



Hosts

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Plastic Surgery for Melanoma

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Welcome to Yale Cancer Center Answers with doctors Francine Foss and Lynn Wilson. Dr. Foss is a Professor of Medical Oncology and Dermatology, specializing in the treatment of lymphomas. Dr. Wilson is a Professor of Therapeutic Radiology and an expert in the use of radiation to treat lung cancers and cutaneous lymphomas. If you would like to join the conversation, you can contact the doctors directly. The address is canceranswers@yale.edu and the phone number is 1-888-234-4YCC. This week Dr. Lynn Wilson is joined by Dr. Deepak Narayan. Dr. Narayan is Associate Professor of Plastic Surgery and Chief of Plastic Surgery at the West Haven, VA. Here is Lynn Wilson.

Wilson Let's start off by having you tell us a little bit about what it is you do?

Narayan I have been trained both in general surgery and plastic surgery and part of what I do is a combination of treatment for melanomas from a surgical standpoint, as well as the reconstruction of the defect that it entails. Melanoma is my primary interest, but I also deal with other types of cancers and reconstructions, and these include breast cancer, and head and neck cancers.

Wilson Tell us a little bit about your background, your training? How did you become interested in this field?

Narayan I started off training as a general surgeon and I am board certified in general surgery. During this time, I became interested in surgical oncology and spent a three-year research fellowship at Yale doing research in surgical oncology, but I found that the more difficult aspects of treatment were the reconstructions of the defects that resulted from surgical resections, which is why I moved into the reconstructive aspects of oncologic surgery. What I principally do now revolves around melanoma treatment both as a primary caregiver from a surgical standpoint, and in reconstruction, as well as reconstruction for other cancers, where I do not get involved from a resection standpoint such as breast tumors or head and neck cancers.

Wilson You obviously deal with a lot of different cancer types. Can you tell us a little bit about how they differ in terms of plastic surgical needs, and treatment modalities?

Narayan Every area has a unique requirement in terms of what the plastic surgeon can provide. For instance, if we were to take a squamous cell cancer of the head and neck area that involved the jaw bone, for instance, reconstruction for that particular patient involves a multiplicity of aims including restoration of the contour of the jaw bone, the ability to chew, the prevention of drooling, as well as the necessity to provide dental implants. That would involve removing a bone from the leg and anastomosing, meaning hooking up the blood vessels from the leg using a microscope into blood vessels of the neck, thereby restoring contour, providing a firm basis for the dental implants

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that helps with chewing and restoring speech. On the other hand, a woman with breast cancer, for instance, has femininity issues to be concerned about as well as how she perceives herself as a woman, and so reconstruction from this standpoint would involve mostly restoration of the breast contour and the psychosocial aspects that are involved.

Wilson: So to be able to do all of these different types of reconstructions, you mentioned three years of research and clinical work in your fellowship in addition to general surgery, but this must take an incredible amount of experience and training to be able to all of these different things.

Narayan That is absolutely accurate, when I look back and count the number of years it took to finally get out on the other side, it comes to a total of about 17 years. I did spend some time at Memorial Sloan-Kettering working with excellent surgeons that taught me a lot about reconstruction and owing to the high volume, we were able to see a lot in very little time. Plastic surgery residency now takes a minimum of three years from the plastic standpoint, and when I did the training it involved five years of general surgery, and then three years of plastic surgery. Now-a-days, it has condensed a little bit and you can finish in about six years, and that leaves enough time to do a fellowship, but coming back to your original question, it does take a lot of training to be able to reconstruct various areas satisfactorily.

Wilson Today we are going to focus specifically on melanoma, can you tell us some of the risks factors for developing melanoma? How can it be prevented?

Narayan While not much is known about what exactly causes melanoma, I think the risks factors have been very clearly delineated. The most important one, obviously, is exposure to the sun and it has been shown that early sun exposure in childhood, especially involving sunburns, can be potent risk factor for developing melanoma at a later age. The obvious answer in terms of prevention is to use adequate amounts of sunscreen. What is recommended by dermatologists in the field is something above an SPF of 35. The point of all this is that you have to reapply it fairly frequently, especially if you are close to water or in the swimming pool or the beach, and I think that is where most people neglect to carry out these preventive measures. Genetic factors also play an important role and I think that is beginning to be pretty obvious to people doing research in the field. Not much is known about the genetic predisposition and these families who have a predilection for melanomas are very rare and their propensity to develop melanomas is usually undefined. People who are immune suppressed also seem to have a slightly higher incidence of melanomas and a special population is HIV infected people, though we do not see it as much as say squamous cell cancer or other cancers in this group, a very rare syndrome is the called xeroderma pigmentosum, where essentially you get what is called sun poisoning and the cells are not able to repair the damage

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caused by UV light and that seems to be the causative factor for the development of melanomas.

- Wilson Along the lines of genetics, folks with lighter skin, red hair, blue eyes, do they tend to have some increased risk?
- Narayan You are absolutely right. I think the Celtic population and people who sunburn easily, the so called Fitzpatrick skin type, people who rarely tan but very frequently burn, are very likely to have melanomas and this usually speaks to Irish or Scottish ancestry.
- Wilson Do we get the sense that melanoma is more common now than say 30 years ago?
- Narayan That is an interesting question. If you look at the numbers alone, that would most certainly be the case because melanoma appears to be one of most rapidly increasing cancers in the United States today, but the numbers seem to have dropped off slightly in the last couple of years, and part of it may be due to the fact that the population in general is much more aware of what these issues are and dermatologists have repeatedly been told how important it is to pick these cases up early, and therefore, what we might be seeing is a situation where people are much more aware of problems, and therefore, are much more likely to bring it to light. So it is not entirely clear to everyone that this is indeed an increasing incidence as opposed to an increasing detection rate that we are seeing.
- Wilson I see, and that would obviously be a good thing if we are doing a better job at detection.
- Narayan There is no question about it.
- Wilson Naturally we might think that the incidence might be going down because of the use of sunscreen, say for example over the past 30 years.
- Narayan Correct, and I think sunscreens have proven to be a bit of an issue as well because most people think of sunscreen as something magical applied once and then you are safe for the whole day, and some studies have suggested that the people who use sunscreen actually may have slightly higher incidences of melanoma only because they do not re-apply it and they are willing to get sunburned under the misguided notion that if you apply the sunscreen once, you are good for the whole day, and that might actually be a paradoxical finding.
- Wilson And obviously, not the case.
- Narayan No.

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- Wilson What are some of the treatment options for early stage melanoma? It sounds like the primary treatment is a surgical approach, but talk to us about the different stages of melanomas, and some of the different treatment options that are considered.
- Narayan As you point out, surgical treatment still is a mainstay for most melanomas that we see. So, melanomas that are in the early stages, for instance that are limited to the skin itself and have not spread elsewhere, are easily treated by surgery alone. Some of the tests that are done as a part of the work-up for melanomas involves assessing whether the melanoma has spread to the lymph nodes or not, and this appears to be the most common site of spread, and in those cases we perform a procedure called a sentinel node biopsy, which involves specifically sampling a certain node, a lymph node or a lymph gland in the draining lymph nodal area. This may be under the armpit, in the neck, in the groin, depending on where your melanoma is and based upon what the pathologist tells us, meaning whether there is a melanoma cell present in the lymph node or not, we go ahead and dissect out the remaining lymph nodes. The logic being that if one of them has melanoma cells in it, there may be others that have it and removing them might help survival. As we go further along the spectrum, the treatment options get a little less effective, for instance, if you had a brain metastasis as a consequence of melanoma, some of these areas can be resected, but that is very unusual and most of the time, what is done is we offer the patient localized radiation treatment, which can be very effective in treating small numbers of metastases of the brain. Other options are dependant upon the type of metastases you see. For instance, if you had a melanoma in the leg that has spread to various parts of the leg, one of the treatment options would be to offer what is called an isolated limb perfusion. Essentially what that involves is to identify the main blood vessel of the leg and perfuse it, meaning pass a fluid containing very high doses of chemotherapy through the leg locally, so that it does not have any systemic effects, in effect putting the leg on bypass, much as the heart surgeons do. That way very high doses of chemotherapy can be delivered directly to that site. Other options that are available for an increasingly aging population are, for instance, BCG injections, or more recently, Aldara, which is a form of an immune stimulant that can be applied directly to the lesions and sometimes produces spectacular results.
- Wilson In terms of the surgical resection, what is the current thinking in terms of how wide margins should be, in other words, how big is big enough?
- Narayan In the early part of the last century, it was thought that bigger was better and people resected fairly large mutilating chunks of tissue around the melanoma in the hope that that would cure them. It has been found, as with other types of cancers, that you really do not need to resect such large amounts of tissue, and in general, the guidelines for resection of melanoma is based upon the

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thickness of what the original melanoma was. For instance, if the melanoma was a millimeter in thickness, about a centimeter margin around it will suffice. If for instance, it was 2 mm thick, a 2-cm margin would work perfectly well. In fact, for any thickness beyond 2 mm to 3 mm, more than a 2 cm margin has not been shown to improve the results of local control and so most surgeons now would limit themselves to resecting that amount.

Wilson Typically when the lesion is caught early, it's small and can be resected with a pretty straight forward surgical closure?

Narayan Absolutely.

Wilson And may not require a plastics procedure, so to speak?

Narayan Correct.

Wilson Can this type of operation be done by a variety of different kinds of surgeons?

Narayan Yes, for instance in earlier forms of melanomas, very early stages, melanoma in situ for instance, this can be easily resected by a dermatologic surgeon with equally good results as a plastic surgeon would produce. General surgeons, depending upon where you are in the country, are also equally capable of doing this. I think the issues come when these involve cosmetically sensitive areas such as the face, the nose, the ears, and so forth, or functionally important areas such as the hand, where resections of this kind can produce significant problems if they are not treated in a proper manner.

Wilson We are going to take a short break for a medical minute. Please stay tuned to learn more information about plastic surgery for melanoma with Dr. Deepak Narayan.

*Medical
Minute*

This year over 200,000 Americans will be diagnosed with lung cancer, and in Connecticut alone there be over 2000 new cases. More than 85% of lung cancer diagnoses are related to smoking and quitting even after decades of use can significantly reduce the risk of developing lung cancer. Each day patients with lung cancer are surviving thanks to increased access to advanced therapies and specialized care. New treatment options and surgical techniques are giving lung cancer survivors more hope than they have ever had before. Clinical trials are currently underway at federally designated comprehensive cancer centers like the one at Yale to test innovative new treatments for lung cancer. An option for lung cancer patients in need of surgery at Yale Cancer

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Center is a video-assisted thoracoscopic surgery, also known as a VATS procedure, which is a minimally invasive technique. This has been a medical minute. More information is available at yalecancercenter.org. You are listening to the WNPR Health Forum on the Connecticut Public Broadcasting Network.

Wilson Welcome back to Yale Cancer Center Answers. This is Dr. Lynn Wilson and I am joined by my guest, Dr. Deepak Narayan and we are discussing plastic surgery for melanoma. Deepak, we talked about some of the considerations in terms of how extensive a surgical procedure might have to be and the good news is, that for smaller early lesions, it does not have to be particularly extensive. For things that might be more complicated, who do you think is an especially good candidate for plastic surgical treatment for melanoma and what are some of the common areas that are seen? I know you have mentioned the nose, the ears, the hands, but are there other certain situations when you learn of a patient with melanoma and in that situation it is almost crystal clear to you that this person is probably going to benefit from at least your involvement from the plastic surgical standpoint?

Narayan I think what has changed in the recent years is the expectation of the public in terms of the results that are obtained, and when people talk about plastic surgery, it is usually associated with cosmetic surgery and the truth of the matter is that most plastic surgeons do a lot of reconstructive surgery as well, and defining exactly the difference between reconstructive and cosmetic surgery is a sort of a gray area. It is very clear then if something is cosmetically sensitive, such as the nose, the eyelids, the ears, the mouth, or has significant functional consequences as a result of the removal, it would necessarily benefit from the involvement of the plastic surgeon. Now it also depends a great deal upon the patient, for instance, if there was a melanoma on the back that needed to be removed by a general surgeon who offered the patient an option of a skin graft, in theory that would be a perfectly adequate treatment for it. The patient might not feel happy having skin taken from elsewhere and placed on the back, and the resulting defect that would ensue, and therefore, those might be instances where a plastic surgeon could get involved in order not to use a skin graft, but use a local flap in order to reconstruct that defect and produce the best results possible. As I mentioned earlier, for the fingers, the hands, or lesions involving a melanoma close to major nerves, those are probably best dealt with by a surgeon who is experienced in dealing with these kinds of issues rather than the occasional operator who might end up causing more damage treating it.

Wilson You mentioned two things, a skin graft and a flap. Could you go into a little bit more detail for our audience about what those are? What are the differences?

Narayan If you can imagine a defect the size of say a golf ball on the top of your thigh as a consequence of

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removing a melanoma, that could easily be treated by taking skin from elsewhere, which is what a skin graft is, where you remove a layer of skin and place it upon the defect and stitch it in place. The problem with that kind of approach is that the skin is usually removed from a different area and does not match the color and the texture to the donor area that it is being applied to. Also, it does not have the same thickness and so while you might get a closed wound, which has healed well, you obviously can see that the skin in that area is different from the skin surrounding it and does not quite have the same contour as the surrounding tissue. A flap, on the other hand, utilizes tissue that is adjacent to the defect and using well-known surgical principles you can actually transfer this and move it into place and suture it down, so that you get the best possible results, because you are using the same skin, the same texture, you are restoring the contour and while you may have a few extra scars in that area, they usually are planned in such a way as to minimize the cosmetic effect.

Wilson In your practice, have you found the need or the occasion to use artificial devices as part of reconstruction, such as parts from cadavers or non-related donors, for example?

Deepak I have, and these are very special situations. We are faced with an increasingly elderly population and one of the problems of melanomas in these individuals is that it occurs on a fairly large field, if you will, of change from sun exposure. As a consequence it becomes very difficult to distinguish cells that are overtly malignant versus those are damaged by the sun, and under those circumstances, it is best to have the pathologist look at these cells very carefully. So, rather than go and remove the tumor and then close it in the same sitting, we may actually benefit from the use of these adjuncts that you mentioned, which is artificial skin or skin substitutes to cover the wound until such time that the pathologist is able to tell us, yes the margins are clean, you can go ahead and close the wound without the fear of having to go back in again and remove the flap or the skin graft that you have so carefully placed.

Wilson Let's talk a little bit now about the Melanoma Program at Yale. Tell us a bit about that, its background and your role within that program.

Deepak The Yale Melanoma Program was founded approximately 30 years ago by Dr. Stephan Ariyan who was a former Chairman in the Department of Surgery in the section of plastic surgery. Since then it has grown by leaps and bounds. For instance, at our last melanoma meeting we had almost 40 people in the audience. Part of this has been Dr. Ariyan's philosophy to be all inclusive, to get people who are directly involved in the patient's care, and while it might not be obvious to the lay public, we have people who are involved in genetics, social work, and psychology, in addition to who you traditionally associate with a multidisciplinary cancer program such as medical oncologists, radiation therapists, surgeons, and so fourth. Dr. Ariyan and I are the principal

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surgical oncologists in the Yale Melanoma Program and we see a large number of melanomas in Connecticut at the Yale Melanoma Program itself, and part of the reason the Yale Melanoma Program has gone from strength to strength, is that we also have a very strong research basis to what we do. We have recently been awarded a major grant from the National Institute of Health headed by Dr. Ruth Halaban. We have medical oncologists Dr. Sznol and Dr. Harriet Kluger, who are pioneering new medical treatments for advanced melanoma, which obviously keeps us at the cutting edge of this research. You have input from different minds who see the problem from different perspectives and putting them all together obviously gives you the best results for the patient. Secondly, you are not allowed to force a point of view, which may or may not be backed by literature or research solely on the grounds that you are the treating physician and therefore it becomes a much more democratic and ultimately a much better offering for the patient to have a multidisciplinary input and I think this is the way most cancer treatments are evolving in the United States and indeed across the world today.

Wilson And is it more convenient for the patient? Does a patient come in and possibly see several specialists in one visit, or at least part of that day, as opposed to having to go to multiple doctors' offices over several weeks?

Deepak That is true, and that is a definite advantage. Part of it also depends upon the grade or the stage of melanoma that you are seeing, for instance most of the patients that I see save themselves the trouble of seeing an oncologic surgeon as well as a reconstructive surgeon, so you essentially get two for the price of one. Along the same line, if the medical oncologist had a patient who they were seeing for another metastatic problem, and they had some surgical issues that they wanted input on, it is very easy for us to walk across and see the patient and offer what surgical suggestions we might have and so the bottom line is, I think having a multidisciplinary group, especially one that works as closely as we do in the Yale Melanoma Program, is a great benefit for all patients coming to Yale Cancer Center.

Wilson What are some of the advances in your field of plastic surgery that have been made over the past five to ten years that you have incorporated into your practice to help these patients? Are there new techniques or things that are being developed that you think you will utilize in the future?

Deepak Plastic surgery has a pretty long and ancient history; in fact we use techniques that were in use almost 2000 years ago and from that perspective, new can mean a lot of different things. Now-a-days, as you already mentioned, we have the use of skin substitutes and that has been particularly helpful in temporizing reconstructions for people who need a large degree of surgical resection. Over the last 15 years to 20 years, methods of tissue transfer improved significantly and what we use now are called free flaps, whereby you take tissue from other areas of the body, hook them up

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using a microscope to blood vessels in the area that been treated in order to reconstruct the defect. I must point out that this is unusual in melanomas, at least in Connecticut, because we see them pretty early and those lesions requiring a lot of resections are not very common. Something new that is on the horizon and has been on the horizon for sometime is the role of artificial organs and recreating new tissue in the lab so you do not have to use the body as a source for reconstruction. So, the concept of tissue engineering is gradually taking hold and most of these advances, at least the ones that we use on a reasonably regular basis, involve fat transfer because fat can be used to restore contour in a variety of situations.

Wilson When you talk about tissue engineering, are we talking about cells from the patient who needs the surgery, or someone genetically similar to them or someone completely unrelated, how does that work?

Deepak The short answer is all of them. Ideally we would like to use the patient's cells alone for a variety of reasons. For one, we do not have to worry about them being hematologically different from the patient's other cells. Secondly, the question of transmission of infectious diseases through cells obtained from other folks obviously does not exist because we are using the patient's own tissue samples. Sometimes it may be that the patient is not able to produce the tissue that we need and therefore a combination of these methods can be used in the future. I think most of what we use on a regular basis in terms of tissue engineering usually results from skin substitutes or cells that approximate the skin and this was originally started as a treatment for burns at Yale many years ago and now has reached the mainstream.

Wilson Very quickly, what is the process like for a patient who undergoes a reconstructive surgery? I know it depends obviously on what part of the body and how extensive, but how long is the hospital stay and what sort of follow-up program do they need?

Deepak Most of the patients who undergo reconstructive surgery have a one-day procedure, they come in, get the surgery, they are treated adequately for the pain and they go home the same day. It is very rare that we admit the patient overnight and some of those patients might be those who need lymph node dissections or something a little more involved such as isolated limb perfusions, but these are the rarity when you compare the whole spectrum of melanoma patients that we treat. So, once they are sent home, they are usually asked to come back within a week to 10 days to check the wounds, remove the sutures and such, and depending upon the stage of melanoma, we have them come back to see us at least twice a year for about five years, which is the generally accepted guideline for follow-up for melanomas.

Dr. Deepak Narayan is Associate Professor of Plastic Surgery and Chief of Plastic Surgery at the West Haven VA. If you have questions or would like to add your comments, visit yalecancercenter.org, where you can also get the podcast and find written transcripts of past programs. You are listening to the WNPR Health Forum on the Connecticut Public Broadcasting Network.