

## Interview with Dr. Mitesh Badiwala

UTMJ Interview Team (Sarah Kanji, Nicole Kim, Shubham Shan)



Dr. Mitesh Badiwala

**D**r. Mitesh Badiwala is an Assistant Professor in the Department of Surgery at the University of Toronto and is a Staff Cardiovascular Surgeon at the Peter Munk Cardiac Centre at UHN. He is the Surgical Director of the Heart Transplant Program at UHN.

Dr. Badiwala completed his BSc in Arts & Science at McMaster University in 2000 and his MD at the University of Toronto where he was elected to the Alpha Omega Alpha honor society in 2004. He pursued a residency in Cardiac Surgery at the University of Toronto and became a Fellow of the Royal College of Physicians and Surgeons of Canada in 2013. Having received the prestigious Detweiler Travelling Fellowship from the Royal College, he travelled to Chicago where he completed an advanced fellowship at Northwestern University. As Chief Fellow, he specialized in mitral and tricuspid valve repair, minimally invasive aortic valve surgery, heart transplantation and mechanical circulatory assistance.

Dr. Badiwala completed graduate training in vascular biology research at the University of Toronto and holds a PhD in Cardiovascular Science. Dr. Badiwala is the recipient of several prestigious awards including the Vanier Canada Graduate Scholarship, the Vivien Thomas Young Investigator Award from the American Heart Association, as well as the Shafie S. Fazel Outstanding Resident Surgeon and Investigator Award and the Starr Medal from University of Toronto.

His main clinical interests are in valve reconstruction, minimally invasive cardiac surgery and heart transplantation. His primary research interest lies in the development of an Ex-Vivo Heart Perfusion system for regeneration and evaluation of marginal and DCD donor hearts.

### Medical School Journey and Work

**UTMJ:** Tell us about your academic journey.

**MB:** I didn't want to limit myself, so I picked a broad-based undergraduate program at McMaster and I got into medical school at UofT in 2000. When I started medical school, I didn't know what kind of doctor I wanted to be. I think that's the case for a lot of medical students. There are innumerable things you can do in medicine.

So, my career path took an interesting turn when I first started medical school. There's a program where you get paired up with a mentor and request the specialty you want to be matched to. I requested cardiology because during anatomy, I liked the heart, circulation, and cardiac physiology best. They matched me up with Heather Ross, the director for the heart transplant program and past-president for the Canadian cardiovascular society; she's now a cardiologist here. She was my very first mentor in medical school. I used to come in on Saturday mornings and follow her around the CCU and when she would leave after the morning rounds, she would pair me with her fellow. I would watch them put the lines in and it was all very exciting to me. This experience really gave me insight into the area of medicine I enjoyed. Later that year, I decided that I wanted to do research in the summer. I had an NSERC studentship and I decided to conduct research in cardiology. I worked for Dr. Richard Weisel, who is now the editor-in-chief of the *Journal of Cardiovascular and Thoracic Surgery*. He luckily accepted me into his lab. That summer I got paired with his lab staff and did some cell-based projects. At the same time, I spent 2-3 nights in the OR watching with people like Dr. Cusimano, Dr. Yau, and Dr. Rao (now chief of staff), who had just returned from his fellowship with a new technology called ventricular assist devices and had become director of the transplant program. They all became my clinical mentors, but I spent many hours just watching them operate. Back then, you could scrub in as medical students simultaneously and I spent a lot of time with them. I pretty much fell in love with that career path at that point. I returned the following summer to Dr. Weisel's lab and he took me back because he knew I was interested and continued to spend time in the OR. As I went into clerkship, I made a point to tell myself that I should still keep other options open and look at diverse areas within surgery and medicine to see what else I would like. I tried to keep an open mind. I started with pediatrics and liked it, but not as much as cardiac surgery. I liked psychiatry, a very interesting field, but I wasn't fixing anything so it didn't appeal to me. No other real surgical specialty other than vascular, thoracic or HPB surgery appealed to me. At the end of my rotations, I said to myself "well I like

surgery” so I also applied for general surgery because cardiac surgery was very competitive at that time and you couldn’t get into vascular surgery directly. So when I applied for residency, I applied for cardiac surgery and general surgery, and luckily I matched to cardiac surgery. I did two years of residency and then I went to Dr. Rao’s lab. I was going to go back into Dr. Weisel’s lab, but Dr. Rao had a new lab and had a PhD student who was just finishing up, so there was an opportunity to follow in his footsteps and work in transplant research. Here, I did a PhD looking at endothelial injury related to transplantation and a particular protein related to endothelial cells and I characterized its vascular protective effects. I learned how to design research studies and conduct basic science research. More importantly, I still remained clinically active. Whenever a heart transplant came out, the team would send me to get the hearts and I became very independent and started doing it very early on. So in the first year, I went away and got about 100 hearts for our program and came back and slowly, as the years went by, they let me do more of the implanting. I had three years of residency left after that and then did my royal college exam. After that, they had expressed a strong interest in hiring me here, but they wanted me to go away and do an advanced fellowship in valve repair. I found a center where they did lots of valve repair and transplants at Northwestern in Chicago. I spent one year as chief fellow there and at the end of the day, I was recruited out here after taking the summer off with my family. I started in September 2014, and by January 2015, Dr. Rao passed on Surgical Transplant directorship to me. By summer 2015, I had recruited enough people to work on my lab interest, which is Ex vivo resuscitation and reanimation of hearts. Since Summer 2015, that is what we have been working on, in collaboration with the engineers from the university.

**UTMJ:** What was your medical school experience like? What is your best memory of medical school?

**MB:** Medical school was a great time in my life. The friends that I made in medical school are lifelong friends. We initially developed study groups and that developed into lifelong social relationships. Although, we are scattered across the country and world, we still stay in touch from time to time and when we meet, it’s like we never left each other. Those relationships are very meaningful and important to have. Medical school was a lot of information given to you very quickly. Reflecting back on it, it gave you an understanding of everything to a certain degree, but in the end, the area you practice in is the

one you’ve developed a sufficient depth of knowledge in. However, you still have an understanding of other things so you can collaborate effectively with the other groups. Medical school was fun. It’s very different now and it has gotten a lot better in terms of being comprehensive and blending different facets of medical education together.

One of the best memories was graduation. To see everyone that started four years ago make it and go on to the next step even though we were scattering. It was a milestone that was memorable because of all the things we went through to get to that point.

One of the most memorable things to happen was that I was on my OB rotation and I happened to be on call with the obstetrician that delivered me at St. Joe’s. I reminded him that he delivered me and I guess I made him feel old.

**UTMJ:** When did you decide to pursue a career in surgery? Why cardiac surgery? Was there anything in particular that motivated you?

**MB:** I liked the intensity of cardiac surgery. It was intuitive to me. I’m a mechanically minded thinker. In cardiac surgery there are different parts of the heart (to consider) and the way they interact. Additionally, there are many different operations in cardiac surgery from heart transplantation to microvascular surgery (coronary bypass). It really felt to me like there was a wide spectrum of things I could do and it would challenge me.

**UTMJ:** What are your main areas of interest in cardiac surgery?

**MB:** What I’m interested in and what I do are two very different things. My areas of interest are heart transplantation, mechanical assistance and valve surgery. What I do is very different from what I would like to do and that is simply because of what patients need. The average patient with heart disease needs coronary bypass surgery. There is a small fraction that need valve surgery and transplantation is a rarity. We did 37 heart transplants here last year and that’s a new record (when I was a resident we did 20-27, and my first year on staff we did 34). There are 4 of us for transplantation which is not a large number considering that I do 110-120 cases a year.

**UTMJ:** What are some bread and butter cases in cardiac surgery?

**MB:** Coronary bypass and aortic valve repair are the two most frequent operations that we do. The spectrum of cardiac disease has changed over the years and so have

the operations. Back in the day, when patients did not have acute reopening of coronary arteries and they had myocardial infarction that were treated late and not reopened in terms of vascularization, there were other mechanical complications like ventricular and papillary ruptures that we don't see very frequently anymore. We still see aortic dissections from time to time, but the frequency of mechanical complication of MI has changed. It was far more frequent in the 1980/1990s to have emergency bypass surgery, but it's very rare now because the cardiologists can open blocked arteries with balloons and stents.

**UTMJ:** What do you want to accomplish/long term goal with your research?

**MB:** My long-term goal in research is two-fold. First, to increase the number of transplants we can do to address end-stage heart failure. Second, to improve the quality of the transplants we do. There is a large number of patients who could potentially benefit from a transplant, but we just can't offer them to everyone. A day might come where we take a decellularized heart off the shelf and re-cellularize it for transplant. That may be science fiction right now, but it may be what we're doing 30-40 years down the road. Those types of far-fetched ideas that have some grounding in potential reality are long term aims for someone like me, with the end goal of trying to help more people.

### Personal/Life

**UTMJ:** What are some challenges you face in work-life balance?

**MB:** There are many challenges. You have to pick and choose what you give and take. The scale will always tip one way or another. Having a family adds an entirely different dimension to you and your life. Halfway through my training, I got married, and there was a very big difference between what I could do before and after. Before I got married, I had no dependents, and no obligations. All I had was what I wanted to achieve – staying in the OR as much as I wanted, or working in the lab overnight. But when you have a family, you have obligations to them. You have to make the time to help your children grow, instill morals and values in them, and help with their education. Being a heart surgeon, it's not easy. My wife does most of that. She's providing for them in a different way, because I'm not there most of the time when it's their bed time, or to help them with their homework. When I first started in practice, I didn't pay much

attention to that because I was so focused into getting into practice. But within a year, I realized that it's not sustainable to come into work on weekends and not spend the time with my family. It's not going to make me happy. So I tried to switch the other way, because it's not fair to them. I'm off on weekends, because I cannot invest the time I need to during the week.

You also have to think of choosing what you say yes or no. When I first started, I would never say no, because if I did I thought people would think ill of me. But the reality is, you have to say no to the things that are not that meaningful to you, and moreover, to the things that you will not invest the appropriate time in. You will not make everyone happy. People will be disappointed when you say no, but you can't win everything. You have to prioritize what is important in life. For me, my patients are always first. That's a duty that I have for anyone who's come under my care. My family knows this. It's disappointing to them. But they understand at the end of the day.

**UTMJ:** What is a typical day in your life?

**MB:** It starts early. I wake up around 5:30 am and get to work by 6:30 am. At 7 am, there's usually something going on – cardiac surgical rounds, committee meetings, transplant rounds, etc. By 8 o'clock, I'm usually in the operating room 2-3 days a week. A non-operating day could easily turn into an operating day in an unplanned fashion. If I'm operating, the first case usually ends around 1, and the second case runs from 2 pm to 7 or 8 at night, if everything goes well. If not, it could go much later. I have clinics one day a week, from 9 am to the afternoon. At the end of the day on some days, there are rounds as well, meetings, research meetings, resident teaching, etc. Some days I go to the research lab to give some help. On a non-operating day, I'm usually home by 6. It's very rare that I come home before that.

**UTMJ:** What are your long-term goals and where do you see yourself in 10 years?

**MB:** Hopefully in 10 years, things aren't too different from how they are now. In terms of career, I hope to be moving forward into molding my practice into more of a valve practice than coronary bypass. I'm looking forward to advancing the field of heart transplantation, increasing the number of transplants that we do, looking at new ways of getting more organ donors, new technologies, and using them in daily practice. Also, I hope that our patients in Toronto can have access to more minimally invasive surgeries.

**UTMJ:** What are some of your biggest achievements?

**MB:** When I was a resident, there was a guy 3 years ahead of me, a fourth-year resident in the program, named Shafie Fazel. He was incredible. You would just look at him and say “wow, this guy’s special.” He was essentially running his own independent lab, as a resident. He was the brightest guy I knew. He was going to be a superstar, academic surgeon, with an international reputation. In his second last year of training, he decided to do an elective, because an opportunity came up at Stanford. While he was out there, he developed melanoma. It had spread, and he died within a couple of years. That really affected a lot of us. He was the guy that the junior residents looked up to. And a lot of the faculty members were at a loss. After he passed, the Department of Surgery put together an award – the Shafie Fazel award – to honor his memory. It was to be given out every year by his wife and his children, to recognize some resident who resembled Shafie in some way in terms of research and clinical training to recognize someone who would be worthy of being compared to Shafie. And they decided to give me that award the first year. And that really affected me. And I knew him very well. He and I were good friends. For them to give me that honor, I think is one of my greatest achievements.

**UTMJ:** What do you think it takes to become a surgeon?

**MB:** You have to really want it. It goes the same for every aspect of medicine. It has to continually challenge you and you have to be fully committed to it. Know up front that it’s going to challenge your personal space. You have to be willing to put in the hours. As a resident, you have to be of the mindset that you’re going to try to be in the OR as much as possible – not to see the routine, but to see how to manage things that deviate from the routine. Because you may see those once a year. One day, you’re going to be in that seat where you will be the one doing it. That’s a different demand that is placed on you. You have to be able to manage them because otherwise, patients die. They truly die. If you go into surgery, you have to realize you have to make that effort up front, so that in the rest of your career, you are able to manage those situations and save patients from dreaded, rare complications. That’s very different, from a lot of other specialities. Also, you have to like to working with your hands.

**UTMJ:** What is the current workforce nature in cardiac surgery?

**MB:** It’s always changing. The pendulum swung in a very negative direction in the early 2000’s. Things were going really down. Cardiac surgery residency fell to historical lows in Canada and in the States. The pendulum has swung completely the opposite direction now. There are multiple job postings now in the US and Canada. Every year there are at least a few jobs because of people moving around and retiring, so the market is opening. But that shouldn’t be a driving force for you to choose a specialty. If you’re good at what you do, you’ll find a job. Because there’s always one job somewhere, for someone, and they want someone who’s good. So if you’re good, you’ll be sought after. When people tell you you’re good and giving a lot of positive feedback, then you should run with it because that means they are trying to root for you. That applies to every aspect of life.

**UTMJ:** What advice would you give to current medical students?

**MB:** Medical school is the one time in your life where you have an obligation to learn, but you don’t have many other obligations. It is your time to learn as much as possible and see as much as possible in such a diverse setting. Even if you won’t be practicing in that area, it’s important for you to learn. Take every opportunity. And it’s okay to say “I don’t know” because it’s your role to learn. One day you will be there, out in some hospital where someone will come to you and ask “what should we do?” and that’s not your time to learn. Your time to learn is now. And learn to pick and choose to maintain some balance in your life. You have to enjoy life, you live only once. You have to learn to give up on some minor opportunity to learn so you can have some personal time.