Pediatric Pacemakers: Results of a Collaborative Electrophysiology-Surgery Program

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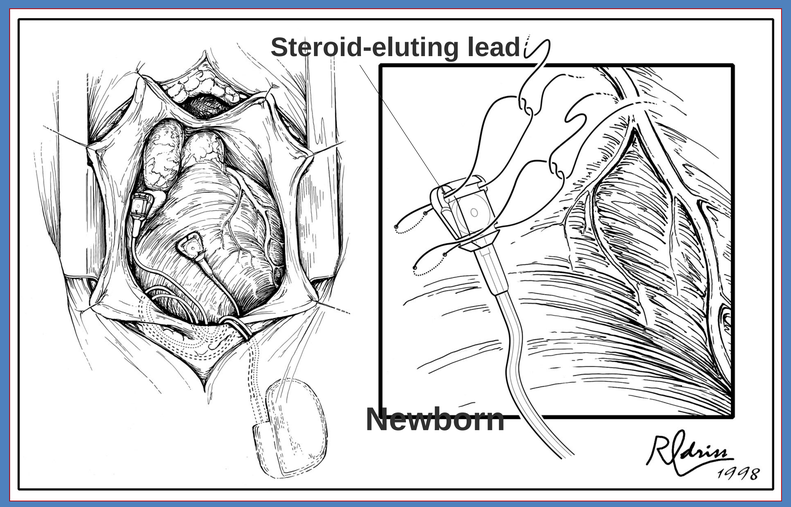
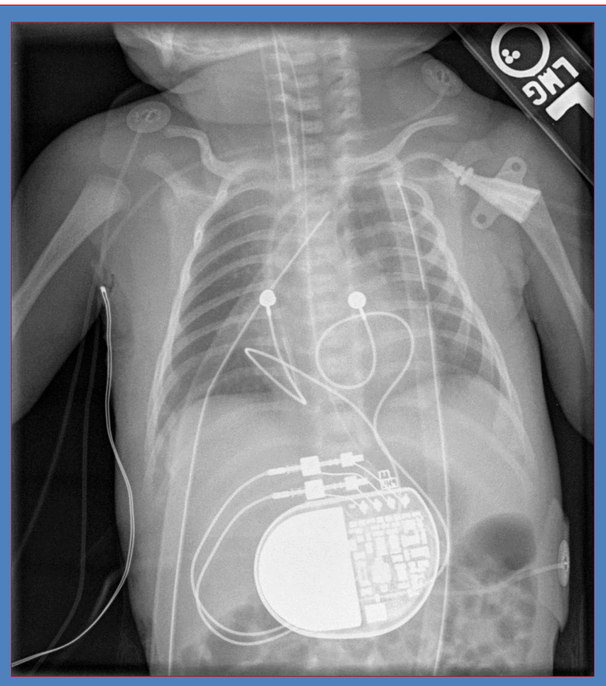
Objective

Evaluate results of pediatric pacemaker placement in a collaborative program where surgeons implant the pacemakers and electrophysiologists provide diagnostic and programming support.





2 day old 2.2-kg newborn with congenital third degree AV block

Strategy

- ✓ Our group has avoided transvenous placement until the patient weighs 20-30 kg to avoid stenosis/ occlusion of the SVC and brachiocephalic veins.
- ✓ This strategy has been facilitated by the enhanced longevity of steroid-eluting epicardial leads.

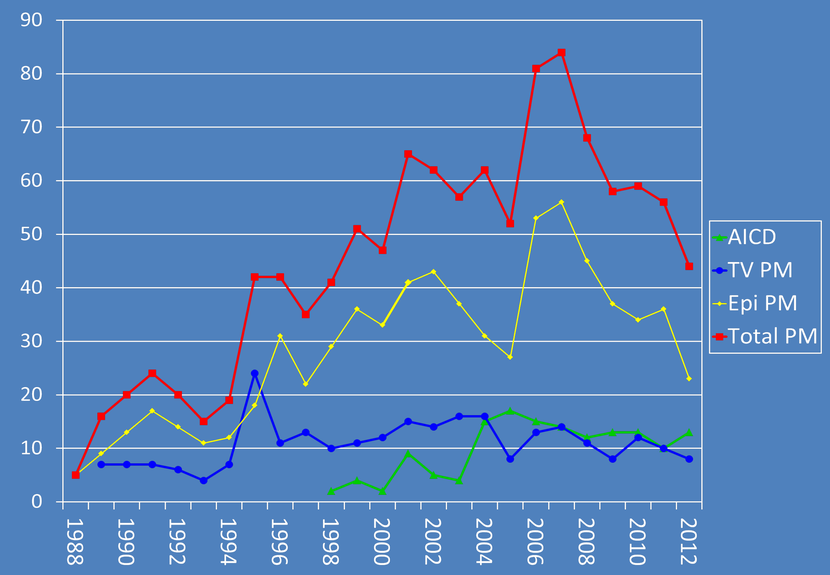
Methods

From 1988-2012 828 patients underwent 1,345 pacemaker-related procedures:

- 452 epicardial pacemakers
- 190 transvenous pacemakers
- 91 AICDs
  - 9 AICDs with epicardial leads
  - 82 AICDs with transvenous leads
- 395 generator changes
- 1,126 epicardial leads placed
- 477 transvenous leads placed

Results

- Mean age at initial pacemaker: 13 ± 10 years
  - Range: 1 day – 48 years
- 20 newborns with congenital heart block
  - Median age: 3.6 days
- 9 infections in 1,345 operations (0.7%)
  - 1 septicemia, 1 mediastinitis
- 71 reoperations in ≤60 days (5.3%)
  - Revision of transvenous lead - 24/477 (5.0%)
  - Epicardial lead revision - 10/1137 (1%)
- 15 patients died in ≤30 days
  - 11 due to underlying congenital heart disease
  - None as a direct complication of pacemaker



Devices by Year, 1988-2012

Conclusions

Pacemaker placement for patients with congenital heart disease in a collaborative program with implants performed by surgeons and diagnostic and programming provided by pediatric electro-physiologists results in excellent patient outcome with very low infection, mortality, and reoperation rates.