



**EPISODE 3 – Breaking Ground on
Revolutionary Orthopedic
Research and Care**

TRANSCRIPT

For this exciting episode of *Research Park Chronicles*, we're steering away from the park's older history, and into its more recent! Over the past few years the Research Park has been a pioneering center for a wide array of work, to include work with the University of Tennessee Medical Center. Now, with the innovations that are going on with orthopedic research and care, the park is at the forefront of another fascinating world of research.

Rickey has a wide-ranging conversation with members involved in the newly founded Advance Orthopedic Institute on the research that they are conducting at the park. Rickey guides us through the UT Medical Centers role in teaching new residents, their dedication to the local community. We also get insight into the incredible collaborations and partnership in orthopedics, and the leaps they're taking toward the future of orthopedic practices at the Institute as it nears its opening date!

In this episode we cover:

00:00:00 - Introduction

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00:09:45 - The Advance Orthopedic Institute

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00:31:00 - The Future/Outro

Rickey: Hello, and welcome back to the *Research Park Chronicles*. I'm your host Rickey McCallum and throughout this podcast I'm going to lead you on a journey through the gateway to collaboration. In previous episodes, we discussed the history and creation of the University of Tennessee Research Park at Cherokee Farm, from the land's Native American roots to the influential vision of Dr. David Millhorn, to the role of German car manufacturer Volkswagen in making the university's Research Park a reality. We've already explored a few ways in which UT's Research Park will help usher in innovation through collaboration.

But did you know that the Research Park will also have a tangible impact on the health and well-being of the people living in and around the charming southern city of Knoxville, Tennessee? In a move that will revolutionize outpatient orthopedic care in East Tennessee, the University of Tennessee Medical Center and private care provider OrthoTennessee have teamed up to build a three-story, 93,000-square foot orthopedic ambulatory surgery and research center at UT's Research Park. Named the UT Medical Center's Advanced Orthopaedic Institute, the building will be a crossroads of scientific discovery and medical care, providing high-quality and cost-effective orthopedic care to patients while also making strides in advancing powerful research in the field. When it comes to the history of collaboration in the orthopedic field in the Knoxville area, Dr. George Baddour—who serves as vice president of the Advanced Orthopedic Center for UT Medical Center—has been around for a lot of it.

To get a better idea about what this past history looks like, I decided to get together with Dr. Baddour so he can tell me a little bit more about his 35-year career as an orthopedic surgeon and his history of the orthopedic care in the region.

Dr. Baddour: I grew up in a very small town in West Tennessee, North of Memphis. Across the street from me was our local town doctor, and he was always held up on a pedestal. And so when I got to UT Knoxville for my undergraduate years, I decided I would try to go to medical school. Eventually, that worked out and I went back to Memphis to the University of Tennessee's Center for Health Sciences and the College of Medicine.

During my medical school years, I spent a month or two back in Knoxville at University Medical Center, I was doing a rotation with an orthopedic doctor-in-training or an orthopedic resident. We had a patient who presented to our emergency department, a gentleman who had been hiking in the Smoky Mountains. He had an artificial hip joint—an artificial ball and socket joint—that when he bent over in the mountains, the ball dislocated from the socket.

They brought him into the emergency room; the orthopedic resident came to see him. They sedated him a little bit. The orthopedic resident put the ball back in the socket. The gentleman literally walked out of the emergency room. And I thought that's pretty cool. So, that started my interest in orthopedics.

Rickey: It wasn't soon after Dr. Baddour's training that he was given the opportunity to join a small group of orthopedic surgeons at UT Medical Center. This group eventually changed its name to the University Orthopedic Surgeons.

Dr. Baddour: When I came back to Knoxville to begin my practice, I practiced general orthopedics. Back in the day a lot of orthopedic surgeons coming out of training were generalist, did a little bit of everything, but I soon realized that orthopedics was growing in such a way that it was really hard to keep up with all areas of orthopedics. So, I decided I would focus in the area of the shoulder, and for most of my career, I practiced as a shoulder specialist with University Orthopedic Surgeons at UT Medical Center.

Rickey: And since Dr. Baddour was working at the UT Medical Center, he also spent time teaching up-and-coming medical professionals on orthopedic practices.

Dr. Baddour: Generally speaking, if you're at UT Medical Center—which is an academic medical center—you're expected to participate in teaching. In fact, the hospital's mission is to serve through healing, education, and discovery. And my group would have doctors-in-training, interns, and residents who would spend time with us in our clinics, seeing patients in the operating room observing surgery, and would participate with us when we'd go to the emergency department to see, let's say, an injured patient.

Rickey: The University of Tennessee Medical Center split from UT in 1999 and is now owned and managed by University Health Systems, Inc. Now, around the same time in 1998, University Orthopedic Surgeons and three other orthopedic practices became divisions of what would become OrthoTennessee. Eventually, Dr. Baddour retired from his position at University Orthopedic Surgeons, though he was soon given the opportunity to continue his career in orthopedic health care as the vice president of UT Medical Center's Advanced Orthopedic Center.

Dr. Baddour: I was very fortunate to be offered the position of vice president of the Advanced Orthopedic Center. It's been great because as I mentioned, I still have the opportunity to work with my former partners every day and represent the hospital because we have had such great collaboration through the years. So, it is a much different role. It's strictly administrative, I don't take care of patients anymore, but I have a lot to learn. I've learned a lot and I, just, am grateful.

Rickey: According to Dr. Baddour, there's always been a spirit of collaboration between the UT Medical Center and private orthopedic practices in the area, such as his own former group the University Orthopedic Surgeons.

Dr. Baddour: There's always been a great collaboration between University Health Systems, which is the group that owns and manages UT Medical Center, and University Orthopedic Surgeons, my former group. Collaborations have included work in trauma. For example, UT Medical Center is really the only hospital system that's capable of having a level one trauma center. There's a large orthopedic aspect to taking care of injured patients. University Health Systems, and University Orthopedic Surgeons, and OrthoTennessee, for example, in bringing an orthopedic oncologist to the area.

Prior to this orthopedic surgeon coming to provide orthopedic oncology care, an individual with a bone cancer would have to travel to Emory and Atlanta, or Duke, or Vanderbilt in Nashville for orthopedic oncology services, and now those services are provided here. And that really only happened because of collaboration between University Health Systems and University Orthopedic Surgeons.

Rickey: And it's not just Dr. Baddour who can attest to collaboration in the orthopedic field in this area of Tennessee. Jon-David Deeson, CEO of OrthoTennessee, says the combination of four private practices to what would soon become OrthoTennessee back in the late 1990s was an example of teamwork in the field.

Jon-David Deeson: It was, in many ways, one of the first collaborations that our organization had done by joining those four groups together. If you look at the healthcare industry—and this would be true, just not here locally, but really across the country—it's a complex industry. There's a lot of different moving parts, and so there's always been a focus on collaboration. And particularly over the last 30 years, you've seen it physician to physician group, and our group would be an example of that where there's been smaller practices that have seen the benefits of coming together to try to do some things that are more difficult, obviously, when you're not a larger entity, but also hospitals and physician practices have always collaborated together to try to provide the level of services that our hospitals and medical centers do provide to our communities. And that's taken on a lot of different forms and shapes over the years, and the project we're talking about today is really just a more contemporary example of that reality, given the market conditions and things that are going on that, really, our community and patients need.

Rickey: According to Tom Rogers, president and CEO of the UT Research Park, the university and the UT Medical Center also have a history of working together.

Tom Rogers: The university and the Medical Center obviously have a long-standing partnership. Originally UT Medical Center was part of the university and broke off several years ago. There is a graduate school of medicine that is involved at UT Medical Center to provide residency and internship opportunities for graduate students. There had been a long-standing partnership between the two institutions.

Rickey: So, with the orthopedic health care community in the Knoxville area, and the university, already sporting a history of collaboration, it's really no surprise that the Advanced Orthopaedic Institute was the next step in an impressive list of team-ups. But where did the idea for a freestanding orthopedic center come from? And how did such a project come into fruition?

Dr. Baddour: The idea, again, I believe, came about just from conversation. The leadership, UT Medical Center or University Health Systems, the leadership at OrthoTennessee, realized that there was a need for an orthopedic-only outpatient surgery center. Because, again, the Center for Medicare and Medicaid Services is pushing for orthopedic procedures to be performed on an outpatient basis. It's more cost-effective, it's more efficient, and insurance carriers are interested in hospitals being able to offer the option of outpatient surgery to their covered lives. It just is really, for lack of a better term, it's a market force that is coming toward orthopedics and really all medical specialties as a way to be efficient and cost-effective and focus on quality and patient satisfaction.

Rickey: This emphasis on quality and patient satisfaction was a key part of early discussions about what the orthopedic center would look like, according to Jon-David of OrthoTennessee.

Jon-David Deeson: Our purpose statement as an organization is to improve lives through patient-centered care, every patient every time. Nearly every healthcare organization has at the, really, the center of its focus, patient care. Certainly, that's what it is at UT Medical Center as well. So, the earliest conversations and vision for this project, whether it was independently in organizations prior to getting together to talk was really about creating an environment that was particularly needed in regards to the entities that are partnering in this project, both the UT Medical Center and then our University Orthopedic Surgeon division that would be able to really address that particular focus.

Rickey: Tom Rogers, president and CEO of the UT Research Park, says that it was important to establish the framework of how research would be conducted at the Orthopaedic Institute since it's located at the Research Park.

Tom Rogers: We're building a park that will serve as a gateway for collaboration between its tenants, and university faculty, and staff, research assets, and our incredibly talented students. In this case, we've had to dig a bit to find the right kind of research focuses. The university's medical center is in Memphis. While UT Medical Center is an academic medical center, they don't do a lot of research, currently, in orthopedics, and so we've had to dig quite a bit to get to know the surgeons, understand that they have a lot of experience, they have a lot of data, they have interest in research, but their primary focus is in taking care of patients. We need to establish relationships whereby the university faculty and students can be the primary drivers of the research, and the surgeons can provide a supporting role in providing experience, background, and data.

Rickey: In addition to a focus on providing quality patient care, the need for more physical space helped push the new Orthopaedic Institute at the Research Park into a reality. Here's Dr. Baddour:

Dr. Baddour: My former group has grown to the point that they've outgrown their current space. It also gave the group a chance to move into some new space where there will be more space. The trauma surgeons in the group—in other words, those orthopedic surgeons that focus their time primarily on taking care of the injured patients—they wanted to be close to the hospital because they have to be close to the operating room on an emergent basis. And the Research Park at Cherokee farm is such a beautiful property, and it's close to the hospital, it just seemed to be a natural place to build a new facility.

Rickey: Tom Rogers also says that location for this new orthopedic center was one of the more critical aspects of the project.

Tom Rogers: The University Orthopedic Surgeons really wanted a new place to work, a place to focus on ambulatory surgery care. There was some overcrowding going on at the hospital and the park offered a place that was very proximate to the university which is important to them because they do level one trauma work, but also really the best of both worlds: a situation that was next to the medical center but was separate, with good parking, good access for all.

Rickey: The space at UT's Research Park is a good fit for a brand new orthopedic surgery and research center, but bringing such a vision from paper to real-life wasn't without some hurdles along the way.

Dr. Baddour: There are cultures, I suppose, that have to be meshed between the hospital side and the private orthopedic side. There are just mechanical issues of which lot are we going to put this building on? And what about parking? And if you have a vision of something that can be really grand and if you're willing to stick with it and work through those bumps in the road, then you can make it happen.

And again, I really do give the credit to senior leadership at University Health Systems, and senior leadership from OrthoTennessee, and University Orthopedic Surgeons to bring this together; it's a great collaboration. If you have a vision for something that can be really grand, then you can work through those stumbling blocks. That is exactly what I witnessed over the

year-and-a-half or so that it took to put this together. It really was because people had a vision for something that could be really great in orthopedics.

Rickey: In October 2020, this revolutionary vision started to manifest when representatives from OrthoTennessee, UT Medical Center, and the UT Research Park broke ground on the new orthopedic research institute.

Each of the UT Medical Center's Advanced Orthopaedic Institute's three floors are estimated to open for business in Spring 2022, but each story of the brand new building will have its own very specific function. The first floor will serve as the ambulatory surgical center with five to seven operating rooms, where common procedures will include surgery of the hand and foot, arthroscopic and reconstruction of the shoulder, hip, and knee, as well as total joints, and spine procedures. Here's Jon-David Deeson again, CEO of OrthoTennessee:

Jon-David Deeson: If surgery is a part of their treatment—or an MRI—they'll do that on the first floor. Obviously, from a surgical experience standpoint, that's important to be on the first floor. And so we'll have those operating rooms and the entire experience of really arriving, and then discharge from the surgical day will be there on the first floor.

So, this is an outpatient facility in orthopedics, really. 80% of what's being done across all subspecialties, collectively, if you think about us as a group in terms of all of our surgical procedures, are happening in an outpatient environment. Even in some areas where procedures are being done at the hospital, patients are not staying overnight anymore, so that first floor experience is really set up to be able to serve that reality, both for the medical center as well as for us in terms of taking care of those surgical issues and doing that on the same day, and having people come and go.

Rickey: Tom Rogers says that having an ambulatory surgery floor of the orthopedic center reflects overall trends in the field.

Tom Rogers: One of the things that the ambulatory surgery focus allows them to do is to be away from the hospital. There's no need for patients to spend the night in hospital or multiple nights in the hospital. And this is clearly a trend in the industry. What we have is a huge trend in the medical industry toward ambulatory surgery—outpatient care—that lines up really well with the circumstances we have here.

Rickey: Making the patient experience frictionless is all part of the orthopedic center's plan, Jon-David says.

Jon-David Deeson: I mean, literally, they will park and go in, be seen in an office—let's assume the diagnosis requires surgery or maybe first diagnostics that can be done in the building—they'll come back and have surgery in the same building, they can come back and have therapy in the same building. So, to be able to do all those things under one roof in the convenient, accessible location is going to really provide a great experience for our patients, and something I think noticeably different than they're experiencing now when they see our physicians who work here.

Rickey: The floor above the surgery center will house the clinic space for the orthopedic surgeons who provide quality care to patients at the Research Park's new building.

Jon-David Deeson: I'll actually talk about it in regards to how, probably, more frequently a patient would experience it. The second floor is where most of that activity is going to occur. So, that's where our office space will be—clinics. We'll also have therapy there as well. And that'll be on the second floor.

When they have an appointment with one of our physicians at University Orthopedic Surgeons, they'll come and they'll have their services on that floor. We'll have a number of our orthopedic surgeons there, so we're designing a larger office space for that to happen. So, that's going to also create some additional collaboration, even just from an operational standpoint, as our team is interacting.

Rickey: So, that's pretty straightforward. Surgery on the first floor, clinics and therapy on the second. But what about the third floor? Well, as Dr. Baddour put it:

Dr. Baddour: This is a Research Park, and so performing research in the Research Park is part of it.

Rickey: That's right. The third floor will be a dedicated space to research new technology and methods for providing top-tier orthopedic care. Here's Dr. Baddour with a little bit more about what this research floor will look like:

Dr. Baddour: The top floor of the facility will be focused on musculoskeletal research and it'll be public and private partnerships doing orthopedic and musculoskeletal research. And for me, it's just almost the crown jewel of this facility because the orthopedic surgeons, their private offices where they retreat to do paperwork and answer emails will be on the same floor as the engineers and researchers. So, they'll be passing each other in the hallway and when an orthopedic surgeon has something he would like to have a better way of doing, let's say in the operating room, he'll bump into the engineers, he'll be able to say, "Hey, I'm having this problem. Can you help me with this?" And so I believe there'll be great collaboration between the surgeons and the researchers, just because of their proximity to one another.

Rickey: Private companies and the University of Tennessee will be able to take out space on the third floor.

Tom Rogers: There is a third floor. There's about 15,000 square feet of physical space that's available, initially, to sublet to collaborators. The university's expressed interest in leasing some of that space; a private company in town has expressed interest.

Rickey: So, what kind of research will take place on the third floor?

Dr. Baddour: There is a company that is currently headquartered in West Knoxville, founded by a UT professor that is focused on orthopedic design and technology. That company is very

interested in occupying space on the research floor of the new facility. The University of Tennessee Tickle College of Engineering is also interested in occupying space on the third floor.

We think that's a great fit because the owner of the company, for example, is a professor in the College of Engineering, so we see a lot of collaboration between UT Knoxville, the orthopedic company that I spoke about, and the orthopedic surgeons. They'll all be together on the third floor. They'll be brushing shoulders with each other as they're going up and down the corridors, and I think when you put people in close proximity to one another, it enhances the opportunity for problems to be solved. I believe there'll be orthopedic design and technology that will be invented.

Rickey: Tom Rogers says collaborations between surgeons and companies at the orthopedic center is key.

Tom Rogers: We see the potential to develop an ecosystem that involves operating surgeons and ambulatory surgery operating environment, a number of small companies here in the area who are interested in collaborating to develop new goods and services around the orthopedic industry, faculty at UT who are doing active research, not just in orthopedics, but in social work in nursing, in kinesiology, in biomedical engineering, so a much broader array of translational medical research. And the trick is, the secret sauce is to put all of those together in a dynamic way so the sum of the parts is much greater than any one of the individuals.

Rickey: Having surgeons right in the middle of the action of new developments in orthopedic and musculoskeletal research could help them harness the power of innovation to care for patients. So, here's Jon-David again:

Jon-David Deeson: All of our surgeons are very engaged and interested in how to create the best outcome for their patients regardless of what part of the body they are addressing from a surgical standpoint. To be able to be that close to research that, in whatever category it might fall in, having a direct impact on improving outcomes, which can be everything from something like returning a patient to play, to work, to activity, to motion much sooner. So, there's always a lot of engagement, I believe, in the medical field—particularly from a surgical perspective—on innovation to be able to more effectively take care of patients and create good outcomes. And that's going to be an environment that's going to be happening on a daily basis in this building.

Rickey: It's hard to predict the impact of the innovations that will emerge from this new Orthopaedic Institute. Here's Tom Rogers:

Tom Rogers: We've just barely scratched the surface in terms of the types of collaborations that will occur on the third floor of this facility. I don't think anyone really can predict exactly the outcomes from that center; we just know that it's going to be an environment where people are going to be next to each other. There will be positive collisions all the time between researchers, between students, between operating surgeons, members of companies, and in all of that, innovation is going to occur.

Rickey: So, this new space for research is pretty cool and has a lot of potential. Just take it from a former surgeon, Dr. Baddour:

Dr. Baddour: I think the possibilities are unlimited. I mean, I think we don't know all the things that could come about from research on the third floor, but I think the key is bringing everyone in close proximity to one another. If you're a surgeon, you don't have to remember the problem that you had three days ago. You can see that engineer today and say, "Hey, maybe you can help me figure out a better way to do this."

I just find it really very, very exciting. And then UT Medical Center with their focus as an academic medical center, we should be able to have medical students, interns, and residents participate in the research. I believe there'll be biomedical research. Because we're going to be in a facility that will have physical therapy, there'll be opportunities to monitor outcomes of patients, maybe those that have had joint replacements, we'll be able to monitor range of motion, and strength, and progress as they recover from their procedures. And, again, UT Knoxville, the College of Engineering will be a part of this. They'll bring professors and engineers into the mix. I just think the possibilities are unlimited, and we'll just have to see what actually evolves, but it's really very, very exciting.

Rickey: Exciting indeed. But when looking into the future, Tom Rogers says that the Orthopaedic Institute is by no means be the only place medical research will be conducted at the Research Park.

Tom Rogers: We're building another building directly adjacent to it that has about 40,000 square feet of space. And so not all of the medically-related research has to happen in the Orthopaedic Institute itself. In fact, I would say that translational medical research is one of three major research focuses for the park in general. I suspect over the next two or three years we'll see additional collaborators working who may not be physically located in that facility, but will be in the park, and the real key to success is seeing those companies work together.

Rickey: One thing is for sure, as the next iteration of collaboration among the orthopedic healthcare field in the Knoxville area, this research center will usher in brand new discoveries that will help shape the future of healthcare. Both UT Medical Center and OrthoTennessee have decades-long successful histories of providing high-quality care to the eastern part of the Volunteer State.

And both Dr. Baddour and Jon-David seem to believe that the orthopedic research center fit in with their respective organization's missions. Here's Dr. Baddour:

Dr. Baddour: I'll go back to UT Medical Center's mission, which is to serve through healing, education, and discovery. Healing, or the treatment of patients, has always been the strong suit for UT Medical Center and University Orthopedic Surgeons. UT Medical Center is an academic medical center, and so education is a part of our being; it is part of our core. We train many medical students and then doctors-in-training, interns, and residents, and fellows.

The Orthopedic Group has always participated in teaching. From an orthopedic standpoint, those medical students and interns and residents discovery—which, to me, has a lot to do with research—is something that UT Medical Center has always focused on, but the Orthopedic Group has been so busy taking care of patients that they just haven't had the opportunity. This new facility, the Advanced Orthopaedic Institute is going to combine all three aspects in the stated mission of UT Medical Center to continue healing, to serve with healing, education, and discovery. This facility, this building, will bring all that together. We'll still be taking care of patients, we'll still be teaching, and now we'll be able to do research or discovery. So, it's very, very exciting for me to have been with my group for so many years and now to see this opportunity. I really do think it's one of the great opportunities for UT Medical Center and University Orthopedic Surgeons.

Rickey: When I talked with Jon-David from OrthoTennessee, he told me that his organization's purpose statement—similar to UT Medical's—is:

Jon-David Deeson: To improve lives through patient-centered care, every patient, every time.

Rickey: But to Jon-David, there's something special about the fact that the Orthopaedic Institute will be devoted to advancing care in that specific field of medicine.

Jon-David Deeson: You're finding, I think, a reality in this collaboration in an Orthopaedic Institute, something that's really unique, I think, in this region particularly, for everything in that facility to be completely dedicated to the orthopedic space. And that's of huge value to the patient, both from an experiential standpoint, but also in regards to the potential and opportunity from a research standpoint. We interact with a lot of orthopedic practices across the country, and the project that's being really birthed here is not something you would typically see in a community like ours, typically more so in larger urban areas. So, I think that's an element of it that's extremely exciting, that it's going to be more than just a hospital and a medical practice coming together to try to really provide a new facility to take care of patients. It is, in many ways—and this is where UT Medical Centers focus on it from an Orthopaedic Institute standpoint creates something significantly different in terms of the opportunity of what this project and, really, facility for this region can mean—it's much more than just taking care of the patient; it's about advancing innovation in that effort.

Rickey: The UT Medical Center's Advanced Orthopaedic Institute truly embodies the UT Research Park's motto of being the gateway to collaboration. Between researchers, engineers, students, and practitioners, the institute will forge a unique name for itself as a leader in orthopedic innovation and research, all while providing phenomenal and cost-effective orthopedic care to everyday residents of East Tennessee. I had such a fun time learning about the public and private collaboration at the Orthopaedic Institute at the Research Park.

I was so curious about what other businesses will work at the park that I decided to do a deep dive on the Spark Innovation Center, a center that is providing support to six technology startups as they build their companies. But what sort of technology are these businesses developing? How did the Spark Innovation Center come to be, anyway? Find out next time on *Research Park Chronicles*.

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