

Section 6A: References

Clinical Memo References

1. McRury I, Panescu D, Mitchell M, Haines D “Non-uniform Heating During Radiofrequency Catheter Ablation With Long Electrodes: Monitoring the Edge Effect” *Circulation* 1997;96:4057-4064
2. Chan EKY, Abati AL and Vepa K “Coagulum index predicts coagulum formation in right atrial radiofrequency energy delivery to ablate atrial fibrillation” *PACE* 2000;11:1856-1856
3. Weiss C, Antz M, Thuncke F, Meinertz T, Kuck KH and Willems S “Radiofrequency catheter ablation using long coiled electrodes: Impact of irrigation on lesion dimensions and incidence of coagulum formation” *PACE* 2001;24:933-938
4. Wittkamp FHM and Nakagawa H “RF Catheter ablation : Lessons on lesions” *PACE* 2006;29: 1285-1297
5. Electrophysiology Report, Lankenau Hospital Cardiovascular Services, date: 10/24/2001
6. Page RL, Wilkinson WE, Clair WK, McCarthy EA, Pritchett ELC “Asymptomatic arrhythmias in patients with symptomatic paroxysmal atrial fibrillation and paroxysmal supraventricular tachycardia” *Circulation* 1994;89:224-227
7. Hindricks G, Piorkowski C, Tanner H, Kobza R, Gerds-Li J, Carbucicchio C and Kottkamp H “Perception of Atrial fibrillation before and after radiofrequency catheter ablation” *Circulation* 2005;112:307-313
8. Pritchett E “Symptomatic arrhythmia recurrence as an outcome in clinical trials of antiarrhythmic drug therapy” *Heart Rhythm* 2004;1:836-840
9. Rana JS, Mannam A, Donnell-Fink L, Gervino EV, Selke FW and Laham RJ “Longevity of the placebo effect in the therapeutic angiogenesis and laser myocardial revascularization trials in patients with coronary heart disease” *American Journal of Cardiology* 2005; 95:1456-1459
10. Leon MB, et al “ A blinded, randomized, placebo-controlled trial of percutaneous laser myocardial revascularization to improve angina symptoms in patients with severe coronary disease” *Journal of the American College of Cardiology* 2005;46:1812-1819

11. Mehra MR, Greenberg BH "Cardiac resynchronization therapy; caveat medicus!" *Journal of the American College of Cardiology* 2004;43:1145-1148
12. Patten M, Maas R, Bauer P, Luderitz, Sonntag F, Dluzniewski M, Hatala R, Opolski G, Muller, H and Meinertz "Suppression of paroxysmal atrial tachyarrhythmias-results of the SOPAT trial" *European Heart Journal* 2004;25:1395-1404
13. Bellandi F, Simonetti I, Leoncini M, Frascarelli F, Giovannini T, Maioli M and Dabizzi R "Long term efficacy and safety of propafenone and sotalol for the maintenance of sinus rhythm after conversion of recurrent symptomatic atrial fibrillation" *American Journal of Cardiology* 2001;88:640-645
14. Atarashi H, Inoue H, Fukunami M, Sugi K, Hamada C and Origasa H "Double-blind placebo-controlled trial of aprindine and digoxin for the prevention of symptomatic atrial fibrillation" *Circulation Journal* 2002;66:553-556
15. Lafuente C, Mouly S, Longas-Tejero MA, Mahe I and Bergmann JF "Antiarrhythmic drugs for maintaining sinus rhythm after conversion of atrial fibrillation" *Archives of Internal Medicine* 2006;166:719-728
16. Hemel N "Quinidine rehabilitated and more lessons from the PAFAC and SOPAT anti-arrhythmic drug trials for the prevention of paroxysmal atrial fibrillation" *European Heart Journal* 2004;25:1371-1373
17. see reference six
18. Vasamreddy CR, Dalai D, Dong J, Cheng A, Spragg D, Lamiy SZ, Meininger G, Henrikson CA, Marine J, Berger R and Calkins H "Symptomatic and Asymptomatic atrial fibrillation in patients undergoing radiofrequency catheter ablation" *Journal of Cardiovascular Electrophysiology* 2006;17:134-139
19. Nergarch A, Frick M "Perceived heart rhythm in relation to ECG findings after direct current cardioversion of atrial fibrillation" *Heart* 2006;92:1244-1247
20. Hindricks G, Piorkowski C, Tanner H, Kobza R, Gerds-Li J, Carbucicchio C and Kottkamp H "Perception of Atrial fibrillation before and after radiofrequency catheter ablation" *Circulation* 2005;112:307-313
21. Viskin S, Golovner M, Malov N, Fish R, Alroy I, Vila Y, Laniado S, Kaplinsky E and Roth "Circadian variation of symptomatic paroxysmal atrial fibrillation" *European Heart Journal* 1999;20:1429-1434
22. Gillis AM, Connolly SJ, Dubuc M, Yee R, Lacombe P, Pilippon F, Kerr CR, Kimber S, Gardner MJ, Tang A, Molin F, Newman D and Abdollah H "Circadian variation of paroxysmal atrial fibrillation" *American Journal of Cardiology* 87:794-798

23. Gerstenfeld EP, Guerra P, Sparks PB, Hattori K, Lesh MD “Clinical Outcome after Radiofrequency Catheter Ablation of Focal Atrial Fibrillation Triggers” *J Cardiovasc Electrophysiol* 2001;12:900-908
24. Humphries KH, et al “New onset atrial fibrillation; sex differences in presentation, treatment and outcome” *Circulation* 2001;103:2365-2370
25. Patton KK, Zacks ES, Chang JY, Shea MA, Ruskin JN, Macrae CA and Ellinor PT “Clinical subtypes of Lone atrial fibrillation” *PACE* 2005;28:630-638
26. Nieuwlaat R, et al. “Atrial fibrillation management: a prospective survey in ESC member countries” *European Heart Journal* 2005;26:2422-2434

The Disease of Atrial Fibrillation

27. Miller J, Zipes D “Catheter Ablation of Arrhythmias” Cardiology Patient Page from the Krannert Institute of Cardiology, Cardiovascular Division, Department of Medicine, Indiana University School of Medicine, Indianapolis, date: 2002
28. Fuster V, et al. “ACC/AHA/ESC 2006 Guidelines for the Management of Patients with Atrial Fibrillation” *Circulation* 2006;114:e257-e354
29. Shimizu A, Centurion OA “Electrophysiological properties of the human atrium in atrial fibrillation” *Cardiovascular Research* 2002;54:302–314
30. Sung R, Lauer M “Atrial Fibrillation: Can We Cure It If We Can’t Explain It?” *J Cardiovasc Electrophysiol* 2005; 16:505-507
31. Markides V, Schilling R “Atrial Fibrillation: Classification, Pathophysiology, Mechanisms And Drug Treatment” *Heart* 2003;89:939–943
32. Saksena S, Prakash A, Krol R, Shankar A “Regional Endocardial Mapping of Spontaneous and Induced Atrial Fibrillation in Patients With Heart Disease and Refractory Atrial Fibrillation” *Am J Cardiol* 1999;84:880–889
33. Scmitt C, et al. “Batrial Multisite Mapping of Atrial Premature Complexes Triggering Onset of Atrial Fibrillation” *Am J Cardiol* 2002;89:1381–1387
34. Ndrepepa G, et al. “Electrophysiologic Characteristics of the Spontaneous Onset and Termination of Atrial Fibrillation” *Am J Cardiol* 2002;90:1215–1220

Relationship of Atrial Fibrillation (AF) to Isthmus Ablation and Atrial Flutter (AFL)

35. Bottoni N, et al. "Outcome After Cavo-Tricuspid Isthmus Ablation in Patients With Recurrent Atrial Fibrillation and Drug-Related Typical Atrial Flutter" *Am J Cardiol* 2004;94:504–508
 - Reports long term clinical outcome of 56 patients with recurrent AF and drug-induced typical AFL resulting in a substantial reduction in the incidence of episodes, quality of life improvement, and decrease in hospitalization
36. Schmieder S, et al. "Acute and long-term results of radiofrequency ablation of common atrial flutter and the influence of the right atrial isthmus ablation on the occurrence of atrial fibrillation" *European Heart Journal* 2003;24:956–962
 - Atrial fibrillation occurrence was significantly reduced after ablation of the isthmus line (112 in 343 patients, 33%) as compared to occurrence of atrial fibrillation before radiofrequency ablation (198 in 363 patients, 55%.)
37. Montenero AS, et al. "The Linear Ablation of Atrial Fibrillation in the Right Atrium: Can the Isthmus Ablation Improve Its Efficacy?" *Journal of Interventional Cardiac Electrophysiology* 2002; 6:251–265
 - 24 patients with recurrent, drug refractory, paroxysmal AF underwent RF ablation in two groups: 15 patients received two RA linear lesions (Group 1), 9 patients received the same two RA linear lesions plus isthmus ablation (Group 2) resulting in no AF recurrences in 26% of Group 1 patients (FU: 23 to 47 months) and 55% of Group 2 (FU: 14 to 23 months) in the absence of any drug treatment
38. Yang Y, et al. "Mechanism of Conversion of Atypical Right Atrial Flutter to Atrial Fibrillation" *Am J Cardiol* 2003;91:46–52
 - Retrospective review of 221 patients with typical atrial flutter and found that bidirectional cavotricuspid isthmus block is associated with cure or control of AF in approximately 50% of patients with AFL
39. Waldo, A "The Interrelationship Between Atrial Fibrillation and Atrial Flutter" *Progress in Cardiovascular Diseases* 2005;48(1):41-56
40. Waldo, A "Mechanisms of atrial flutter and atrial fibrillation: distinct entities or two sides of a coin?" *Cardiovascular Research* 2002;54:217–229
 - Concludes that atrial flutter and atrial fibrillation may be responsible for causing each other

41. Stabile G, et al. "Response to Flecainide Infusion Predicts Long-Term Success of Hybrid Pharmacologic and Ablation Therapy in Patients With Atrial Fibrillation" *J Am Coll Cardiol* 2001;37:1639-44
 - Concludes that the creation of a complete bi-directional conduction block at the inferior vena cava-tricuspid annulus isthmus, plus flecainide administration, reduces the recurrences of both AF and AFL in patients with class IC atrial flutter
42. Nabar A, et al. "Class IC antiarrhythmic drug induced atrial flutter: electrocardiographic and electrophysiological findings and their importance for long term outcome after right atrial isthmus ablation" *Heart* 2001;85:424-429
 - 24 consecutive patients with AF developing AFL while taking propafenone or flecainide received an isthmus lesion ablation resulting in a prevention of AF recurrences in 11/13 (85%) patients with typical AFL and a reduction in AF recurrences in 4/8 (50%) patients with atypical AFL
43. Liu T, Tai C, Chen S "Treatment of Atrial Fibrillation by Catheter Ablation of Conduction Gaps in the Crista Terminalis and Cavotricuspid Isthmus of the Right Atrium" *J Cardiovasc Electrophysiol* 2002;13:1044-1046
 - Case report of a patient with AF where creation of bidirectional conduction block over crista terminalis gaps and the cavotricuspid isthmus was performed and after 6 months of follow-up had no further AF recurrence
44. Wazni O, et al. "Randomized Study Comparing Combined Pulmonary Vein-Left Atrial Junction Disconnection and Cavotricuspid Isthmus Ablation Versus Pulmonary Vein-Left Atrial Junction Disconnection Alone in Patients Presenting With Typical Atrial Flutter and Atrial Fibrillation" *Circulation* 2003;108:2479-2483
 - Concludes that AF and AFL usually share common triggers
45. Wolpert C, Haase KK, Süsselbeck T, Borggrefe M "Hybrid therapy for atrial fibrillation" *European Heart Journal Supplements* 2003;5: H51-H55
 - Concludes that one possible way to achieve clinical and symptomatic improvement in a subgroup of patients with AF is a hybrid therapy with a class IC drug and linear isthmus ablation
46. Nabar A, et al. "Radiofrequency Ablation of "Class IC Atrial Flutter" in Patients With Resistant Atrial Fibrillation" *Am J Cardiology* 1999;83:785-787
 - Results demonstrate that 9/13 patients with typical AFL and symptomatic AF were symptom free at a mean of 4 month follow-up after combined class IC antiarrhythmic drug and right atrial isthmus ablation

Pacemaker Implantation in Patients with Atrial Fibrillation

47. Reston J, Shuhaiber J “Meta-analysis of clinical outcomes of maze-related surgical procedures for medically refractory atrial fibrillation” *European Journal of Cardio-thoracic Surgery* 2005;28:724—730
 - Reports a 3.9% need for pacemaker implantation following maze surgery

Maze procedures for treatment of AF

48. Ruchat P, et al. “A biophysical model of atrial fibrillation to define the appropriate ablation pattern in modified maze” *European Journal of Cardio-thoracic Surgery* 2007;31:65—69
 - Found that incremental ablation lines limited to the left atrium resulted in success rates of 55-80% which increases to 95-100% when right atrial ablation lines are added
49. Jessurun E, et al. “Right atrial modification of maze surgery does not affect refractoriness and conduction patterns of human lone atrial fibrillation” *Europace* 2003;5:39–46
 - Reports that right atrial surgery does not modify the arrhythmogenic substrate of atrial fibrillation implying that maze surgery can be restricted to the left atrium
50. Cox J, Schuessler R, Lappas D, Boineau J “An 8 ½-Year Clinical Experience with Surgery for Atrial Fibrillation” *Annals of Surgery* 1996;224(3):267-275
 - Clinical results for 164 patients that underwent surgical maze procedures reporting a 93% success rate of patients that were arrhythmia free without any antiarrhythmic medication
51. Filipecki A, Saksena S, Lin WH “Effectiveness of Rhythm Control in Persistent or Permanent Atrial Fibrillation with Overdrive Atrial Pacing and Antiarrhythmic Drugs after Linear Right Atrial Catheter Ablation” *Am J Cardiol* 2003;92:1037–1044
52. Kawaguchi A, et al. “Risks and Benefits of Combined Maze Procedure for Atrial Fibrillation Associated with Organic Heart Disease” *J A C* 1996; C.28(4):985-90
53. Gillinov A, Blackstone E, McCarthy P “Atrial Fibrillation: Current Surgical Options and Their Assessment” *Ann Thorac Surg* 2002;74:2210 –7
 - Reports success rates of 70-80%

54. Thomas L, et al. "Atrial structural remodeling and restoration of atrial contraction after linear ablation for atrial fibrillation" *European Heart Journal* 2003;24:1942-1951
 - A radial pattern of linear radiofrequency ablation resulted in restoration of sinus rhythm (79% at 3 years follow-up) and atrial function
55. Deneke T, et al. "Efficacy of an additional MAZE procedure used cooled-tip radiofrequency ablation in patients with chronic atrial fibrillation and mitral valve disease" *European Heart Journal* 2002;23:558-566
 - A modified MAZE operation using cooled-tip radiofrequency ablation can be safely combined with mitral valve surgery and is highly effective in restoring sinus rhythm (80%)

Catheter Ablation of Atrial Fibrillation

56. Wazni O, et al. "Radiofrequency Ablation vs Antiarrhythmic Drugs as First-line Treatment of Symptomatic Atrial Fibrillation" *JAMA* 2005;293:2634-2640
 - RCT of catheter ablation (PV isolation) vs. antiarrhythmic medication demonstrating that PVI may be feasible as first line treatment for patients with symptomatic AF
57. Oral H, et al. "Circumferential Pulmonary-Vein Ablation for Chronic Atrial Fibrillation" *N Engl J Med* 2006;354:934-41
 - RCT of circumferential pulmonary vein ablation vs. amiodarone and 2 cardioversions (control) resulting in 74% success rate from recurrence of AF at one year for the ablation group and 58% in the control group
58. Pappone C, et al. "A Randomized Trial of Circumferential Pulmonary Vein Ablation Versus Antiarrhythmic Drug Therapy in Paroxysmal Atrial Fibrillation" *JACC* 2006;48(11):2340-7
 - RCT results showed an 86% success rate of patients in sinus rhythm at one year for the ablation group versus 22% in the control group
59. Feld G "Catheter Ablation of Atrial Fibrillation: What Is the Best Technique for Achieving a High Cure Rate With Acceptable Risk?" *JACC* 2004;43(11):2054-6
 - Focuses mainly on left atrial ablation lesions for treatment of AF

60. Erdogan A, et al. "Quality-of-Life in Patients with Paroxysmal Atrial Fibrillation After Catheter Ablation: Results of Long-Term Follow-Up" J Cardiovasc Electrophysiol 2001;12:900-908
- Concludes that patients with PAF experience a significant improvement in QoL after successful catheter ablation and patients with recurrences show improvement to a lesser extent
61. Cappato R, et al. "Worldwide Survey on the Methods, Efficacy, and Safety of Catheter Ablation for Human Atrial Fibrillation" Circulation 2005;111:1100-1105

Patient Recognition of Symptoms of AF

62. Patten M, et al. "Event-Recorder Monitoring in the Diagnosis of Atrial Fibrillation in Symptomatic Patients: Subanalysis of the SOPAT Trial" J Cardiovasc Electrophysiol 2006;17:1216-1220
- Concludes that patients' symptoms are not a reliable surrogate parameter for the prevalence of AF and medications can change a patient's perception of AF symptoms

Right Atrial Lesions

63. Padeletti L, et al. "Prevention of Paroxysmal Atrial Fibrillation in Patients with Sinus Bradycardia : Role of Right Atrial Linear Ablation and Pacing Site" J Cardiovasc Electrophysiol 2006;17:1216-1220
- Results indicate that right atrial linear lesions did not provide any additional therapeutic benefit to combined antiarrhythmic drug therapy and septal or nonseptal atrial pacing in patients with sinus bradycardia and paroxysmal AF
64. Arruda M, Natale A "The Adjunctive Role of Nonpulmonary Venous Ablation in the Cure of Atrial Fibrillation" J Cardiovasc Electrophysiol 2006;17:S37-S43
- Discussion of adjunctive role of right atrial ablation

Placebo Effect

65. Gerstenfeld E, et al. "Clinical Outcome after Radiofrequency Ablation of Focal Atrial Fibrillation Triggers" J Cardiovasc Electrophysiol 2001;12:900-908
 - Reports that there can be a significant improvement in QoL questionnaire after an unsuccessful ablation procedure highlighting the tendency for a placebo effect with subjective measures
66. Olshansky B "Placebo and Nocebo in Cardiovascular Health" J Am Coll Cardiol 2007;49:415-21
 - Discusses placebo effect in cardiovascular disease including catheter ablation for atrial fibrillation

Linear Atrial Ablation with Long Coiled Electrodes

67. Mitchell M, McRury I, Haines D "Linear Atrial Ablations in a Canine Model of Chronic Atrial Fibrillation" Circulation 1998;97:1176-1185
 - Discusses risk of coagulum formation with long coiled electrodes with a single temperature sensor as well as incomplete lesion continuity produced by these electrodes

Current Treatment of Atrial Fibrillation

68. Fisher J, et al. "Atrial Fibrillation Ablation: Reaching the Mainstream" PACE 2006; 29:523-537
 - Review of literature through 2005 outlining technique and at least 6 months follow-up
69. Reddy V "The Clinical Implications of Current Treatment Approaches, Including Ablation, for Atrial Fibrillation" Medscape Cardiology 2005; 9(1): posted 1/14/05
 - Catheter ablation can be considered routine clinical practice in many experienced centers