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## Reconstructive Surgery for Breast Cancer

Hosted by: Anees Chagpar, MD

Guest: Michael Alperovich, MD, Assistant Professor of Surgery (Plastic)

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*Welcome to Yale Cancer Answers with doctors Howard Hochster, Anees Chagpar and Steven Gore. I am Bruce Barber. Yale Cancer Answers is our way of providing you with the most up-to-date information on cancer care by welcoming oncologists and specialists who are on the forefront of the battle to fight cancer. This week in honor of breast cancer awareness month, it is a conversation about reconstructive surgery for breast cancer patients with Dr. Michael Alperovich. Dr. Alperovich is an Assistant Professor of Plastic Surgery at Yale School of Medicine, and Dr. Chagpar is an Associate Professor in the Department of Surgery at Yale School of Medicine and the Assistant Director for Global Oncology at Yale Comprehensive Cancer Center.*

Chagpar Michael, we worked together quite a bit in the operating room, and I felt what we do is really take this from the standpoint of a patient, because breast cancer is the leading malignancy affecting women and a lot of patients are faced with the decision of what do I do in terms of surgery. And when I see patients, I talk to them about you can have a partial mastectomy or breast-conserving surgery, this is also called a lumpectomy or you can have a mastectomy. Now, after a mastectomy, people have choices with regards to whether they want to be flat or whether they want reconstruction, which can often be done at the same time. So, why do not we start there? What are the advantages and disadvantages of having your reconstruction done at the same time as the mastectomy?

Alperovich It is a great question. I think there is a few just logistical advantages: One, if you do the reconstruction at the same time as the mastectomy, you are taking advantage of one operating room trip, one hospital stay, one recovery period. So, you are able to take care of both the extroversive of portion of removing the tumor as well as the breast reconstructive portion at the same time. From an outcomes perspective, we know that if we do the immediate reconstruction and you preserve the skin envelope and we are able to preserve the integrity of the breast at the time of mastectomy, we have actually superior aesthetic outcomes. So, it is easier for you as a patient to recover, you have better results, and from a psychological benefit, you go to sleep with breasts and you wake up with breasts, and I think it is a lot of easier to be able to get through the whole process knowing that you do not have to have a period where you are actually without breasts.

Chagpar Yes, and just for our audience, in most circumstances that is an option. The one circumstance where I can think of where it is really not an option is in inflammatory breast cancer. But aside from that, are there other contraindications to immediate reconstruction from your standpoint.

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Alperovich I agree with you. I think reconstruction is something that is possible for almost any patient, I agree with you, inflammatory breast cancer and certainly a small portion of my practice is devoted to patients who had aggressive tumors and did not feel that they wanted to suffer or go through the extra recovery or pain or discomfort of reconstruction and chose to just have the mastectomy. Certainly, if someone has other medical conditions that make any longer surgical time, either reconstruction - even simple as a tissue expander not in their best health and self-interest, then in those cases we will say, look we are not comfortable with pursuing reconstruction given just the general tenuousness of your health conditions. So, we will do what is absolutely necessary, which is removing the tumor, but we will not elect to prolong the anesthetic and recovery time with the reconstruction.

Chagpar So for most patients, they can have immediate reconstruction, and then we get into the whole potpourri of options with regard to immediate reconstruction. So, can you kind of break it down for us in terms of what are people's options and what are advantages and disadvantages of each and how do you kind of decide what is an optimal reconstruction for a given patient.

Alperovich So, I will say that there are many options and this typically takes over an hour of discussion with the patient and oftentimes I will have the initial discussion and if there is time, I will have the patient come back in a week or two to reinforce and repeat a lot of the discussion because I know how complicated this can get. The main two categories are either implant reconstruction using breast implants, not unlike a patient who undergoes cosmetic augmentation, and the other big category is using your own tissue, which we call flaps to basically doing a transplant where we transfer tissue from one part of your body to reconstruct the breast. The option that is best for the patient really depends on that patient's individual goals and objectives as well as their body type cancer and what they have in terms of their own mindset of what an aesthetic reconstruction involves. The big advantage of an implant reconstruction is that there is no new scarring, we use the same access incision as we use for the mastectomy, the operations adds about an hour to hour and a half per breast side at the time of surgery and it is generally a chance for you to get back on your feet faster and more quickly with less pain and discomfort. The disadvantage is that it is an implant and certainly implants feel and look, and although they are very good, they still feel and look less normal and realistic than normal breast tissue, and implants do have a life expectancy and they are not forever, so someone is in the 30s or 40s, they should anticipate that over the next 10, 15 or 20 years, they will probably require some exchange and removal of that either rupture or old implant. The advantage of using our own tissue is that it is your own tissue and certainly if someone is available for it, I tend to bias towards that option because we replace like with like, we take fat from your belly or your thigh your upper butt, and we make a breast tissue out of it and it feels like a breast tissue and looks like breast tissue and it is your tissue. It will never get rejected, it will never have to be replaced or removed, and once it heals, it is there forever.

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Alperovich And these patients, I find, eventually forget about their breast cancer and they move on and just accept these as their new breasts without any sort of the reminders that you get often with implants and screenings to make sure there is no rupture or other issue with infection. The big disadvantage obviously is the recovery time from borrowing tissue from another part of your body is significantly longer, and I tell patients this is an upfront buy-in, you commit to a longer recovery right at the start but you sacrifice all the recovery at the beginning for a prolonged and lasting impact that will be with you the rest of your life.

Chagpar So, I want to dig a little bit deeper into those two categories. So, with the implant, a lot of people need a tissue expander first and then there is an implant that is exchanged afterwards. Can you kind of talk a little bit about that, so it is actually not exactly only one operation.

Alperovich Absolutely. So, regardless of what reconstructive approach you go through, I always tell patients plan on 9-12 months to get the reconstruction, that is what is typically required in my hands as well as in the national landscape, and why is that the case? Well, for an implant reconstruction, let us say you do as you mentioned oftentimes you will not put in the full-size implant right at the start. In 1980s, there was this idea of 2-stage tissue expander implant reconstruction. So at the time of the mastectomy, we place a tissue expander which is just a shell of an implant filled with a little bit of water and then after several subsequent office visits, we eventually fill that implant to the full size of what we want. What that allows the mastectomy skin to do is to heal, and it also allows the pec muscle under which the implant is sitting as well as the skin to stretch. So, you get both breast mound and envelope and as well as pec muscle under which the implant sits to stretch and accommodate the full size that you want, and now I would say that is about 75% of all implant reconstruction nationwide include these two stages; so at first, you have the mastectomy, you place a tissue expander, you follow up in the office, we fill them up with water, and once they are the full adequate size, you go back to the operating room, we take out the tissue expander and we replace it with a permanent implant which can either be water filled which is saline or it could be gel filled or silicone. And if you elect to have a single implant stage reconstruction – you want to just get the permanent implant at the start, typically these are patients who are older or do not want to go through the extra operation and then also patients who are willing with a slightly smaller breast envelope to have a breast size that is smaller than their original preoperative size. But even if you undergo a flap option, you still often will require some revisionary surgery, a nipple reconstruction, an areolar tattoo and all these subsequent operations are out-patient, short procedures, minimal anesthetic. I do tell the patients: plan on 9-12 months until you are completely done with everything regardless of your steps.

Chagpar Right. And so, the other question that a lot of patients have that is concerning to them is this whole concept of the implants rupturing. How common is that?

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Alperovich I would say, I have seen patients who have had them for 30 or 40 years and they are still intact. They are guaranteed for 10 years by the manufacturer, but if you are like me, I have certainly eaten a loaf of bread that expired yesterday and I have had it and I have done okay, and for that same reason, if I see a patient who has had their implant for 11 or 12 or 13 years, I do not take them to the OR and prophylactically remove it. I have had patients who with barring a car accident or a jujitsu hobby who will have these implants for decades, but they can rupture. The one thing that I often emphasize the patients is there is a natural capsule that your body forms around any implant, it forms around any foreign body at all, so if you have a knee replacement or you step on a nail and you have a nail lodged in your foot, it will naturally wall it off, and this fibrotic capsule actually preserves any contents of that implant. So, even if you have a silicone implant and it ruptures, that silicone not going to go through your bloodstream and around your body. It is going to sit in that capsule and oftentimes while if I see a ruptured, I will take the patient to the OR and remove it and replace it. I often emphasize this is not an emergency, this is a not a risk to your life or your health and this is something we should ideally within the next few weeks.

Chagpar So, are there certain tests that you mandate that people have to look for these ruptures or do you kind of look for them with say an MRI as and when there is clinical indication.

Alperovich So, that is a very controversial issue among plastic surgeons. The FDA does recommend that if you have a silicone implant, that you have an MRI 3 after the implant is placed and then every 2 years thereafter. I can tell you of the half million silicone implants that have been placed in the United States in the last year, and that 60-70% of those are for cosmetic indications and MRI costs about a 1000 dollars. So, majority of patients who have silicone implants are not capable of affording MRIs every 2 or 3 years and those patients live with the same implant without getting routine screening. Breast reconstruction patients are in a favorable position because this is covered by insurance for them and they can obtain routine screening. Generally, barring any clinical signs of rupture and that would often be deformation of the breast, hardening of the breast, pain or discomfort, it is rare to actually have a positive MRI finding barring clinical symptoms. But I do recommend patients that if you want to be absolutely safe that is FDA recommendation. If they have a water filled or saline implant and that ruptures, then in those cases you do not need an MRI because if the water-filled implant ruptures, it is like a balloon that water disperses in that capsule and gradually gets reabsorbed to your body. So, those patients will be very obvious when they rupture. They will come in and say my one breast looks smaller and flat compared to the other, and then we can just come back and replace it.

Chagpar And the other question that I think a lot of people ask is about the new stories that have been coming out about leukemias or lymphomas associated with the implants. How much weight is there to that, how much truth is that, how common is that, should people really be worried about that.

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Alperovich So, this is something that is new to the mainstream because it was covered in The New York Times and all over evening news in the last couple of months, but this is something that in our plastic surgery community is well known. I am on actually a breast implant taskforce where we talk about the Yale New Haven Health System and what implants we cover, and we had actually discussed whether or not to use textured implants. So, this is something we have known for at least 5 years now. Essentially, the data shows that there are certain types of implants that are associated with an extremely rare lymphoma. How rare is this lymphoma? While there are about 400 reported cases in the entire world and how many implants do we place worldwide, about 1-1.5 million, so you figure 1-1.5 million implants over the last 10 or 15 years and we have 400 cases. You are more likely to get in a plane crash flying to LA or a car accident driving home, then you are in getting lymphoma. The interesting fact was that there was a certain shell or capsule that the implant has, it is more associated with this lymphoma – it is called the textured capsule. Instead of having a smooth surface, it looks more like a rippled surface, like you would find like a lot of rocks. In those particular cases what we found is that those patients have a higher risk and for that reason, I tend not to use textured implants.

Chagpar Great. Well, we are going to take a short break for a medical minute, but right after break, we are going to more about the other kind of reconstruction -- autologous reconstruction with my guest, Dr. Michael Alperovich.

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## Medical Minute

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*This is a medical minute about head and neck cancers. Although the percentage of oral and head and neck cancer patients in the United States is only about 5% of all diagnosed cancers, their challenging side effects associated with these types of cancer and their treatment. Clinical trials are currently underway to test innovative new treatments for head and neck cancers. In many cases, less radical surgeries are able to preserve nerves, arteries and muscles in the neck, enabling patients to move, speak, breathe and eat normal after surgery. More information is available at [YaleCancerCenter.org](http://YaleCancerCenter.org). You are listening to WNPR, Connecticut's public media source for news and ideas.*

Chagpar This is Dr. Anees Chagpar and I am joined tonight by my guest Dr. Michael Alperovich. We are talking about breast reconstruction after cancer. Now, right before the break we started talking a lot about implant-based reconstruction, which is one big category, so Mike, maybe you can give us kind of a breakdown. How many patients get implant-based reconstruction, how many patients get autologous reconstruction.

Alperovich Nationally, the ratio is actually skewing more towards implant. It is about 80% of patients nationwide obtain implant-based reconstruction. We are a unique place here at Smilow because we tend to be a tertiary referral center and so we have the interest and the expertise to do more microvascular autologous reconstructions. So, our numbers are closer to 50-50, which is unusual for the most majority of the country.

Chagpar Right. Because it does take the special expertise to know how to hook up those blood vessels under the microscope. So, let us talk a little bit about autologous reconstruction. How do you know when somebody is a good candidate? A lot patients will tell me I would love to have a tummy tuck, and yet when they go to see the plastic surgeon, sometimes the plastic surgeon would say you do not have enough tissue or you have got a scar there. What kinds of things go into your calculus of deciding whether a patient is a good patient for autologous reconstruction.

Alperovich So, the first thing is that they need to have available tissue. Now the most common site is really their belly fat and the fat that we can use is the belly fat that is from the belly button down to really your pubic area. That fat, that ellipse of skin is what we can use to make breast tissue. If that fat is not adequate to match your volume, you have to question do you want to be the same size as your preoperative breast size, and if you do and your belly tissue is not adequate or you do not have another adequate donor site from either your thighs or your butt, then that is oftentimes a reason not to pursue autologous options.

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Alperovich The next thing that we do is we do look at scarring. We want to make sure that the blood vessels that we transfer with the fat are adequate and viable in order to keep that fat alive. Now, if patients have had prior surgeries, it is not a contraindication, we frequently operate on patients with prior abdominal surgery or other surgery, but it just makes the scarring and the operative dissection a little bit harder. What I do is I get a CAT scan for every patient and I look at the blood vessels themselves to make sure that they are adequate and suitable for reconstruction. The only sort of contraindication that I can find is patients who will say 'I have tons of fat right here', it has to be fat that actually has a good well-defined blood vessel anatomy. So, the way we keep that belly fat alive is we take the blood vessels from that part of the body with the fat and skin, we find similarly-sized vessels in the chest and then we connect the blood vessels from your belly or your thigh to the blood vessels in your chest. To give you a sense of how big they, they are about 2-3 mm in diameter. So, if you look at the head of a pen, it is smaller than the head of a pen and the reason it is called microsurgery is we actually use a microscope to sew the lumen of the artery to the lumen of the artery of the chest, and the vein to the vein, and we use the suture that is essentially finer than a strand of human hair. If their blood vessels are not appropriately sized or viable, or there is not fat in the distribution of those blood vessels, then they cannot get this reconstruction.

Chagpar So, there are a number of procedures that people talk about when they talk about belly fat. So, in the past, a lot of people were talking about TRAM flaps. Now, people are talking about DIEP flaps. People were talking about muscle-sparing TRAM flaps. Can you kind of break down what all of these terms mean and what is better?

Alperovich Sure. Essentially what you do when you take muscle-sparing TRAM, TRAM and DIEP, all these refer to transferring your belly fat to make a breast. The first operation in the early 1980s was called the pedicle TRAM where they would basically take your belly fat and rotate it on its blood vessels and into your chest from your abdomen, and what that did was sacrifice all of the abdominal wall and muscle, so although the patients had a great reconstruction, they often had significant abdominal weakness or hernias that created major problems for these patients. In the later period, they started doing what they called free TRAMs, where they would just transfer the belly fat and skin and abdominal wall to the chest and take a little bit less abdominal wall and a little bit less muscle, but this still had a lot of consequences to the patient. Then, there were iterations of these, try to take less and less muscle and less and less abdominal wall, and muscle-sparing TRAMs tried to do that.

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Alperovich What I do is essentially 95% plus of my reconstruction is called the DIEP flap, which I actually learned from the first person to ever do a DIEP flap in the world, Dr. Bob Allen, and he was my teacher and I essentially do it the same way he does it, and what he innovated was, he said look instead of taking even a little bit of abdominal wall or a little bit of muscle, let's just take the blood vessels. And I spare all the abdominal wall, I spare all the abdominal muscle, and so patients who are athletic, who like to do exercises, sit ups, they can still continue all these exercises after surgery and there is very little morbidity to the abdominal wall and that was really the iteration. It was first performed in the early 1990s – 1992, 1993 and it is now certainly now my standard of care and I think at any major center, I think a DIEP flap is what you should strive for because it does have such a better risk profile. It is a much more complicated operation, you are doing small single 1- to 2-mm vessel dissection, but it is such a better result for the patients that I cannot justify not doing it if I have the opportunity.

Chagpar What about the people who do not have enough belly tissue, but they say listen I have got big thighs or a big butt, can you use that tissue?

Alperovich Absolutely. So, the point that I try to make is that if you are interested in autologous reconstruction, we can almost always find a donor site for you. The belly is going to be first line in over 80% patients, but there are other options. For instance, we recently did a profunda artery perforator flap where we actually took upper thigh skin and fat and transferred it to make breast for a patient who did not have adequate abdominal tissue. This operation is less commonly done because most women do have fat in their belly, but for the woman who have more of a thicker thighs or buttock area, we can transfer tissue from there rather than the belly and still provide adequate size match. It is a less common operation. It is slightly more difficult to do, and I would say as few places that offer the DIEP flap, even fewer will offer the PAP and SGAP, I will say that we do offer all of it at Yale and I am happy that we are able to provide really the cutting edge options to all of our patients.

Chagpar What about other options that some people have heard about – things like a latissimus flap and sometimes they will combine that with an implant. How often is that done and when do you consider that?

Alperovich Very rarely. That is for me the final salvage operation. Latissimus flap involves rotating your back skin, fat, and back muscle and rotating it to recreate your chest. If you want increased volume and projection, you can add an implant underneath that muscle and skin to provide improved volume. This is an operation that I think is a last option for patients who either cannot have an implant reconstruction or do not have adequate tissue or are not good candidates for free flap option from their belly or the thigh.

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Alperovich The downside of this operation to me is that one, you sacrifice a major muscle – the latissimus. So, if doing pull-ups or climbing ladders or even using your arms to push up out of the chair are important to you, there is documented weakness from doing latissimus muscle and sacrificing that muscle. I think aesthetically it provides a less ideal result because you often end up with a lot bulky tissue near your armpit where that rotation of latissimus muscle occurs, and finally, I just think we have many superior options available such as the DIEP flap or the PAP flap or the SGAP flap today that supercede the need for latissimus flap. However, when do I do it? I am actually doing one in a couple of weeks and it is for a patient who has radiation, is not a good candidate for an implant, and not a good candidate for an autologous option because of clotting issues and in her particular case, because she needs reconstruction and she can't use the existing breast skin, needs to replace it with healthy skin. I am going to be doing latissimus flap as my last ditch effort to try to replace some of that radiated skin with healthy back skin and fat.

Chagpar So that is a nice segue into my next question, which is, a lot of people talk about reconstruction and radiation as a marriage that does not mix. So, some people have said you can never have reconstruction after radiation and you have kind already pointed out that yes you can, other people have also said you do not really want to have radiation over reconstruction. Can you kind of clarify some of the myths that are out there with regard to radiation and reconstruction.

Alperovich Just as our specialty in plastic surgery has evolved and we've moved from pedicle TRAMs to free TRAMs to DIEP flaps, I think we also have to acknowledge there has been a lot of change in the radiation oncology field and the degree of radiation and the damage of radiation injury has changed over the last several decades, and I think now there is increasing evidence that radiation and implant or even a flap reconstruction are not necessarily completely contraindicated. We do know that radiation has a damaging effect on all tissue, including flaps, including implants. Implants in particular, the capsule that forms around them is particularly susceptible to radiation and about 30% of patients develop thickening and deformation of their capsule which can be extremely uncomfortable. For these reasons, if someone is scheduled for radiation or is likely to have radiation, I will often try to discourage them from an implant reconstruction knowing that there is about a 25-30% of either failure or high aesthetic dissatisfaction rate with implant reconstruction. This is national across all universities and major centers. That being said, we still occasionally do require radiation in the setting of implant reconstruction either because it was unexpected or because the patient is not a free flap candidate for whatever reason and even those patients have been able to obtain fairly good results. The big thing to understand is that radiation is an unknown and every one responds differently to it. You can have severe changes to your skin that make you look like you have high third-degree burns or you can go through it and there may be very minimal evidence on your breasts that you ever had radiation, but because of that unknown, it is something that I often warn patients about as an important thing in consideration when planning reconstruction.

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Alperovich There is recent evidence actually out of the University of Michigan, where they studied patients who had immediate flaps and then underwent reconstruction, and these patients had excellent aesthetic results with minimal damage from the radiation, and I think at our institution, we followed a similar protocol and we are actually performing immediate reconstruction even if we know that they are going to have radiation, and although I would not do that for an implant, for a flap these patients tend to weather it quite well and they are happy to be able to combine the reconstructed and extirpative surgeries into one with fairly good results despite even radiation afterwards.

Chagpar So, for the patients who have breast-conserving surgery and we know that those patients will need radiation and then they get a recurrence, does that mean that they can never have reconstruction because they have had radiation in the past, say 5 or 10 years ago.

Alperovich Absolutely not. First, we can always get autologous or a flap reconstruction even if you had breast-conservation therapy and radiation, and you can even have implant reconstruction if you have had a previous history of radiation. Just last week, we did a case with someone who had Hodgkin's lymphoma and had radiation. I think we have shown that you can have opportunities to reconstruct someone in the setting of radiation. We actually published a paper in our plastic surgery landmark journal about this 3 years ago where we studied patients who had a remote history of radiation of 5, 10 or 15 years ago for breast-conservation therapy and they successfully underwent implant reconstruction. We know that the further you get from radiation, the better your skin heals and recovers. So, if someone is going to get an implant and then they get radiation, I will wait at least 6 months before I remove that temporary tissue expander and put in an implant, and if you wait 12 months, the data shows that it is even lower complication risk. So, extrapolate that out, if you had breast-conservation therapy and radiation 10 years ago, by the time you are ready for a mastectomy and implant reconstruction, that skin has had 10 years to recover and as long as the skin looks pliable, I will still often offer radiation to that patient population.

Chagpar Yes. I think it is an important point to make because a lot of patients really worry about that. So, I want to go back and talk about one area where we work together a lot, which is not often thought about or talked about and that is in the area of breast conservation. We work together a lot when I do a mastectomy and you do immediate reconstruction, but in breast conservation, there is something called an Oncoplastic procedure where we work together as well. Can you tell us a little bit more about that and how that works.

Alperovich Sure. We do breast reductions on a regular basis and that involves rotating the nipple and areola to a more useful and higher position and then we essentially tighten the breast envelope. Well, what if that area where we removed a breast tissue actually has a cancer. The idea is that we work together, you cut out the cancer and then I use your area where you cut it out and remove a little bit more tissue to rearrange it to essentially do a breast reduction and lift, encompassing your resection. For us, it is a chance to give them a great aesthetic result and so also a chance to provide limited morbidity and aesthetic contour issues following the breast conservation.

*Dr. Michael Alperovich is Assistant Professor of Plastic Surgery at Yale School of Medicine. If you have questions, the address is [canceranswers@yale.edu](mailto:canceranswers@yale.edu) and past editions of the program are available in audio and written form at [YaleCancerCenter.org](http://YaleCancerCenter.org). I am Bruce Barber reminding you to tune in each week to learn more about the fight against cancer. You are on WNPR, Connecticut's public media source for news and ideas.*