GASTRO INTESTINALE STROMACEL TUMOREN
DE ROL VAN VAN CHIRURGIE

Kees Verhoef
Surgical Oncology
Erasmus MC Cancer Institute
Rotterdam, The Netherlands
Introduction

- 1983 Mazur and Clark
- 1998 Kindblom: Interstitial cell of Cajal
Incidence

- 1 – 3% Gastrointestinal tract neoplasms
- 5 – 6% Sarcoma’s
- +/- 300 pts / year in the Netherlands

EJC 2005;41:2868-72
Fig. 1. Incidence of GIST and GIST-like tumours per one million residents from 1995 to 2003, using the Dutch population in 2003 as the standard population.
Clinical Features

- Stomach 60%
- Small Intestine 25%
- Rectum 5%
- Esophagus 2%
- Variety 8% appendix gallbladder pancreas mesentery omentum retroperitoneum

GIST JCO 2004;18:3813 - 3825
Clinical Features

- Esophagus
Clinical Features

- Stomach
Clinical Features

- Small Intestine
Clinical Features

Rectum

GIST
Clinical Features

omentum
Clinical Features

omentum
Clinical Features

omentum
Clinical Features

- 10 – 90 years, peak age around 60 years
- Male : Female ratio 1 : 1
- Synchronous Metastasis +/- 20%
Clinical Features

- 70% symptoms (9cm); bleeding, pain
- 20% accidental (3cm)
- 10% autopsy (3cm)
Clinical Features

Early GIST often submucosally protruding in bowel lumen
Clinical Features

Early GIST often submucosally protruding in bowel lumen

Gastric GIST
Advanced GIST often expanding to serosal side, often fragile and hemorrhagic
Clinical Features

Advanced GIST can give mass related symptoms
Clinical Features

- Hepatic metastasis frequent
- Peritoneal metastasis common
- Pulmonary metastasis rare
Clinical Features

Lymphnode metastasis rare

Associated with advanced disease
Diagnosis

BIOPSY RULES

- No agreement on need for preoperative biopsy, if radiology evident
- Biopsy preferably by endoscopy
- Percutaneous or open biopsy (risks tumor spill and bleeding in abdominal cavity is unknown)
Treatment
Primary resectable GIST
Treatment
Primary resectable GIST

wide resections as total gastrectomy not necessary wedge resection with free margins is adequate
Treatment

enbloc resection of adjacent organs whenever feasible, if radical resection is possible by doing so.
Treatment
Primary resectable GIST

- Lymphnode metastases rare and as in other sarcomas often late at the time of other metastases
- Standard Lymphadenectomy not indicated
Treatment (pre-glivec)

SURGERY

Ng et al Ann Surg (1992)  MDACC  191 pat

Prognostic Factors

- complete resection without tumor rupture \( (p < 0.001) \)
- localized lesions \( (p < 0.001) \)
- low grade of tumor \( (p = 0.02) \)
- tumors smaller than 5 cm \( (p = 0.03) \)

Ng et al, Ann Surg 1992
Disease-specific survival after complete resection of primary GIST

<5 cm: rare metastases
5-10 cm: 30% metastases
>10 cm: 60% metastases
Disease-specific survival after complete resection of primary GIST

Survival depends on mitotic rate

Before Imatinib

Survival

Mitoses <5
N=83
Mitoses ≥5
N=31

P<0.001

Unpublished data
Survival does not depend on mutation status

Before Imatinib

- Mutation
  - N=88
- No mutation
  - N=26

P=0.55

Unpublished data
# Prognostic Factors

<table>
<thead>
<tr>
<th>Risk Level</th>
<th>Tumor size</th>
<th>Mitotic count</th>
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<tbody>
<tr>
<td>Very low risk</td>
<td>&lt;2 cm</td>
<td>&lt; 5 / 50 HPF**</td>
</tr>
<tr>
<td>Low risk</td>
<td>2-5 cm</td>
<td>&lt; 5 / 50 HPF</td>
</tr>
<tr>
<td>Intermediate risk</td>
<td>&lt; 5 cm</td>
<td>6 -10 /50 HPF</td>
</tr>
<tr>
<td></td>
<td>5 -10 cm</td>
<td>&lt; 5 / 50 HPF</td>
</tr>
<tr>
<td>High risk</td>
<td>&gt; 5 cm</td>
<td>&gt; 5 / 50 HPF</td>
</tr>
<tr>
<td></td>
<td>&gt; 10 cm</td>
<td>Any mitotic rate</td>
</tr>
<tr>
<td></td>
<td>Any size</td>
<td>&gt; 10 / 50 HPF</td>
</tr>
</tbody>
</table>

* Size represents the single largest dimension.

** Ideally, mitotic count should be standardized according to surface area examined (based on size of high power field).

*** HPF = high power fields
## Risk for Progressive Disease \(^a\) (\%)  

<table>
<thead>
<tr>
<th>MITOTIC INDEX (HPF)(^b)</th>
<th>TUMOUR SIZE (CM)</th>
<th>GASTRIC</th>
<th>JEJUNUM/ILEUM</th>
<th>DUODENUM</th>
<th>RECTUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>(\leq 5/50)</td>
<td>(\leq 2)</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td></td>
<td>&gt;2 (\leq 5)</td>
<td>1.9%</td>
<td>4.3%</td>
<td>8.3%</td>
<td>8.5%</td>
</tr>
<tr>
<td></td>
<td>&gt;5 (\leq 10)</td>
<td>3.6%</td>
<td>24%</td>
<td>34%^c</td>
<td>57%^c</td>
</tr>
<tr>
<td></td>
<td>&gt;10</td>
<td>10%</td>
<td>52%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>(&gt;5/50)</td>
<td>(\leq 2)</td>
<td>NONE(^c)</td>
<td>HIGH(^c)</td>
<td>UNKNOWN(^d)</td>
<td>54%</td>
</tr>
<tr>
<td></td>
<td>&gt;2 (\leq 5)</td>
<td>16%</td>
<td>73%</td>
<td>50%</td>
<td>52%</td>
</tr>
<tr>
<td></td>
<td>&gt;5 (\leq 10)</td>
<td>55%</td>
<td>85%</td>
<td>86%^c</td>
<td>71%^c</td>
</tr>
<tr>
<td></td>
<td>&gt;10</td>
<td>86%</td>
<td>90%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Treatment (pre-glivec)

Resection of metastasis is favourable, if radical resection is possible.
Treatment (pre-glivec)

Median survival after radical resection of metastasis is about 32 months (before Glivec era).

Jpn J Clin Oncol 2005;35:338-341
Treatment (pre-glivec)

Radiotherapy

Only palliative role in bleeding metastases

Chemotherapy

Standard Adriamycine and Ifosfamide hardly any response rate

<table>
<thead>
<tr>
<th>Regimen</th>
<th>n</th>
<th>n (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>DOX + DTIC</td>
<td>43</td>
<td>3 (7%)</td>
</tr>
<tr>
<td>DOX + DTIC +/- IF</td>
<td>60</td>
<td>10 (15%)</td>
</tr>
<tr>
<td>DOX + DTIC+ IF</td>
<td>11</td>
<td>3 (27%)</td>
</tr>
<tr>
<td>IF + VP-16</td>
<td>10</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Paclitaxel</td>
<td>15</td>
<td>1 (7%)</td>
</tr>
<tr>
<td>Gemcitabine</td>
<td>17</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Liposomal DOX</td>
<td>15</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>DOX</td>
<td>12</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>DOX or docetaxel</td>
<td>9</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>High-dose IF</td>
<td>26</td>
<td>NR (0–8%)</td>
</tr>
<tr>
<td>EPI + IF</td>
<td>13</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>Various (e.g., DOX, gemcitabine, CT2584)</td>
<td>40</td>
<td>4 (10%)</td>
</tr>
<tr>
<td>DTIC + MMC + DOX + CDDP + GM-CSF</td>
<td>21</td>
<td>1 (5%)</td>
</tr>
<tr>
<td>TOTAL</td>
<td>266</td>
<td>22 (8.3%)</td>
</tr>
</tbody>
</table>

DeMatteo et al, Hum Pathol 2002
Treatment

Imatinib mesylate
(STI 571, Glivec®, Gleevec®)
Treatment adjuvant
Primary resectable GIST

- Netherlands: Adjuvant therapy after radical resection for high risk group
# Treatment adjuvant
Primary resectable GIST

<table>
<thead>
<tr>
<th>MITOTIC INDEX (HPF)</th>
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<tbody>
<tr>
<td>≤5/50</td>
<td>≤2</td>
<td>0%</td>
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<td>0%</td>
<td>0%</td>
</tr>
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<td></td>
<td>&gt;2 ≤5</td>
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<td>10%</td>
<td>52%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&gt;5/50</td>
<td>≤2</td>
<td>NONE?</td>
<td>HIGH?</td>
<td>UNKNOWN?</td>
<td>54%</td>
</tr>
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<td></td>
<td>&gt;2 ≤5</td>
<td>16%</td>
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<td>86%</td>
<td>90%</td>
<td></td>
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</tr>
</tbody>
</table>
Treatment adjuvant
Primary resectable GIST

- ACOSOG Z 9001; 1 year Glivec versus Placebo
  - *No* OS difference

- SSG XVIII; 1 versus 3 year Glivec
  - *Yes* OS difference

- EORTC 62024; 2 year Glivec versus placebo
  - *No* OS difference
Surgery in Glivec Era

Induction chemotherapy in locally advanced disease
Surgery in Glivec Era

after 2 weeks Glivec
Surgery in Glivec Era

after 12 months Glivec
Surgery and Glivec

Surgery after 14 months
Surgery and Glivec
Can CT predict adjacent organ invasion in patients with Gastrointestinal Stromal Tumor?

P Boons¹, JJ Hermans², MA den Bakker³, JH De Wilt¹, C Verhoef⁴

¹ Department of Surgical Oncology, ² Radiology and ³ Pathology
Erasmus Medical Center-Daniel den Hoed Cancer Center, Rotterdam, Netherlands

Introduction

- Radical resection is standard treatment for primary Gastrointestinal Stromal Tumors (GIST)
- Patients with unresectable or locally advanced disease, may benefit from induction treatment with Imatinib
- Identification of these locally advanced or unresectable tumors is primordial

Objectives

- We aimed to evaluate the accuracy of preoperative helical CT in predicting adjacent organ involvement for GIST

Methods

- Consecutive patients who underwent resection for primary GIST were analyzed retrospectively
- Preoperative CT findings were reviewed by an experienced GI radiologist
- Identification on CT of fatplane between tumor and adjacent organs was considered as absence of invasion.
- Resection specimens were reviewed by a pathologist to detect adjacent organ invasion.
- Radiologic findings were correlated with pathology findings.

Results

- 44 patients underwent resection for primary GIST (1998-2006)
- 30 patients were male (68%)
- Median age was 59 years

Table 1. Correlation between CT and pathology findings

<table>
<thead>
<tr>
<th></th>
<th>Pathology No invasion</th>
<th>Pathology Invasion</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>CT No invasion</td>
<td>14</td>
<td>0</td>
<td>14</td>
</tr>
<tr>
<td>CT Invasion</td>
<td>24</td>
<td>6</td>
<td>30</td>
</tr>
<tr>
<td>Total</td>
<td>38</td>
<td>6</td>
<td>44</td>
</tr>
</tbody>
</table>

- Sensitivity: 100%
- Specificity: 37%
- Positive predictive value: 20%

Conclusion

Helical CT scan cannot accurately predict adjacent organ invasion of Gastrointestinal Stromal Tumor
GIST ingrowth adjacent Organs

Correlation between CT and pathology findings

- Sensitivity: 100%
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Conclusion

Helical CT scan cannot accurately predict adjacent organ invasion of Gastrointestinal Stromal Tumor
Surgery and Glivec

Induction chemotherapy in locally advanced disease

“maximal shrinkage”
Neoadjuvant Imatinib in Locally Advanced Gastrointestinal Stromal Tumors (GIST): The EORTC STBSG Experience

Piotr Rutkowski, MD, PhD1, Alessandro Gronchi, MD2, Peter Hohenberger, MD, PhD3, Sylvie Bonvalot, MD, PhD4, Patrick Schöffski, MD, MPH5, Sebastian Bauer, MD, PhD6, Elena Fumagalli, MD7, Pawel Nyckowski, MD, PhD8, Bui-Phuc Nguyen, MD9, Jan Martijn Kerst, MD, PhD9, Marco Fiore, MD10, Eizbieta Bylina, BSc11, Mathias Holczyk, MD12, Annemieke Cats, MD, PhD12, Paolo G. Casali, MD13, Axel Le Cesne, MD13, Jürgen Treckmann, MD, PhD14, Eberhard Stoeckle, MD15, Johannes H. W. de Vilt, MD, PhD15, Stefan Steijger, MD, PhD15, Ronald Tielen, MD15, Wimette van der Graaf, MD, PhD15, Cornelis Verhoef, MD, PhD15, and Frits van Coevorden, MD, PhD16

ABSTRACT

Background. Preoperative imatinib therapy of locally advanced GIST may facilitate resection and decrease morbidity of the procedure.

Methods. We have pooled databases from 10 EORTC STBSG sarcoma centers and analyzed disease-free survival (DFS) and disease-specific survival (DSS) in 161 patients with locally advanced, nonmetastatic GISTs who received neoadjuvant imatinib. OS was calculated from start of imatinib therapy for locally advanced disease until death or last follow-up (FU) after resection of the GIST. DFS was calculated from date of resection to date of disease recurrence or last FU. Median FU time was 46 months.

Results. The primary tumor was located in the stomach (55%), followed by rectum (20%), duodenum (10%), ileumjejunum (11%), and esophagus (3%). The tumor resection after preoperative imatinib (median time on therapy, 40 weeks) was R0 in 83%. Only two patients have demonstrated disease progression during neoadjuvant therapy. Five-year DSS/DFS rates were 95%/65%, respectively, median OS was 104 months, and median DFS was not reached. There were 56% of patients who continued imatinib after resection. Thirty-seven GIST recurrences were diagnosed (only 5 local relapses). The most common mutations affected exon 11 KIT (65%). Poorer DFS was related to primary tumor location in small bowel and lack of postoperative therapy with imatinib.

Conclusions. Our analysis comprising the largest group of GIST patients treated with neoadjuvant imatinib in routine practice indicates excellent long-term results of combined therapy in locally advanced GISTs.
Locally Advanced GIST, Surgery and Glivec; outcome
Role of Surgery in Metastatic GIST
Recurrence Patterns

Liver

Peritoneum

Other
Treatment (pre-glivec)

Resection of metastases is favourable, if radical resection is possible.

Median survival after radical resection of metastases is about 32 months.

*Jpn J Clin Oncol* 2005;35:338-341
Treatment

**GIST**

*Imatinib mesylate (STI 571, Glivec®, Gleevec®)*
Treatment GIST metastases

Verweij J, Lancet 2004
Treatment
GIST metastases

- **Imatinib, long term outcome**
  - Median follow-up 71 months
  - 1% CR, 67% PR and 16% SD
  - Median time to progression 24 months
    - (33 months (CR+PR) and 12 months (SD))
  - Median overall survival 63 months (CR+PR+SD)

Blanke, JCO 2008
Treatment (pre-glivec)

Resection of metastases is favourable, if radical resection is possible.

Median survival after radical resection of metastases is about 32 months.
Treatment
GIST metastases

Metastases: Glivec
Discontinuation of imatinib in patients with advanced gastrointestinal stromal tumours after 3 years of treatment: an open-label multicentre randomised phase 3 trial

Axel Le Cesne, Isabelle Ray-Coquard, Binh Nguyen Bui, Antoine Adenis, Maria Rios, François Bertucci, Florence Duffaud, Christine Chevreau, Didier Cupissol, Angela Cioffi, Jean-François Emile, Sylvie Chabaud, David Pérol, Jean-Yves Blay for the French Sarcoma Group

**Figure 2:** Progression-free survival after 3 years of imatinib
PFS—progression-free survival.
Initial and Late Resistance to Imatinib in Advanced Gastrointestinal Stromal Tumors Are Predicted by Different Prognostic Factors: A European Organisation for Research and Treatment of Cancer–Italian Sarcoma Group–Australasian Gastrointestinal Trials Group Study

Martine Van Glabbeke, Jaap Verweij, Paolo G. Casali, Axel Le Cesne, Peter Hohenberger, Isabelle Ray-Coquard, Marcus Schlemmer, Allan T. van Oeveren, David Goldstein, Raf Sciot, Pancras C.W. Hogendoorn, Michelle Brown, Rossella Bertulli, and Jan R. Jaduson

Fig 3. Time to progression as a function of the largest diameter of the largest lesion (cm). O, observed failures; N, number of cases.
Follow-up results after 9 years of the ongoing phase II B2222 trial of imatinib mesylate in patients with metastatic or unresectable KIT+ gastrointestinal stromal tumors (GIST)

<table>
<thead>
<tr>
<th>Tumor bulk (cm³)</th>
<th>Median</th>
<th>Number at Risk</th>
<th>Median Follow-up (months)</th>
<th>95% CI</th>
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</thead>
<tbody>
<tr>
<td>&lt; 1.1</td>
<td>9.8</td>
<td>92</td>
<td>63</td>
<td>22.0</td>
</tr>
<tr>
<td>1.1 - &lt;3.0</td>
<td>27</td>
<td>25</td>
<td>14</td>
<td>11.0</td>
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<tr>
<td>3.0 - &lt;5.0</td>
<td>18</td>
<td>14</td>
<td>11</td>
<td>8.0</td>
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<tr>
<td>&gt; 5.0</td>
<td>22</td>
<td>16</td>
<td>36</td>
<td>23</td>
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</tbody>
</table>

Log-rank test P = 0.0043

von Mehren et al J Clin Oncol 29: 2011 (suppl; abstr 10016)
Metastases: Glivec and Surgery?
<table>
<thead>
<tr>
<th></th>
<th>PFS Hazard ratio (95% CI)</th>
<th>p-value</th>
<th>OS Hazard ratio (95% CI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>age at surgery</td>
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<td></td>
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<td></td>
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<tr>
<td>&lt;60 years* (n = 31)</td>
<td>1</td>
<td>0.96</td>
<td>1.02 (0.48 – 2.16)</td>
<td>0.77</td>
</tr>
<tr>
<td>&gt;60 years (n = 24)</td>
<td>1.02 (0.48 – 2.16)</td>
<td></td>
<td>1.15 (0.44 – 2.99)</td>
<td></td>
</tr>
<tr>
<td>response†</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>yes* (n = 35)</td>
<td>1</td>
<td>&lt;0.05</td>
<td>7.95 (3.31 – 19.13)</td>
<td>&lt;0.05</td>
</tr>
<tr>
<td>no (n = 20)</td>
<td>1.79 (3.31 – 19.13)</td>
<td></td>
<td>11.45 (3.89 – 33.67)</td>
<td></td>
</tr>
<tr>
<td>resection</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>complete* (n = 29)</td>
<td>1</td>
<td>0.04</td>
<td>2.23 (1.04 – 4.80)</td>
<td>0.15</td>
</tr>
<tr>
<td>incomplete (n = 26)</td>
<td>2.23 (1.04 – 4.80)</td>
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<td>2.02 (0.77 – 5.33)</td>
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</tr>
<tr>
<td>location metastasis‡</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>abdominal* (n = 33)</td>
<td>1</td>
<td>0.59</td>
<td>0.81 (0.39 – 1.72)</td>
<td>0.72</td>
</tr>
<tr>
<td>liver (n = 22)</td>
<td>0.81 (0.39 – 1.72)</td>
<td></td>
<td>0.84 (0.32 – 2.21)</td>
<td></td>
</tr>
</tbody>
</table>
Surgery in metastatic GIST
2002 – 2009 Dutch Experience

Figure 1: Progression-free survival (PFS) based on response to systemic therapy at the time of surgery, calculated from date of surgery
A: Group of responders; B: Group of non-responders
Surgery in metastatic GIST
2002 – 2009 Dutch Experience

Figure 2: Overall survival (OS) based on response to systemic therapy at the time of surgery, calculated from date of surgery
A: Group of responders; B: Group of non-responders

Numbers at risk

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers at risk</td>
<td>36</td>
<td>19</td>
</tr>
<tr>
<td>10 months</td>
<td>32</td>
<td>9</td>
</tr>
<tr>
<td>20 months</td>
<td>29</td>
<td>8</td>
</tr>
<tr>
<td>30 months</td>
<td>21</td>
<td>2</td>
</tr>
<tr>
<td>40 months</td>
<td>14</td>
<td>1</td>
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<tr>
<td>50 months</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>60 months</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>70 months</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

p < 0.05
Surgery in metastatic GIST
Consistently reported in retrospective series
Impact of Surgery on Advanced Gastrointestinal Stromal Tumors (GIST) in the Imatinib Era


Annals of Surgical Oncology, 13(12):1596–1603
DOI: 10.1245/s10434-006-9047-3

FIG. 5. PFS of operated patients (calculated from the start of imatinib).

Surgical Intervention Following Imatinib Treatment in Patients With Advanced Gastrointestinal Stromal Tumors (GISTS)

SUN JIN SYM, MIN-HEE RYU, JAE-LYUN LEE, HEUNG MOON CHANG, TAE-WON KIM, HEE CHEOL KIM, KI HUN KIM, JONG HWAN YOOK, BYUNG SIK KIM, YOON-RU KANG

Journal of Surgical Oncology 2008;98:278–284

Post-imatinib surgery in advanced/metastatic GIST: is it worthwhile in all patients?


Annals of Oncology 21: 403–408, 2010

Figure 1. Kaplan–Meier curve for postoperative PFS according to response at the time of selection for surgery (P < 0.01).
Surgery in metastatic GIST
Consistently reported in retrospective series
Surgery and Glivec

Resection of active metastasis

After 2 months glivec
Surgery and Glivec

Resection of active metastasis

After 6 months glivec

Single progressive lesion after 9 months glivec
Surgery and Glivec

Resection of active metastasis

6 months post operative

11 months post operative
Surgery and Glivec

After 3 months glivec

After 18 months glivec
Surgery and Glivec
Surgery and Glivec

24 months after operation
Surgery in metastatic GIST

Do operate if there is no progressive disease?
Surgery in metastatic GIST
Do operate if there is no progressive disease?
Surgery in metastatic GIST

Do operate if there is no progressive disease?

- **Systemic Treatment only:**
  - Median time to progression 24 months \(^{(33 \text{ months (CR+PR) and 12 months (SD))}}\)
  - 3 year PFS +/- 60%

- **Systemic Treatment and Surgery:**
  - Median time to progression 24 months
  - 3 year PFS +/- 60%
Surgery in metastatic GIST
Do operate if there is no progressive disease?

Long-term follow-up of patients with GIST undergoing metastasectomy in the era of imatinib — Analysis of prognostic factors (EORTC-STBSG collaborative study)
Surgery in metastatic GIST
Do operate if there is no progressive disease?

Figure 2. A and B): Overall survival curves for patients who underwent metastasectomy depending on affected organ system in the complete population (2A) and restricted to non-progressive patients (2B). Time-to-progression curves calculated from date of surgery until progression for non-progression GIST (2C) and progressing GIST at the time of surgery (2D). Time to progression curves calculated from date of first imatinib for metastatic disease until progression or death in all patients (2E) and restricted to non-progressing patients only (2F).
EORTC study for metastatic GIST

Glivec – response -6 months

Resection and Glivec

Glivec
In metastatic GIST, the role of surgery regarding DFS and/or OS is absolutely unclear.
Palliative Surgery in GIST
Palliative Surgery in GIST
Palliative Surgery in GIST
Surgery in metastatic GIST

Conclusion

- In metastatic GIST, the role of surgery regarding DFS and/or OS is absolutely unclear

- There is a tendency not to operate if there is a general progression of disease

- We urgently need a RCT

- There is a role for palliative surgery
GIST: Surgery and Glivec

Molecular Biology
Radiology
Pathology
Medical Oncology
Surgical Oncology