Introduction:

Some studies have already shown that the number of biopsy cores and the biopsy scheme can have an influence on the cancer detection rate. We have developed a method to calculate the pierced area of each lobe. We wanted to know if this area was similar in both lobes and if this new variable could impact on the cancer detection rate in each lobe.

Methods:

The Urostation® (Koelis, France) provides 3D mapping of transrectal prostate biopsy cores. With this device, we were able to estimate the pierced area of the posterior prostate capsule for each lobe (cf Figure 1). We retrospectively reviewed prostate biopsy procedures which were realized with the Urostation® ultrasound system in our department. All patients lied on lateral decubitus position, and 6 biopsy cores were acquired for each prostate lobe. We defined the cancer in each lobe as one or more positive cores in the lobe. We only included patient without history of prostate cancer, PSA=4-20ng/ml and/or abnormal digital rectal examination (DRE). We analyzed the following criteria: age, PSA level, DRE, prostate volume, left and right prostate pierced area.

Our primary objective was to compare the pierced area between the right and the left side according to the prostate size.

Our secondary objectives were to compare the cancer detection rate and the positive core rate between the right and the left lobe according to the prostate size.

All data were collected in a database and were analysed with Excel® analysis software or with “R” software. Significance of results was assessed with Chi2 tests for qualitative values (cancer rate in each lobe) and analysis of variance tests for quantitative measures (pierced area of each lobe).

Results:

158 patients were eligible for the study. Mean age was 64 years, mean PSA 8.22ng/mL and mean prostate volume 50.3ml.

We found significant differences between the right and the left lobe for the pierced area ($105$mm$^2$ vs $116$mm$^2$). This difference was significative according to the prostate size (cf figure 1).

The cancer rate (cf table 1) detection between the right and the left side ($29.1\%$ vs $40.5\%$) was significant for the complete group, and also was the rate of positive cores ($12.6\%$ vs $16.1\%$)(cf table 2).

However differences were not always significative according to the prostate size subgroup.

Conclusion:

There are significant differences between right and left lobe cancer detection rate and pierced area. These differences may impact on clinical decision.

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**Figure 1.** Variation of the pierced area and the cancer detection rate according to the prostate size

**Table 1.** Biopsy results according to the prostate size and the side (at least one positive core)

<table>
<thead>
<tr>
<th>Prostate Volume [g]</th>
<th>Number of Patients</th>
<th>Abnormal Finding according to the Prostate Side</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Patients</td>
<td></td>
<td>Right lobe</td>
</tr>
<tr>
<td>&lt;40</td>
<td>51</td>
<td>20 (39.2%)</td>
<td>26 (51.0%)</td>
</tr>
<tr>
<td>40-&lt;60</td>
<td>57</td>
<td>11 (23.2%)</td>
<td>26 (45.0%)</td>
</tr>
<tr>
<td>60-&lt;80</td>
<td>27</td>
<td>5 (20.0%)</td>
<td>9 (33.3%)</td>
</tr>
<tr>
<td>80-&lt;100</td>
<td>13</td>
<td>2 (15.4%)</td>
<td>3 (23.1%)</td>
</tr>
<tr>
<td>&gt;=100 (max=138)</td>
<td>10</td>
<td>1 (10.0%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>All Patients</td>
<td>158</td>
<td>40 (25.6%)</td>
<td>64 (40.5%)</td>
</tr>
</tbody>
</table>

**Table 2.** Number of positive cores according to the prostate size and the side

<table>
<thead>
<tr>
<th>Prostate Volume [g]</th>
<th>Number of Patients</th>
<th>Number of Positive Cores</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Number of Patients</td>
<td>Number of Positive Cores</td>
<td></td>
</tr>
<tr>
<td>&lt;40</td>
<td>51</td>
<td>61 (19.9%)</td>
<td>73 (22.9%)</td>
</tr>
<tr>
<td>40-60</td>
<td>57</td>
<td>46 (13.4%)</td>
<td>57 (17.8%)</td>
</tr>
<tr>
<td>60-&lt;80</td>
<td>27</td>
<td>16 (4.9%)</td>
<td>19 (6.7%)</td>
</tr>
<tr>
<td>80-&lt;100</td>
<td>13</td>
<td>4 (3.1%)</td>
<td>4 (3.1%)</td>
</tr>
<tr>
<td>&gt;=100 (max=138)</td>
<td>10</td>
<td>11 (16.7%)</td>
<td>0 (0%)</td>
</tr>
<tr>
<td>All Patients</td>
<td>158</td>
<td>120 (12.6%)</td>
<td>153 (15.1%)</td>
</tr>
</tbody>
</table>