Outcomes of Implantable Cardioverter Defibrillator (ICD)/Pacing Lead Extraction Over 8 Years

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Published In/Presented At
Outcomes of Implantable Cardioverter Defibrillator (ICD)/Pacing Lead Extraction Over 8 Years
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Background
- Cardiac Implantable Electronic Devices (CIED) are used to regulate a patient’s heartbeat when arrhythmia is present
- Indications for lead extraction include lead and pocket infection, lead fracture, skin erosion, recalled lead, lead migration or dislodgement
- Due to binding tissue that can form around the leads if implanted for multiple years, extraction can be challenging. An understanding of complication risk factors is beneficial for optimal CIED management and lead extraction decision making

Objectives
1. Gain a better understanding of LVHN Lead-Extraction Patient Population.
2. Determine any correlation between identified risk factors and survivability.
3. Analyze Complication and Mortality Rates (Perioperative, 30 Day, Yearly)
4. Evaluate overall intraoperative and postoperative outcomes.

Methods
Retrospective study of 195 adult patients with the discharge condition of lead extraction treated at LVHN CC over an eight year period, from 2011 to 2018

Table 1: Population Demographics

<table>
<thead>
<tr>
<th>Age (Mean, SD)</th>
<th>67.19 (15.28)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic Renal Disease</td>
<td>60 (30.54)</td>
</tr>
<tr>
<td>Hypertension</td>
<td>132 (67.8%)</td>
</tr>
<tr>
<td>Myocardial Infarction (MI)</td>
<td>48 (25.1%)</td>
</tr>
<tr>
<td>Angina</td>
<td>40 (20.5%)</td>
</tr>
<tr>
<td>Diabetes Mellitus</td>
<td>36 (18.5%)</td>
</tr>
<tr>
<td>Coronary Artery Disease (CAD)</td>
<td>104 (52.8%)</td>
</tr>
</tbody>
</table>

Table 2: Hospital Stay

<table>
<thead>
<tr>
<th>Median Length of Stay</th>
<th>5 Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Postop to Discharge</td>
<td>0.65 Days</td>
</tr>
<tr>
<td>Readmission Within 30 Days</td>
<td>13.4%</td>
</tr>
</tbody>
</table>

Table 3: Mortality Rate

| 30 Day | 4.1% (8) |
| 1 Year | 15.9% (31) |

Table 4: Risk Factors and Complication Rates

| ICD Device Extraction | 11.3% (20) |
| Extraction Due to Infection | 16.0% (28) |
| 3+ Leads Extracted | 20.0% (8) |
| Lead < 5 Years Old | 12.5% (6) |
| Females | 15.9% (9) |
| Not On Antiaggregants | 15.1% (11) |
| *High Risk Cohort | 16.7% (7) |

Figure 1: Indications for Extraction

Figure 2: Procedural Outcome

Figure 3: Complication Rates

Figure 4: Kaplan-Meier Survivability Curve Comparisons

Results
- Patients in increased risk subsets (Infection as Extraction Indication; 3+ Leads Extracted) have a significantly lower survivability rate than those in the general population
- LVHN Lead Extraction Patients have a higher age and high risk demographic, however mortality and complication rates are kept low
  - Age: >75 Years 37.4%
  - High Risk: >2 Comorbidities 69.7%
  - Complication Rate: 15.4%
  - Perioperative Mortality Rate: 3.1%
- Future Steps:
  - Further Exploration Within Significant Risk Factor Subsets
  - Infection Prevention and Awareness: Antibiotic Envelope/Emerging Leadless Tech

Conclusions

References

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