

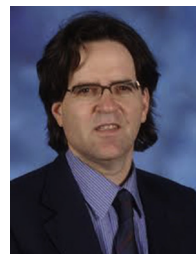
complete responsibility for the integrity of the information and the accuracy of the analysis.

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Key Words: surgical ablation, atrial fibrillation, coronary artery bypass grafting

Discussion



Dr Niv Ad (Falls Church, Va). I'll start with a question in line of what I just told Chris, that the endpoint of surgical ablation I think is somewhat relying on the entire finding. But you had the admission data. Can you tell us anything about the reason, the cause of the admission, because you can say if it was for atrial arrhythmia, if it was for cardioversion, if

it was for any of those things. Any differences between the groups?



Dr. J. Scott Rankin (*Morgantown, WV*). Yes. The readmissions (early in the first 90 days) were higher in the ablation group by about 15%, mainly for the diagnosis of atrial arrhythmias: flutter, fibrillation, and unspecified atrial arrhythmias. There was not a difference for repeat ablation in the cath;

it was the same in both groups. But after the 90 days, the readmissions were 15% less in the patients who had ablations, and that may be related to multiple different factors.

Our study has a much different design than Dr Malaisrie's. First of all, we were looking only at patients who had admissions with defined AF twice in the preceding year in the CMS database. So these are all persistent AF patients. And then secondly, there advantages to a propensity matched study in some situations, but one of the problems is examining only the center of the Gaussian distribution, and from other studies, we know that the relative benefit of ablation for mortality is probably pretty constant across all baseline risks. Thus, the absolute mortality benefit may be greater in those higher risk patients that are eliminated from the propensity matching, and with propensity matching, differences tend to go to the null. We believe regression analysis is better for large data sets with established covariates and risk models, such as these.

Dr Ad. I completely agree, but I would like maybe if Ralph can jump in and say there is a push now from the industry to have a study that is going to do pulmonary vein isolation and exclusion of the left atrial appendage in all CABG patients to reduce the risk of stroke due to perioperative A-fib. What you are telling us, it's kind of interesting, is that actually by applying surgical ablation, which I completely agree, you may actually increase A-fib, because we don't really know if it's a tendency to treat A-fib or there was more A-fib postoperatively and what was happening afterwards.

Dr Rankin. Then you are talking about the early readmissions?

Dr Ad. Yes. So basically, and I just want your opinion about it. We know that virtually postsurgical ablation patients do have about 30% A-fib within the first 30 days. I don't know much about the 90 days.

So what is your comment about this study design as a preventive measure for A-fib to apply pulmonary vein isolation and appendage exclusion based on your findings?

Dr Rankin. I would not be in favor of doing prophylactic ablation in patients with no preoperative atrial fibrillation and prefer transient amiodarone prophylaxis in these patients, as validated in the PAPABEAR trial. Dr Badhwar published a paper on trends in the STS database, and looked at the 2014 US coronary bypass population. The vast

majority of the CABG patients with AF ablation probably had simple pulmonary vein isolation, and about 89% had left atrial appendage occlusion. So that's probably the dominant operation applied to the patients in the current study.



Dr Ralph J. Damiano (*St Louis, Mo*).

Scott, congratulations. You are certainly adding to the body of evidence. It's still hard in this study, and I agree with you, propensity matching is not ideal, but they were clearly selecting the lower-risk patients to have surgical ablation in this, and there

may have been some selection bias for that that you couldn't risk-adjust for.

Dr Rankin. You say that, but I have incredible confidence in the ability of current STS regression models to adjust for differences in baseline characteristics. We can go over this aspect later, but we have multiple examples of the accuracy of regression modeling in recent studies. For sure, there is no perfect technique, but I think regression analysis of an entire real-world population is the best current approach, even better than randomized trials, where there are a lot of problems, as you know. Thus, I would stand by the accuracy of STS regression data.

Dr Damiano. I like it, and I agree with your conclusions. We did a lot of big STS studies which showed that off-pump was better than on-pump surgery in the early days, if you can remember that, with "risk-adjusted," but then when the randomized trials came, we got different results.

Dr Rankin. Yes, you are right, but there are multiple other factors involved that would have to be considered.

Dr Damiano. I agree with your conclusion. I just think you always have to be a little careful. But arguing back with me, I would have said that the one thing that would suggest that they got adjusted, because it didn't affect the early phase mortality, that makes it really compelling that it was something about the operation, because if you thought if they were really high-risk patients, then the early-phase mortality would be different in the nonablation group, but they were pretty similar.

Dr Rankin. Well, as you taught me, most of the coronary bypass patients don't have enlarged left atria, so PVI is more effective in those, and most of the studies show a 60 to 80% conversion rate. That is probably the conversion rate we are dealing with here in this population.

Dr Damiano. Though I would say just as an aside, it is not with your study, this was a short study. We have seen that virtually in the CABG population also, and this was more of a persistent but even paroxysmal, the failure rate with PVI alone if done just with the clamps, once you get out to 5 years, is dramatic; it's over a 50% failure rate. So, I would hate for people to leave to think that PVI and clipping is a good thing.

Dr Rankin. We agree with you; you have taught us that; and a biatrial maze is our current approach for all patients with A-fib. But that's probably not what was done here.

Dr Damiano. This is important, because I do agree with you. As great as it would be to do a randomized trial—and we know the problems and it's never going to get done and we keep getting told, well, I just don't want to do ablation—but I think this is adding, and the same with Chris's study, this is adding to some evidence to suggest there are some real long-term benefits to the patient.



Dr Jack Sun (*Orange, Calif*). I do want to start off by saying there are few patients that I operate on that if they have A-fib that I don't do a full Cox-Maze on. So, I believe in it. I would say that my concern is that for those of us who really believe in it and are aggressive about it, sometimes I feel

like we are a little too gung-ho about wanting to make sure everybody is doing it. And part of that, and my concern is, I do look at Dr Madry's study, and I can believe it. We have been all trained that there are decades of data that if we had longer clamp times and longer pump times there is higher mortality. So how can we come out and say we are doing a procedure that takes longer and increases those times with no increase in mortality?

So, my concern is that we are kind of trying to convince everyone that there is no increased risk at all by doing a Cox-Maze procedure, and by doing so it's actually hurting

the cause, because a lot of surgeons aren't going to believe that, number one. And, number two, it actually may hurt us, because then we start, like those of us in California and New York where we have isolated CABG being publicly reported and then they are saying, well, look at these studies that show CABG and Cox-Maze shows no difference in operative mortality, so we are going to include all those patients now in isolated CABG. And then, if it's not really true, it ends up hurting our data.

So, if you could add some comments about that, I would really appreciate it.

Dr Rankin. Well, I think you make a very good point, but we need to stay focused on what happens to the patient long-term—and I believe the evidence is mounting that if the patient has atrial fibrillation and requires a coronary bypass, then, the outcomes at 5 years are very significantly better. So, we have all these political problems and public reporting problems, but the key is the patient. If we do better for the patient, those other problems will take care of themselves. We are now performing biatrial ablations in virtually all coronary bypass patients with preoperative AF.

Dr Sun. Agree. So, we are looking at long-term benefit, which is why we do it, but I do worry about us saying there is no increase in risk.

Dr Rankin. I agree, but we have shown that in fact there may be a small early mortality benefit for ablation in mitral patients, and the cause could relate to better postoperative cardiac output in sinus rhythm, less thromboembolism, etc.