Breast Reconstruction Market Landscape

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Breast Reconstruction: Background Study

There are two methods by which breast reconstruction can be carried out:

1. Breast Implant Reconstruction
2. Autologous (or Flap) Breast Reconstruction

Breast Implant Reconstruction

In a breast implant reconstruction, the breast is formed by inserting synthetic implants in the chest. The implants may be inserted alone or they may be accompanied by use of temporary silastic implants known as tissue expanders. During breast implant reconstruction; there can be either full or partial muscle coverage of the implant.

Full Muscle Coverage

With Full Muscle Coverage breast reconstruction, the implant is covered by the muscles in the immediate area of the breast. The surgeon may use portions of the pectoralis major chest muscle, pectoralis minor muscle, serratus anterior muscle, and sometimes the rectus abdominus muscle or fascia to achieve full muscle coverage of the implant.

Advantages	Disadvantages
? Muscles add an additional layer of tissue between the implant and the skin ? Decreases the risk of implant exposure ? Decreases the risk of being able to see or feel the implant through the skin	? Unnatural appearance of the breast such as a high riding breast (breast sits unnaturally high on the chest) ? More challenging for the surgeon to control final shape, size and location of the reconstructed breast ? Poor projection of the breast ? Poor definition of the breast shape ? Serratus Band Contracture - risk of muscles spasming and/or contracting causing the breast to become deformed

Partial Muscle Coverage

With Partial Muscle Coverage, the pectoralis major muscle is used to cover just the top part of the implant, leaving the lower portion of the implant uncovered. Without muscle constraining the lower part of the implant, the bottom portion of the implant is kept free, supported by existing breast skin only. This may help to provide more natural looking ptosis, or hang to the breast. Partial muscle coverage addresses some of the drawbacks of full muscle coverage breast reconstruction with implants, but may create a different set of risks and concerns.

Advantages	Disadvantages
? Helps to achieve a more natural looking breast shape and contour (by keeping lower part of implant unrestricted by muscle) ? Better defined crease where the breast naturally hangs ? Greater breast projection, the way the breast hangs and points	? "Bottoming out" of the implant - risk of implant moving downward, falling below the natural crease of the breast towards the waist ? Lateral malposition ? implant can shift sideways, toward the side ? Exposure and extrusion of implant ? the weight of the implant can stretch your skin to the point that it breaks through the skin itself ? Symmastia ? implants can move towards one another resulting in the breasts possibly touching in the middle ? May be able to see or feel the implant through the skin

Autologous (or Flap) Breast Reconstruction

In an autologous reconstruction, the breast is shaped from existing muscle, fat and skin (tissue) taken from other areas of the body. There are four common areas of the body from which a breast flap can be formed for reconstruction.

1. A TRAM (Transverse Rectus Abdominis Muscle) Flap uses tissue from the stomach area.
2. A Latissimus Dorsi Flap uses tissue from the upper back and/or the shoulder.
3. A DIEP (Deep Inferior Epigastric Artery Perforator) Flap uses tissue from the stomach area, but preserves the abdominal muscle there.
4. A Buttock Crease Transfer/Gluteal Flap uses tissue from the buttocks.

Advantages	Disadvantages

? More natural look and feel ? No risk of implant related complications ? Breasts will behave as a natural body, possibly fluctuating in size depending on weight gain or loss	? Recovery may be longer and more difficult ? Risk of blood supply issues ? Risk of muscle weakness where the new breast tissue came from ? Additional scarring where the replacement tissue came from ? May require additional revisionary surgeries ? Possible differences in size and shape of both breasts ? Possibility of postoperative pain or infection ? Breasts may sag, as natural breasts would, as the person ages

TRAM (Transverse Rectus Abdominis Muscle Flap)

In a TRAM Flap procedure, tissue is taken from the lower abdominal area and used to help shape the breast. Skin, fat, blood vessels and at least one muscle from the abdomen are moved from the abdomen to the chest. There are two types of TRAM flap breast reconstruction: Pedicle Flap and Free Flap.

Pedicle Flap

In a Pedicle Flap procedure, skin, fat and muscle are removed from the lower abdominal area and used to reconstruct the breast. The muscle, which carries the blood vessels from the lower abdomen area, remains attached to the original blood supply and is tunneled under the skin to the breast region.

Advantages	Disadvantages
? Less time needed in surgery versus some other autologous reconstructions, i.e. DIEP and gluteal ? Less risk of the body rejecting the tissue and less risk of scar tissue forming ? Results in tightening of the lower abdomen skin ? similar to a tummy tuck	? May decrease the strength of the abdomen ? Risk of an abdominal hernia occurring ? May affect mobility and range of motion

Free Flap

In a Free Flap procedure, skin, fat and muscle are removed from the lower abdominal area and moved up to the chest in order to reconstruct the breast. Blood vessels attached to these tissues are also removed from the lower abdomen area and are then reattached to the existing blood vessels in the chest.

Advantages	Disadvantages
? Less risk of the body rejecting the tissue and less risk of scar tissue forming ? Results in tightening of the lower abdomen skin - similar to a tummy tuck	? May decrease the strength of the abdomen ? Risk of an abdominal hernia occurring ? Microsurgery to connect blood vessels requires extra time in surgery ? Complications associated with microsurgery may result in tissue not surviving when moved to the breast

Latissimus Dorsi Flap

In a Latissimus Dorsi flap breast reconstruction procedure, skin, fat, muscle and blood vessels taken from the upper back are tunneled under the skin to the front of the chest to form a pocket for an implant. It is important to note that Latissimus flap reconstruction can be done with or without the addition of a breast implant. In some cases, enough tissue is available from the flap and an implant may not be needed in this procedure.

Advantages	Disadvantages
? Less risk of the body rejecting the tissue and less risk of hard scar tissue forming ? Does not damage the abdominal wall (like in TRAM)	? May experience weakness in the back, shoulder or arm after surgery ? May affect mobility and range of motion in the shoulder area

DIEP (Deep Inferior Epigastric Artery Perforator) Flap

A DIEP Flap breast reconstruction procedure uses fat and skin from the same area as the TRAM Flap in the lower abdomen, but does not require removal of any muscle. The DIEP procedure requires the use of an operating microscope (microsurgery) to connect blood vessels when the tissue is moved to the breast.

Advantages	Disadvantages
? Results in the tightening of the lower abdomen ? similar to a tummy tuck ? No abdominal muscle removed ? Little to no loss of abdominal strength versus TRAM	? Microsurgery requires extra time in surgery (up to 8 hours for the reconstruction of both breasts) ? May affect mobility and range of motion ? Complications associated with microsurgery may result in tissue not surviving when moved to the breast

SIEA (Superficial Inferior Epigastric Artery) Flap

A SIEA Flap procedure is similar to a DIEP Flap in that it uses fat and skin from the lower abdomen and does not require removal of any muscle. However, there are two main differences. First, is the use of different vessels including the Superficial Inferior Epigastric Artery. Second, it does not

require an incision through the abdominal muscle due to the superficial location of the vessels. The SIEA flap procedure also requires the use of an operating microscope (microsurgery) to connect blood vessels when the tissue is moved to the breast. It is important to note that only a minority of patients are candidates for SIEA Flap (approximately 15%) because the superficial vessels are very small thus limiting flap volume and increasing the risk of flap loss.

Advantages	Disadvantages
? Results in the tightening of the lower abdomen ? similar to a tummy tuck ? No abdominal muscle removed ? Little to no loss of abdominal strength compared to TRAM procedure	? Microsurgery requires extra time in surgery (up to 8 hours for the reconstruction of both breasts) ? May affect mobility and range of motion ? Complications associated with microsurgery may result in tissue not surviving when moved to the breast

Gluteal Free Flap / Buttock Crease Transfer

The Gluteal Free Flap autologous breast reconstruction procedure uses tissue from the buttocks, including the gluteal muscle, to create a new breast shape. Like a TRAM Flap reconstruction, the skin, fat, blood vessels and muscle are cut from the buttocks and moved to the chest area. An operating microscope (microsurgery) is needed to connect the blood vessels, and the scar where the new breast tissue has come from is conveniently concealed in the buttock crease.

Advantages	Disadvantages
? Concealed scar ? Removes fat and tissue from the buttocks	? Lengthy procedure (up to 12 hours) because of microsurgery involved ? Complications associated with microsurgery may result in tissue not surviving when moved to the breast

Source: Breast Reconstruction Matters

Breast Reconstruction: Market Overview

The following dashboard illustrates the **Breast Reconstruction Market** in the US over the period 2007-2010, **by different Procedure Types**:

This is supposed to be a flash animation. You'll need the flash plugin and a browser that supports it to view it.

The following dashboard illustrates the **Breast Reconstruction Market** in the US over the period 2007-2010, **for different age groups**:

This is supposed to be a flash animation. You'll need the flash plugin and a browser that supports it to view it.