Focal Cryoablation

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Focal

CryoAblation
Thus, cryotherapy addresses cancer simultaneously at the cellular (membranes, organites) and the stromal support (microvasculature) levels.

It then engages the cascade of apoptosis in injured but surviving cells.

There is no known -possible- mechanisms of resistance to cryotherapy when the appropriate temperature was reached for a sufficient length of time.
Cryotherapy applied to Focal treatment of the prostate
two cycles of -20°C for 10 minutes at the outer limit of the target, interspeded by passive thawing.
Freezing point of a 0.9% w/v solution (saline solution) is \(-3.3°C\)
- that is the temperature reached at the outer limit of the iceball -

Laboratory testing was performed in room temperature (21°C) gel; measurements were made after two 10-minute Freeze cycles separated by a 5-minute passive Thaw cycle. Accuracy is ±3 mm width, ±4 mm length.

<table>
<thead>
<tr>
<th>ISOTHERM DATA</th>
<th>IceSeed® 1.5 1.5 mm (17G)</th>
<th>IceSphere® 1.5 1.5 mm (17G)</th>
<th>IceRod® 1.5 1.5 mm (17G)</th>
<th>IceRod® 1.5 PLUS 1.5 mm (17G)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0°C</td>
<td>33 mm x 38 mm</td>
<td>39 mm x 45 mm</td>
<td>41 mm x 60 mm</td>
<td>43 mm x 60 mm</td>
</tr>
<tr>
<td>-20°C</td>
<td>20 mm x 27 mm</td>
<td>26 mm x 32 mm</td>
<td>27 mm x 50 mm</td>
<td>30 mm x 48 mm</td>
</tr>
<tr>
<td>-40°C</td>
<td>11 mm x 20 mm</td>
<td>16 mm x 24 mm</td>
<td>16 mm x 41 mm</td>
<td>18 mm x 42 mm</td>
</tr>
</tbody>
</table>

Ice Sphere: 11 mL/-20°C
Ice Rod: 19 mL/-20°C

Galil 2018 Manual
Limitations therefore pertain to our ability to outline the cancer limits - as opposed to the organ limits - and to extend the ice ball beyond the tumor margins.

« Optimal circumferential margin for treatment was deemed to be 5 mm around a lesion that was seen on imaging »

Donaldson, Eur Urol 2015

That is to account for three orders of imprecision

1. in the position of the target
2. in the precision of the targeting
3. in the outer margins of the treated area
In spite of these limitations, its investigational nature, and the fierce competition in the field, focal cryotherapy remains one of the leading energies for focal ablation.
Three requisites to promote organ-conservation

1. negligible effect on organ function and, consequently on quality of life,

2. instruments for surveillance to detect early recurrence

3. and the demonstration that it does not preclude salvage treatment
127 cryotherapies, Focal: 89 Total: 38) & 68 AS patients
Low level of agreement between experts on the means and organization of surveillance

PSA
There is currently insufficient evidence defining the use of PSA or PSA derivatives in the post-focal therapy setting

Other biomarkers
There is currently little evidence to incorporate these into a post-focal therapy protocol beyond research purposes

mpMRI
mpMRI should be performed at 3- or 1.5-T with endorectal coil
mpMRI is recommended at least once 6–12 months after initial treatment
The optimal frequency of imaging is not known, and periodic imaging should be determined by patient factors and resource availability
Less frequent repeat imaging is necessary in patients with Gleason 3 + 3 (PGG1) cancer
A negative mpMRI suggests a low risk of disease recurrence or progression
A positive mpMRI should lead to a targeted biopsy for histologic confirmation

Biopsy
Follow-up should comprise 4–6 core biopsies from the treated zone alone at 3–6 months and 12 core systematic plus targeted biopsy of the ablation zone at 12–24 months
Following 24 months, the gland should be biopsied only if there is suspicious change in MRI or PSA/clinical findings
If clinical parameters/PSA are stable, mpMRI should be repeated at the 5 years mark with possible biopsies of abnormal areas

Interpretation of histology
Resolve indeterminate histology through the use of immunohistochemical markers
Definitive cancer on biopsy should be treated as a positive finding

Surveillance after prostate focal therapy

Kae Jack Tay,1,2 · Mahul B. Amin3 · Sangeet Ghal4 · Rafael E. Jimenez5 · James G. Kench6 · Laurence Klotz7 · Rodolfo Montironi8 · Satoru Muto9 · Ardeshir R. Rastinehad10 · Baris Turkbey11 · Arnauld Villers12 · Thomas J. Polascik1

Abstract

Focal therapy remains a nascent field largely comprising single center cohorts with little long-term data. Our project. World J Urol 34(10):1373–1382

Multiparametric magnetic resonance imaging (mpMRI) should be performed at 3–6 months, 12–24 months and again

No informed consent was necessary.

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No human subjects or animals
It’s actually quite hard to understand the clinical value of an investigational technique in the absence of definitions of success and failure. In that respect, this low level of evidence paper takes a first and important step in the right direction.

**Table 2** Summary of recommendations

<table>
<thead>
<tr>
<th>Definitions of failure</th>
<th>Recommendations</th>
<th>Grade</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Significant volume (≥ 0.2 cc or ≥ 7 mm in diameter) of Gleason 3 + 4 (PGG 2) within the treated zone is considered failure</td>
<td>C</td>
</tr>
<tr>
<td></td>
<td>The development of any foci of clinically significant cancer requiring further therapy is considered focal therapy failure (or failure of the focal therapy strategy as a whole) in the untreated zone</td>
<td>C</td>
</tr>
</tbody>
</table>

Important distinction between focal therapy failure and failure of the focal strategy as a whole.
Thank you!