PAUL HARRIS
PLASTIC SURGEON

Acellular Dermal Matrix (ADM) Information Sheet

This information sheet is a general guide for patients undergoing surgery that may involve the use of an Acellular Dermal Matrix (ADM) under the care of Mr Paul Harris. It should answer some questions that you might have about this material and your operation, although you may have already discussed many of the points below with Mr Harris at your consultation.

There are many additional factors that can impact your recovery and the long-term result. These include your overall health, previous surgery, any bleeding tendencies that you have and your healing capabilities, some of which will be affected by smoking, alcohol and various medications. Issues specific to you need to be discussed further and are not covered here. Please feel free to ask Mr Harris any additional questions before you sign the consent form.

What is ADM?

ADM is a natural tissue that has had its cells removed to leave behind collagen and extracellular matrix components. ADM is like a scaffold network that provides support and acts as a framework for the patient's tissues to grow into. Thin sheets of ADM were initially developed for use in burn patients as a template for skin replacement. Their use was then extended to a more structural function as a natural repair layer in the abdominal wall rather than synthetic mesh. More recently, ADM has been used in implant-based breast reconstruction and augmentation procedures. In the USA, over 60% of implant reconstructions make use of ADMs. ADM use in the UK is not as prevalent but is on the increase. There are a number of commercially available ADMs that differ by donor tissue (human, porcine, bovine) and by the processes they undergo to include separation of tissues, cell removal, and disinfection. Each of these steps can alter the architecture of the ADM and its interaction with your body.

How is ADM produced?

Decellularisation (cell removal) is required for all ADMs to prevent an immune reaction or rejection by the patient receiving the product. The detergents used to achieve this differ by product. Dehydration is the next step, making the tissue easier to handle, improving shelf life and reducing the loss of some intrinsic growth factors. ADMs can be dehydrated either through freeze-drying or by vacuum pressing. There is no clear evidence in the literature that one type of sterilisation is better although if a preservative is used, it should be thoroughly washed away at the time of surgery to prevent a reaction.

What happens when it is placed in the body?

If successful, once the ADM has been placed inside the body, you will incorporate the new tissue framework as if it belonged to you with rapid new blood vessel and tissue growth. There are no known long term problems associated with ADM use once it becomes fully incorporated.

What are the uses of ADM?

Mr Harris uses ADM at the time of immediate breast reconstruction following a mastectomy in combination with implants. He may also use this for abdominal wall hernia repair, or to improve the soft tissue coverage of a cosmetic breast augmentation. Although several products are available in the UK, Mr Harris preferentially uses a product known as Surgimend®, derived from bovine calf skin. It is freeze dried and contains no preservative.

How is ADM used in breast reconstruction?

The traditional approach to an implant-based breast reconstruction at the time of mastectomy for breast cancer, has been to insert a deflated implant (tissue expander) under the muscle and collapse the skin down on top of this. Over time, this expander is blown up by injection of saline into the implant until the original breast size is achieved and the skin has been stretched out again. A second operation is then undertaken to exchange the expander implant to a more permanent device.

ADM may be used to convert this two-stage prolonged treatment journey to a one-step reconstruction. Instead of expanding the chest muscle and breast skin over a period of several weeks after your

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mastectomy to create a pocket big enough to hold an implant, Mr Harris will stitch a patch of ADM inside the breast skin to the sides of the muscle and along the inframammary fold. This creates a pocket without delay, and also covers the implant edges very well.

Implant-based reconstruction accounts for 30–50% of immediate reconstructions following mastectomy in the UK. Complication rates are high and include capsular contracture, rippling and movement of the implant. ADM use results in a better appearance (better inframammary fold definition and a more natural look) and is less time consuming in the right patients. There is evidence that the early complication rate from ADM use is higher when compared to the more traditional approach of a two-stage technique using a tissue expander. Nevertheless, Mr Harris feels that the advantages are such as to outweigh this small increase in early post-operative problems. These complications can also be lessened by attention to detail and careful patient selection. Hence not all patients undergoing implant-based breast reconstruction are selected for ADM use.

Am I a suitable candidate?

Smokers and patients with a body mass index (BMI) greater than 30 have higher rates of complication and implant failure, and are not ideal candidates. The breast skin of patients who have had previous radiotherapy will not integrate well into an ADM and hence the use of these materials in such patients is extremely high-risk.

Patients requiring post-operative chest wall radiotherapy have a four-fold increase in post-operative complications including an increased risk of capsular contracture. However, there is some evidence that ADM may reduce the severity of capsular contracture in these patients.

Mr Harris will discuss the pros and cons of implant surgery and the possibility of a one step surgical intervention using ADM with you.

What are the possible post-operative complications?

Initial reports indicated higher rates of post-operative infection, breast skin necrosis and postoperative seroma (fluid collection) when using ADM. The most common post-operative complication is infection with up to 25% of patients needing antibiotics in the three months following surgery. Up to 10% of patients need to return to theatre for local complications (wound infection or skin flap necrosis, and haematoma) and another 8% for implant loss. However, more recent results have shown that appropriate surgical technique and good patient choice give better outcomes.

What precautions should I take before surgery?

Pre-operatively, no aspirin containing medicine should be taken for one week. If you smoke you should stop at least three weeks before surgery to minimise postoperative complications, which are more common in smokers. Also, do not start smoking again until all of your wounds are fully healed.

Please see the appropriate information sheet for further information about your hospital stay and recovery.