University of Colorado Denver
Department of Surgery
Grand Rounds

Local resection and RFA vs. Liver Transplantation for the Treatment of Hepatocellular Carcinoma

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Hepatocellular Carcinoma

18,000 patients await cadaveric liver transplantation in the USA

5000 available cadaveric donors per year

Median waiting time from 65 days in 1991 to 514 days in 1998.


http://www.unos.org/data/annualReportasp
Diagnosis of early HCC-curative treatments

Trends in Western countries, 1980-2020

HCC

Stage 0
PST 0, Child-Pugh A

Stage A-C
Okuda 1-2, PST 0-2, Child-Pugh A-B

Stage D
Okuda 3, PST >2, Child-Pugh C

Very early stage (0)
Single< 2cm, Carcinoma in situ

Early stage (A)
Single or 3 nodules <3cm, PS 0

Intermediate stage (B)
Multinodular, PS 0

Advanced stage (C)
Portal invasion, N1,M1, PS 1-2

Terminal stage (D)

1980-1990
Early HCC: Curative Treatments (5-10%)

1990-2010
Early HCC Curative Treatments (30-40%)

2010-2020
Early HCC Curative Treatments (40-60%)
Current Practice
### RFA, resection vs. transplantation?

#### Recurrence rates
- Recurrence rates in RFA 5 – 40%
- Recurrence rates in resection 30%
- Recurrence rates after OLT 20 -50%

#### Table 1
Evidence-based benefits of treatments according to the strength of study design and of endpoints and targeted BCLC class, 2007

<table>
<thead>
<tr>
<th>Treatments assessed</th>
<th>Benefit</th>
<th>Level of evidence</th>
<th>BCLC stage</th>
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</thead>
<tbody>
<tr>
<td><strong>Surgical treatments</strong></td>
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<tr>
<td>Surgical resection</td>
<td>Increases survival</td>
<td>3iiA</td>
<td>0-A</td>
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<tr>
<td>Adjuvant therapies</td>
<td>Controversial</td>
<td>1A–D</td>
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<tr>
<td>Liver transplantation</td>
<td>Increases survival</td>
<td>3iiA</td>
<td>A</td>
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<tr>
<td>Neo-adjuvant treatments</td>
<td>Treatment response</td>
<td>3Di</td>
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<td><strong>Locoregional treatments</strong></td>
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<tr>
<td>Percutaneous treatments</td>
<td>Increase survival</td>
<td>3iiA</td>
<td>0-A</td>
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<tr>
<td>Radiofrequency</td>
<td>Better local control</td>
<td>1iID</td>
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<tr>
<td>Embolization/chemoembolization</td>
<td>Increase survival</td>
<td>1iA</td>
<td>B</td>
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<tr>
<td>Lipiodolization</td>
<td>Treatment response</td>
<td>3iiiDiii</td>
<td></td>
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<tr>
<td>Internal radiation (T^{131}, Y^{90})</td>
<td>Treatment response</td>
<td>3iiiDiii</td>
<td></td>
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<tr>
<td><strong>Systemic treatments</strong></td>
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<tr>
<td>Sorafenib</td>
<td>Increases survival</td>
<td>1iA</td>
<td>C**</td>
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<tr>
<td>Hormonal compounds</td>
<td>No survival benefit</td>
<td>1iA</td>
<td></td>
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<tr>
<td>Tamoxifen</td>
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<tr>
<td>Anti-androgens</td>
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<tr>
<td>Systemic chemotherapy</td>
<td>No survival benefit</td>
<td>1iA</td>
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<tr>
<td>Immunotherapy</td>
<td>No survival benefit</td>
<td>1iiA</td>
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</tr>
</tbody>
</table>

*Annals of Oncology 20 (Supplement 7): vii1–vii6, 2009*
Conclusions

• HCC detected at more treatable stages
• Curative treatment is more realistic
• Transplantation has proven to be limited
• Similar outcomes with adequate patient selection
• Future directions in both areas