**Optimal timing for pacemaker implantation post cardiac surgery - too early or too late?**

**Background:**

The optimum timing for pacemaker implantation following cardiac surgery is unknown. Many patients regain normal conduction, but longer monitoring periods are more resource intensive. Guidelines suggest implantation at least 3-7 days following surgery depending on the operative indication. We aim to review the timing of pacemaker implantation post cardiac surgery in our centre and identify factors influencing long-term pacing requirements.

**Method:**

Consecutive patients with pacemaker implants from 08/21-06/24 at Auckland City Hospital were included. Baseline demographics were obtained prospectively from our local device registry and clinical notes review. Underlying rhythm and pacing indications were reviewed at 1-month, 3-months, and 6-months. Early implantation was defined as <5 days.

**Results:**

A total of 55 post-surgical patients were implanted with pacemakers (87.3% dual chamber). The median time to implant was 8 days (IQR 6-12). 14.5% were early, all following aortic valve procedures. 47% implanted for high-degree AV block (HDAVB) retained a pacing indication at 1-month, 44% at 3-months, and 39% at 6-months. Median VP% for HDAVB implants was 84% (IQR 7-99.5%) at 1-month, 42% at 3-months (IQR 5.5-99.5%), and 27.5% at 6-months (IQR 1-96.5%). Median AP% for sinus node dysfunction implants was 15% at 1-month (IQR 11.8-46.5%), 78% at 3-months (IQR 45.6-83%), and 40.5% at 6-months (IQR 29.7-51.2%).

Table 1. Baseline Pre-Surgical ECG

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Cohort (n=55)** | **AVR Only (n=26)** | **MVR Only (n=4)** | **CABG Only (n=4)** | **CABG+Valve (n=10)** | **Double Valve (n=9)** | **Other (n=2)** |
| Normal | 61.2 | 72.3 | 33.3 | 75 | 40 | 62.5 | 50 |
| IVCD | 10.2 | 18.2 | 0 | 0 | 0 | 12.5 | 0 |
| RBBB | 14.3 | 4.5 | 0 | 0 | 40 | 25 | 0 |
| LBBB | 6.1 | 4.5 | 33.3 | 0 | 10 | 0 | 0 |
| Bifascicular Block | 6.1 | 0 | 0 | 25 | 10 | 0 | 50 |
| LAFB | 2 | 0 | 33.3 | 0 | 0 | 0 | 0 |

Table 2. Pacing Indications

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
|  | **Cohort (n=55)** | **AVR Only (n=26)** | **MVR Only (n=4)** | **CABG Only (n=4)** | **CABG+Valve (n=10)** | **Double Valve (n=9)** | **Other (n=2)** |
| High Grade AV Block | 74.5 | 76.9 | 100 | 25 | 80 | 77.8 | 50 |
| Sinus Node Dysfunction | 7.3 | 3.8 | 0 | 50 | 10 | 0 | 0 |
| Bradycardia/Pauses during AT/AFl/AF | 9.1 | 11.5 | 0 | 0 | 0 | 11.1 | 50 |
| Bifascicular & 1° AV Block | 3.6 | 7.7 | 0 | 0 | 0 | 0 | 0 |
| 1° AV Block | 1.8 | 0 | 0 | 0 | 10 | 0 | 0 |
| Right Bundle Branch Block | 1.8 | 0 | 0 | 25 | 0 | 0 | 0 |
| 2° AV Block Type I (Wenckebach) | 1.8 | 0 | 0 | 0 | 0 | 11.1 | 0 |

**Conclusion:**

At our centre, the timing of pacemaker implantation post-cardiac surgery is consistent with guideline recommendations. The reduced rate of AVN conduction recovery in AVR patients suggests a shorter monitoring period is reasonable. For other indications, a more prolonged observation period may reduce unnecessary pacemaker implantation.