Breast Reconstruction

Breast Care

We put our patients first by working as one team; leading and listening, and striving for the best. Together, we make the difference.
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Introduction

Breast reconstruction is a surgical procedure to restore the appearance of a breast for women who have had or are about to have a mastectomy to treat breast cancer. The surgery attempts to rebuild the size and shape of the breast and, if you wish, the nipple and areola, (the darker area surrounding the nipple), at a later date. Most women who have had a mastectomy can have reconstruction.

This information is designed to give you the facts you need to make an informed decision about breast reconstruction. The decision to have breast reconstruction is a matter of personal choice. No single source of information can provide every fact or give you all the answers. You and those close to you should discuss any questions and concerns about reconstructive surgery with your surgeon and breast care nurse.

If you are thinking about having reconstructive surgery, it is a good idea to discuss it with your surgeon who is experienced in breast reconstruction before your mastectomy. This allows the surgical team to plan the treatment that is best for you, even if you decide to wait and have reconstructive surgery later.

Decisions about reconstructive surgery depend on many factors such as:

- Your overall health
- The type of breast cancer
- The size of your natural breast
- The amount of tissue available, (for example, very thin women may not have the excess body tissue to make flap grafts possible)
- Your desire to match the appearance of the opposite breast
Other important factors to consider:

- You may choose to wait until after your initial breast surgery to decide about reconstruction if you do not want to think about this issue while you are coping with a diagnosis of cancer.
- You may simply not want to have any more surgery than is needed
- Not all surgery is completely successful, and you may not be pleased with your cosmetic result
- Your ability to heal may be hindered by previous surgery, chemotherapy, radiation, smoking, alcohol, diabetes, various medications, and other factors
- You may not be a candidate for reconstruction at all if you are obese or have major medical problems

Goals of reconstruction

Women choose breast reconstruction for different reasons. The goals of reconstruction are as follows:

- In clothes, (or underwear, or a swimming costume), your appearance will be similar to before your surgery.
- Even without clothes, you may feel better with a recreated breast giving you a more natural shape.
- It may help to restore your self-confidence and feelings of femininity, attractiveness and sexuality.
- You will not have to wear an external artificial breast, (prosthesis).

Limitations of reconstruction

Unfortunately what we cannot do is make an exact copy of your natural breast. Results vary between patients who have the same procedure. This is due to many factors which include breast size and shape, skin quality, previous scarring and/ or radiotherapy, tissue atrophy, (loss of tissue over time), and response to foreign material, (i.e. breast implants). Before making a decision about whether to have a reconstruction you need to have realistic
expectations about the possible result and be aware of the limitations.

The difference between the reconstructed breast and the remaining breast can be seen when you are naked. When wearing a bra though, they may be close enough to one another in size and shape that you will feel comfortable about how you look in most types of clothing.

Your reconstructed breast will often have no sensation in the skin after the operation and this does not usually return with time. Whilst you may be happy with the appearance of your reconstruction it will not feel like your natural breast.

Changes in the shape and size of your body over time may affect the reconstructed breast differently to your natural breast. This can result in a loss of the symmetry between the reconstructed and natural breast. Whilst many women are happy to accept a degree of asymmetry, you may require/desire further surgery in the future to attempt to correct this if you are becoming increasingly asymmetrical.

You may need to have an operation on your natural breast in order to make it as symmetrical as possible with your reconstructed breast. This operation may be needed to reduce the size, (reduction), enlarge the size, (augmentation), or uplift, (mastopexy), your other breast. None of these operations can be done without at least some visible scarring on your breast.

Your body image and self-esteem may improve after your reconstruction surgery following a previous mastectomy, but this is not always the case. Breast reconstruction does not fix things you were unhappy about before your surgery.

Often, two or more operations over a period of approximately six months will be needed to give the best possible result.

You may be disappointed with how your breast looks after surgery. You and those close to you must be realistic about what to expect from reconstruction.

- Reconstruction will not be able to give back the exact appearance and shape of your breast.
- Your new breast will lack the sensation of your natural breast.
• You may need further operations in the future to keep your reconstructed and natural breast as symmetrical as possible.

• You may also want/need to have an operation on your other breast to reduce or increase the size in order to achieve the best cosmetic outcome.

• Most women need to have two or three operations to get a reasonable match with the opposite breast.

Immediate or delayed reconstruction with breast cancer

Immediate reconstruction
This is reconstructive surgery that is done at the same time as the mastectomy, when the entire breast is removed. The benefit with immediate reconstruction is that the chest tissues are undamaged by radiation therapy or scarring and your natural breast skin is retained helping to shape the reconstruction more like your natural breast and minimise scarring. Immediate reconstruction also means one less operation.

Delayed reconstruction
This is surgery that is done at a later time following a mastectomy. For some women, this may be advised if radiation is likely to follow mastectomy. This is because radiation therapy that follows breast reconstruction increases the risk of complications and adversely affects the cosmetic result. Some women find it difficult to decide about reconstruction at the time of a cancer diagnosis or prefer not to have a more major operation at this time. Delayed reconstruction can be carried out usually 6 months after completion of chemotherapy and or radiotherapy.

Types of Breast Reconstruction
Several types of operation are available for breast reconstruction but you may not be suitable for all types of procedure.

Outlined below are the most commonly used breast reconstruction operations:
Tissue expansion and silicone implant procedures

1a) 2 Stage Implant Only

This operation is most suitable for women with small to moderate size breasts with minimal ptosis (breast droop). It can also be used in larger reconstructions if patients are unsuitable for more extensive surgery or for patient preference. It is usually performed as a two stage procedure (2 operations separated by 3-6 months).

A tissue expander (Diagram 1), like a balloon, which has a silicone shell, and a chamber into which saline, (salty water), can be injected to gradually fill the implant is placed beneath the skin and chest muscle. The purpose of this is to stretch the skin and muscle over a period of time to create a pocket for the subsequent silicone implant.

Once healing of the surgical wound has occurred, usually between four and six weeks after surgery, tissue expansion can begin. Through a valve mechanism beneath the skin, saline is injected at regular intervals to fill the expander over time. This is usually carried out several times as an outpatient at weekly intervals. It only takes a few minutes to perform this procedure. There may be a sensation of tightness following expansion which is often worse the following day but soon improves. The expander is removed in a second operation, and a permanent silicone implant is then put in its place.

Diagram 1: Tissue Expander
Diagram 2: Implant only reconstruction using an ADM

1b) Single Stage Implant only using Acellular Dermal Matrix (ADM)

Some ladies may be suitable for a single stage implant only reconstruction using ADM which is a patch of material made from processed pig or cow skin. This patch is used to create a pocket in combination with the chest muscle for the silicone implant.

Diagram 3: Scar pattern for Wise Pattern with nipple on right and without on left

1c) 2 Stage Implant Only Using the Wise Pattern Skin Envelope Reduction with Dermal Sling

This method is a combination of the 1a and 1b methods. The pocket for the expander is made using the chest muscle and the patient’s own skin. This is a technique which is suitable for larger
breasted ladies with ptosis (breast droop), but does require surgery on the healthy breast in the future for symmetry in the form of a breast reduction. It can give a more naturally shaped breast than the standard 2 stage implant only reconstruction.

**Implant only benefits**
- Retains a reasonable breast shape in clothing
- Avoids need for an external prosthesis, (breast form)
- It is a quicker and smaller surgical operation than other reconstructions and has a shorter recovery time
- No other scars needed on the body

**Implant only limitations**
- Least realistic reconstruction in terms of shape and softness
- Reconstruction may be apparent if wearing low cut top/dress
- Tends to be in a more upright position than your other breast when not wearing a bra
- Your implants may not last a lifetime, so you may need additional operations to replace them

**What are the risks of this procedure?**
Most women will experience no complications but it is important to be aware that problems can occur:

**Bleeding**
This can occur after any surgery. A very small amount of bleeding is not uncommon but anything more than this may mean another short operation to stop the bleeding.

**Infection**
You will be given antibiotics to reduce the risk of infection. If the wound becomes infected after surgery there is a risk the infection can occur in the tissue around the implant. If this occurs it is usually necessary to remove the implant until the infection has settled. It would then be replaced with a new implant after a minimum of 3 months.

**Capsular contracture**
A breast implant is a foreign body and it is normal for your body to try and isolate the implant. This is done by producing a ‘capsule’ of scar tissue around the implant. In up to 10% of patients, the
capsule can become very tight. If this happens it is a slow gradual process and you may only notice a slight change in shape initially. This may progress to eventually feeling abnormally hard and causing pain within the breast. This scarring and contraction can significantly alter the cosmetic result and/or become so uncomfortable that the implant may have to be removed with the scar tissue and replaced with a new implant.

**Revisional surgery**
Breast implant surgery is a lifelong commitment. Breast implants do have a life expectancy of approximately 10 years, after which time they may need replacement. If the implant reconstruction does not change significantly over time or cause symptoms it does not need replacing.

**Asymmetry, (unequal size and shape)**
In the short term, there will be a marked difference between the breasts until the tissue expansion process is complete. The implant will feel different to your natural breast tissue feeling firmer and cooler than normal breast tissue. Implants tend to create a ‘youthful’ looking breast with no breast droop, which may be less natural in appearance with increasing age. In patients with thin overlying tissue creasing or folds in the implant may be apparent. There can also be a rippling effect seen through the skin. Most women will have some degree of asymmetry (unequal size/shape) between breasts and this is more likely after this surgery. Adjustment surgery can be carried out to the opposite breast, if your surgeon recommends this. Teardrop shaped implants are commonly used and these can rotate altering the shape of your reconstructed breast. If this occurs you may need further surgery to reposition the implant.

**Scars**
You will have a scar on the front of the chest either in the same location as the mastectomy scar or underneath the breast. All scars are red and raised initially and begin to settle over a 12-month period.

**Ruptured/leaking implants**
This is when the outer silicone shell of the implant is punctured and the silicone gel contents released into the tissues locally. Modern cohesive gel implants have a firm consistency (similar to jelly),
which is very unlikely to disperse in significant amounts. Leaked silicone can result in benign lumps occurring in the surrounding tissue. These are known as ‘silicone granulomas’. The leaked silicone can also accumulate in the axillary lymph nodes and cause lymph node enlargement.

Silicone safety
There have been concerns raised by patients and doctors in the past about the safety of implants. An independent review group report; Silicone Gel Breast Implants (1998) did not find any evidence of adverse effects and information can be found on their web site: www.silicone-review.gov.uk

Breast Cancer and mammography
Breast implants do not increase or decrease the risk of developing a new breast cancer or a recurrence of a previous cancer. There is no reason to perform mammograms on the reconstructed breast. Follow up mammography should continue in the remaining breast.

2) Latissimus dorsi flap (back flap)
This type of reconstruction moves tissue from your back and transfers it to the front of your chest in place of the breast tissue removed at mastectomy. It is more suitable for moderate to large breasted women and gives a more realistic shape and feel to the reconstruction than implant only reconstructions. It is however a more complex operation requiring a longer recovery period and leaves a scar at the donor site (on the back).

This operation can be used to create small or larger breast reconstructions and is appropriate for women:

- Where previous radiotherapy has made the skin unsuitable for tissue expansion
- Who have small or large breasts
- Wanting a more natural reconstruction than an implant only
- Who are not suitable or do not want an abdominal flap reconstruction, (discussed later)

The Latissimus dorsi flap operation involves moving a flap of muscle, fat and overlying skin from the back. The flap and its blood supply are tunneled under the skin just below the armpit. It is then put into position to make a new breast shape. Often, there is not
enough tissue to form a whole breast, so an implant may be put behind it to match the size of the other breast. Sometimes a larger area of tissue is taken from the back, which is called an autologous latissimus dorsi flap, so that no implant is used. This gives a more natural feel to the breast reconstruction and avoids the potential complications associated with implants, (listed above).

Any type of breast reconstruction using muscle, fat and skin flaps is a major operation and needs a hospital stay of around 5 days. This type of operation leaves scars both from where the skin and muscle flap is taken (donor site), and on the reconstructed breast. The scar on the reconstructed breast is round, oval or elliptical and the scar on the back is either diagonal or straight, so a bra strap will mostly cover it.

This type of reconstruction generally has few problems and can make a small or moderate size breast very well. However, it cannot always match a very large breast. To give a good match, some women with large breasts may need to have a breast uplift procedure (mastopexy) or breast reduction of the other breast at a later time.

Diagram 4: LD Flap

**Benefits**
- Can create better breast ptosis, (droop), giving a more natural look and feel, (clothed and naked), than an implant only reconstruction
- Can be used for small and large reconstructions
- Can sometimes avoid using an implant.
Limitations
- Longer operation, hospital stay and recovery
- Creates a donor site scar on the back
- The reconstruction will be largely numb

Risks
All the risks listed above in relation to implant only breast reconstruction can occur if an implant is used.

Additional risks are:

Flap loss
This is extremely rare (1 in 500 cases) but can occur if there is disruption to the blood supply or obstruction to blood flow. It may also result from previously unknown damage to the blood vessels from surgery under the arm or to the chest.

Muscle bulge and twitch
The tendon of the muscle crosses the armpit and creates a bulge which you may be aware of initially. The swelling settles to some degree with time but there will always be some bulging. Women generally get used to the sensation so it becomes unproblematic with time. The muscle is still connected to its nerve supply and will twitch with certain movements. This is usually only apparent if pushing hard against an object or lifting something heavy. Generally it will not twitch doing normal daily activity.

Shoulder weakness
There are many muscles around the shoulder which continue to allow normal shoulder movement following this type of surgery. You should not notice any significant change unless you are involved in high standard competitive racket sports, cross country skiing, rock climbing or rowing. You may notice some weakness if pushing up to get out of a bath.

Back scar and seroma (fluid)
The scar on your back may feel tight for a while following surgery but tends to loosen with time. There can be problems with wound healing of the back scar. The risks are much greater if you are overweight or a smoker.

Fluid collects in the space in your back following surgery; this is a normal bodily reaction to the operation. This continues to form for
a variable amount of time and may require regular drainage in the outpatient clinics. The fluid will not harm you but it may give you a full sensation in your back when lying down.

Chest wall skin
The blood supply to the skin that is left behind on your chest wall following the mastectomy is not as good as it was before your mastectomy. There is a risk (approximately 1-5%) that a portion of this skin does not have enough blood supply to keep it alive. This can occasionally cause an area of skin necrosis where the skin either forms a blister and then settles or in more extreme cases can turn black and needs to be removed.

The complications described are more common if you are diabetic, obese, or a smoker. You are advised to stop smoking at least six weeks before your operation. If you are taking Tamoxifen you should stop taking it four weeks before your operation and if you are taking Aspirin you should stop it two weeks before your operation. If you have had major chest surgery or kidney surgery on the same side of your body you should inform your surgeon prior to the operation to ensure you are suitable for this reconstruction.

3) TRAM (transverse rectus abdominis muscle) flap, and DIEP (deep inferior epigastric artery) flap
The TRAM flap procedure uses tissue from the lower abdominal wall, (tummy tissue). The tissue from this area alone may be enough to create a breast shape, and an implant may not be needed. If there is insufficient tissue to recreate a breast then this procedure would not be suitable for you. The skin, fat, blood vessels, and at least one of the abdominal muscles are moved from the abdomen to the chest area. This procedure also results in a tightening of the lower abdomen skin, or a “tummy tuck.” There are two types of TRAM flaps:

• Pedicle flap involves leaving the flap attached to the underlying muscle and to its original blood supply and tunnelling it under the skin to the breast area.

• Free flap means that the surgeon cuts the flap of skin, fat, blood vessels, and muscle free from its original location and then attaches the flap to blood vessels in the chest area. This requires the use of a microscope, (microsurgery), to connect the
tiny vessels and takes longer than a pedicle flap.

A newer type of flap procedure, the DIEP flap, uses fat and skin from the same area as in the TRAM flap but does not use the muscle to form the breast mound. This procedure results in a tightening of the lower abdomen skin, or a ‘tummy tuck’. The procedure is done as a ‘free’ flap meaning that the tissue is completely detached from the tummy and then moved to the chest area. This requires the use of a microscope (microsurgery) to reconnect the tiny vessels to vessels either in your axilla (armpit) or behind your ribs. The procedure takes longer than the TRAM pedicle flap discussed above.

Diagram 5: The DIEP Flap

Benefits

• Avoids implant use.
• Less likely to require future revisional surgery but may require several operations to initially get a breast mound shape that you are happy with.
• Feels more natural as uses only body tissue

Limitations

• More complex procedure
• Greater risk of flap loss (2-5%)
• Longer operation, hospital stay and recovery
• Creates a donor site scar on the abdomen
• The reconstruction will be largely numb

Risks
• Bleeding
• Infection
• 3% significant donor site infection or flap infection requiring hospitalisation.
• Seroma
• Fluid accumulation in the abdominal wall

Flap loss
This is the most serious complication and can leave you with no reconstruction. The risk of total flap loss with a free flap procedure is around 2%. This risk is smaller for a pedicled flap but the risk of partial flap loss is greater with a pedicled flap. You may then require a further reconstruction to match your other breast.

Scar
A scar stretches from one side of the lower abdomen to the other in a U shape. Delayed wound healing can occasionally be problematic.

Abdominal wall hernia or bulge
The risk is reduced with a DIEP flap and greatest with a pedicled flap. Mesh may be required to provide support to your abdominal wall following a pedicled TRAM flap. If a hernia develops you may need further surgery to your abdominal wall to correct this.

Fat necrosis
Occurs in up to 10% of TRAM flaps leading to hard and or inflamed areas within the reconstruction which may require further surgery to correct.

Mastectomy skin flap necrosis, (breast skin loss)
This complication can occur with any of the immediate reconstruction procedures described including implant only or latissimus dorsi, (back flap), reconstructions.

Neither TRAM flap nor DIEP flap reconstructions are available at Musgrove Park Hospital, Taunton and you will be referred to the Plastic Surgeons based in Exeter for consideration of this. All other procedures can be undertaken at Musgrove Park Hospital, Taunton.

Nipple and areola reconstruction
The decision to have your nipple and areola (the dark area around the nipple) reconstructed is dependent on your wishes. Many people having breast reconstructions decide to have a nipple and areola reconstruction, but not all. They are considered the final phase of breast reconstruction. This separate surgery is done to make the reconstructed breast more closely resemble the original breast. It is usually done after the new breast has had time to heal, (3-6 months after surgery), and is carried out as a day case.

There are two types of nipple reconstruction that are performed by the Musgrove Park Hospital Breast Care Centre:

**The ‘skin flap’ technique (CV Flap)**
This technique involves using the skin on the surface of your reconstructed breast, to create a nipple protrusion, Diagram 6.

**The ‘nipple sharing’ technique.**
If the opposite nipple is large enough a piece of it can be grafted onto your reconstructed breast, Diagram 7. This procedure is not suitable for ladies who have had bilateral (both sided) reconstructive surgery.

**Tattooing**
The areolar (flat part of the nipple) can be created at a later date with tattooing. Tattooing of the nipple is performed in Clinic at the Breast Care Centre.

The colour of the ‘normal’ side is matched by the tattoo or a colour can be chosen to match skin tone (in the case of bilateral reconstructions). The procedure is done after the application of an anaesthetic cream to the area and is very well tolerated. The colour fades over time and repeat tattooing may be needed.

**Benefits**
- Breast Reconstruction looks more realistic
- Limitations
- Further surgery
- Nipple reconstructions can flatten with time
- Small risk that the new nipple will not have enough blood supply and may then die
Help you decide which reconstructive options are best for your age, health, body type, lifestyle, and goals.

Breast reconstruction after a mastectomy can improve your appearance and renew your self-confidence. However, keep in mind that the desired result is improvement, not perfection.

Breast reconstruction at the same time as a mastectomy cannot recreate the exact appearance of your natural breast however we will endeavour to mimic your natural breast as closely as possible.

You will be shown photographs of reconstructions and subsequently be able to discuss any issues further.

If you would like to talk with someone who has had your preferred type of surgery this can often be arranged.

If we are planning to do a reconstruction at the same time as your mastectomy, we will need to do a short operative procedure under General Anaesthetic called a Sentinel Node Biopsy on your axilla (armpit) to make sure that your lymph nodes do not have cancerous cells in them. This procedure will take place two to three weeks before your planned mastectomy and reconstruction. If the lymph nodes are free of cancer we will be able to do your reconstruction at the same time as your mastectomy. If the lymph nodes contain cancer cells there is a high chance that you will need radiotherapy to your chest wall and we therefore prefer to do your reconstruction at a later date, as a delayed procedure after your mastectomy and chest wall radiotherapy.

**Preparing for your surgery**
Smoking

The use of tobacco causes constriction of the blood vessels and reduces the supply of nutrients and oxygen to tissues. As with any surgery, smoking can delay healing. This can result in scars that are more noticeable and a longer recovery time. Sometimes these complications are severe enough to require a second operation. If you smoke, you should ideally stop six weeks before your surgery but stopping at any stage before your surgery will be beneficial.

Medication

If you are on Tamoxifen you should stop taking it one month before your surgery. If you are taking aspirin you should stop taking it two weeks before surgery.

After breast reconstruction surgery

What to expect

You are likely to feel tired and sore for a week or two after implant reconstruction and longer after flap procedures. You will be given medicines to control your discomfort.

Depending on the type of surgery, you should go home from the hospital in three to five days. You can shower (not bath) with your dressings on as they are splash proof. You will need to wear a soft bra (not too tight) for six weeks post surgery and you should bring this with you into hospital. You should not drive for two to six weeks depending on the operation you have undergone. Generally you will need 4-12 weeks sick leave depending on your recovery and type of work you do but you may need longer. If you have any concerns or questions, call your breast care nurse during the day (Monday – Friday 08:30-16:30) or your GP if out of hours.

Getting back to normal

You should be up and about in one week. If implants are used without flaps, your recovery time may be less. Some things to remember:

• Reconstruction does not restore normal sensation to your breast, but some feeling may return.
• It may take as long as one to two years for tissues to completely
heal and for scars to fade, but the scars never go away entirely.

- Follow your surgeon’s and physiotherapist’s advice on when to begin stretching exercises and normal activities. As a rule, you’ll want to avoid any overhead lifting, strenuous sports, and sexual activity for six weeks following reconstruction.

- Women who have reconstruction months or years after a mastectomy may go through a period of emotional readjustment once they have their breast reconstructed. Just as it takes time to get used to the loss of a breast, you may feel anxious and confused as you begin to think of the reconstructed breast as your own. Talking with other women who have had reconstruction might be useful as will discussing it with your breast care nurse or GP.

**Breast Reconstruction and cancer recurrence**

Studies to date have shown that reconstruction has no known effect on the recurrence of breast cancer. It should not cause problems with chemotherapy.

It is important to have regularly scheduled mammograms on the opposite breast.

Having a breast reconstruction does not affect your cancer treatment or follow up.

**Glossary**

**Areola**: the darker area surrounding the nipple.

**Breast implant**: a sac used to increase breast size or restore the contour of a breast after mastectomy. The sac is filled with sterile saltwater (saline) or silicone gel or both.

**Breast reconstruction**: surgery that rebuilds the breast contour after mastectomy. A breast implant or the woman’s own tissue is used. If desired, the nipple and areola may also be recreated. Reconstruction can be done at the time of mastectomy (Immediate) or any time later (Delayed).

**Capsular contracture**: scar tissue formation around the implant that tightens and squeezes the implant. There are four grades of contracture (Grades I-IV) that range from normal and soft to hard,
painful, and distorted.

**DIEP (Deep Inferior Epigastric artery Perforator) flap:** a newer type of flap procedure that uses fat and skin from the same area as in the TRAM flap, but does not use the muscle to form the breast mound.

**Free flap procedures:** the tissue for reconstruction is moved entirely from another area of the body and the blood and nerve supplies are surgically reattached with special microscopes.

**Latissimus Dorsi flap:** procedure tunnels muscle, fat, and skin from the upper back to recreate a breast mound.

**Mastectomy:** excision and removal of the breast.

**Microsurgery or microvascular surgery:** procedure that uses microscopes and fine surgical instruments to reattach the blood supply to tissues that have been removed from another area.

**Necrosis:** cell death from lack of blood supply to the tissue.

**Pedicle flap:** tissue that is surgically removed but the blood vessels remain attached and are tunnelled from the original site.

**Saline-filled implant:** has an external silicone shell and is filled with sterile saline (salt water).

**Silicone gel-filled implants:** breast implants filled with a synthetic material. Because of its flexibility, strength, and texture, it is similar to the natural breast.

**Tissue expander:** implantation of an inflatable balloon under the skin is used to keep living tissues under tension. This causes new cells to form and the amount of tissue to increase. The surgeon inserts the balloon expander beneath the skin where the breast should be and periodically, over weeks or months, injects a saline solution to slowly expand the overlaying skin to create space for an implant.

**Tissue flap reconstruction:** tissue that is surgically removed for reconstruction in another area of the body. It can be a pedicle (attached and tunnelled) or a free flap (detached and re-attached).

**Transverse rectus abdominis muscle (TRAM) flap:** a procedure that
uses tissue and muscle from the lower tummy wall to reconstruct a breast mound. It can be a pedicle or a free flap.

**Two-stage reconstruction**: a two-step procedure that is performed if your skin and chest wall tissues are tight and flat. An implanted tissue expander is placed beneath the skin and chest muscle. It is like a balloon that is inflated with saline over time and an implant is surgically placed when the desired fullness of the expander is achieved.
Further information and support regarding breast health is available from:
www.breastcancercare.org.uk

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