THE AFIB REPORT

Your Premier Information Resource for Lone Atrial Fibrillation!

NUMBER 66 **FEBRUARY 2007** **7th YEAR**

Welcome to this first issue of our 7th year of publication. As I reflect back to January 2001 when I wrote the first issue of The AFIB Report I marvel at my naivety in thinking that the cause of lone atrial fibrillation would soon be known, prevention would be commonplace, and effective treatments would be available to those unfortunate few who were diagnosed with afib. How wrong I was!!

The underlying causes(s) of afib are still poorly understood and mainstream medicine is not exactly pulling out all stops to find them. I have never come across an article in a peer-reviewed medical journal that actually addressed the question of prevention and, for the most part, drug treatment is ineffective and often accompanied by serious side effects.

I don't think it is overstating the case to say that the research done by fellow afibbers and discussed on the Bulletin Board and in the Conference Room have advanced our knowledge of how to manage afib more than has "official" medical research. Dietary measures, supplementation and lifestyle changes have all been discussed, tested and either added to our "List" or discarded as not generally effective.

There is, however, one area where medical research has excelled and progressed with astonishing speed – this is in the use of catheterization and surgical procedures to permanently (we all hope!) eliminate afib. In this issue we complete our survey of these procedures based on input from 335 afibbers who underwent a total of almost 500 individual procedures. It is very clear from the survey that the all-important variable determining success or failure is the skill and expertise of the EP or surgeon performing the procedure. The type of procedure used is much less important. This said, it would appear that undergoing a mini-maze by a top-ranked cardiac surgeon gives the best chance of success with a single procedure. This success rate is only equaled by the very best EPs performing the conventional PVI with repeat ablations as required.

Also in this issue, we present a fascinating and thought-provoking article by a fellow afibber John Hagan, MD. John's story adds to existing evidence that, while vigorous, regular exercise may be good for general cardiovascular health, it does significantly increase the risk of lone afib. So, if you know any fellow runners who have luckily avoided afib so far, perhaps a valuable New Year's "gift" to them would be the advice to not overdo it.

Last, but not least, if you need to restock your supplements, please remember that by ordering through my on-line vitamin store you will be helping to defray the cost of maintaining the web site and bulletin board. You can find the store at http://www.afibbers.org/vitamins.htm - your continuing support is very much appreciated.

Wishing you good health and lots of NSR,

Hans

2006 Ablation/Maze Survey – Part 2

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Overview of Procedures

The procedures used to cure atrial fibrillation can be divided into two groups – **catheterization procedures** and **surgical procedures**. Both types involve the creation of lesions on the heart wall (right and/or left atrium) in order to stop the propagation of impulses not involved in conducting the heart beat "signal" from the sino-atrial (SA) node to the atrio-ventricular (AV) node.

Catheterization procedures create the lesions from the inside via an ablation catheter threaded through the femoral vein and are performed by electrophysiologists (EPs). Surgical procedures create the lesions from the outside and access is either through incisions between the ribs or may involve open-heart surgery and the use of a heart/lung machine. Surgical procedures are carried out by cardiothoracic surgeons.

The overwhelming majority of catheterization procedures use radiofrequency (RF) energy to create the lesions, but some EPs prefer the use of nitrogen-cooled catheters (cryoablation) rather than RF-powered ones due to their reduced risk of creating pulmonary vein stenosis.

The original surgical procedure, the full maze or Cox procedure, used a cut and sew protocol for creating lesions forming a "maze" that conducted the electrical impulse from the SA to the AV node, while at the same time interrupting any "rogue" circuits. The cut and sew method has now largely been replaced by the use of RF-powered devices, but cryosurgery, microwave application, and high-intensity focused ultrasound (HIFU) have all been tried as well and are preferred by some surgeons.

The so-called mini-maze procedure also involves lesions on the outside of the heart wall, but access to the heart is through incisions between the ribs rather than via open-heart surgery. The mini-maze may involve the creation of the full maze set of lesions, but usually focuses on pulmonary vein isolation. The procedure does not involve the use of a heart/lung machine.

Most of the rogue electrical impulses that create afib originate in the area where the pulmonary veins join the left atrium. Thus, all catheterization procedures aimed at curing afib involve electrical isolation of the pulmonary veins from the left atrium wall. Depending on the origin of the afib, catheterization procedures may also involve ablations of the superior vena cava and coronary sinus (thoracic veins), linear ablation of the left atrial roof, and a standard cavotricuspid isthmus (right flutter) ablation.

Surgical procedures, except for the full maze, also focus on isolating the pulmonary veins, but in addition may involve lesion creation at specific spots located by mapping, removal of the left atrial appendage, and disconnection of the ligaments of Marshall – a potent source of vagal input.

The catheterization procedures covered in this part of the survey are left atrial flutter ablation, right atrial flutter ablation, cryoablation, and AV node ablation + pacemaker installation. The surgical procedures covered are the maze procedure and the so-called "mini-maze" or minimally invasive maze procedure. The main difference between the full maze and the mini-maze procedure is the method of access to the heart. The maze involves a 6-12" long cut through the breastbone, while the mini-maze provides access through two or more 2" incisions between the ribs. Another important difference is that the maze procedure requires the use of a heart/lung machine, while the mini-maze does not.

Evaluation of Background Data

Seventy-five afibbers responded to this part of the survey and provided details of a total of 86 procedures. Most respondents (78%) had a surgical procedure or a flutter, AV-node, or cryoablation as their first procedure with the remaining 22% having had an unsuccessful RF PVI procedure before undergoing one of the above-mentioned procedures. Fourteen respondents (19%) had a second procedure, 12% had a third, and 7% had a fourth or fifth procedure.

The procedures were distributed as shown in the following table.

	Number of Procedures				
Procedure	1st	2nd	3rd	Further	Total
Cryoablation	4	2	0	0	6
Maze procedure	9	1	2	1	13
Mini-maze procedure	19	1	2	1	23
Right atrial flutter	18	5	2	1	26
Left atrial flutter	2	3	2	1	8
AV node ablation + pacemaker	6	2	1	1	10
Total	**58**	**14**	**9**	**5**	**86**

General Background of Respondents

Demographics	Male	Female	Total
Gender distribution	80%	20%	100%
Average (median) age*	59	60	59
Age range (present)	42-72	45-79	42-79
AF confirmed by diagnosis	90%	87%	89%
Underlying heart disease	19%	20%	19%
Mitral valve prolapse	9%	13%	10%
Mitral valve regurgitation	10%	7%	10%
Median age at diagnosis	49	49	49
Age range (at diagnosis)	20-68	14-73	14-73
Median age at last procedure	58	59	58
Age range (last procedure)	39-71	43-74	39-74

* at time of completing questionnaire

There are no significant differences between males and females as far as demographic variables are concerned. However, the incidence of underlying heart disease in this group of 75 afibbers is twice as high as the incidence among the 335 afibbers discussed in Part 1 of the survey.

A total of 61 respondents had provided detailed information regarding their type of AF (adrenergic, mixed, vagal). The majority of respondents (79%) had paroxysmal afib. Mixed (random) AF was the most common type of paroxysmal AF at 63% followed by vagal at 28%, and adrenergic at 9%. These percentages are similar to those found in the overall group covered in Part 1.

Most paroxysmal afibbers (82%) experienced episodes at least once a week and 31% had episodes every day. Only 10% of those seeking a cure through catheterization or surgical procedures had episodes less frequent than once a month. This indicates that most afibbers only opt for a procedure when the frequency becomes intolerable or permanent AF becomes a reality.

The median duration of paroxysmal episodes was 10 hours with a range from 1 to 60 hours.

The majority of respondents (93%) were taking one or more drugs on a continuous basis to reduce their episode frequency and duration, or ameliorate the effects of their permanent afib. The most popular drug was amiodarone used by 23% of respondents, sotalol used by 17%, and beta-blockers by 14%.

Catheterization Procedures

Right Atrial Flutter Ablation

Twenty-six respondents had undergone a right atrial flutter ablation either as an initial procedure (18 respondents) or as a follow-up procedure after a PVI, mini-maze or unsuccessful right atrial flutter ablation.

Atrial flutter and AF are similar in that they both involve abnormal, sustained, rapid contractions of the heart's upper chambers (atria). In atrial flutter the atria contract 220 to 350 times a minute in an orderly rhythm. In AF the rate of contraction may be as high as 500 beats/minute and the rhythm is totally chaotic. The two arrhythmias can both occur as a result of an enlarged atrium or in the aftermath of open-heart surgery, but the mechanism underlying them is quite different. Nevertheless, they can coexist in the same patient and one may convert to the other.

There are two major types of atrial flutter – common or type 1 and atypical or type 2 flutter. Type 1 flutter is by far the most common (65-70% of all cases) and is characterized by a specific conduction abnormality in the lower right atrium. Type 2 or atypical flutter, on the other hand, has no easily discernible origin and is therefore harder to deal with.

Because the location of the origin of atrial flutter, at least in the common type, is so well known and consistent from patient to patient radio frequency catheter ablation can be used with considerable success to permanently eradicate atrial flutter. Unfortunately, this procedure is unlikely to cure AF, which may often coexist with atrial flutter. There is also some evidence that atrial flutter patients who have a successful ablation increase their risk of later developing AF by 10-22%. So undergoing RF ablation for atrial flutter may not remove the necessity of dealing with AF.

Because of the close connection between AF and atrial flutter, it was quite common, in the early days of ablation, to perform an atrial flutter ablation in the hope that it would cure the AF. The atrial flutter ablation involves only the right atrium so there is no need to pierce the septum to the left atrium as is done in a PVI.

After the 1998 discovery that 80-90% of paroxysmal episodes originate in the left atrium near the pulmonary veins, the use of the right atrial flutter ablation in an attempt to cure AF became less common, but the procedure

is still used as a first attempt in patients with a combination of AF and flutter. It is, of course, also used in patients suffering from right atrial flutter only.

Only one respondent out of the 18 first procedures reported that the procedure had cured their afib; thus, in 94% of cases the right atrial flutter ablation was unsuccessful in eliminating afib. It did, however, eliminate the flutter component in 3 patients who experienced both flutter and afib. The procedure was also successful in eliminating flutter in the 3 patients who developed the condition after a PVI or mini-maze.

The majority (65%) experienced no adverse events relating to their procedure, but 11% did experience hematoma in the thigh/groin area, and 11% reported the development of post-procedural left atrial flutter or tachycardia.

A significant increase in resting heart rate post-procedure was reported by only one respondent.

Thirteen (72%) of the 18 respondents who had a right atrial flutter ablation as their first procedure went on to undergo a radiofrequency PVI as their next procedure. It is interesting that only one of the 18 right atrial flutter procedures was performed at a top-ranked institution.

Conclusion – Right atrial flutter ablations are generally successful in eliminating right atrial flutter, but only very rarely (6% of cases) do they cure AF as well.

Left Atrial Flutter Ablation

Left atrial flutter is considerably less common than right atrial flutter, but can occur as a side effect of a PVI procedure or mini-maze. Post-procedural left atrial flutter may disappear on its own over a 6-month period or so, but some cases require a repeat ablation to fix the flutter.

Two respondents had left atrial flutter as their primary condition and one was successfully ablated for this, while at the same time eliminating afib.

Six respondents developed left atrial flutter after their PVI or mini-maze and 5 were successfully ablated for the condition. Most (63%) experienced no post-procedural adverse effects, but 2 respondents experienced hematoma. Two also saw a significant increase in resting heart rate after the procedure.

Conclusion – Left atrial flutter can occur as a sequel to a PVI or mini-maze. In most cases it disappears on its own, but in some cases a repeat ablation is necessary to correct the flutter. This procedure (based on a very small sample size) is usually successful.

Cryoablation

The cryoablation procedure is similar to the standard RF ablation procedure except that the ablation catheter is nitrogen-cooled rather than electrically heated. The advantage of cryoablation is that it reduces procedure stroke risk and does not create pulmonary vein stenosis even if the ablation is done inside the pulmonary veins.

Six afibbers, all male, had undergone cryoablation – 4 as a first procedure and 2 as a second procedure, one following a failed cryoablation attempt and the other following a RF ablation. Only one of the 4 original procedures was successful, while both the follow-up procedures resulted in elimination of AF. Thus, based on this very small sample, the procedural success rate of cryoablation PVIs is 50%. Three of the 6 procedures were not accompanied by any adverse effects, but 2 patients reported hematomas and 1 reported the development of both left and right atrial flutter. No respondents reported any significant change in resting heart rate after the procedure.

Two of the successful procedures were performed by Drs. Rodriguez and Timmermanns in Maastricht, The Netherlands and one by Dr. Gregory Feld at the University of California at San Diego.

Conclusion – It is clearly not possible to conclude anything definitive about the effectiveness of cryoablation based on a sample of six. However, it does appear that post-procedural heart rate elevation is not a problem with cryoablation.

AV Node Ablation + Pacemaker Implantation

Palpitations, elevated heart rate, and other major symptoms of an atrial fibrillation episode are associated with rapid and irregular contractions of the left ventricle rather than with the actual "quivering" of the left atrium. So, although the root cause of AF is found in the left atrium, its effects can, to a large extent, be eliminated by isolating the AV node (the ventricular beat controller) from impulses originating in the left atrium and feeding the ventricles their "marching orders" from an implanted pacemaker. AV node ablation + pacemaker installation is a relatively simple procedure and is therefore mostly successful. It does also provide substantial symptom relief allowing afibbers to live a fairly normal life. Nevertheless, the procedure is considered a last resort for the following reasons:

- It does nothing to stop the fibrillation in the atrium and may, in fact, hasten the progression to permanent AF.
- It does not reduce stroke risk as do PVIs and maze procedures. Thus, the patient must continue on warfarin for life.
- It makes the patient dependent on the pacemaker. If it or the leads malfunction, or the battery runs out the patient may die.
- It does little to prevent the fatigue and reduced exercise capacity felt by some afibbers during an episode.

Ten afibbers (30% female) had undergone the AV node ablation + pacemaker implantation. Six had it as their first procedure and the other 4 after failed maze or PVI procedures. Three out of the 10 respondents (30%) had underlying heart disease, a proportion substantially higher than the 10% observed in the overall group.

The members of the AV node ablation group also tended to have been diagnosed later than the overall group (age 56 vs. 48 years) and had their last procedure later in life (age 62 vs. 56 years). Forty percent of the group was on amiodarone vs. only 11% in the overall group.

Eight of the 10 patients felt that their procedure had been successful, even though it gave symptomatic relief only. The remaining 2 were not satisfied with the outcome and 1 went on to have a circumferential PVI (partially successful), while the other underwent a successful maze procedure. It is worth noting that none of the AV node ablation procedures were performed at top-ranked institutions.

None of the patients reported adverse events. The pacemaker determined the resting heart rate (60-80 bpm).

Conclusion – Based on this small sample of 10 respondents, it is clear that AV node ablation + pacemaker installation is usually a successful procedure and provides significant symptomatic relief even though it does not cure AF. Nevertheless, it is still the procedure of last resort.

Surgical Procedures

Maze Procedure

Thirteen respondents reported having undergone a full maze procedure – 9 as their initial procedure, 3 after failed PVIs, and 1 after an unsatisfactory AV node ablation + pacemaker implantation. As shown in the table below the maze group differed significantly from the total group of 335 afibbers in several respects.

Variable	Total Group	Maze Group
No. in group	335	13
Age at diagnosis, yrs.	48	41
Underlying heart disease, %	10	38
Permanent AF, %	19	45
Paroxysmal with daily episodes, %	22	67
Amiodarone usage, %	11	33

It is clear from the above comparison that respondents undergoing the maze procedure had a higher incidence of underlying heart disease and permanent afib than did the total group. This makes sense since the full maze procedure really would be "overkill" for a true lone afibber (no underlying heart disease) with paroxysmal AF.

Three out of the 13 procedures were cryo-maze. In other words, the maze lesions were applied with a nitrogen-cooled catheter rather than with RF energy or the cut-and-sew approach. Only one of these procedures was successful. It is, of course, problematical, perhaps even unwise, to pronounce on success rates with only 13 procedures in the sample. Nevertheless, as with other procedures, there would appear to be a definite trend for procedures performed by top-ranked cardiac surgeons to be more successful than those performed by less prominent ones.

	# of	Success Rate,%			Adverse Event
Surgeon	Procedures	Complete	Partial	Failure	Rate,%
Top-ranked	6	67	17	17	40
Other	7	14	14	72	71
Total	13	38	15	46	58

It is, of course, open to argument who is and who is not "top-ranked", but I do believe that the surgeons in the above group (Drs. Damiano, Geiss, Gillinov and McCarthy) would all fall in this category.

The relatively low complete success rate for even top-ranked surgeons is unexpected. The success rate for the full maze procedure is often quoted at 90% or better. However, a recent report issued by the Washington School of Medicine, Barnes-Jewish Hospital (Dr. Damiano's "home base") arrived at a complete success rate of 67% and a partial success rate of 24% for an overall success rate of 91%.[1]

It would thus seem that success rates for the maze procedure include patients who are afib-free, but only with the help of antiarrhythmics (at the 12-month check-up). Using this measure the success rate of top-ranked surgeons in our survey was 84%. An overall average success rate of 84% was also observed in a study of 3832 patients who had undergone a Cox-Maze III procedure.[2] Thus, while lower than expected, the success rate for top-ranked surgeons found in our survey is not out of line with published studies.

Our results, albeit based on a very small sample, lead to the conclusion that, just as in the case of conventional PVIs, the choice of surgeon or EP is the all-important variable with the type of procedure playing a lesser role in the final outcome.

Seven out of 12 (58%) of patients undergoing the maze procedure experienced one or more adverse events, some of them quite serious. Two suffered a transient ischemic attack (TIA, mini-stroke), one reported excessive fluid retention, and one pericarditis. This rate of serious adverse events is higher than experienced in any other procedure.

The majority (82%) of the 12 patients for whom data was available continued on warfarin for 3 months or more, and 42% were prescribed amiodarone after the procedure. Five patients (42%) recovered fully in less than 3 months, but the remaining 7 took more than 3 months to do so. Half the respondents reported an increase in

resting heart rate of 10 bpm or more and only one reported a decrease. The increase applied whether or not the procedure was successful. One of the unsuccessful maze patients went on to undergo an AV node ablation + pacemaker implantation, while the others had no follow-up procedures and continued to experience afib episodes.

Conclusion – Unless performed by a top-ranked cardiac surgeon the full maze procedure is clearly not as successful as generally believed and may have significant adverse effects. Thus, there would seem to be little reason for a paroxysmal afibber with no heart disease to select this highly invasive and difficult procedure over a standard PVI or mini-maze procedure.

Mini-Maze Procedure

Twenty-three respondents reported undergoing a mini-maze procedure, 19 as their initial procedure and 4 after one or two failed radiofrequency PVIs. As shown in the table below there were no significant differences in 5 key variables between the total group of survey respondents and the mini-maze group except for a somewhat greater incidence of underlying heart disease.

Variable	Total Group	Mini-Maze Group
No. in group	335	23
Age at diagnosis, yrs.	48	49
Underlying heart disease, %	10	23
Permanent AF, %	19	18
Paroxysmal with daily episodes, %	22	24
Amiodarone usage, %	11	13

Two of the mini-maze procedures used microwave energy to create the lesions; both were successful. One of the procedures was performed by Dr. Adam Saltman at the University of Massachusetts; the other was done at Good Samaritan Medical Center in Phoenix, AZ.

One mini-maze procedure used high intensity focused ultrasound (HIFU) for lesion creation and was unsuccessful.

Of the remaining 20 procedures, 12 were carried out by 5 top-ranked surgeons.

- Dr. Randall Wolf — University of Cincinnati Hospital — 8 procedures
- Dr. Dale Geiss — OSF, St. Francis Medical Center, Peoria, IL — 1 procedure
- Dr. James Cox — Ohio State University Hospital — 1 procedure
- Dr. Adam Saltman — University of Massachusetts — 1 procedure
- Dr. Michael Mack — Medical City, Dallas, TX — 1 procedure

RF-powered catheters or clamps were used for lesion creation in all 20 procedures. The outcome results are presented below.

	# of	Success Rate,%			Adverse Event
Surgeon	Procedures	Complete	Partial	Failure	Rate,%
Top-ranked	12	75	0	25	50
Other	8	25	12	63	38
Total	20	55	5	40	45

NOTE: Two of the successful procedures involved the full maze set of lesions

It is clear that the mini-maze is a highly successful procedure if performed by a top-ranked cardiac surgeon. It is, like the conventional RF PVI, far less successful if performed by less skilled operators. The incidence of adverse events tended to be slightly higher than for the conventional PVI and were generally more serious as shown in the table below.

Adverse Event	Patients Involved,%
Left atrial tachycardia/flutter	17
Right atrial flutter	13
Pneumonia	9
Tamponade	4
Serious hemorrhage	4
Subcutaneous nerve pain	4

For comparison, outcome results for a single radiofrequency PVI are presented in the table below.

Outcome of Single RF PVI

	# of	Success Rate,%			Adverse Event
EP	Procedures	Complete	Partial	Failure	Rate,%
Top 3*	121	61	5	34	39
Top 10	179	54	6	40	39
Other	179	22	9	69	43
Total	358	38	7	55	41

* Bordeaux, Cleveland Clinic, Marin General

It is evident that a single mini-maze procedure performed by a top-ranked cardiac surgeon is likely to be more successful than a single RF PVI performed even by the very best EP. The fact that the success rates for other than top-ranked surgeons and EPs are equally poor for conventional PVIs and mini-mazes is perhaps the best example yet of the crucial importance of selecting the most skilled doctor to perform the procedure, and equally, of the relative lack of importance of the procedure chosen.

The standard RF PVI can be repeated, whereas I have not seen any examples of full maze and mini-maze patients being given the option of a second procedure if the initial one fails. Thus, it is of interest to compare the final outcomes of RF PVIs after repeat ablations.

Final Outcome of Multiple PVIs

	# of	Success Rate,%		
EP	Patients	Complete	Partial	Failure
Top 3*	92	78	7	15
Top 10	131	72	8	20
Other	106	37	15	48
Total	237	57	11	32

* Bordeaux, Cleveland Clinic, Marin General

The success rate for the top three institutions after multiple PVIs is very close (difference not statistically significant) to that obtained by top cardiac surgeons performing the mini-maze procedure. Overall, the final outcome for the conventional PVI and the mini-maze is not significantly different when the final outcome for all patients (not just those treated by top-ranked surgeons or EPs) is considered.

Thirty-five percent of respondents recovered fully in less than 2 months, but 30% took 3 months or longer to return to their pre-procedure level of stamina.

Only 9% of respondents had been checked for pulmonary vein stenosis perhaps indicating that this possible complication is not a concern for the mini-maze procedure.

Patients with a successful outcome experienced afib episodes for less than a month (or not at all) after the procedure, while those with an unsuccessful outcome reported episodes for more than a month post-procedure. Twenty-six percent of patients did not take warfarin after the procedure, but 56% took it for 3 months or longer post-procedure. Eighty-three percent of all patients were prescribed antiarrhythmics after with amiodarone and flecainide being the most popular.

Four of the unsuccessful and the one partially successful procedure respondents went on to undergo further procedures. One had a successful AV node + pacemaker implantation, one had two conventional RF PVIs which finally resulted in a cure. The remaining two had one conventional RF PVI each with the outcome being uncertain at this time (less than 6 months since procedure).

Fourteen kept track of their resting heart rate before and after the procedure. About half (57%) experienced a significant increase post-procedure, 21% observed no change, and 22% observed a decrease. There was no correlation between success and heart rate increase.

Conclusion – Based on this survey it would appear that a mini-maze procedure performed by a top-ranked cardiac surgeon provides the best chance of being cured of AF with one single procedure. However, the incidence and severity of adverse events would seem to be higher than for catheterization procedures. It would also seem (based on the experience of just one respondent so far) that it might be possible to get a second chance if the procedure fails by following up with a conventional catheter-based PVI.

Summary

A total of 86 procedures, other than the conventional RF PVI, was performed in order to eliminate AF or flutter arising from a PVI procedure. The following observations were made:

- Right atrial flutter ablations are generally successful in eliminating right atrial flutter, but only very rarely (6% of cases) do they cure AF as well.

- Left atrial flutter or tachycardia occurs fairly frequently as a sequel to a RF PVI or mini-maze. In most cases it resolves on its own, but in some cases a repeat ablation is necessary to correct it. This procedure (based on a very small sample size) is usually successful.

- There were only 6 responses from afibbers who had undergone cryoablation, so it is not possible to draw conclusions as to the effectiveness and safety of this procedure. However, it does appear that post-procedural heart rate elevation is not a problem with cryoablation.

- Based on a small sample of 10 respondents it would appear that AV node ablation + pacemaker installation is usually a successful procedure and provides significant symptomatic relief even though it does not eliminate the fibrillation of the atria.

- Unless performed by a top-ranked cardiac surgeon the full maze procedure is less successful than generally believed and may have significant adverse effects. Based on the input from just 13 respondents, there would seem to be no reason for a paroxysmal afibber with no underlying heart disease to select this procedure over a conventional RF PVI or mini-maze procedure.

- A mini-maze procedure performed by a top-ranked cardiac surgeon would appear (based on 23 responses) to provide the best chance of being cured of AF with a single procedure. It would also seem (based on the experience of just one respondent so far) that it might be possible to get a second chance if the procedure fails by following up with a conventional, catheter-based PVI.

This concludes the evaluation of the 2006 ablation/maze survey. Again, my sincere thanks to all those who participated.

References

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Fascinating Rhythm: Atrial Fibrillation – The Beat Goes On

by John C. Hagan III MD

Teaser: ***As runners pound out mile after mile, year after year wondering what part of our musculo-skeletal system will self-destruct next, we believe our exercise creates a heart and lungs that are indestructible. Wrong!***

We runners worry a lot about injuries. Run long enough, far enough, fast enough and something is sure to ache, break, swell, tear, twist, bleed, blister or grow arthritic. The usual suspects: feet, ankles, knees, hips, back. On the other hand, there are parts of our bodies we never expect to fail. We pride ourselves in our heart and our lungs. As runners pound out mile after mile, year after year wondering what part of our musculo-skeletal system will self-destruct next, we believe our exercise creates a heart and lungs that are indestructible.

My heart, it seems, had not got the indestructible message. Thus my consternation one evening a year and a half ago to feel my heart racing about 190 beats per minute. I haven't been able to generate that kind of tachycardia with maximal exercise effort for 40 years. Not a good thing. I hadn't exercised in two days. In fact, I had just showered and was preparing to go to bed. I retrieved my stethoscope from our home first aid kit. I'm no longer facile with medical instruments unless they have lenses and lights in them. After a brief re-familiarization, I listened to my heart sounds. Hmmm. Irregularly irregular and astonishingly fast. Hey, runners don't get atrial fibrillation (AF) do they? After 30 minutes, I decided to go to the hospital to find out.

With my by now concerned wife, I drove to North Kansas City Hospital. I noted how much different it looked approaching the emergency room as a patient rather than as attending physician. It was, well, scary and intimidating. My complaint of a cardiac arrhythmia moved me to the front of a very long line of waiting, less emergent emergencies. Once hooked up to an EKG monitor, my AF diagnosis was confirmed. "What's with you runners and atrial fibrillation?" an ER doctor I know came over to ask. "The last four physicians treated here in the ER with AF are all big time runners." I had no answer but I vowed to find out.

I was converted with medications to sinus rhythm and hospitalized for an extensive work-up. These tests confirmed my heart was in good shape and there were no other contributing factors to the AF. This, my cardiologist explained, was "lone" AF—the best kind to have. I was discharged on medication and aspirin; the AF returned. I was placed on beta blockers and the AF vanished. But so did all my energy, my exercise capacity and much of my ability to remain conscious when standing up.

Since I treat glaucoma patients with beta blocker eye drops, I thought I had a good understanding of side effects in this ubiquitous class of medications. To put up with these side effects for weeks on end gives one an entirely new perspective. I was breathless after climbing a flight of stairs, running was reduced to laborious walking. Support hose were necessary to deal with significant orthostatic hypotension. I developed a progressive constant cough and post nasal drainage. I was depressed. I was sick and tired of being sick and tired.

Ultimately I decided I could no longer put up with beta blockers. Off medications, the AF returned and I was hospitalized to try yet another medication. When I inquired why I had to be in the monitored coronary care unit, I was told, albeit gently, that some patients developed potentially fatal "pro-arrhythmias." For three days I watched my pulse blip regularly on the monitor. Thankfully, I was not pro-arrhythmic.

This story, thus far, has a happy ending. I measured serial home blood pressures and my cardiologists agreed that I had mild hypertension that should be treated. I'm on medications for AF and hypertension that are well tolerated. I run and exercise as easily as I did 5 years ago. I've given up caffeine and decongestants with pseudoephedrine. I don't drink alcohol beverages. I get some extra heartbeats now and again especially if I get upset or angry. I try to not get upset or angry.

Learning Good Things From a Bad Experience

This whole "heartening" experience has been a great teacher to me personally and professionally. It has made me a better husband, father, grandfather and friend. It has made me a more skillful and empathetic physician. In my ophthalmology practice, I have reduced my utilization of beta blockers to the absolute minimum. I inquire about side effects frequently on all patients and beta blocker patients in extreme detail.

As a patient, I experienced the value of a readily and constantly available high quality emergency and trauma center. In the hospital, I was reminded of the tremendous importance of good nurses, our partners in healthcare. We must work with the nursing and hospital systems to insure that patient-to-nurse ratios do not rise to the level that quality of care diminishes. I was reminded of how valuable—whether rendered by a physician, nurse, technician or any hospital or medical practice employee – a smile, a kind word, a gentle touch and a caring and empathetic demeanor are in dispelling fear and anxiety. I saw how the malpractice insurance crisis is affecting patient care. My cardiologists were losing associates and unable to find replacements. They were working unbelievable hours to staff their clinics and hospitals. My office appointments were often at 6:30 AM.

I've learned that nothing "guarantees" perfect health. This was re-emphasized by the recent death of our young, athletic, non-smoking contributing editor Alan Clark MD from lung cancer. I'm at peace with my own mortality. I exercise and run to improve the quality of my life not necessarily to extend it.

I have learned the value of living each day as if it were my last. I revel in the high honor of belonging to the distinguished profession of medicine. I am re-dedicated to championing medicine in its frequent socio-economic-legal-legislative battles.

I have discussed "lone" AF with my three running colleagues at North Kansas City Hospital. Each tells a story similar to mine. I wrote an acquaintance cardiologist that I met at Emory who, like me, was a member of the Atlanta track club. He's now team physician to the Atlanta Braves and the Falcons. He responded that AF was one of the more common problems he deals with in these highly trained athletes. He also informed me that he himself has AF that is often triggered by very cold drinks.

That's it. My conclusions, anecdote piled on anecdote, is that endurance athletes with physiological bradycardia are at increased risk of "lone" AF. Overall exercise reduces the risk of coronary artery disease, aids in the treatment of hypertension, hyperlipidemia, depression and weight control. In moderation, exercise is one of the most important life habits one can have. As I wrote in 1974, in the long run it's survival of the fittest[1].

Reference

Hagan III JC. "The Doctor as a Coronary Candidate: Survival of the Fittest", *Resident and Staff Physician*, August 1974

Originally published in *Missouri Medicine*, Vol. 103, May/June 2006, pp. 200-01
(Permission to re-publish was granted by the author)

THE AFIB REPORT is published 10 times a year by:

Hans R. Larsen MSc ChE, 1320 Point Street, Victoria, BC, Canada, V8S 1A5
E-mail: editor@afibbers.org World Wide Web: http://www.afibbers.org