**EPISODE EIGHT:**
Dr. Peter Beitsch, Part Two:
Taking the Lead in Precision Medicine as a Surgeon
Dr. Peter Beitsch, Dallas Surgical Group, TME Breast Cancer Network | February 2019*Welcome to* [*The Precision Medicine Podcast*](https://www.interventioninsights.com/precisionmedicinepodcast)*, where experts come to discuss the problems oncologists, reference labs, and payers face as precision medicine grows, and consider solutions for advancing the quality of patient-centered cancer care.*

Jerome Madison: Hello, I'm Jerome Madison, Vice President at Trapelo and one of the hosts of the Precision Medicine podcast. Today, we have Dr. Peter Beitsch, Chief Physician of the Dallas Surgical group and executive with TME breast cancer network. He is the lead author on a study just published in the Journal of Clinical Oncology that many are calling potentially game-changing with respect to genetic testing guidelines, and he was just so gracious to come on the podcast and discuss it with us. Dr. Beitsch, thank you, and welcome to the Precision Medicine podcast.

 Dr. Beitsch: Jerome, thanks for inviting me. This should be a very interesting podcast hopefully.

Jerome Madison: Absolutely. I've known you for some time, and I know it's not unusual for surgeons to participate in research, but you're not in an academic institution yet. You have been the lead author on a number of studies, including those published in very prestigious journals like New England Journal, American Journal of Surgery, and of course recently, the JCO. Tell us about your training and how you developed your unique practice as a board-certified surgical oncologist who does research at this level?

 Dr. Beitsch: Thank you for those gracious comments. Really, I've been lucky in my career. I began training in general surgery at Parkland Hospital, but in the middle the chief of surgery called me into his office and, after being scared, he said, "No, don't worry. I have you a fellowship down in MD Anderson, if you would like to take it.” In the middle of my general surgery residency, I got to spend two years in a immunology lab at MD Anderson. It was fantastic. It's such a dynamic and interesting environment. I learned tons about immunology, I also learned that I could never do bench basic research, so that was good.

 Then I met some long-lasting friends that are still involved in my life today, including Pat Whitworth, who's also in TME breast care network. He's co-author on many papers including the most recent paper in JCO, he's the second author. After that, I finished up at Parkland and then spent a year at the John Wayne Cancer Institute in Los Angeles. That was a very heady time in that Dr. Morton— Don Morton—had gone from UCLA to Santa Monica and started the John Wayne Institute there. His landmark paper in sentinel lymph node biopsy in melanoma patients had just been published the year before, so I was able to learn that technique from the master who was at John Wayne.

 Dr. Beitsch: Dr. Armando Juliano developed the technique in breast cancer and breast cancer sentinel lymph node biopsy has truly revolutionized breast cancer surgery. I came back to Dallas in 1994, brought the sentinel lymph node technique, began my private practice, but I always had a strong desire to do clinical research. David Craig, the other breast sentinel lymph node guru at the time, came to Dallas and said, "I know you trained with Don Morton. I also trained with him. We're going to do this multi-center trial and breast sentinel lymph node. Would you like to be involved?" I probably crazily said yes, not really knowing how much work that was, but we were able to get it through our IRB and consent patients. That paper was really the landmark breast sentinel lymph node multi-center trial published in the New England Journal in 1998.

 That trial led to a prospective and randomized trial—really a daring trial at that time—looking at sentinel lymph node biopsy in breast cancer patients who had a positive sentinel lymph node, meaning they had a metastasis to their sentinel lymph node, and randomizing those patients to either standard care, which was to take out the rest of the lymph nodes from their axilla, or observation of their axilla. These are all breast-conservation patients, so they were all going to get radiation. It ends up the radiation actually probably treats the upper part and the rest of the axilla that's not removed from surgery, but at that time that was not particularly clear.

 Lo and behold, a thousand patients later, a landmark study said if you have a positive sentinel lymph node and breast cancer, you don't have to have a complete axillary dissection, which is a really the morbid part of breast cancer surgery. I was fortunate enough to be on that paper, that was Dr. Armando Giuliano as a primary author. That was published in late 2000’s.

 After that I was a strong participant in the American Society of Breast Surgeons. From that, I got to be the principal investigator on a new technique for breast radiation, called accelerated partial-breast radiation, using a new catheter developed by industry called the MammoSite® catheter. We did a registry at the American Society of Breast Surgeons and ended up collecting about almost 1500 patients, 1/3 of the patients that were treated with a technique during the time period of 2000 to 2007. Published that, and it's really been an incredible benefit to women getting an accelerated—meaning 5-days of radiation treatment as opposed to six-weeks of radiation therapy and their equivalent.

 That was a bit of a pivot. The next pivot in my career, apparently, I did have a, quite a like for clinical research. We moved into genomic testing, which is part of precision medicine that you're very involved with, I know. We did a neoadjuvant registry with the company called Agendia, looking at both their prognostic tests, which is called MammaPrint.® But even more importantly, they're subtyping set of tests, which is called BluePrint. And it turns out the subtyping is important for breast cancer, because not all breast cancers…breast cancer…it's really many kinds of cancers. Hundreds.

 Dr. Beitsch: Maybe every cancer is unique, hence precision medicine. But, at least splits out into four major categories, which is a luminal A, luminal B, basal or triple negative, and the Her2 new group. In that study, where we looked at the neoadjuvant patients and their response rate, we didn't dictate the therapy, but we just reported what the therapy was. It turns out we actually made two fairly significant discoveries, one of which was that about 20% of ER-positive patients, which are classically luminal patients, actually when you look at the genes downstream from the estrogen receptor, they're not turned on by estrogen receptors, and they're actually a basal type. They look like, if you just look at their immunostaining, they look like luminal type that would respond to anti-estrogen therapy, but in fact they're basal and need to be treated like a basal cancer. That's a pretty big thing.

 The other thing was just a complete random bit of luck. During the trial, the standard of care in neoadjuvant treatment of Her2 new positive patients switched from chemotherapy plus Herceptin® to chemotherapy with Herceptin, plus a new drug called Perjeta,® which attacked the Her2 new receptor in a different way. As we're tracking the patients in the study, we see that the Her2 new positive patients, if you're estrogen receptor positive and Her2 new, that they really were responding poorly to chemotherapy plus Herceptin as opposed to the estrogen receptor-negative patients that were Her2 new positive.

 That's an interesting finding. You would expect them to be ... you're targeting Her2 new and that's really what you seem to be controlling the cancer with along with chemotherapy, but lo and behold, that was not the case, and we ended up saying early on in the trial, before the Perjeta was added, that we found this. If you’re a Her2 new positive, but a luminal patient, you're going to be resistant to Herceptin-based chemotherapy.

 What we saw was the Her2-positive positive and ER-positive patient started to get more and more complete pathologic response with treatment. When we went back and looked at the breakpoint, it was exactly when Perjeta came in. We came up with this theory, if you're HER2-positive and ER-positive and luminal, you have to have the dual blockade of Her2 new and Perjeta. People have been seeing that, but didn't know why, and it's actually because of the luminal sub-typing. Those are two big features that came out of that trial. That was pretty exciting.

Jerome Madison: Many people may not know this, but the process of tumor profiling in precision medicine actually started with surgeons, because the tissue was required to be fresh or flash-frozen and needed to be harvested in surgery for gene sequencing. You were one of those early voices advocating for precision medicine and very often clashed with medical oncologists.

 Dr. Beitsch: Yes.

Jerome Madison: Where did that passion to challenge them and take this on?

 Dr. Beitsch: I get...a lot of that is from, I guess, from Dr. Morton really. Some of my trained…people that I trained with; the passion that they had to care for their cancer patients and to fight it tooth and nail. I know Dr. Morton was really instilled, was passionate about precision medicine and actually about the immune system too, which now is blowing up also. That's where that passion came from. I guess, if you can't tell by listening to the first part of this podcast, I'm fairly passionate about things, so often I'm not the most politically-correct guy in the world. I challenge things that seem silly and don't make sense to me.

 One of which is always ... to be it's always been population-based treatments. If it's the best you've got, it's the best you got, and that's how we developed chemotherapy for breast cancer patients. These weren't even stratified by something as simple as estrogen receptors, but back when chemotherapy started, we just put 500 or 1,000 or 2,000 patients in this arm of the trial and 2000 patients in this arm of the trial, gave one chemotherapy and didn't give placebos to the other and followed them.

 Lo the behold, in a population-based study, they did slightly better if you gave them chemotherapy. That's great, but all of sudden now you're treating a lot of people to help a few. Precision medicine, I think, does several things. It treats the people that need to be treated with treatments that should be effective for them, but it also says, "Okay, don't give them that treatment, because that's not going to work on them, or they don't need that treatment." That is giving the treatment that's needed when it's needed, targeted for that patient's cancer. Ultimately, it's going to be that patient's genetic milieu also. That should be our aim, and that's ... I think that's why you're on this podcast, and that's why you do what you do, and you've done it for 20+ years that I've known you.

 That's always made commons sense to me. The science has not always been perfect. It certainly gotten better and better. As we've been able to do things like genetic sequencing, way better. The really intense amount of money that was put into cancer biology in the 90’s really started paying off in the 2000’s when you started getting targeted drugs like Trastuzumab or Herceptin for Her2 new tumors.

 We started getting additional treatments for estrogen-receptor positive tumors. All of that morphed into things like ALK mutations in lung cancer having a very targeted treatment. For those patients, it's been miraculous. The more and more we look at things precisely, the more we find out and the better we get. Not perfect yet, but it certainly got better. Just in my 25-year career, survivals in breast cancer, probably at least going up by 50% maybe more. And, melanoma, there's another classic example of precision medicine.

 There's v-raft mutation testing in melanoma. That was not an evolution, that was a revolution. Half of melanoma patients carry a VURAF mutation that can be targeted with a drug, an oral drug. It has side effects, but not like you know, systemic chemotherapy and untargeted chemotherapy has. And that revolutionized melanoma, and we've gone on from there with additional targets. Then, immunotherapies just blown up. We're really starting to get a handle on some of the cancers that were really…melanoma used to be really…the first part of my career was depressing because we really wanted to escape…the skin and the lymph nodes…was really, didn't have a lot. We weren't very good at treating it, and now we're getting better and better. It's about patient care. I guess my passion and my willingness to confront medical oncologists and to work with my pathologists to push things forward really stems from passion for patient care.

Jerome Madison: Your voice and your opinion very much helped move this industry forward. In fact, as I think about it, today there are really a great number of medical oncologists that are still trying to wrap their minds around precision medicine as to when it should be used, who they should order from. That's today, and that's not a criticism, it just is.

 Dr. Beitsch: Yeah, change is hard.

Jerome Madison: Yeah, absolutely. I remember a few years ago, and this was a few years ago when you were the president of the American Society of Breast Surgeons. NGS, as you know, had just launched as a commercial technology. Tumor profiling was ... it was certainly getting more buzz. It was not mainstream at all, but your presidential address was titled, "Future Shot," and at the end of that speech you told this audience of somewhere around 3000 breast surgeons that if you don't start learning cancer genomics—if you don't start getting involved in precision medicine—they're going to spend the rest of their career taking out gall bladders.

 Dr. Beitsch: Yeah, yeah.

Jerome Madison: What did you see... This was a little while ago to surgeons, where many medical oncologists had not really taken up that mantle of leadership in imploring precision medicine routinely. How have you seen the uptake of interests by surgeons that you've spoken to, and also Med Ops changed since that time?

 Dr. Beitsch: That really got their attention. At least they started paying attention. After I told them, because nobody, they don't like taking alcohol bottles, because those can happen in the middle of the night. They like operating during the day and seeing patient in my office. That certainly got their attention and they listened at least. One of the things about surgeons is we always advocate ... I guess all physicians do, but we strongly advocate for patient care and are not afraid to push the field forward. A staging system in breast cancer was started by surgeons. Estrogen receptor was discovered, and treatment of the estrogen-receptor positive patient started and won a Nobel Prize for a surgeon. Surgeons have always been interested in total care of patients and always in their best interest and to push the field forward.

 Dr. Beitsch: I think surgeons were not entrenched in population-based treatments like medical oncologists are. One big 3000-patient study with…you tweak chemotherapy a little bit, that's fine…but surgeons didn't care much about that. But if you come in and say, "Okay this patient has Her2 new on their cell surface, you better be treating that with targeted therapy.” They get that immediately. Maybe I am just a simple creature. Simple things sound easier for me, but I think surgeons in general really adopted things that made common sense.

 The first one really made a big difference for patients was Oncotype DX and MammaPrint, those two things. You could sort out the pages ... there was a paper, famous paper NSABB B20, study B20, that said, "We cannot find a group of breast cancer patients that don't benefit from chemotherapy." Well, that just turned the spigots on for everybody to get chemotherapy. We weren't seeing that. We're on the front lines with the medical oncologist, and we believe that there are tons of patients that don’t benefit, and they get all the harms from it without any of the benefits.

 Lo and behold, both Oncotype DX from Genomic Health and MammoPrint from Agendia said, "No, no, we can sort this out." Sure enough, they were able to independently develop tests that could sort out people that would benefit from chemotherapy, which is great, but more importantly, patients that were not going to be benefited in any way from chemotherapy. They just needed probably hormonal therapy.

 Those two tests were ... made complete common sense to surgeons, and even though both of those companies started going to the medical oncologists first—because that's who gives systemic chemotherapy—they really got traction once they started talking to surgeons. We used to teach courses for both of those companies where we were teaching—mostly surgeons in the audience to order the test—to then, when the patient went for a consult with a medical oncologists, they'd have it already in their hands, and say, "Well, you say I need chemotherapy, but it looks like my score says I don't need chemotherapy. What do you think about that?” That was a bit upsetting to some medical oncologists because they felt like they were threatened.

 But I think it got their attention, too, and it brought them around. Ultimately, everyone wants what's best for the patient. So, they came around on it eventually, and so, that whole area of genomics has been really a blessing for patients and really adopted by surgeons first and then medical oncologists really coming around. To be honest with you, quite frankly, from the pathologist, too, because they would bring it up in tumor boards or a breast conference and ask about it. The pathologist, even though they may not directly touch patients…or, some do, but rarely…they saw the benefit and in it also, and, you know, nobody wants friends and family to be getting treatments that aren’t going to help them.

 They saw the benefits of it, too. We all got, finally got on the same page with all that. It's been great. That presidential lecture has been, I think, very well-received. Even, it's coming up on 5 years now, I went back and listened to it again a couple of months ago, and most of it still holds up. It was a bit bodacious at that time, but it still holds up I think.

 Jerome Madison: Even since then, you've done research for quite a while, and you mentioned some of your co-investigators on the paper that you work with, but now you're part of TME breast care network. Tell us a little bit about that group and the work that you do.

 Dr. Beitsch: Yeah. TME came up about maybe five years ago when Pat Whitworth and Mark Getelman and Rakesh Patel and I, who had been teaching courses for industry for many, many years—over 10 years, together—decided, "I think, let's come up with some different way. I don't want to be attached to one company. I want to bring up breast care. I want to raise the level of breast care in this entire country. And how can we do that?" Actually, Pat came up with the idea. It's great for academics to stand up at the podium and pontificate, but really what we need to do is get down in the trenches with the people in the communities where most care is delivered and raise the community leaders, tell them about what's the latest, cutting-edge stuff. The community leaders, we'll bring them into a meeting, and then they'll go back and disseminate it in their communities.

 When that happens—when the community leader comes back in the community—the other surgeons see what she or he is doing. They raise their standards too. That was the concept. We've done seminars in the fall—summits we call them—in the fall where we fly people in, and it has to be in Vegas because everybody likes going to Vegas. Meet in a nice hotel, and we do a day or day-and-a-half of soup to nuts, from risk-assessment and diagnosis to survivorship issues, and really what the state-of-the-art is.

 The industry has been very helpful in supporting us in this mission. We've now held nine of ‘em was last November. We used to hold them twice a year now we're just once a year. Then we developed the breast care network, which is basically the group of everybody that's come to a summit. These are community leaders, some academic leaders also, about 10% to 12% of our participants are academics that are real clinically oriented. That's the breast care network now. We have about 250 physicians in that. We have a website. We have a case-based forum where people can openly discuss cases that are complicated. These are high-end physicians to begin with, and if they have a complicated case you can imagine.

 We do that. We hold webinars. Industry will come to us as they're developing a new product, say, “We need an ad board. We want to get some feedback on a new localization device in breast cancer for after biopsy.” That can start with: How does it feel? Which grip do you like? What display do you like? We've had genomics companies come to us and say what's really important on the report. If you can't communicate with your report to the physician simply and understandably, then it's hard to adopt your test, because I can't understand it. They ask us simple things like that so we do ad boards for them, advisory boards with the physicians.

 Dr. Beitsch: It's been a great fascinating process with targeted medical education in breast care network and we've got more things to come. One of the things we learned along the way was once something got approved that they really needed follow-up on their task or their product, and so we developed TME research, and that's one main thing I do in TME is the research. TME research is what developed the network that did the universal breast cancer registry that just got published. We have a foundation now where we were doing our first oncoplastic course with CME via the TME foundation. We can offer CME credits for everybody.

 We're not trying to be the American Society of Breast Surgeons. We’ll never be that. We have no…that's not our charge. We do want to raise breast care in this country. We are like-minded with ASBS, we're just taking a little different tack on it. Thank you for asking about that though, I appreciate that.

 Jerome Madison: Yeah, absolutely. Many of our listeners are innovators in the precision medicine space. How can they get in touch and, of course, physicians as well, how can they get in touch if they want to learn more about TME or find how they can attend one of your conferences?

 Dr. Beitsch: Yeah. Two things. You can go to our website breastcarenetwork.com. We have all our contact information there. That's www.breastcarenetwork.com. You can email me. It's my last name which is Beitsch, BEITSCH@gmail.com. I'll be happy to hook you up. We really are always looking for new people to come to our summit. We love working with new industry partners. We really only work with people that we think are innovative and cutting-edge. If you make it to the summit as an industry, it may only be 40 people there, but it's the right 40 people. You've been to our summits. They're like no meeting you've ever been to. They're very interesting and fun, and we serve mimosas in the morning.

 Jerome Madison: Many thanks to Dr. Peter Beitsch and the Targeted Medical Education breast cancer network for sharing the work they're doing to move breast cancer care forward. We also want to encourage you to listen to part one of Dr. Beitsch's interview, which was titled "Are Current Genetic Testing Guidelines Outdated?" Where we dive into the study and outcomes of the JCO paper. Of course, we want to thank you and all of our listeners for joining us today. We hope you will tune in for the next episode of the Precision Medicine podcast. Don't forget, you can download full transcripts today at precisionmedicinepodcast.com. If you enjoy this podcast, you probably know someone else who would, so please tell them. They'll thank you, and so will we.



**About Our Guest: Dr. Peter Beitsch, M.D.**

Dr. Beitsch went to medical school at University of Texas Southwestern Medical School in Dallas and finished his general surgery residency at Parkland Hospital in Dallas in 1993. He had a National Cancer Institute fellowship at M.D. Anderson Cancer Center from 1988-90. He completed his training with a surgical oncology fellowship at the John Wayne Cancer Institute in Santa Monica, California, where he trained with the fathers of sentinel lymph node biopsy, Donald Morton,MD and Armando Giuliano, MD. In 1994, he returned to private practice in Dallas where his practice is focused on melanoma and breast cancer.

He has held numerous positions in national surgical societies including at the American Society of Breast Surgeons. At the ASBrS, he was the first Chairman of the Membership Committee 2001-4, Program Director for the 2005 Annual Meeting in Los Angeles, Board of Directors Member from 2006-9 and 2012-15 as well as President of the Society 2013-14.

Dr. Beitsch has given numerous national and international presentations and is actively involved in breast cancer and melanoma research. He has major articles in peer-reviewed medical journals including the New England Journal of Medicine, the Journal of the American Medical Association, the Proceedings of the National Academy of Science, Journal of Clinical Oncology, and the Annals of Surgical Oncology.

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