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Adoption of a multi-electrode, phased radiofrequency ablation system for atrial fibrillation ablation by a single operator: outcomes and comparison to 3D mapping system guided, double trans-septal technique

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Aims: A local atrial fibrillation (AF) ablation programme commenced in February 2006 at our centre, performed by a single operator. After the first 12 months, audit results demonstrated a 68% drug-free success rate in 63 patients [7 persistent AF and 56 paroxysmal AF (PAF)] with a further 2% maintaining long term sinus rhythm with anti-arrhythmic drugs (AADs). Fifteen per cent of patients had two or more procedures, with 4% undergoing more than two procedures. Serious complications were limited to tamponade, which occurred in 7%. In November 2007, we switched to the Ablation Frontiers system for both PAF and persistent AF ablations. All patients undergoing ablation continue to take AADs for 6 weeks post ablation, and then stop. Clinic follow-up is at 3 and 6 months. All patients underwent single trans-septal puncture, using a steerable sheath, followed by pulmonary vein (PV) venography and then PV isolation using the PVAC (Ablation Frontiers). Persistent AF cases then had septal ablation and chronic fractionated atrial electrogram ablation using the MASC and MAAC, respectively. If sinus rhythm (SR) was not restored, either IV flecainide or external DC cardioversion was used.

Results: Fifty-two patients (10 female) underwent ablation from November 07 to April 08 (14 ablations were for persistent AF and 38 for PAF). Mean age was 64 years old. Hundred per cent of cases left the lab in SR. In all cases, SR was achieved at the end of the procedure acutely, and the major complication rate (tamponade, stroke/TIA, PV stenosis, and death) was zero. To date, there is complete 3–6 month follow-up data in 29 patients (6 persistent AF and 23 PAF); 4 of the 23 PAF cases have required a redo, and 3 of the 6 persistent cases—subsequent follow-up data will be available for HRC meeting. Nineteen of 23 PAF cases have remained symptom free, off all AADs. Thus, at this (admittedly early stage), the 'first-pass' early success rate is 82% in PAF. Five of six failed ablations are awaiting a redo ablation. In persistent AF, 'first-pass' success at 3 months occurred in three out of six patients, with the others awaiting a redo procedure. One of the three failures has experienced persistent AF becoming PAF, occurring approximately for 12 h three times per week. In PAF, there was a mean of 32.3 ablations per case (SD 9.7) with the PVAC; in persistent AF, there was a mean of 30.8 (SD 17.6) with the PVAC, 11.3 (SD 8.5) with the MASC, and 41.8 (SD 11.6) with the MAAC. Procedure times for PAF are consistently less than 90 min, with the time spent in the left atrium consistently under 60 min.

Conclusion: Our early experience has demonstrated a high success rate following single procedure, dramatically low complication rates, and decreased procedure times. In light of these data, our centre has fully adopted this system for routine ablation of both PAF and persistent AF. Longer term data will be available in September 2008.

	NavX, double T/S		Multi-electrode system	
	PAF	Persistent AF	PAF	Persistent AF
3 month drug free SR	32 of 47 (68%)	6 of 16 (37.5%)	19 of 23 (82%)	3/6 (50%)
Tamponade	3 of 47	1 of 16	0	0
Stroke	0	0	0	0
PV stenosis (clinically)	0	0	0	0
Other	1 dressler-type syndrome	0	0	0

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Catheter ablation for atrial fibrillation: impact of repeat procedures and relevance of centre-specific data

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Aims: Catheter ablation for atrial fibrillation (AF) is increasingly used in the treatment of AF. Repeat procedure rates are variable in reported series but not insignificant. Centre-specific data are important for evaluating performance and for planning resource allocation.

Methods and results: Data of all patients who had undergone catheter ablation for AF in a single tertiary centre with two main operators in the UK were analysed. Patients who had clinically driven repeat ablation for AF recurrence, atrial tachycardia, or atypical flutter were identified. A total of 468 procedures involving 405 patients were carried out between 2001 and 2007. Three hundred and eight-two (82%) procedures were carried out for paroxysmal AF (PAF) and 86 (18%) for persistent AF (PeAF). Sixty-three (13%) of the procedures were repeated. Annual proportion of redo procedures initially demonstrated a progressive reduction but then started to rise, coinciding with starting ablation for PeAF in 2004 (*Figure 1*). Proportion of first procedures which subsequently needed repeat procedures showed an overall decreasing trend with a higher rate of repeat procedure in PeAF (22%) when compared with PAF (14%)

Conclusion: In this single centre series, a learning curve phenomenon appears to exist with a fall in repeat procedure rate over time. However, the rate of improvement in operator skill and technique was not able to avert a rise in the repeat procedure rate when the ablation service evolved to include more complex cases. This will impact significantly on the existing ablation caseload. Real-world centre-specific data are important in considering resource allocation in the face of increasing demand and planning expansion of the service.

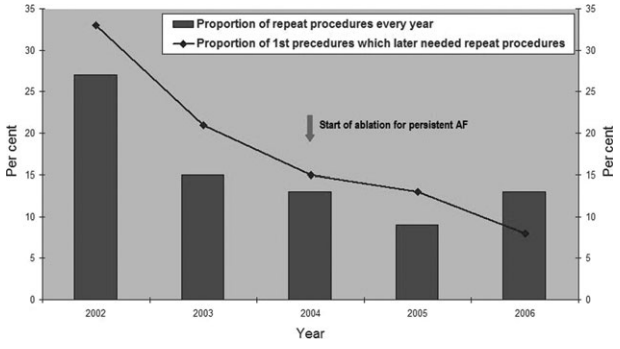

Figure 1 Annual repeat procedures compared with first procedures subsequently needing repeat procedures.