Navik 3D is a novel cardiac mapping system that allows localization of radiopaque structures.

Use of the cryoballoon aided by Navik 3D for additional lesions beyond pulmonary vein isolation resulted in lower fluoroscopy use and procedure time for complex persistent AF cases.

**FIGURE 1**

- **FIGURE 2**

- **FIGURE 3**

**BACKGROUND**

Navik 3D is a novel mapping system that can locate radiopaque objects including RF catheter and Cryoballoons in 3 dimensions. Pulmonary vein isolation, roof line, and posterior wall debulking can be performed using radiofrequency guided by electroanatomic mapping (EAM), or cryoballoon guided by Navik 3D, EAM, or both. We compared these approaches during consecutive complex ablations for persistent atrial fibrillation.

**METHODS**

Pulmonary veins isolation (PVI) with cryoballoon ablation was performed in all 57 patients with persistent atrial fibrillation. Additional ablation lesions (posterior wall, roofline, or mitral isthmus) were guided by [Navik 3D (n=16), EAM (n=15) or both Navik 3D/EAM (n=26)], using cryoballoon (n=18), RF (n=15) or both (n=24). Groups were matched for age, sex, prior ablation and antiarrhythmic use.

**RESULTS**

<table>
<thead>
<tr>
<th>Procedure Data (Kruskal Wallis analysis, Matched for age, sex, prior ablation, antiarrhythmics)</th>
<th>EAM (n=15)</th>
<th>EAM/Navik 3D (n=26)</th>
<th>Navik 3D (n=16)</th>
<th>p value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total procedure time in minutes, median (interquartile range)</td>
<td>249 (211.266)</td>
<td>220 (182.262)</td>
<td>156.5 (146.5, 382)</td>
<td>&lt;0.01</td>
</tr>
<tr>
<td>Fluoroscopy dose in mGy, median (interquartile range)</td>
<td>821 (349, 1428)</td>
<td>865.2 (576, 1219)</td>
<td>277 (180.5, 349.5)</td>
<td>&lt;0.001</td>
</tr>
<tr>
<td>Fluoroscopy time in minutes, median (interquartile range)</td>
<td>51.6 (34.1, 70)</td>
<td>51.2 (44.4, 59.3)</td>
<td>33.7 (26.1, 38.4)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>

**CONCLUSION**

Navik 3D resulted in lower procedure time and radiation dose when used for complex ablations in persistent AF.

DISCUSSION

- Recent literature has reported effectiveness of cryoballoon ablation for isolation of the left atrial posterior wall and roofline.
- Navik 3D is the ONLY cardiac mapping system which allows the user to locate any radiopaque object, including the cryoballoon, in 3D (Figure 1) without limitations on catheter manufacturer.
- Navik 3D utilizes two views, for instance AP and LAO 20, to localize the cryoballoon in a 3D map. Each localization requires 6 seconds of fluoroscopy.
- In this retrospective study, using the Navik 3D mapping system paired largely with the cryoballoon, we report shorter procedure time, reduced fluoroscopy dose, and fluoroscopy time when compared with electroanatomic mapping (EAM) or both Navik 3D combined with EAM.
- This outcome might be due to the fact that cryoballoon lesions have a much larger surface, rather than the point-by-point RF ablation lesions.

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