Pacemaker Re-Implantation over 25 years
Battery Life Termination or Pacemaker Complication?

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Introduction & Aim of the work: Twenty five years have passed since the first implanted permanent pacemaker (PM) back in 1982 at the Critical Care Department of Cairo University. A series of studies were conducted to register permanent PM implantation and follow up data starting from 1983 till the end of 2006, depending on the patients' admission files and the out-patient follow up records at the PM follow up clinic.

During this lengthy follow up, several pacemakers implanted had to be replaced for a variety of reasons. The present study addresses the issue of re-implantation in a large referral center, namely the Critcal Care Center at Cairo University over a quarter of a century in terms of prevalence, etiology, and long term outcome.

Patients and methods: Over the abovementioned period, *2699* permanent pacemakers were implanted in *2088* patients. Patients studied were divided into two groups, group I covered the period from 1983 to the end of 1993 (including *648* implants in *587* patients), and group II covered the period from 1994 to the end of 2006 (including *2027* implants in *1494* patients). The mean rate of implantation increased from *54/year* in group I, to *160/year* in group II. Permanent PM re-implantation showed progressive increase with time from *70* cases in group I, to *541* cases in group II (mean rate of re-implantation of *6/year* in group I as compared to *42/year* in group II).

Indications of re-implantation	***Group I*** *n= 70*	**Group II** n=541	**Total** (611)
Normal end of life (EOL).	20(28.6%)	332(61.4%)	352(57.6%)
Newer mode or programmability required	8(11.4%)	71(13.1%)	79(12.9%)
Pocket infection and extrusion	24(34.3%)	62(11.4%)	86(14.1%)
Premature EOL	5(7.1%)	27(5%)	32 (5.23%)
Lead replacement	13(18.6%)	37(6.9%)	50(8.2 %)
Electronic component failure	0	7(1.2%)	7(1.2%)
Endocarditis related to PM lead	0	5(1%)	5(0.8%)

n=Total number of re-implants.

Results: Compared to the initial series of patients, the second group exhibited a significantly lower rate of pocket infection and extrusion (11.4% in group II versus 34.3% in group I respectively, p-value=0.00003), and lesser need for lead replacement (6.9% in group II versus 18.6% in group I, p-value=0.002). There was a higher rate of normal battery end of life in group II as compared to group I (61.4% versus 28.6%, p-value=0.9), whereas, in both groups there was comparable prevalence of redo-implantation due to the need for a new pacing mode or programmability (11.4% in group I versus 13.2% in group II), and premature battery end of life (7.1% in group I versus 5% in group II). Two indications for re-do implantation were noticed in group II only; electronic component failure, and infective endocarditis on the pacemaker leads comprising (1.2%, and 1% of re-implantations respectively).