

Welcome to Yale Cancer Center Answers with your hosts doctors Francine Foss, Anees Chagpar and Steven Gore. Dr. Foss is a Professor of Medicine in the Section of Medical Oncology at Yale Cancer Center. Dr. Chagpar is Associate Professor of Surgical Oncology and Director of the Breast Center at Smilow Cancer Hospital. Dr. Gore is Director of Hematological Malignancies at Smilow. Yale Cancer Center Answers features weekly conversations about the most recent advances in the research, diagnosis and treatment of cancer and if you would like to join the conversation, you can submit questions and comments to canceranswers@yale.edu or you can leave a voicemail message at 888-234-4YCC. This week you will hear a conversation about reconstructive surgery for head and neck cancers with Dr. Saral Mehra. Dr. Mehra is Assistant Professor of Surgery in Otolaryngology at Yale School of Medicine. Here is Dr. Anees Chagpar.

Chagpar Saral, why don't you start off by telling us a little bit more about what it is that you do?

Mehra I am a head and neck cancer surgeon, who also does head and neck cancer reconstructive surgery, sort of the new wave of head and neck cancer surgeons over the last 15 years or so. So I treat patients with head and neck cancer, but one of the main reasons I was brought here to Yale Cancer Center was to work with the head and neck cancer team that already exists and do head and neck cancer reconstructive surgery.

Gore Could you just remind us what cancers are included in head and neck, is that eyebrows or noses, what?

Mehra It is a good question, head and neck cancer is a term that does not really describe to the layperson exactly what it encompasses, but typically head and neck cancer is a cancer in the upper aerodigestive tract, which means the mouth, throat, and nose, but it also includes cancers in the salivary glands, the thyroid, the neck, the skin on the face and the neck, so really anything between the brain and the collarbones is a head and cancer.

Chagpar When you talk about reconstruction, I mean as a breast surgeon a lot of us are very familiar with the concept of reconstructing the breast after breast cancer surgery. How is that similar or different from what you do as a head and neck cancer reconstructive surgeon, because I do not think that a lot of us have heard that term put together that way.

Mehra The head and neck, I think, is a unique part of the body in that

so many critical structures to form and function are in that one area in terms of speech, swallowing, hearing, balance, not to mention a very important part of aesthetics and quality of life. So, for a head and neck cancer surgeon who does reconstruction, I mean that is the focus, it is not just about restoring form but a main aspect of my surgery is restoring function. How can I get a patient who has had a significant surgical resection to remove the tumor, how can I get them eating as well as possible, and speaking as well as possible, in addition to looking as normal as possible.

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Gore Are you involved with the initial cancer surgery, or are you called in after people have had a big neck dissection or something like that?

Mehra I wear two hats here, I am a head and neck cancer surgeon, so I do some of my own resections, but in the role of a head and neck cancer reconstructive surgeon, we do it all at once. So, it is really a two team approach, so I may start harvesting a flap or starting the constructive part of surgery while the cancer surgeon is removing the tumor. But we do it all at once, we rarely do a stage reconstruction in the head and neck, one of the main reasons for that is some of the big resection required in head and neck cancer connects the mouth with the neck. The mouth is a dirty place, there is saliva, there is a lot of bacteria and basically we immediately need to restore the tissue integrity to separate the contents of the mouth from the neck, which could lead to life threatening complications if not reconstructed immediately.

Chagpar Tell us a little bit more about how it is that you go about reconstructing the head and neck area to preserve function, it seems to me that, that would be more than just simply closing a wound.

Mehra When patients comes to me for reconstructive consult before the surgery, I talk about the reconstructive ladder, which starts from simple reconstructive options like doing nothing at all, just letting the wound heal up on itself eventually, like you might do with a cut on the finger for example, to sewing the wound together, to skin grafting, to local flap, which means borrowing tissue from nearby and repositioning it to cover the defect, regional flaps, taking tissue from an area not immediately adjacent to the defect, but somewhere nearby like the chest or the arm and rotating it into the defect all the way, to free tissue

transfer, which is borrowing tissue from a remote part of the body, removing it from a blood supply and transplanting it into the head and neck region to fill the defect. The reason that we need tissue in most of these cases is that simply sewing, for example, the tongue back together after half of it is removed would completely tether it to the mandible, the floor of the mouth, and the patient will not be able to move their tongue and they are not able to speak in an intelligible way. So, by bringing in extra tissue and replacing the part of the tongue that may have been removed, patients can get better tongue mobility and better speech.

Gore Do you learn to use this, is this a muscle you are actually attaching to the tongue?

Mehra We are not quite there yet. At this point, it is basically just restoring skin in the mucosal lining. In some cases, we do bring muscle there as well but we are not at the point where we can get muscle from the remote part of the body to move in a coordinated fashion with the tongue or the palate, that would be great, but or we are just not there yet.

Gore Do people still have to do any kind of special training to be able to use their newly re-constructed tongue?

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Mehra Definitely, so as a reconstructive surgeon who is very interested in functional outcomes, I work very closely with speech and language pathologists and you are right in that typically a patient who is undergoing a major cancer surgery will see a speech and language therapist before surgery to help optimize their swallowing and speech and after the reconstruction again to give them exercises to strengthen the muscles that are there and to give them techniques and ways to improve their speech and swallowing in the period after a major cancer reconstructive surgery.

Chagpar This is all really very interesting and I think quite unique in the sense that it seems to me that you really are a hybrid between a surgical oncologist, the cancer surgeon whose goal it is to resect the cancer, and a plastic surgeon or a reconstructive surgeon whose goal it is to put everything back together. Can you talk a little bit about your training and your background and how it is that you can meld these two together?

Mehra Absolutely, in head and neck cancer reconstruction, plastic surgeons do it and ENT surgeons with special training do it as well and both are equally competent and technically able to do the reconstruction. I think it comes down to what the reconstruction surgeon is interested in. My entire training, residency and fellowship was only in Ear, Nose and Throat and Head and Neck Surgery and I did additional training in reconstructive surgery just of the head and neck. So basically my entire medical training and career has been in looking at speech and swallowing, salivary gland problems, anything of the head and neck really. So with that additional training of reconstructive surgery, specifically microvascular reconstructive surgery, I try to bring in everything I learned from my ENT training and basically combine it with the technical skills of plastic and reconstructive surgery.

Gore It sounds like you need a huge tool box really because I remember, way back in medical school, the whole head and neck being such a complicated area anatomically, but to be able to actually deal with the mouth and the tongue and the neck and you mentioned the whole ear thing, I had not even thought about that. I mean there are so many structures, how do you have expertise for all of those different areas?

Mehra I totally agree and that is one of the reason I went into ENT and head and neck, was the anatomic complexity of the area. It really is extremely complicated and very integrated with all the cranial nerves in that area, all the different moving parts, not to mention the importance of form but that is what we have been trying to do. I did not do general surgery, I did not do breast surgery, I do not fix leg wounds, all I have done my entire training after medical school has been dealing with the head and neck and learning the intricacies of this area and so you are right, it involves a very large tool box and then you add free tissue transfer, taking tissue from other parts of the body, be it the fibula to reconstruct the mandible or skin from the arm to reconstruct and reline the mouth, it does require a big tool box but the advantage is it is the only area I look at and focus on and think about each and every day.

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Chagpar And it sounds to me like this is an area that because it is so complex, really does have a myriad of research that must go along with it in terms of how can you do this better? How can you better preserve form

and function? Can you talk little about what you think are the cutting edge techniques and areas of research and what you do?

Mehra The main areas of research, and I think the main area where we have need for improvement to do head and neck reconstructive surgery, aside for some really fancy long term sort of options, where we do not even need to use the human body to reconstruct the area, which is I think in the long term horizon, but what we need to do right now, and we are doing, is measuring the functional outcomes. Up until now, we have been pretty good at restoring the integrity and we do a pretty good job of restoring speech and swallowing, but to this day nobody has really measured this objectively, using patient reported quality of life outcomes and patient centered questionnaires and objective data like tongue strength, tongue mobility, does a sensate flap, meaning a flap that we hook a nerve backup up to, does that make a difference in the patient's functional outcome? We do all this stuff, but we do not know if it makes a difference to the patient at the end of the day and I think that is the most immediate area of research that we really need to do to improve our cells as a reconstructive surgeon.

Chagpar So it sounds like you are doing all of this stuff, but you are kind of guessing and thinking that it makes a difference, but you do not really know, so I suspect that you are doing some of those studies at Yale?

Mehra Exactly, yeah, so we are embarking upon a pretreatment planning session where whether patients get chemotherapy, radiation or surgery, we will evaluate their function preoperatively and then at various time points, post treatment, I say preoperatively, but really pretreatment because radiation and chemotherapy can have similar effects on speech, swallowing and function. So, by measuring them preoperatively and then postoperatively and comparing different treatment modalities and different flap choices and sort of different reconstructive options, maybe one day we will know which ones really make that difference to patients.

Gore How do you decide who is going to be getting chemotherapy or radiation or surgery? I thought chemotherapy was mostly for people whose cancer had spread elsewhere in the body, is that not the case?

Mehra So the head and neck again, as you know, is such a small area and like with most cancers at Yale Cancer Center we have a whole head and neck team here and we have a multidisciplinary tumor board where we meet every

week and talk with radiation doctors, medical oncologists who give chemotherapy, surgeons, reconstructive surgeons, not to mention speech therapists, nurses and physical therapists and we talk about what is the best treatment for each cancer. In the head and neck, surgeons are typically involved right from the beginning because the patient comes with a

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lump in their neck and we make the diagnosis, but from that point it could really be any of the three modalities, surgery alone, surgery and radiation, or surgery and chemo and it really depends on how advanced the tumor is, as you pointed out, as to which is the best treatment.

Chagpar That is fascinating and I would like to come back after we take a break for medical minute to talk about how the surgical complexity may change given different modalities of treatment, but first we need to take a short break for a medical minute, please stay tuned to learn more information about reconstructive surgery for head and neck cancer with our guest Dr. Saral Mehra.

Medical

Minute The American Cancer Society estimates that in 2014 over 45,000 new cases of pancreatic cancer will be diagnosed in the United States. Pancreatic cancer is the fourth most frequent cause of cancer death. Clinical trials are currently underway at federally designated comprehensive cancer centers such as Yale Cancer Center and at Smilow Cancer Hospital at Yale-New Haven to make innovative new treatments available to patients. Clinical trial participation is offered for treatment of advanced stage and metastatic pancreatic cancer using chemotherapy and other novel therapies for the disease. FOLFIRINOX, a combination of five different chemotherapies is the latest advancement in the treatment of metastatic pancreatic cancer. There is continued research being done at centers like Yale and around the world looking into targeted therapy and a recently discovered marker hENT1. This has been a medical minute brought to you as a public service by Yale Cancer Center and Smilow Cancer Hospital at Yale-New Haven. For more information go to yalecancercenter.org. You are listening to the WNPR, Connecticut's Public Media Source for news and ideas.

Chagpar Welcome back to Yale Cancer Center Answers. This is Dr. Anees Chagpar and I am joined today by my co-host Dr. Steven Gore and together we have our guest, Dr. Saral Mehra. We were discussing reconstructive surgery for head and neck cancer and right before the break Saral, we were talking about how surgery is involved early on, but that this really is a multidisciplinary thing that we do in head and neck cancer. Can you talk a little bit about how

the reconstructive portion of this surgery may change depending on what other therapies patients have received?

Mehra That is a great question because most of what I do actually as a head and neck cancer reconstructive surgeon is actually in the salvage setting, meaning someone who has treatment before, whether surgery plus radiation plus or minus chemo or some prior treatment, these are the patients that really need the big surgeries removing half of the mandible, removing the entire hard palate, removing half the tongue, these are the patients that need a reconstructive surgeon with specialty in free tissue transfer and so I am glad you asked that question because this is most of what I do and these are the patients that benefit most from free tissue transfer. So function aside, just tissue integrity, the patients who have seen radiation and prior surgery, using local options, though it might bring the tissue together and it might give an okay functional outcome the fact

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is it limits their treatment options, for example, re-irradiation, additional surgery giving more chemotherapy, intraoperative radiation, these might not be options for patients in treating their cancer if they do not have fresh vascularized tissue from another part of their body there to withstand additional treatments.

Gore So you are saying, if I am a patient, if I have the option, maybe I should plan to have a reconstructive surgeon involved right from the get go. Is that something people should be asking their doctors about with so much on their minds when they get a diagnosis of cancer?

Mehra I think that is the importance of having a head and neck cancer team where all they do is head and neck cancer. For my cancer surgeons, I am immediately available any day. So if they are seeing a patient in the office and thinks he or she should see a reconstructive surgeon they will call me on my cell phone and if I am not in the operating room doing a surgery, I will come up and see that patient and we will talk together about surgery and reconstruction at the same time. But I think a lot of it is at the behest of the cancer surgeon. If they think that a reconstructive surgeon might help when you have a team and you have a head and neck cancer reconstructive surgeon immediately available they are quick to call the cancer reconstructive surgeons.

Chagpar And it seems to me that this is a resource that a lot of people may not have at their fingertips outside of large academic centers because as a surgeon I have a sense that working in a radiated field, in a field that has had previous surgery, previous radiation chemotherapy, not to mention tumor, it gets a little tricky.

Mehra Absolutely, I am sure it is the same in all areas of cancer surgery, absolutely, and in the head and neck which I can speak to, I am sure it is similar in other areas, you have got a lot of critical structures in that area that you are trying to preserve, cranial nerves that move the tongue, the shoulder, the carotid artery, the jugular vein and it really makes things quite challenging in patients who have been treated before, but at the same time these are the patients that need the surgery and going to a place that does a lot of complicated difficult surgeries, in my opinion really can benefit the patient.

Gore Can you give us a sense of what percentage of patients who undergo this kind of reconstruction, have a satisfactory result or something that they are overall pleased with?

Mehra Some of these studies have been done, for example, an oromandibular reconstruction, mainly reconstruction of the jaw, some major cancer centers have looked at this and the truth is that patients do remarkably well in terms of speech, swallowing, and form after major mandible or tongue reconstruction and in fact patients report their outcome to be better than the surgeon might even think it to be and it really depends on the extent of the defect that will determine their outcome and I think part of that is managing the patient's expectations preoperatively. So I do see every patient preoperatively. I do not just show up in the operating room, look at the defect and decide then what I am going to do. I like to talk to patients. I like to work at their imaging. I like

20:25 into mp3 file http://medicine.yale.edu/cancer/podcasts/2014_0525_YCC_Answers_-_Dr_Mehra.mp3 to talk to the cancer surgeon and get a sense of what the defect might be, though as a cancer surgeon, you can't always predict it, but I like to get that sense beforehand and counsel the patient on what I expect based on my experience, what their outcome might be and I think that helps patients deal with the impairment that might occur in speech and swallowing and their reported outcomes, I think subsequently are probably better subjectively then they might be if they had no idea, no expectations preoperatively.

Gore Is there any relationship between having this kind of surgery and the chance of the cancer recurring, are those two separated?

Mehra Absolutely, I think that is the thing that every cancer surgeon struggles with the most, is you do a major surgery and a major reconstructive surgery at the same time and these surgeries can last eight to fourteen hours and then six months and one year later the tumor comes back, and the fact is, when you are doing a big surgery like this it is usually for a bigger more aggressive tumor and the chances of it coming back are probably higher than a small T1, meaning a small localized cancer. So, it is a challenge and it is frustrating obviously for the patient, but also for the surgeon and the cancer treating team.

Chagpar Just to clarify, it is not the reconstruction that makes the cancer come back. It is the fact that it was a big cancer to begin with right?

Mehra Absolutely, it is the biology of the disease as we say and the reason we do two team approaches here typically. The cancer surgeon focuses on resecting the tumor and confirms negative margins as much as possible in almost every case unless it is invading a life sustaining organ and they aim for negative margins and they take out what they need to and then I come in and reconstruct what I need to, and sometimes, just like in any area, these microscopic cancer cells with the biology of the disease makes it an aggressive cancer.

Chagpar When you were talking about how the patients are in general quite satisfied and how you are trying to preserve form and function when you are moving tissue from one part of the body to another part of the body, it is kind of like robbing Peter to give it to Paul. So how badly do the patients feel when you remove part of their fibula from their leg or other parts of their body to reconstruct their head and neck? Does that cause problems?

Mehra It is a very common question every patient asks me, and they kind of do a double take when I tell them I am going to take the bone from your leg to reconstruct the bone in your jaw, then I am going to take a graft from your thigh to reconstruct the skin that I took from your leg and it seems a little crazy to them to think about that, but the fact is the sites that we harvest flaps from are well established sites with an established blood supply with predictable and reliable tissue components and they are selected to limit the functional impairment in the donor sites. So for example, the patient who already has really poor gait and are barely walking, I am not going to use their

fibula to reconstruct their mandible. I might use their scapula, the bone from the shoulder blade

24:02 into mp3 file http://medicine.yale.edu/cancer/podcasts/2014_0525_YCC_Answers_-_Dr_Mehra.mp3 and it is a major part of the discussion with the patient, what the donor site morbidity can be. A lot of the flaps we use are skin flaps, for example, from the radial forearm, the arm, and that has really limited morbidity, because it is just skin with blood vessel. We leave the muscles, we leave the tendon, we leave the nerves and it is little functional impairment other than a cosmetic deformity. Some areas we take muscle and skin and that can leave them with some morbidity, meaning some functional deficits in the donor area, but again we choose the flaps. The flaps that we use are designed to limit the donor site morbidity.

Gore During the break, you were talking to Anees and myself about some very interesting work you are doing to correct some deficits that come from some other complications of cancer treatment. Could you tell the public about that?

Mehra Sure, as a cancer reconstruction surgeon who is really interested in function after cancer treatment, another area that we are actively researching and seeing patients with is a side effect of treatment for thyroid cancer, specifically radioactive iodine. The radioactive iodine is great, it can treat microscopic disease and thyroid cancer, but there are side effects. One of the major side effects is really bothersome to patients, not life threatening per se, but very bothersome, is salivary gland dysfunction, dry mouth, throat discomfort, mouth discomfort, and even significant swelling in the parotid or submandibular salivary gland, which can get infected. These patients quality of life is really affected by a seemingly innocuous treatment for thyroid cancer and so what I am doing now at Yale, I am trying to study, because there is not much research behind it, is salivary endoscopy where we stick a tiny camera inside the salivary ducts and diagnose what is going on. Why are the patients having salivary gland dysfunction after RAI? Typically, it is stenosis, meaning narrowing of the duct, inflammation, or mucus debris within the duct. So with a tiny camera, I am talking about 1.1 mm in size, we can diagnose the problem and even treat the problem by irrigating out the mucus, dilating the duct, or instilling the steroids to decrease inflammation in the ducts.

Gore This is fascinating, can you do that kind of technique for other people who have cancer related dry mouth problems, people you have had radiation, for example, external radiation.

Mehra Absolutely, we could. I am a little bit reticent to do that because there is really not much precedent for that right now, but we do know that RAI specifically affects the distal ducts. I think radiation in head and neck, which is known, as you pointed out, to cause salivary gland dysfunction, is really the gland itself is the problem. Unfortunately, my cameras cannot get into the gland, but they do a great job getting into the ducts and that is how we believe radioactive iodine causes salivary gland dysfunction. So at this point, limiting it to RAI induced salivary gland inflammation, but one day perhaps we could use it in other areas as well.

Gore I was thinking about my patients who have had stem cell transplants, who may often have dry mouth as well.

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Mehra Unfortunately, I do not think I can help them yet with salivary endoscopy.

Chagpar How frequent is this complication after radioactive iodine and how satisfied are patients after you do this endoscopy?

Mehra This is the major issue with this procedure. There is not much research. There are not many centers in the country that are doing this right now and we do not have good quality data to answer that question. The data we do have seems to imply that the higher the dose of RAI, the more likely patients are to get complications. Some studies have looked at a cut off. There is definitely a gray area. Some patients with less RAI get symptoms, sometimes the patients with more RAI do not get symptoms, but 150 millicuries, for example, has been studied in one specific study to be sort of the cut off the patients who get symptoms versus who do not. Now whether this works or not, is again something we are actively studying. So the patients who come to see me, I am interested to know how bad are their symptoms subjectively before idea of the procedure and how are they afterwards, and I think soon we are going to have those answers but the studies out there right now are maybe 20 patients. So what I tell the patients right now is it is somewhat experimental but it is really low risk. There are no incisions made, there is a small camera and you go home the same day. There are no pain medications required, but I

do not know if it is definitely going to help them. In some patients, I will get about three to nine months of benefit after cleaning it out, injecting or instilling steroids, but then the symptoms come back, whereas in other patients I will get lifelong or at least a couple of years of therapy.

Dr. Saral Mehra is Assistant Professor of Surgery in Otolaryngology at Yale School of Medicine. We invite you to share your questions and comments with Dr. Foss, Dr. Chagpar, and Dr. Gore. You can send them to canceranswers@yale.edu or you can leave a voice mail message at 888-234-4YCC. As an additional resource archived programs from 2006 through the present are available in both audio and written versions at yalecancercenter.org I am Bruce Barber hoping you will join us again next Sunday evening at 6:00 for another addition of Yale Cancer Center Answers here on WNPR Connecticut's Public Media Source for news and ideas.