

**DR. ANDREA ABBOTT:** My name is Dr. Andrea Abbott, and I am a board-certified surgical oncologist, who specializes in the management of breast cancer at the Hollings Cancer Center in MUSC. Nipple-sparing mastectomy offers patients with breast cancer the opportunity to preserve the natural look of their breast while removing the breast cancer. Patients can maintain their own skin, nipple, and areola, and then have an implant placed under the skin. This approach adheres to principles of cancer surgery, and gives them the best chance of recurrence-free survival while also providing a cosmetic outcome that looks as close to their natural breast as possible.

In this picture, I have marked out the boundaries of the dissection for the nipple-sparing mastectomy. You can see the line along the inframammary fold. There is a line down the middle to mark the sternum, and then another line across the top of the breast to just mark the top for the plastic surgeon for reconstruction. And this is how we prepare all of our cases, so that we know the true boundaries to help not only the surgical oncologist, but also the plastic surgeon.

In Figure 2, I am starting to incise along the inframammary inferolateral line. You can see the hashmarks there. And I usually draw out about an 8 cm incision so that I can fit the majority of my hand in to aid in the dissection. This line is right along the inframammary crease, and I try to place it a little bit lateral so that it will have a better cosmetic appearance to it, and it allows me a little bit better access to the axilla in case of doing a lymph node procedure at the same time.

In Figure 3, I am performing the initial dissection of the breast tissue off of the muscle. I prefer to take the specimen off of the pectoralis muscle first, as I feel that this approach preserves the blood flow to the nipple for a longer period of time, and is less traumatic on the skin flap. I use Adair clamps to grasp the tissue and the skin, and then I use electrocautery to dissect down to find the pectoralis muscle.

It is important to note that the incision may actually be below the inframammary fold to achieve the desired cosmetic outcome, which may change the direction of your dissection. As I work laterally, I ensure that I preserve the serratus anterior fascia. I continue my dissection to the sternum medially, the clavicle superiorly, and out towards the latissimus dorsi muscle laterally.

In Figure 4, you can see the completed dissection of the breast tissue off of the pectoralis muscle. I have taken the pectoralis fascia off of the muscle, and the Adair clamps are elevating the skin, the breast tissue, and the fascia superiorly. The back-lighted retractor is essential to my dissection, because it provides adequate retraction while also serving as a light source.

So then I start the creation of the skin flap. And I believe this is the most difficult part of the procedure. When you're first starting, it can be difficult to get the thickness just right, so I will use skin hooks to elevate the skin, and I'll grasp the breast tissue with the Adair clamps, and then start to create my skin flap.

It's really important that your assistant provide upward retraction so that you can stay in a good plane and have great visualization. Once I have developed the plane enough, then I can start to get in my lighted retractor, which really helps me visualize and see better. Again, it's important to make sure that the assistant is pulling straight up to keep that plane of dissection where you need it to be as the operating surgeon.

In this figure, you can also see that there is a hand on the chest wall. And that hand is actually providing upward retraction. So with the lighted retractor and my assistant's hand, that really aids my dissection, and allows me to get in the right plane, and stay there, and proceed efficiently.

This is the final specimen. I mark it and send it to pathology. I always mark the nipple margin, so that they can be sure that that margin is negative. I mark the lateral margin and the superior margin for orientations.

Our pathologist will take a separate section at the nipple to ensure a true negative margin along the base of the nipple. If you have any question about whether or not you got a true margin along the nipple, then you can event the nipple, and take a separate margin at the time of dissection, and send it for frozen section, if there's any concern about the tumor being close at that level.

**DR. JASON  
ULM:**

Hi. My name is Dr. Jason Ulm. Good portion of my practice is for breast reconstruction. I do all aspects of breast surgery, but in particular reconstruction with either a two-stage tissue expander to implant a base reconstruction or a one-stage direct-to-implant reconstruction. My partner and I also do autologous micro surgery for breast reconstruction including DIP flaps.

Today, I'm going to be talking about the pre-pectoral direct-to-implant reconstruction, which we've been doing over the past year here at this facility. The use of acellular dermal matrices has allowed us to offer patients with the correct profile this operation where they can have their implant-based reconstruction immediately at the time of the mastectomy-- oftentimes with a nipple-sparing mastectomy in concert with our breast surgeons-- and to place the reconstructed device above the pectoralis muscle, thus decreasing their pain and discomfort in the immediate peri-operative period, as well as decreasing their long-term animation defects or problems that they often have, particularly with younger, thinner patients.

The primary indication for a patient wishing to have pre-pectoral reconstruction, whether we're placing a tissue expander at the time of the mastectomy or going ahead and placing the final implant, there are a couple of factors that you want to keep in mind. Most importantly is if there's been prior radiation to the chest wall. The other co-morbidities of the patient are certainly a factor, including diabetes, morbid obesity, smoking status, any ongoing or prior infections, particularly implant-based infections, as well as her lifestyle and desire to minimize any animation deformity from placing the implants in a sub-pectoral plane.

After the patient has undergone a mastectomy, whether nipple-sparing or skin-sparing mastectomy, the first step we do is evaluate the pocket, maintain hemostasis, and check the overall integrity of the skin flaps for the ability to stress the skin further by placing the final device at this time. One thing that we do with that is, in addition to taking the normal base width measurements for selecting our device, is to proceed with placing sizers using indocyanine angiography or SPY angiography to look at the real-time perfusion of these skin flaps.

Figure 9-- sizers are placed in the breast pocket, and the patient is sat upright. The sizers are bathed in triple-antibiotic solution. Saline inflatable one-time use sizers can be used or the silicone gel sizers.

Figure 10-- short-term perfusion angiography is done to evaluate the blood supply of the skin flaps while the sizer is in place. After the selected implant has been chosen, it is brought in the operative field. It is placed in triple antibiotic Adams solution. It is then wrapped in the acellular dermal matrix on a back table. The dermal matrix is copiously washed with a saline bath followed by a triple-antibiotic bath.

It is then oriented and secured down in around the device in a hand-in-glove type fit. Any bare areas are preferentially kept on the posterior surface that will sit on the chest wall. The ADM implant construct is then placed within the breast pocket.

It's possible to use a Keller funnel to minimize skin exposure during placement. Once it is placed within the pocket, it is oriented using its orientation tabs if it is an anatomical or shaped implant. The implant is then anchored to the chest wall with a series of interrupted 2-0 PDS suture.

The patient is then temporarily-- incision is temporarily closed. She's sat upright and checked again for symmetry between the right and left side, as well as proper implant placement within each pocket. The incisions are then closed in layers. The final result with the incisions closed.