T, N0, M0</td>
<td></td>
<td></td>
</tr>
<tr>
<td>low grade (G1): surgery</td>
<td>Type 3</td>
<td>Std.</td>
</tr>
<tr>
<td>high grade (G2-G3): induction chemotherapy + surgery ± post-op RxTh</td>
<td>Type 3</td>
<td>Ind.</td>
</tr>
<tr>
<td>• Any T, N1-M1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>chemotherapy¹ + surgery² (T, N, M) if possible</td>
<td>Type 3</td>
<td>Std.</td>
</tr>
</tbody>
</table>

¹See recommendations for chemotherapy on slide 22
²See surgical techniques on slides 18 and 19
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Follow-up & Evidence & Option

| Clinical examination of head and neck mucosa and neck palpation/ performance status/nutritional assessment: every 2 months (first 2 years), every 6 months (years 3-5), once a year ( > 5 year) | Type C | Std. |
| Dental examination and orthopantomogram every 6 months | Type C | Std. |
| Chest spiral CT every year | Type C | Std. |
| MRI head and neck every year during the first 5 years | Type C | Std. |
| Evolution of late toxicity (CTC scale) | Type C | Std. |
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Salvage treatment for loco-regional disease

<table>
<thead>
<tr>
<th>Option</th>
<th>Evidence</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Palliative care</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>Chemotherapy(^1)/ surgery(^2)/ RxTh</td>
<td>Type C</td>
<td>Ind.</td>
</tr>
</tbody>
</table>

\(^1\)See recommendations for chemotherapy on slide 22
\(^2\)See surgical techniques on slides 18 and 19

Salvage treatment for metastatic disease

<table>
<thead>
<tr>
<th>Option</th>
<th>Evidence</th>
<th>Option</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chemotherapy(^1)</td>
<td>Type C</td>
<td>Std.</td>
</tr>
<tr>
<td>Surgery(^2) of the metastasis if possible</td>
<td>Type C</td>
<td>Ind.</td>
</tr>
</tbody>
</table>

\(^1\)See recommendations for chemotherapy on slide 22
\(^2\)See surgical techniques on slides 18 and 19
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**Appendix:**
- Surgical techniques
- Recommendations for pathological examinations
- Recommendations for chemotherapy

- References
Surgical techniques (2 slides)

- Radical surgery
  - mandibulectomy (extended)
  - maxillectomy (extended)
  - ...

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Surgical techniques

- Reconstruction
  Primary if - good prognosis
  - Radicality

  with Free flaps (fibula, iliac crest)

- If no primary reconstruction:
  • Reconstruction plate (AO or THORP)
  • Maxillary obturator prosthesis
Recommendations for pathological examinations (2 slides)

- Macroscopy:
  - 2-10 cm
- Pathology:
  - atypical cuboidal or polyhedric cells
  - osseous material which can be osteoid or bone
- Classification:
  - tumoral differentiation: osteoblastic, chondroblastic, fibroblastic
  - cytological atypia (Broders): grade I to IV
Recommendations for pathological examinations

• Analysis of surgical specimen
  - precise tumour extension and resection margins
  - confirm or modify the degree of atypia and the differentiation
  - identify a preexisting lesion
  - appreciate effects of chemotherapy: % of necrosis
Recommendations for Chemotherapy (1 slide)

- Localized osteosarcoma
  - Cisplatin 100 mg/m² J1 and adriamycin 25 mg/m², J1-J2-J3, 6 cycles every 3 weeks

- Metastatic osteosarcoma
  - More intensive chemotherapy with cisplatin, high dose MTX, high dose Ifosfamide and adriamycin
    + surgery of the primary site and the metastasis if feasible
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