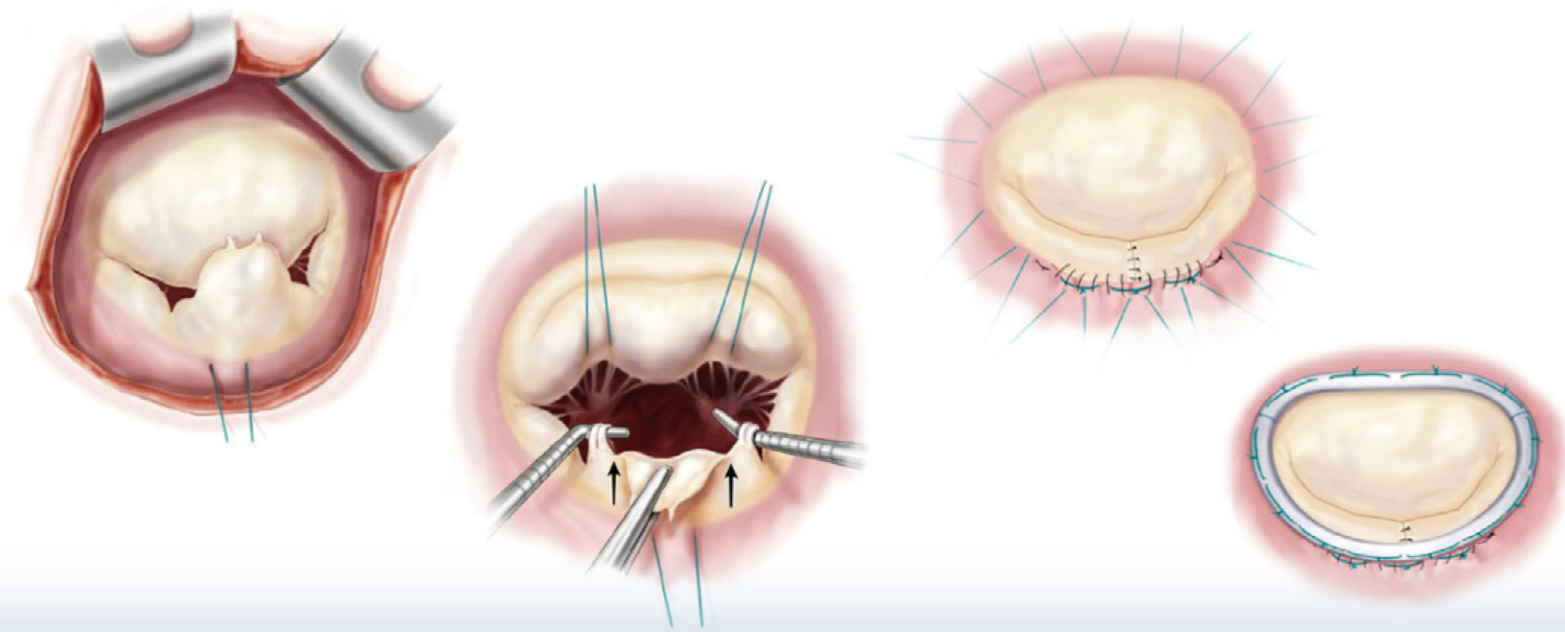




Webinar Transcript

Advances in Mitral Valve Surgery & Valve Management Guidelines



Webinar Speakers

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I. Introduction from Adam Pick, HeartValveSurgery.com founder

Dear Patients & Caregivers,

As patients with mitral valve disease can be confused about their diagnosis, their treatment options, the timing of surgery, the surgeon selection process and patient outcomes, The Mount Sinai Medical Center, The Mayo Clinic and HeartValveSurgery.com held a live, online webinar titled, “Advances in Mitral Valve Surgery & Valve Management Guidelines” on December 19, 2014.

During this live event, Dr. David Adams and Dr. Rick Nishimura shared critical information about mitral valve disease and the guidelines for treating mitral valve disorders.

The webinar was an overwhelming success – with over 230 patient registrations from all over the world. For those patients and caregivers who were unable to attend this live event, I prepared this eBook to help you.

If you have any questions, please email me at adam@heartvalvesurgery.com.

Keep on tickin!

Adam
Patient & Website Founder

II. Featured Webinar Speakers

The featured speakers for this webinar include:



Dr. David Adams

Cardiac Surgeon
Mount Sinai Hospital
(866) 306-9648

[Click to see my profile.](#)



Dr. Rick Nishimura

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III. Written Transcript & Presentation Slides

In addition to providing you the written transcript of the “Advances in Mitral Valve Surgery & Valve Management Guidelines” webinar, we will also provide you the presentation slides shared during the online event.

Webinar Introduction



Adam Pick: Hi, everybody. My name is Adam Pick, and I'd like to welcome you to the webinar Advances in Mitral Valve Repair and Valve Management Guidelines. If I have yet to meet you, I'm a former patient and I'm the founder of HeartValveSurgery.com. Our mission is very simple: we want to educate and empower patients. This webinar, which had registrations from over 200 patients in countries all over the world, was designed to support that mission.

During the webinar, all participants will be in what we call “listen-only” mode. That being said, you can submit your questions during the webinar by typing them into your control panel in the upper right part of your screen. Simply post your questions, and we'll get to them as we get to the “Q&A” section of the webinar. Lastly, at the end of the webinar, we're going to ask you to complete a very quick five-question survey.

I am very thrilled to introduce the featured speakers of this webinar. Dr. David Adams is the cardiac surgeon in chief for The Mount Sinai Health System and the program director of the [Mount Sinai Hospital Mitral Valve Repair Reference Center](#), which has set a national benchmark with greater than 99% degenerative mitral valve repair rates. The Mount Sinai Hospital is one of the top 10 hospitals in the nation for cardiology and heart surgery, according to the US News and World Reports.

Dr. Rick Nishimura is a professor of medicine at the Mayo Clinic. A cardiologist, Dr. Nishimura is the lead author of the 2014 AHA/ACC Guidelines for the Management of Patients with Valvular Heart Disease.

I could go on-and-on about the achievements of Dr. Adams and Dr. Nishimura, and their accomplishments in cardiac care. Instead, I'd like to show you why these men – and Dr. Adams in particular – are so celebrated by the patients, their families, and friends in the community of HeartValveSurgery.com.

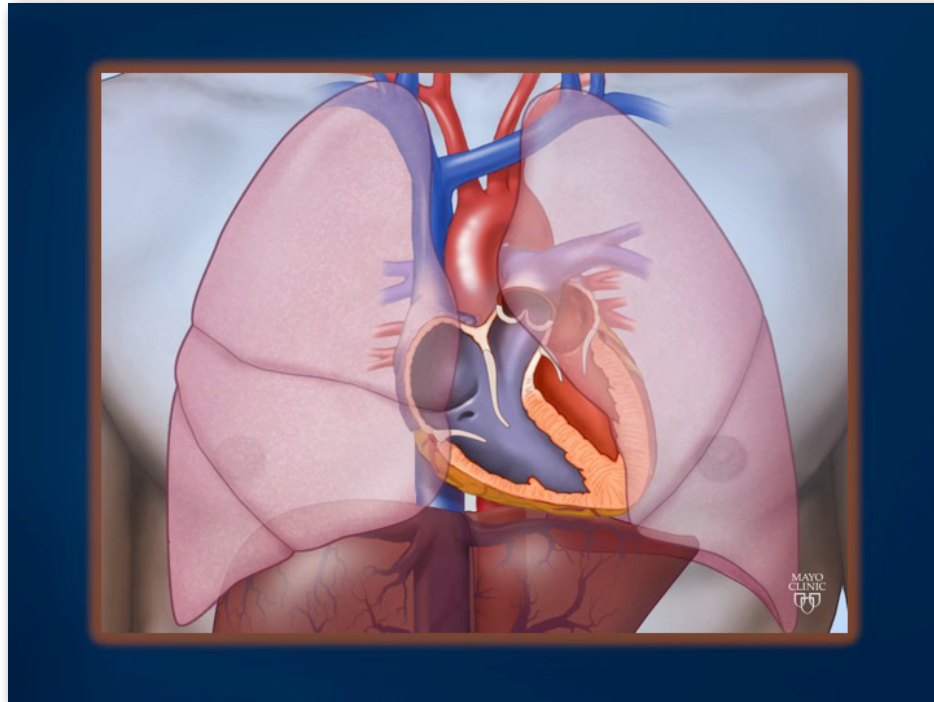


Since launching this website in 2006, Dr. Adams has successfully treated over 100 patients from our community, including Sophie Marsh, Monique Battaglia, Jim Smith, Jim

Jones, Cindy Tarver, Joseph Kusiak, Robert Spath, and Selma Kaplan. Personally, I've been fortunate to watch Dr. Adams operate here in the United States and in the Dominican Republic on a medical mission. Most recently, Dr. Adams performed successful mitral surgery on the president of Cyprus.

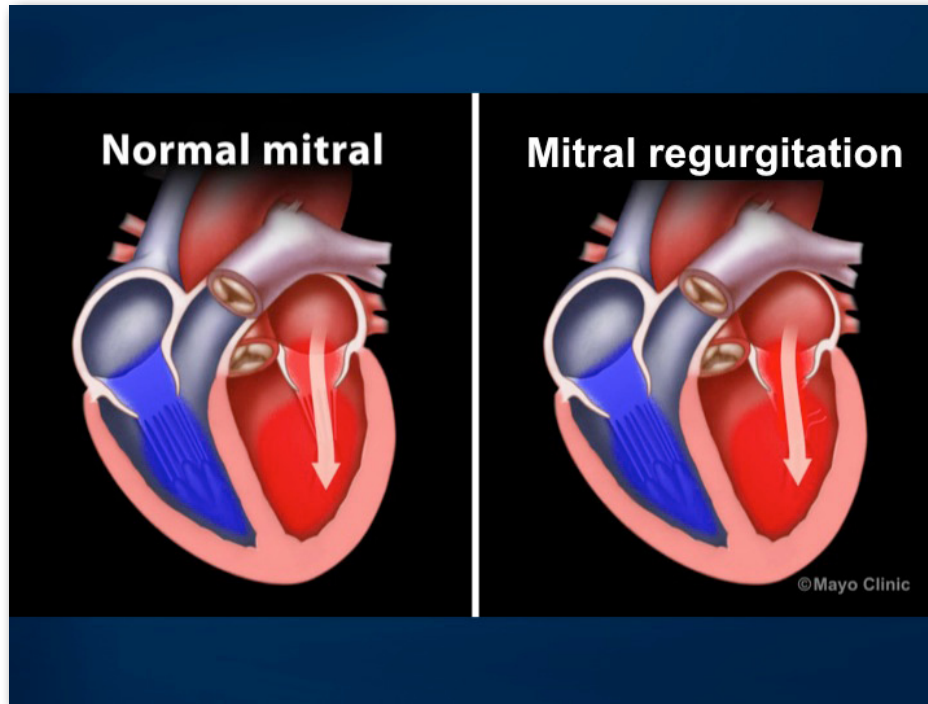
Personally, I am humbled that Dr. Adams and Dr. Nishimura are taking time away from their very busy practices to share their clinical experiences during this educational webinar. To start, I'd like to open this up with a discussion about the human heart.

The Human Heart



Dr. Adams: What we're looking at here is a picture of the heart and the chest, and the key thing that we always explain to patients is we have four chambers in our heart. We have these flaps called heart valves, and they basically open and close in a way that moves boluses of blood from one chamber to the other. Nature counts on these valves being unidirectional, so we want blood to normally flow from one chamber to another, and we want to do it with as little energy loss as possible. That's what makes the heart a very efficient muscle.

Mitral Valves: Normal and Problematic



Dr. David Adams: On the next slide, you can see a video of the normal valve, how the blood is moving. It actually moves in a figure of eight from the blue side through the lungs, comes back through the mitral valve, and then gets ejected out to the big tube, the aorta, to the rest of our body.

On the right side, you see [mitral valve regurgitation](#). What you can see is that the blood is coming through the mitral valve normally, but as the heart squeezes, a bolus of blood is going backwards. That's what's called a [leaky heart valve](#), or mitral valve regurgitation. Because the way nature sets up this directionality of blood, as well as the pressures – there's a large pressure difference in different chambers – once a valve starts leaking, that changes these relationships, and that has long-term pathological condition. Sometimes it's related to how patients feel. Sometimes it's related to the efficiency of the heart.

The other thing you can see here is one of the mechanisms that valves leak, and that is the strings. The chordae that suspend the valve in position are prone to break or elongate. Nature has a lot of ways to line these little doors up, but over time, sometimes the

chords wear out. When they do, that's what will cause the regurgitation.

Adam Pick: You mentioned that a bolus of blood might flow backwards. For the patients on the call, they might not know what a bolus is. Can you quantify the amount of blood that flow backward?

Dr. Adams: I always tell patients you can have a quarter of your blood volume actually going backwards, and severe regurgitation for each heartbeat. How do you explain that to a patient?

Dr. Nishimura: The heart will fill up with a certain amount of blood and eject it forward into the rest of the body, but in the situation of the regurgitation, half of that blood actually can go backwards into the lungs.

Adam Pick: Wow, I never knew it was that much.

Dr. Adams: I always explain that to patients: it's like losing cylinders in your car engine, because fatigue is a very common symptom in valvular heart disease. It's an early symptom. Of course, that's because the blood has oxygen, and you're putting blood backwards into an oxygenated chamber, as opposed to forward to your body where it really wants the oxygen.

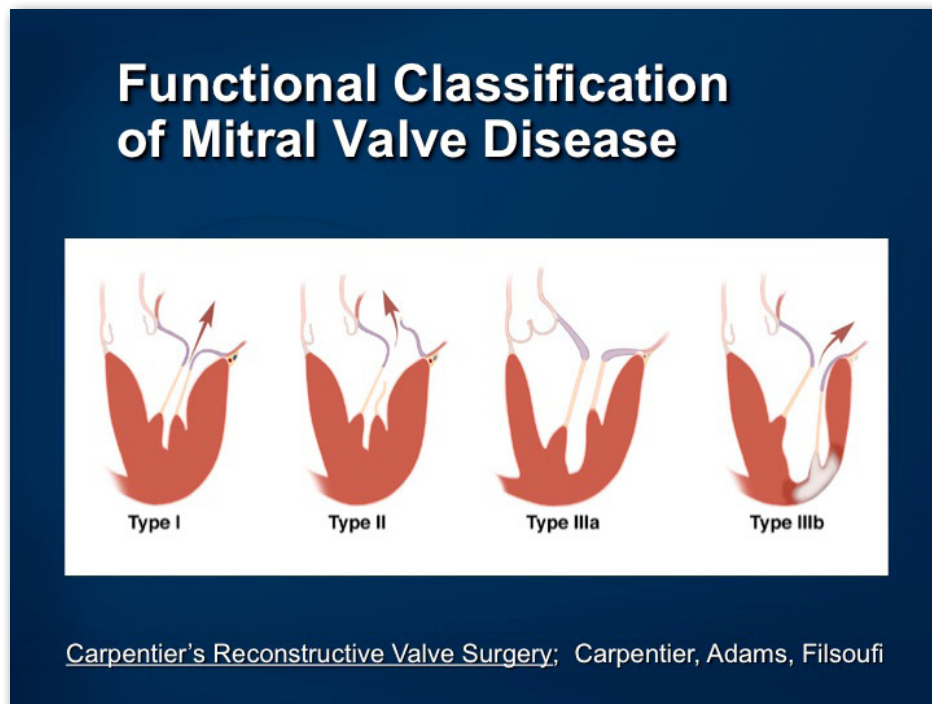
Dr. Nishimura: As long as you're talking about the car engine, I also want to bring up that the heart now is working overtime. It's like keeping your engine at 5,000 RPMs the entire time. It's pumping twice as hard to be able to keep that forward blood going. At some point in time in your car, if your RPM's are going at 5,000 the whole time, the motor is going to wear out. What can happen here with this leaky valve is even if you don't feel poorly... The motor can go out which is the big pumping chamber of the heart: the left ventricle.

Dr. Adams: That's really important because you'll see as we go through the decision-making process – about when to intervene on a leaky mitral valve – that this impact about the pump is a very important one. As you put strain on the pump, you may not have symptoms, but the pump may start showing signs of wear. That's one of the strongest indications that we see in patients needing an intervention.

Here, we see the right ventricle and the left ventricle. These are the major parts. Here we see three of the valves. Let's see the first valve that we're going to be talking about

today and then valves on the left side of the heart, the aortic valve, and the mitral valve – they're causing problems because most of the valve disease we see in this country is disease of the aortic valve or the mitral valve. Those are the predominant problems. We're going to be talking about that for the next several minutes.

Classifications of Mitral Valve Disease

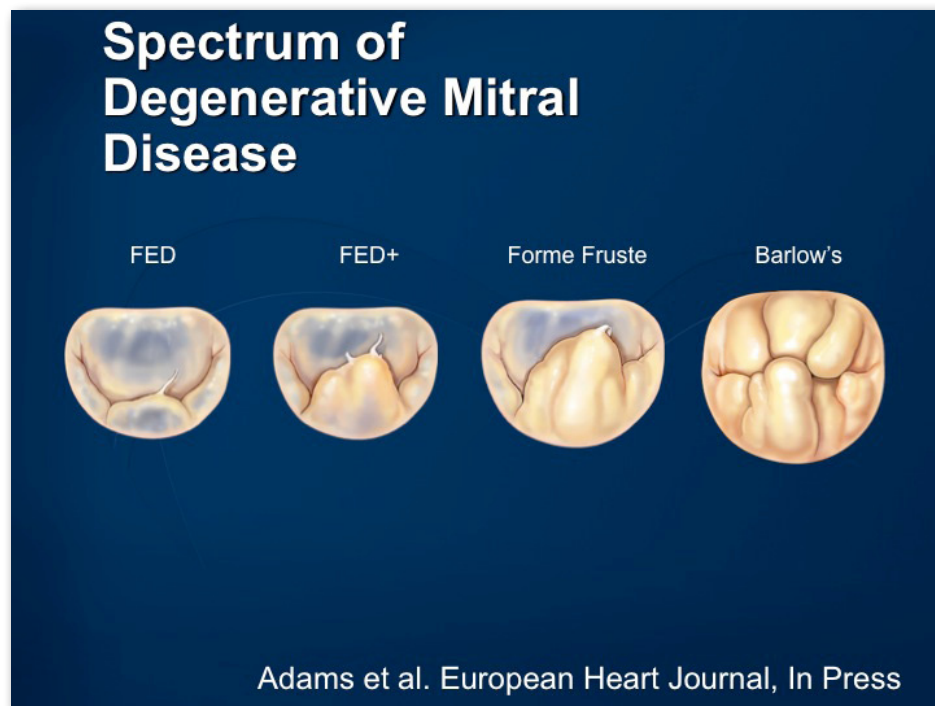


Dr. Adams: Every patient that has a mitral valve disorder – or is suspected to have a valvular disorder based on a physical examination, will undergo an echocardiogram. What that does is it lets us look at the motion of these flaps, and characterize the strength of the ventricle, and the size of the ventricle and mitral valve.

One thing that's very important is we're trying to sort out is the mechanism of these flaps not moving. The most common issue is that a string is broken and that one flap moves above the other. That's why it's called prolapse, or [leaflet prolapses](#).

There's other mechanisms too. Sometimes the frame around the tube – or around the valve – can dilate. That's common with an arrhythmia called [atrial fibrillation](#). Rheumatic disease can cause scarring below the valve and tug the valve into the ventricle so the leaflets get stiff and can't come together.

Then the other disease is when you have a heart attack. If your heart muscle is not moving normally, a normal valve can be pulled open. That's differentiated now, in the new guidelines, by primary and secondary. These are very different diseases and have very different connotations in terms of our recommendations.



Mitral Valve Disease & Atrial Fibrillation

Adam Pick: Dr. Adams, you mentioned atrial fibrillation (AFib). Is it common with mitral valve disease that patients with mitral valve disease also have AFib?

Dr. Nishimura: It's actually quite common to have atrial fibrillation. Atrial fibrillation is actually an electrical abnormality. You can consider your heart having an electrical system and a plumbing system. The leaky valve is the plumbing system, but there's an electrical system that can go haywire, to cause your heart rate to go very, very fast and irregular. Sometimes the blood going backwards from the left ventricle to the left atrium, causing a high pressure in the left atrium, can lead to atrial fibrillation. That's why a plumbing problem can actually lead to the electrical problem that patients will feel.

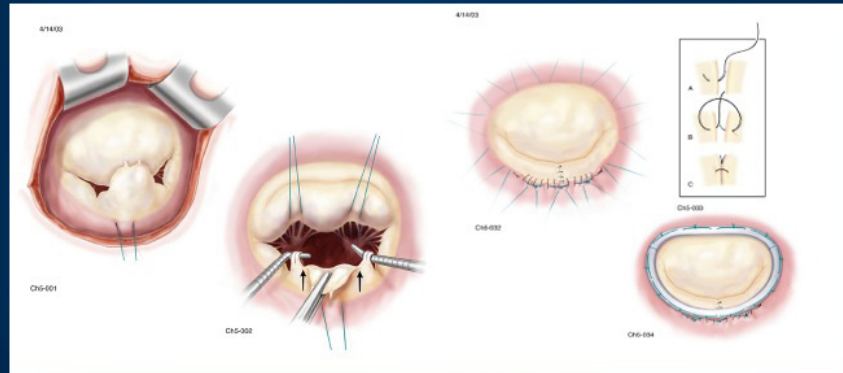
Adam Pick: Dr. Adams, when you're performing surgery can you treat the mitral valve disorder and the atrial fibrillation in one procedure?

Dr. Adams: It's very common now to treat the atrial fibrillation at the time of surgery. Alleviating the mitral regurgitation will cure some patients. Decreasing the pressure and normalizing the volume will sometimes take those triggers away that cause atrial fibrillation. We also do procedures called Maze procedures because, basically, you're creating a pathway for normal electrical current. When you do those sorts of procedures, you increase the likelihood patients to go back into a normal rhythm.

I think one thing that's important to emphasize is that atrial fibrillation is a turning point in valve disease. It's one of the key turning points in a patient that might be followed for mitral valve regurgitation. Atrial fibrillation is one of the important triggers now, I think, that lead to a discussion of timing intervention. Atrial fibrillation is an important marker that it's probably time to think about dealing with the mitral valve regurgitation.

The other thing that's coming out in the guidelines is that because imaging is becoming so much more precise, we're getting much better at characterizing simple versus complex prolapse. This is very important because we really want to try and individualize the matching of a complexity of disease with an experience of a cardiac center, because mitral valve repair – there are two ways you can treat mitral valve regurgitation. One is to do a [mitral valve repair](#). If you go to the next slide, I'll show you what that means.

Approaches to Mitral Valve Repair



Carpentier's Reconstructive Valve Surgery; Carpentier, Adams, Filsoufi

Dr. Adams: If you do a valve repair, that's basically plastic surgery on the leaflets. You're preserving the living tissue inside the heart, and a variety of techniques can allow us to remodel leaflets, or resuspend them in the setting of broken chordae. There are different types of approaches to do that.

Then, we almost always reinforce this repair with some sort of a band or a [ring around the valve](#). The ring brings the dimension of the valve back to normal. As the heart dilates, it pulls the two leaflets open, so you need to pull the leaflets back into a normal position. That's an important part of valve durability.

What we're trying to do now is trying to understand the complexity of this disease, because this is very important. If we're trying to have the highest repair rate possible, we want to make sure that we are matching complexity of disease with experience of surgeon or cardiac center.

If you have a very complex disease repairs may not be possible. That may make you more conservative when to actually intervene on the patient. It's becoming increasingly clear that not just defining prolapse but the type of prolapse, and understanding what the sequelae or what the ramifications are going to be is important in our recommendation for timing for surgery.

Dr. Nishimura: As we talk about timing, do you want to say a couple words from a surgical standpoint about what happens if the valve cannot be repaired?

Dr. Adams: I just had a course here with a bunch of visiting surgeons and I showed a patient that had a very complex morphology. I asked some of the surgeons what they thought the repair rate would be. They very correctly said they thought in their hands it would be 80%, which is – by the way, that's higher than the national average. That's a very good repair rate.

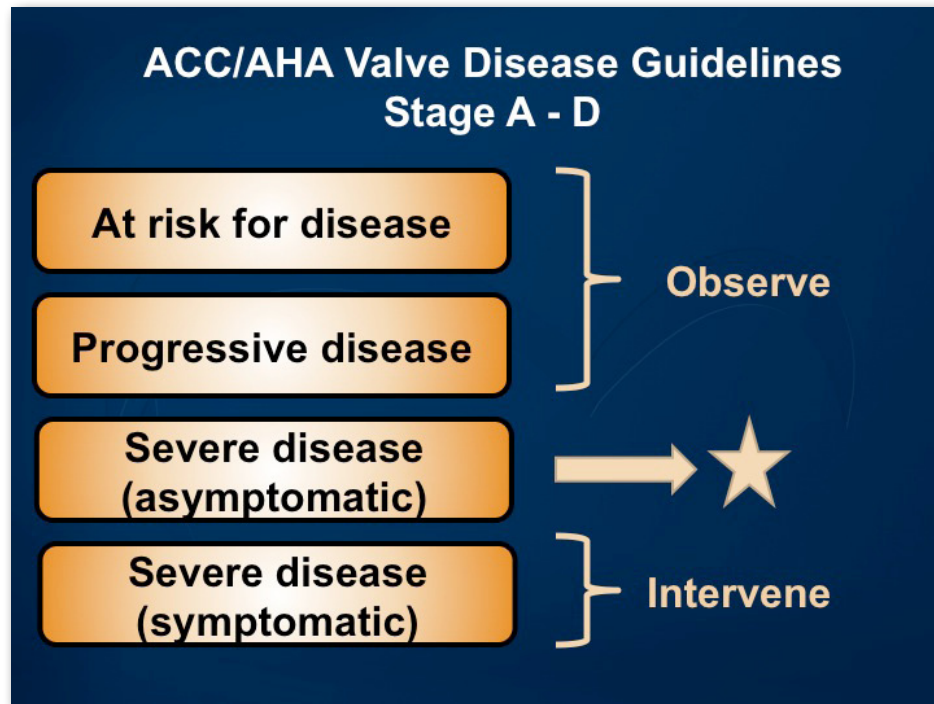
Because this patient's asymptomatic and the pump – the engine – is still good, that's actually a patient – if it was only going to be 80%, we would recommend to keep following at this point. We want to make sure that if we're going to intervene earlier, that we're going to give the patient a valve repair.

If you need to do a replacement, that's, of course, another very interesting discussion about what type of prosthetic valve you would use. You have two main options. One's a [bioprosthetic valve](#) and one's a [mechanical valve](#). I always caution patients that metal lasts forever, but mechanical valves inside your heart don't always last forever. A significant number of patients, over their lifetime, will have complications from either option.

The main difference is animal valves, because of the high pressure inside the heart, tend to fail early. It's not living tissue. The tissue has been fixed in glutaraldehyde, so it's not living tissue, and they tend to degenerate over time. Metal valves will have a lower rate of reoperations, but they require a high dose of blood thinners every day, so they introduce a different risk, which is the risk of bleeding.

It's always better to keep your own valve if you can. That's, of course, been a big emphasis in the guidelines, and also a big emphasis in cardiac centers across the country now, trying to develop expertise to do valve reconstruction.

Valve Disease Guidelines: The Stages



Dr. Nishimura: I was just going to say – as a cardiologist – trying to decide the timing of when to send a patient to operation, this whole concept of if the valve can be repaired with a very high degree of success versus not being repaired and requiring a replacement becomes one of the biggest factors in determining how and when to go ahead with the operation.

Maybe what we can do is go to the stages of valve disease and inform people about what I mean by that. What we've done in the guidelines is try to make categories of where a person is in the progression of their mitral valve disease to help us, as cardiologists, determine when timing of operation is appropriate.

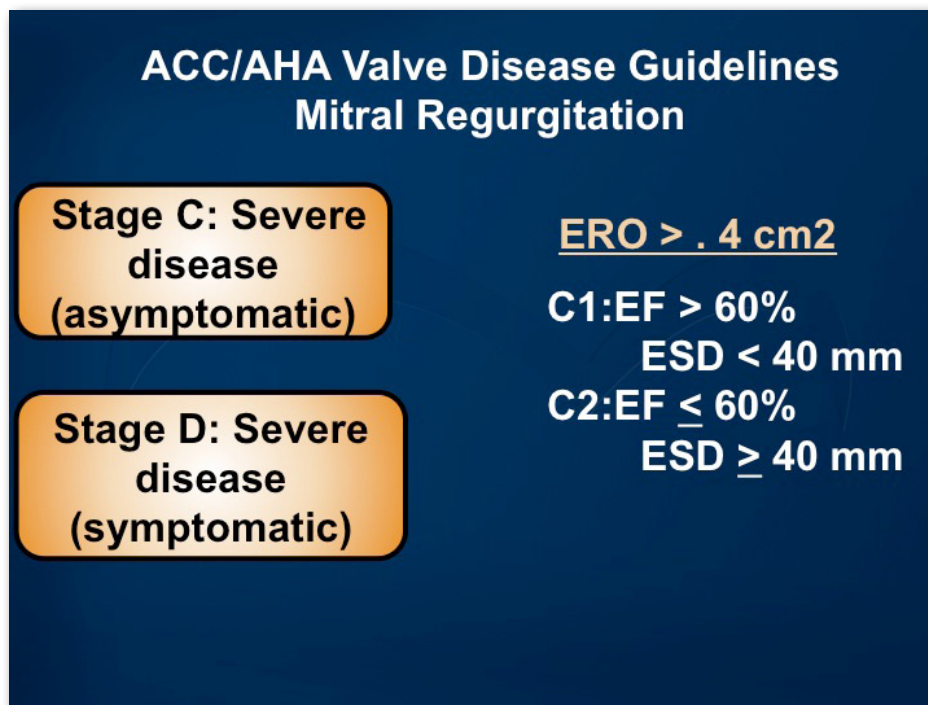
We've got the first bar: at risk for disease. We call that Stage A, and those are people who might have been born with an abnormal valve but it's still working well. Progressive disease means that patients have now developed leakage of the mitral valve, but it's only a mild to moderate amount of leakage. I think that's important because those people may have years or may never require an operation, and we need to say, "This is a progressive disease." We need to follow the patients but don't necessarily need to intervene.

At some point in time, the third bar is when they have severe disease. That's when the leakage becomes very severe, but they're still asymptomatic: no symptoms whatsoever, able to do their daily activity. Finally, the fourth bar is when they have severe disease, but now the blood is going backwards so much into the left atrium and lungs that they get symptoms of shortness of breath.

That helps us with timing because at Stage A and B, at risk of progressive disease, means we're going to follow them. Once they become severe and symptomatic – Stage D – it means we operate, irrespective of whether or not they can have the valve repair or replacement. It's that Stage C, the severe stage, asymptomatic, that we have to go further.

Severe disease means that we go ahead and intervene, but the severe disease, asymptomatic patient... we've got a question mark and we have to break it down further.

The next slide shows how we break it down further. Remember, David was talking about the pump, the left ventricle, the big pumping chamber of the heart. There are a number of patients in whom the pump continues to compensate, work very well. Those are the people that we call Stage C1 disease, and there's some numbers that the cardiologists will use from the echocardiogram to say that the pump is still working well.



There might be a time when the heart pump starts to fail because it's overworking. The numbers will become more abnormal, and we call that Stage C2 disease. Even if there are not any symptoms, once a person reaches Stage C2 disease, they should have an operation, irrespective of whether or not it's a valve repair or replacement.

Now the Stage 1 disease, remember, are patients who have severe leakage. They're doing well. They don't have any symptoms. Their heart muscle's still doing very well, but if we can have that valve repaired with a very high degree of success, with a very low operative risk, we would tend to send that patient for early surgery because we can prevent the heart muscle from deteriorating. That's where we need to really understand what the risk of surgery is and what the chance of repair is. David, I might turn it over to you now to talk about that.

Dr. Adams: I'll just emphasize what you said, Rick, about one thing I find always interesting talking to patients. Sometimes, you see patients that have a very severe leak and they feel great. Sometimes, you'll see patients that have even – you're not even sure if the leak is severe but they actually have a lot of symptoms.

One of the things that sometimes confuses everyone is the directionality of these jets. If the jet is going just into the orifice of the vein, where the blood is trying to leave the lungs, I think some of these patients can have disease based on the directionality of their leak, which is controlled by which portion of the valve ruptures. There're a lot of subtleties in terms of looking at this algorithm of the leak, the mechanism of the leak, what the patient feels, and then, of course, what's happening to the pump.

I think that ideally, we would operate on patients before they have pump problems, because I always tell every patient, "We want your pump to last for you to blow out your 85th birthday candles." If you're 40 or 50 years old, that's a long time. We really want to protect this precious engine that we have.

I think as we get better at imaging – we have to be transparent about our repair outcomes, and this is something that you brought up this morning in your lecture. If we can continue to show improvement, and the reproducibility of valve repair, and the durability of it, then I think we will continue to emphasize early intervention to protect the pump.

The valve really always – for my patients, the valve is just a mechanism that moves the

blood in the same – in the right direction. It's the pump that determines your survival, so we really – all these interventions that we talk about, at the end of the day, are all geared toward protecting the strength of your – and the viability – of your pump.

That's why it's been a very interesting – it's been a very exciting four or five years, particularly in mitral valve diseases. We've moved toward early intervention, and the responsibilities are great. Patients are young, and the mean age for mitral valve disease – different valve disease affect different age groups. If you take aortic stenosis, the mean age is in your 70s and even 80s, but mitral valve regurgitation affects patients that are 40, 50, 60 years old, so these are relatively young patients that have expected long survival. The decisions we're making around when to intervene and what the actual intervention is are very important because patients have long-term life expectancy.

Adam Pick: A quick question for both of you specific to symptoms. Do you ever have patients who are maybe confused about whether they do have symptoms or don't have symptoms?

Dr. Nishimura: Absolutely. The patients are confused, the doctors are confused, everybody's confused. I think there's two things that you should do there. Number one is, because valve disease is a slowly progressive problem, people may be subconsciously limiting the amount of exertion they do. They might not even realize that they're symptomatic.

There's two things you should do about that. Number one, you should talk to their spouse, because the person who lives with them knows more about whether or not they're still – walk up the same flight of stairs they could two years ago – better than the person can.

The other thing we like to do is to put them on a formal exercise test. That gives us an objective measurement on how much they can really do, and also helps us categorize what their symptoms are due to.

Many patients, if they say – if they get told, "Listen, you've got some heart disease," all of a sudden, they'll start getting more symptoms that they don't really have, so it's very important to get an objective measure that way.

Dr. Adams: During a consult with a patient, I always sit the patient – right here in my office. Then, I line the family up behind the patient. As you know, oftentimes you'll ask the patient how they're feeling and they'll say they feel fine, and every head behind them is shaking no. They'll perceive he doesn't feel fine, so it is – it's interesting in human nature to hide that.

I have seen the other as well... Once patients are concerned, just like we always say when you're in medical school, you get every disease that you study. I think patients sometimes – on the opposite side, just like we all do, we're all human. We hear something and then they start to attribute symptoms.

If you're not sure, particularly about the degree of regurgitation – this was something that you talked about this morning that I thought was really great for all of us, which is that valve disease gives you imaging. It gives you these echocardiographic parameters. You get a history. You get to listen. Then you put all the pieces together, and if something doesn't fit together then usually you want to get some more information. That's where this exercise testing can really be important, because you really want to discriminate patients.

This is particularly important as you get older. The older you get, you have these competing variables of a little more limited life expectancy, and you have a little bit more risk for surgery, you want to make very careful decisions. If the pieces don't all add up, usually we're trying to get more information, or another interval of follow-up, because that's the other thing that's very important when we're following cases of mitral disease. We learn a lot by seeing patients again-and-again because it is a progressive disease. If you've really got it, it does progress.

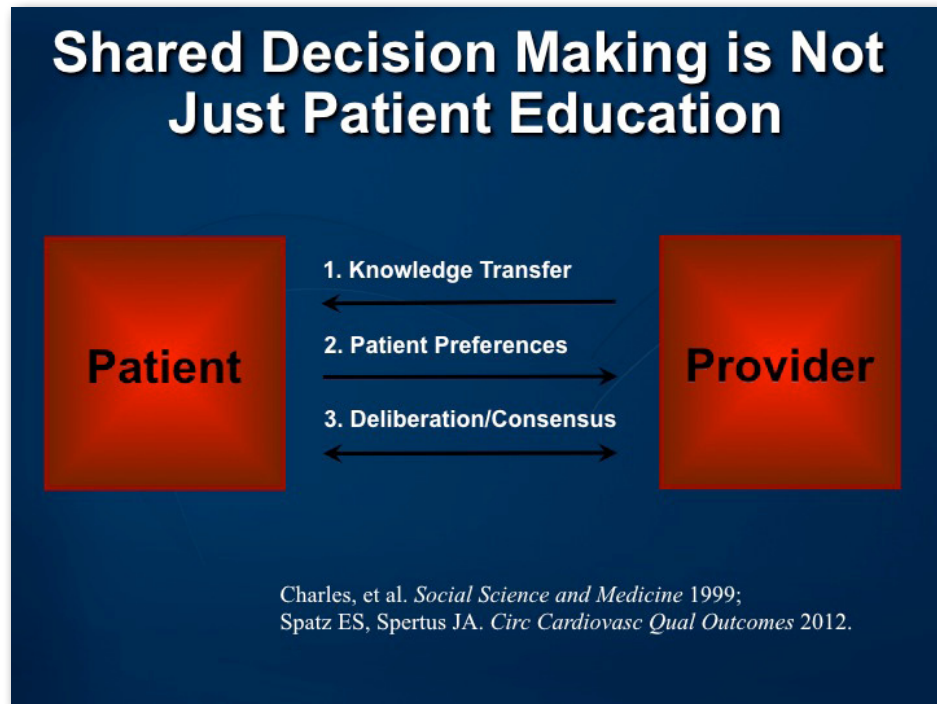
Adam Pick: Great. It sounds like this is another reason to have your spouse or somebody in your family come to a consult with your cardiologist or surgeon: not just for the comfort but as part of the diagnostic process.

Dr. Adams: Oh, absolutely. Absolutely.

Dr. Nishimura: Especially if they're Minnesota farmers. Minnesota farmers will never complain of anything, but their spouses will show them.

I think that I want to go back to this concept of operating earlier. Say you're going to take a person who feels great. They're able to do whatever they want. Their heart muscle might still be working well. You might tell them, "Well, you'd better consider an earlier operation because we can prevent our problems down the road." Remember: we're never going to make an asymptomatic patient feel better with an operation, so it's a complex decision.

Shared Decision Making



Dr. Nishimura: This brings us into an interesting discussion about shared decision making. I think, in some of these situations, it's not just a matter of patient education. What you have to do – what we have to do as the provider, as the cardiologist, is give the patient the knowledge of the pros and cons of waiting versus an early operation. Then, the patient and the family have to provide to us what their preferences are: what they want out of life, what they want to do, what quality of life they want, what risks they're willing to take. It's only together by sharing that can you come up with an actual decision that we call shared decision-making.

I think old cardiologists like me, we've been doing it for years, but it's a different concept from the very quick in-and-out consultations that people have done today, and we have to go back to that shared decision-making process so that everybody is able to feel very comfortable with their decision. David, I know you do this during consults with the patients and their family. I think that's very important.

Dr. Adams: We spend about an hour per patient in here, trying to establish the relationship that Rick just mentioned. One thing I think is really important for listeners and people that might watch this to understand is that it's rare that mitral valve disease, the leak – particularly with mitral valve regurgitation – is an emergency. Typically, a young patient that's had prolapse and is being followed, and they may have crossed the threshold or become more symptomatic, there's time to make decisions.

You need to get yourself educated about heart valve surgery. Learn. Really try to understand what's going on with yourself. Be comfortable with the decision to have an intervention, and do it in an elective fashion. These are rarely things that you have to drop everything and have immediate surgery. This is an operation that's done to preserve long-term life expectancy in most situations. It's not because you have an imminent risk.

I think that this also comes into play: that patients should really take their time to get educated and to really have a formal consult and understand the likelihood of repair, the types of disease I have, how many of this type of disease that I have has been treated here successfully in the last year or two, and do you think you're someone – I can be taken care of here, or should you sent me somewhere else? I think that these are all really valid questions for an elective disease in young, healthy people.

I think it's good to take a deep breath in the field of mitral valve regurgitation. Really understand what's going on and really have a good, solid discussion, just like Rick said here, between your own goals and what you're willing to undergo, and what the goals are of the individual and institution you're sitting in front of.

Adam Pick: Can you talk about, again, the importance of asking the right questions? I get this all the time from patients: "What should I ask my surgeon?"

Dr. Adams: Let's say I need an arthroscopic knee operation. I'd like to know how many of these have you done recently? What has been your success rate? What are my potential – what are the chances that you will go and find something that would make you do something different than what you have told me is the optimal therapy for it? What are the risks, and what are the risks not just in the literature? I don't want to know what happened at the Mayo Clinic. I want to know what happened here if this is where I'm going to have my surgery done.

[We actually have these questions on our website.](#) We think these are – it's funny: I've had a lot of patients bring my own questions to me. "You don't mind telling me how many of these have you done?" I actually don't. I think it's always great when they bring those questions. It's the same sort of thing that – most of this is common sense. I think that volume doesn't guarantee success. What it means is, which I tell every patient – it just

means we get more practice.

The other thing that I would emphasize, and I'm sure Rick would agree with me: it's not just the surgeon. It's the quality of imaging. It's the postop intensive care. You're asking the heart to work harder, initially, when you fix a mitral valve. Sometimes if you open up a stenotic valve, the heart gets to work easier. If you do a bypass operation for occluded blood vessel, the heart gets more blood. Those are scenarios where the heart likes the operation. The heart doesn't necessarily like the mitral valve operation the first few days because now it has to work harder. It has to push all the blood through the high-pressure chamber instead of back toward the lung, so I can't underestimate the importance of the care and the anesthetic management, and also the quality of the imaging to make decisions around the time of surgery.

There're a lot of moving parts in what Rick's called the heart valve reference center. It's not just the surgeon. The surgeon obviously – the skill of the surgeon in terms of valve repair is important, but it's more than that to really get the kind of outcomes that we talk about are mandatory, particularly in asymptomatic patients: 98, 99% repair rates and less than 1% mortality. These are only achieved by heart teams, not by individual people.

Adam Pick: Dr. Nishimura, could you talk a little bit about what Dr. Adams was discussing in terms of the heart valve reference center? What does that mean?

Dr. Nishimura: Medicine's become more transparent, which is a good thing. Not every search surgeon's alike; not every cardiologist's alike. People, patients, cardiologists referring the surgeons need to know the outcomes of that particular heart team: with the surgeon, and the hospital, and so on and so forth.

What we proposed as a [heart valve center](#) of excellence are a heart team that specializes in valve disease, because many people don't necessarily take the time and effort to specialize in a certain area. They end up performing a lot of procedures, so they have a lot of expertise and experience in it, but they also report their own data and their outcomes, and they're transparent about it so everybody can see.

I think David was saying patients might feel a little reluctant to ask a surgeon about their outcomes, but I think that's essential. If a surgeon can confidently say that they and their team were able to do this type of operation with a very high success rate, that is very important in a physician. It makes patients feel much more comfortable too.

Adam Pick: In terms of getting back to the guidelines, do you think it's important for the patients to take the time to read the [2014 Valve Management Guidelines](#)? To maybe understand it from their own perspective and digest it? Is that something you encourage patients to do, or not?

Dr. Adams: I was saying to Dr. Nishimura that we use the guidelines in daily practice. I show almost every patient that I consult with the actual algorithms from the guidelines, and try and show them where, on that document, they actually fit in terms of their indication for surgery. I find it a very practical guideline. Also, it's something that's very interesting to interact with the patient around, particularly the asymptomatic patients.

I think the guidelines are written at a level where a lot of it is too technical for the patient, but particularly the summaries and the algorithms. The sort of diagrams that show where you fit, trying to understand where you fit there, I think, are actually very important, and actually not very complicated. You're not expected to read the guidelines and make your own decisions. But, I think having some familiarity with them, and certainly asking your doctor about them if you're not sure what your indication for surgery is, is healthy.

Q&A: Managing Heart Valve Disease

Question 1 – From Ricardo

Hi Adam, Drs. Adams and Nishimura,

I'm not having mitral valve surgery anytime soon. I'm doing everything I've always done, despite the fact that I have a diagnosis (Dec 2013) of serious mitral valve prolapse and regurgitation. How do I manage the situation without surgery at least until I feel really debilitated in some way?

I am 80 and riding a tandem bike with my partner for local transportation. Can I outlive this or will surgery extend my life another 20 years ?

So, what would be the best measures and medication for me to manage a healthy heart to offset the detrimental effects of a malfunctioning mitral valve?

At present, I am taking an 81 MG aspirin in the morning and in the evening before bed. I also am prescribed Lipitor three days a week and Altace once a day. The doctors prescribing Lipitor and Altace did so according to them, as preventative measures to keep the other aspects of the heart healthy. I think that was their rationale. I do take vitamins also. In your opinion, what is my prognosis?

Adam Pick: We are going to be going on to the question-and-answer session. We've been getting a lot of questions from the patients who are on the line.

The first question comes from Ricardo. He writes: "Hi Adam, Drs. Adam and Nishimura, I'm not having mitral valve surgery anytime soon. I'm doing everything I've always done, despite the fact that I have a diagnosis of serious mitral valve prolapse and regurgitation. How do I manage the situation without surgery, at least until I feel really debilitated in some way?" We can start there.

Dr. Adams: I always like an 80-year-old that's planning to live to be 100, so that's a good start. That's a very good sign. I think, Adam, this is an interesting question, because we are more conservative the order that you get. We don't have enough information here because we can't qualitatively make a decision about delaying surgery based just on symptoms. I'm glad he's active and I'm glad he's very positive about the next 20 years. But, it would be important to know about, again, the strength of the squeeze and the size of the pump in terms of making a recommendation.

Certainly we're going to – I'll let Rick comment, but I would assume – I think we're going to be conservative in this age group and really look for hard triggers to push us toward surgery.

Dr. Nishimura: I would agree. As far as his question about what he can do, he's doing everything right. It's the old grandma's recipe of good exercise. A daily aerobic exercise program is wonderful for anybody with heart disease. I wouldn't do any heavy weight lifting. I hope he's not a weightlifter at 80 years old. Eating healthy is very, very good. There's no single medication that's going to help a patient with valve disease. Now the medications may be given for other reasons, but there's no need to go out and seek a medication or an over-the-counter medication, because as long as you lead a healthy lifestyle, you're doing everything that you can.

Dr. Adams: Rick, one thing I'm asked a lot is about the level of exercise. I usually tell patients I sort of like fat burn, not cardio. I like heart rates at 120 or 130, not 180. How do you counsel?

Dr. Nishimura: Absolutely. I think that if – in a patient with significant valve disease, they should not go to the point where they're breathless, but they should have a long duration: 25 to 30 minutes of an aerobic exercise without stopping, knowing that if they go to the point where they become short of breath, they need to back down. If they can do that three to five days a week, they're doing wonderfully.

Q&A: Patient Outcomes & Risks By Surgical Approach

Question 2 – From Denise

Can you please explain the risk for the following surgical systems:

- a. Da Vinci Robotic
- b. Laparoscopic
- c. Open heart

Which surgical system has the best statistical outcomes for success?

Adam Pick: Let's go on to the next question, from Denise. "Can you please explain the risk for the following surgical systems: da Vinci, laparoscopic, open-heart. Which surgical system has the best statistical outcomes for success?"

Dr. Adams: I'll tackle that first as an access question. In the best of hands, all three show comparable results. If you're looking at very experienced – I use the Mayo as an example, where [Dr. Rakesh Suri](#) is good friend of mine and has really developed an outstanding robotic program there. In his hands, robotic surgery has been published now. He's actually published his outcomes, and they are consistent with what we achieve through a small incision in the front, so there are centers that have gone through a learning curve and can get there with any of these three approaches.

The laparoscopic approach is done from the side. Surgeons insert a camera, and they're basically working watching the camera instead of looking directly at the valve. I think all three of them, in selective hands, can provide comparable outcomes.

The challenge we have is, again, the experience level. Because when you look at – for instance, when the last snapshot at the STS database was done, the big cardiac surgery database was done, there were only a handful. There were less than 10 robotic centers in the United States that were doing more than 10 operations per year, so it depends a lot on where you are as to which approach is probably the most realistic.

Again, the other thing that you'll find, and I know I've talked to Rakesh about that: more complex pathologies typically are still done through direct access approaches. I think the best robotic centers are still somewhat selective in their type of pathology that they approach.

I think what's happened in the field is we've learned that most mitral operations can be done through three or four inch incisions. We typically do operations, today, through eight centimeter incisions, which is a little under four inches. We used to do everybody through 10 or 12 inch incisions and open them up like a textbook. Now, we work through small ports, whether that port is from the front or from the side. I think that's a lot less critical than you're not having sort of regular, big operations.

Again, safety is the most important thing in cardiac surgery, but this is another question. Just like repair rates, you really need to know your surgeon and your center if you're going to talk about alternative access approaches, including a small incision in the front.

Adam Pick: I think what Denise is also may be wondering here is about the long-term outcome for success. You had a great surgery. What does that mean to your lifespan?

Dr. Nishimura: There is good data, and the data is that if you can perform a mitral valve repair and you can do it before the heart muscle becomes deteriorated, that outlook is comparable to that of an age-matched, sex-matched population who has no heart disease. That outlook is wonderful if the operation is done correctly and it's done in time.

Adam Pick: Fantastic!

Dr. Adams: In [our book with Carpentier](#), we said normal valve, normal life. It's a good phrase. I use it all the time with patients. It's important to keep your valve. Have it done in a timely manner and you can expect to have a normal life expectancy.

Q&A: Mitral Valve & Tricuspid Valve Disorders

Question 3 – From A.T.

Hi Adam

I was diagnosed with a heart murmur when I was 6 years old and later found out it was from mitral valve prolapse . In 2000 I was diagnosed with mild mitral regurgitation, in the last 5 years it has now been moderate - severe . I have symptoms of chest pain palpitations and PVCs as well as SVT (from a holter monitor). I do get SOB sometimes when walking up a flight of stairs.

My valve is a large barlow valve with myxomatous degeneration with prolapse of both leaflets which I understand is a more complex repair technique and skill . My question to Dr. Adams is when would it be right to fix it - I don't want to wait until irreversible damage has been done to my heart.

As of the last echo in October my LVEDD is 4.4 and I have 2 separate eccentric jets as well as mild left atrial enlargement and Pisa of .60 in one echo and .66 in another. The murmur is loud and can be heard through my back. I also have a myxomatous tricuspid valve which is redundant and hooded / thickened. Does that also need to be repaired?

Adam Pick: The next question from A.T. “I was diagnosed with a heart murmur when I was six years old and later found out it was from mitral valve prolapse. 2000, I was diagnosed with mild mitral regurgitation. In the last five years, it has moved on to moderate-severe. I have symptoms of chest pain, palpitations, and PVCs, as well as SVT from a Holter monitor. I do get short of breath sometimes when walking up a flight of stairs.

My valve is a large Barlow valve with myxomatous degeneration, with prolapse of both leaflets, which I understand is a more complex repair technique and skill. My question to Dr. Adams is when would it be right to fix it? I don't want to wait until irreversible damage has been done to my heart.

As of the last echo in October, my LVEDD was 4.4 and I have two separate eccentric jets, as well as mild left atrial enlargement and Pisa of .60 in one echo and .66 in another. The murmur is loud and can be heard through my back. I also have a myxomatous tricuspid valve, which is redundant and hooded/thickened. Does that also need to be repaired?”

Dr. Adams: The myxomatous disease, particularly advanced myxomatous disease, is actually more common in young patients than older patients. The Barlow deformity was one of the original diagnoses of mitral valve disease. Usually patients are discovered to have murmurs in their 20s and come to surgery in their 40s and 50s, so there was some fallout for a long time about it.

We don't know enough about the time course of this to make a definitive recommendation. I would tell you that, again, the more advanced your myxomatous changes are, the more you need to ask those questions to your surgeon about their experience repairing them, because again: at the most experienced centers now, those valves are routinely repaired. I wouldn't make that – I wouldn't be – hesitate to say that a repair rate of near 100% should happen in advanced myxomatous disease right now.

You're asking a question about your tricuspid. That was something we'd have to look at. A lot of centers now are becoming more aggressive, doing concomitant tricuspid valve repair. Usually, these are very simple. They add very little to the operative time and are associated with very low risks, so I wouldn't hesitate to do that, and it would not impact a decision to intervene on the mitral valve.

This sort of story is when we want to get more information. We don't know the [ejection fraction](#) and we really – this is the one where an exercise study (and I'll let Rick comment on that) really helps us discriminate between patients that should have a good event-free survival without surgery versus a poor event-free survival, and therefore should really consider elective surgery. Rick, how would you handle a patient like this?

Dr. Nishimura: Of course, we can't make a recommendation as to the valve surgery, but there's a few things here. That shortness of breath is a little concerning. One would need to figure out if that shortness of breath is actually due to the heart or something else. This is like David said: a certain type of exercise test will be able to help us determine that. If that shortness of breath is due to the heart, it would push one more towards early operation.

The other thing is that as cardiologists, we tend to use a lot of numbers. We've got the Pisa number, the LVEDD number, but you always have to put that together with everything else, such as your clinical examination, your follow-up of what's happened over the last few years in terms of the heart size and function. Just one number or two numbers alone is not going to cause us to push a button, but accumulation of all the knowledge.

Q&A: Long Term Outcomes For Mitral Valve Repair

Question 4 – From Franco

Dear Adam,

I'd like to answer Dr. Adams about long term outcome of patients who underwent mitral valve repair. I had this kind of surgery last summer; I feel well, but I am a bit concerned about this aspect. Thanks a lot.

Adam Pick: Moving on to the next question, and this is from Franco. “I’d like to ask Dr. Adams about long-term outcomes for patients who underwent mitral valve repair. I had this kind of surgery last summer; I feel well but I’m a little concerned about this aspect. Thanks a lot.”

Dr. Adams: We counsel patients to help them understand that when you have mitral valve disease, and particularly the younger you are, you can still develop a new mitral valve problem. All of us can develop a mitral valve problem, and the risk for a patient that had a successful valve repair is a little bit higher than patients that have never had valve disease.

On the other hand, we know now from several different reports that that risk is somewhere on the order of a half percent to one percent per year the first four or five years, and that’s to develop a new regurgitation. The risk of reoperation is much lower than that, but some patients can develop that. On the other hand, when you look at the alternatives between a valve replacement and a valve repair, by far, the operation that offers the best event-free survival is reconstruction.

The other thing I tell you is we all have little things in medicine that we keep in the back of our mind, but I would encourage you to recognize that the overwhelming likelihood is that you've had your only heart valve operation you will ever require, and that you're going to live your normal life expectancy.

In fact the guidelines, the new guidelines, are not even emphasizing close echo surveillance after valve repairs. As long as you feel well – Rick can talk about that, but I think as long as you feel well and you've had a documented successful echocardiographic result, we're really just following how you're doing these days because we're that confident in your outcome.

Dr. Nishimura: Absolutely. As long as the – as we said before, as long as the surgery was done in time, before the heart muscle got affected, frankly, you're going to have a great life ahead of you.

Adam Pick: Getting back to the long-term outcomes, you've talked about the success rate over a patient's life for mitral valve repair. Is there any other data that shows the advantage of a mitral valve repair versus a mitral valve replacement?

Dr. Nishimura: Absolutely. As David said, a mitral valve repair is basically plastic surgery on your own valve. When it's done properly, you've got a normal, working valve. Anytime you put a valve replacement in, you're creating a problem in itself. Now it might not be as great a problem as a severe leakage of the valve, but there are complications that can occur with either a tissue valve or a mechanical valve. You'll have to be followed very closely for that.

Q&A: Mitral Valve Re-Operations

Question 5 – From Ruth

Dr. Adams performed a re-repair of my mitral valve 3 months ago in September as well as a tricuspid repair. I had met with 3 other surgeons, and no one else gave me a chance for re-repair.

Dr. Adams was able to do it with a sliding leaflet plasty procedure. My questions:

- What percentage of second or third operations receive a re-repair and what data are available on the longevity of the re-repaired valves?
- Is the sliding leaflet plasty procedure used more commonly in re-repair than first surgeries?
- How often are Goretex chords used and why?

Adam Pick: This is from Ruth. “Dr. Adams performed every repair of my mitral valve three months ago in September, as well as a tricuspid repair. I had met with three other surgeons and no one else gave me a chance for a re-repair. Dr. Adams was able to do it with a sliding leaflet plasty procedure. My questions: what percentage of second or third operations receive a re-repair and what data are available on the longevity of the re-repair valves?”

Dr. Adams: That’s a good question, since you have the Mayo Clinic and Mount Sinai sitting here together. I believe that our two institutions have published the largest series on valve re-repair. I know Rakesh published one a few years ago and one of my partners, published one recently as well.

We tend to approach the re-repair in the same way we do a primary repair. We do a valve analysis, and if we think, in our hands, that the durability of the repair will be better than any valve replacement we can do, and we can execute it, then we do that.

Keep in mind that in both of our series, about a third of patients that were re-operated on had a technical failure the first time. Something broke; something wasn't quite right after the first operation. About a third of them will have a progression of their own disease. A new chord can break. If an old chord was broken, a new chord breaks. About a third develop a new disease. Sometimes they develop scarring, for example.

The third one's the hardest one to re-repair. The first and second ones actually have a very – can have a very high repair rate in very experienced centers dedicated to valve preservation, but this is a special operation and I wouldn't be surprised that – you need to be in a very high-volume center interested in valve re-repair to undergo it. There's not a lot of long-term data because these operations are much more special than first time operations.

The techniques don't matter so much. Sliding leaflet plasty is a technique we use for excess tissue, not because it was a re-repair. She's also asking about Gore-Tex loop. That's the chords we use to resuspend the leaflet. Those were all based on what we see in the operating room. Different institutions have different techniques, and they all actually work quite well for valve repair.

I think that the real example of your case (and I appreciate you writing your question, Ruth; I'm glad you're doing okay) is that if you can keep your valve, even in a reoperation, I think what we know about the risk of valve replacement, it's always better to keep your own living valve if possible.

Dr. Nishimura: I think the one caveat to this – we've been talking about individualized things – is the risk of the operation, because every time a surgeon goes in again, the risk goes up a little bit more because of more scar tissue.

What's taken into consideration at the time of the operation is an experienced surgeon saying, "Will I be able to go in again if I repair this and a problem occurs? Or, is this operation just so difficult now, for a reoperation, that I don't want to go in again?" in which case you probably replace it rather than repair it.

Dr. Adams: Absolutely. That's why when we look at a patient that requires a reoperation, regardless of the valve or the condition, we're always thinking about which operation will have, in your hands, will have the best event-free survival for the patient, because reoperations become more risky each time you do them.

I tell patients that we can re-repair almost anything, but it would not be responsible to re-repair every valve, because if we think the re-repair will only last a year or two, they'd be much better with a replacement. We're very careful about our interest in repairing all valves versus balancing the best event-free survival for a patient. That's, I think, a real important message that we try to give patients up front: that there may be very good reasons we will do a valve replacement, depending on what we find inside.

Dr. Nishimura: You need a thinking surgeon. You really do.

Adam Pick: With that response, we are going to conclude the webinar, but please don't exit just yet. On behalf of the entire community at HeartValveSurgery.com, I want to thank you, Dr. Nishimura, and you, Dr. Adams, for your incredible support of our community. I can't tell you how much it means to all of us to get access to your clinical experiences and your research and be able to hear from, really, two of the gurus in this industry about how to best take care of valvular issues like mitral regurgitation.

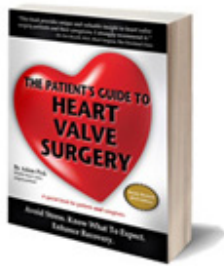
Please note that a video playback and written transcript of this webinar will be available at HeartValveSurgery in the near future. As we end the webinar, I'd like to thank you, all the attendees, for your participation in this online event.

As we always say here, keep on ticking!

Thanks so much!

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