KELVIN RAMSEY
PLASTIC SURGEON

DIEP Flaps Information Sheet

DIEP Flaps refers to a way of reconstructing the breast after surgery such as a mastectomy. The acronym stands for Deep Inferior Epigastric Perforator Flaps and it is the name given to the process of moving a piece of skin and fat from the abdomen and using it to rebuild the breast once the original breast tissue has been removed. No muscle transfers are used in a DIEP Flap operation.

For women requiring breast reconstruction, this approach is favoured by many as it can look and feel much more natural – a new breast is simply created from spare living tissue from your own body.

So, a DIEP is a piece of tissue (flap) composed of fat and skin, taken from your lower tummy (abdomen), to create the feel and shape of a breast. The tissue and its blood vessels are carefully detached from your abdomen before being reconnected to a new blood supply in your chest. It is a complex operation that takes about five to seven hours.

DIEP flaps give warm, soft and pliable reconstructed breasts that resemble natural breast tissue, so they are considered as the gold standard for breast reconstructive procedures. In addition, the removal of tissue from your abdomen results in a flatter tummy, as if you have had a tummy tuck (abdominoplasty).

After the skin, tissues and perforators (the flap) have been carefully dissected, the flap is connected to your chest using microsurgery. Mr Ramsey then shapes the flap to create the new breast. As no abdominal muscle is removed or transferred to the breast area you should experience less pain post-operatively and a faster recovery compared to other flap procedures. Abdominal strength is also maintained long-term after the DIEP flap procedure.

Because the surgery involved is very complex, few breast centres offer DIEP flap breast reconstruction. Mr Ramsey specialises in this procedure both in the NHS (at the Royal Marsden Hospital) and privately, and he has performed more than 500 DIEP flap cases in the last few years.

All breast reconstructions are a process of care that usually require two or more operations. When using the DIEP flap, whilst as much of the reconstruction is done at the time of the main flap transfer operation, there is often a need for a second smaller operation to refine and adjust the reconstruction, as well as undertake a nipple reconstruction. Despite the need for more than one operation, the result should be life-long and the reconstruction should age with you naturally. It should also change with your body weight in a similar way to your breast. This is one of the major differences between flaps and implants, as implant-based reconstructions frequently need revision surgery in the future.

Is a DIEP flap suitable for me?

Mr Ramsey will discuss the suitability of this procedure with you. In general, it is a good choice if you do not want an implant and need to have either one or both breasts reconstructed, and have an adequate amount of tissue on your tummy. You can still have a DIEP reconstruction if you've had some abdominal surgery (hysterectomy, caesarean section, appendectomy, bowel surgery) unless the scarring on your abdomen is extensive. If you are very slim, very overweight, smoke or have health problems like diabetes then the procedure may not be suitable for you.

What happens before the operation?

If Mr Ramsey considers the DIEP flap to be an appropriate operation for you, then he will often arrange for you to have a scan of the blood vessels of the abdomen (CT angiogram). This will help him plan the details of the surgery and he should be able to tell you if some of the muscle of the tummy will be damaged by the surgery or if the pattern of the blood vessels is such that the muscle will be unaffected. This scan also helps speed up the operation.

If you smoke you should stop at least a month before surgery to reduce the likelihood of post-operative complications. If you are unwell before the operation, please call Mr Ramsey's office as the date of surgery may need to be postponed. No aspirin or medication containing aspirin should be taken for two weeks before surgery. Please bring with you a nightdress, dressing gown, slippers and toiletries. Do not bring cosmetics or jewellery. It is useful if you could also bring a non-wired comfortable and support bra, like a sports-bra, that you don't mind being cut. After the operation, a hole is often made in the bra so that the DIEP flap can be examined without having to remove the bra frequently.

An anaesthetist will visit you to discuss the anaesthetic. Mr Ramsey will see you soon after admission, when he will often draw some markings to guide the surgery. It is important that you do not wash these lines off.

You will then be asked to sign a consent form. Make sure that you are fully informed of and fully understand all the consequences of the surgery prior to signing this. Signing this form does not take any of your normal rights away, it merely states that Mr Ramsey has explained the operation to you and that you have had an opportunity to discuss the anaesthesia with an anaesthetist.

Day of surgery

A DIEP reconstruction is a major operation performed under a general anaesthetic and usually requires a hospital stay of four to six days. A urinary catheter is used to drain urine while you are confined to bed during the first hours after the operation. Some drains are positioned in the abdomen and the breast. These are removed in the first few days following surgery. You will be given some intravenous antibiotics to help reduce the chances

of post-operative infection but these will not be continued beyond the first 48 hours. You will also be given a blood-thinning injection of heparin to reduce the chances of deep vein thrombosis.

Waking up from the operation

You will wake up in the recovery area before being transferred to the high dependency area or specialist ward. It is usual to feel drowsy and a little disorientated for some time post-operatively. If you have pain or feel sick, you should tell the nursing staff so that they can give you the appropriate medication.

The breast(s) will feel a little sore after surgery particularly when the arms are moved, but this rapidly improves over the first few days. It is likely that your hips and knees will be bent, perhaps on cushions or with the bed bent in the middle, to take the strain off the abdominal wound. You will be given sufficient pain relief to keep you completely comfortable and a warming blanket is also usually in place for the first night to stop you getting cold.

Scars

You will have an incision on your breast and one on your abdomen. The breast incision will contain a patch of visible skin from the tummy so that Mr Ramsey's team can check that the flap is working well. The abdominal incision will be a long, curved line across your tummy at or just above the bikini line. There will also be an incision around the belly button (umbilicus). All the sutures are dissolvable except for a small number within the umbilicus.

All incisions produce scars, which usually settle down over several months. However, some scars can be troublesome. Hypertrophic scars are red, raised and itchy for several months following the operation. These can be treated but may result in a wide stretched scar. Keloid scars are larger and more difficult to treat but these are extremely rare following breast reconstruction.

Drains

Drains will be used in both breast and the abdomen to drain away excess fluid following the operation. They usually exit the wound through a separate tiny incision, and are usually removed in the days following surgery, depending on the amount of fluid that is drained. Occasionally the abdomen wound produces quite a large amount of fluid and patients prefer to go home with their drain still in place. If this is the case, you would need to return to the hospital a few days after discharge for removal of the drain.

What is the recovery like?

The first night after surgery is usually spent in a high dependency area or in a room with your own dedicated nurse. This is so that the flap can be checked regularly as it is important

to ensure the blood supply to the flap is in good condition. After the first night, you are then usually transferred to the ward for standard nursing care. On the first day following surgery, a physiotherapist will help you sit out in a chair for a short time. You can usually get out of bed by yourself two days after the operation.

Over the next few days the drains and catheter are removed, showering is commenced and mobilisation is increased. On the day of discharge, you will be given an information sheet and be asked to attend a Dressing Clinic appointment approximately seven to ten days after the operation. At that appointment, the dressings will be removed by a nurse and the wound checked. Mr Ramsey would usually review you after two weeks. You should continue to shower daily but it is inadvisable to soak in the bath with the wounds submerged for at least three weeks.

After two to three weeks you may go back to non-physical employment and resume driving a car, but this will depend on your recovery. It is also important to check with your insurance company as some policies do vary. Four weeks after your operation you may resume gentle exercise, but strenuous exercise or manual labour are inadvisable for six to eight weeks.

What are the potential complications?

Any invasive surgical procedure has risks such as infection, haematoma (blood clot), dysaesthesia (changes in sensation), post-operative pain, and delayed wound healing. However, the overall complication rate for DIEP is less than 10% and most of these are minor problems. The most common complications are outlined below:

- **Haematoma:** A haematoma is a collection of blood inside the body. These are normally prevented by the use of drains. However, if one does occur a further short operation would be required to drain the haematoma and stop the bleeding (The risk of this is about 2%). If post-operatively you feel the breast reconstruction or the abdomen getting larger, especially if it is associated with pain or you feel light-headed, then you should tell a member of the nursing or medical team as soon as possible.

- **Flap loss or failure:** This rarely happens but it is a serious complication. The nursing staff and Mr Ramsey will keep a very close check on the new tissue in the reconstructed breast in the first few days after the operation. He will want to be sure that its blood supply is working well. If there are any signs of a problem, you may need to go back to the operating theatre to have it checked. About 2 in 100 women who have a DIEP flap may need one of these ‘second checks’ in the week after their surgery. Very rarely the new tissue in the breast fails and an alternative method of reconstruction is needed. This has never happened to Mr Ramsey in over 500 DIEP cases but it is an important complication to be aware of.

- **Infection:** Infection is rare. Antibiotics are given at the time of the surgery to reduce the chances of infection occurring. Most infections resulting from surgery

appear within a few days of the operation and require a further course of antibiotics.

- **Build-up of fluid under the wound site (seroma):** This sometimes happens after the abdominal or breast drains have been removed, but it usually gets better within a few weeks. It occurs in approximately 1 in every 10 women. The fluid can be simply drained at an out-patient appointment with Mr Ramsey, using a needle connected to another drain bottle. If the seroma formation is a recurrent problem then very rarely, an injection of steroid needs to be applied to the abdominal wound to reduce the production of the fluid. The seroma or its treatment does not usually have any long-term consequences.

- **Lack of sensation in new breast:** The breast reconstruction flap will have little or no light-touch sensation. Over 18 months, the periphery of the reconstruction does regain some sensation and most patients can feel movement of the breast on the chest wall.

- **Asymmetry:** Most women's breasts are asymmetrical (not perfectly equal in either size or shape) and Mr Ramsey may mention this pre-operatively. With advancing age, the breast also tends to ptose or droop. Although every effort is made to create a new breast to match the opposite healthy one, it is rarely possible to achieve perfect symmetry. After discussion with Mr Ramsey and depending on your wishes/needs it may be deemed appropriate to perform a mastopexy (hitching up) or reduction operation on the other breast in order to match the breasts up.

- **Abdominal bulge or hernia:** Weakness of the abdominal wall after a DIEP flap procedure may produce a bulge on one side but this is rare. Post-operative abdominal exercises can sometimes improve on this over time. Very rarely, damage to the muscle may produce a hernia that will require additional surgery for correction. This is an extremely rare complication because the abdominal muscle is left intact, which is the great advantage of the DIEP technique compared to the previously used TRAM flap breast reconstructions.

- **Psychological problems:** A diagnosis of breast cancer and its subsequent treatment can be a very traumatic experience. Members of the breast care team are available to discuss any problems you may have. There are a number of independent organisations that also offer help and Mr Ramsey or his nursing team can discuss this with you in more detail.