

## **Dermal Substitute for Skin Reconstruction**

### **以人工真皮重建皮膚**

#### **Introduction**

Reconstruction of large area skin defects can be done with flaps and/or skin graft. A simple split thickness skin graft lacks the dermal layer for support and pliability. The use of dermal substitute provides for closure of wound, replacement of dermis and support for split thickness skin grafts, contributing to improved quality and pliability of the reconstructed skin.

#### **What is Dermal Substitute?**

Dermal Substitutes refer to skin substitutes or artificial dermal replacements used to serve as a template or scaffold into which cells can migrate and repair wounds. Integra is the most often used product in Hong Kong so far and it is a bilayer membrane system with the:

- Inner layer forming the regenerated dermis.
- Outer silicon layer providing for temporary coverage and is to be replaced by staged skin graft.

A 2-staged operative approach is required.

#### **Indications**

Skin reconstruction for:

- i) Full thickness burn wounds/scars
  - involving the face and/or the neck >5 cm (or half a percent of the total body surface area) or
  - across joints with contracture problems, **OR**
- ii) After full thickness resection of:
  - large naevi on the face, neck or hands of sizes >5 cm (or half a percentage of the total body surface area) or
  - congenital giant naevi of sizes >15 cm (or 2 percent of the total body surface area) affecting the rest of the body

**And** when alternative options of skin graft, flaps and tissue expansion would lead to inferior results.

#### **Contraindications**

Allergy to bovine products.

### **Clinical benefits**

- Allows reconstruction of large skin defects where alternative flaps/tissue expansion is not feasible.
- Improves appearance and quality of reconstructed skin with increased pliability across joints.
- Smooths out small depressions over the grafted area.
- May enable more radical excision of skin lesions with malignant potential with selected pathologies.

### **Preparation before the procedure**

The doctor will discuss with the patient the extent of the area that may need to be reconstructed. Excision and the application of dermal substitute are usually performed at the same setting with the second stage, i.e. skin grafting, in 2-3 weeks' time. For a more extensive lesion, it may be necessary to operate on sequential portions of the lesion serially.

### **Procedure**

Each surgery is performed in 2 stages 2-3 weeks apart.

#### Stage 1

- Planned excision of the wound, scar or skin lesion
- Wound bed is prepared
- Dermal substitute laid on wound and fixed

#### Stage 2 (After 2-3 weeks)

- Outer layer of the silicon sheet is removed and split thickness skin graft is harvested to cover the new dermis
- The wound is dressed and fixed for 1-2 weeks

### **Risks and Complications**

- Anaesthetic complications
- Bleeding and haematoma collection
- Wound infection and loss of the template or skin graft
- Poor wound healing and scar formation
- Skin donor morbidities such as pain, infection, poor healing and scar

### **Risks of not having the procedure**

- Exposed wound may lead to infection and scarring
- Contracture especially across joints can cause functional disability
- Less satisfactory cosmetic outcome with conservative treatment or alternative therapy

### **Aftercare of the procedure**

- Wound care for the recipient and skin donor sites
- Temporary immobilization of related areas
- Continued dressings as indicated
- Additional skin grafting may be needed
- Appropriate scar care
- Physiotherapy in individual cases
- Pressure garment therapy as indicated

### **Alternative treatment**

- Non-surgical treatment to the primary pathology
- Proceeding with autologous skin grafts/flaps possibly with increased morbidities and less optimal outcome
- Using alternative but less preferred options such as serial excision or tissue expansion and skin flaps where feasible

### **Follow up**

Your doctor will follow up regularly for any wound complications and scarring and to start preventive or therapeutic treatment accordingly until the wound is stable.

### **Remarks**

The information above is for general purposes only and is not exhaustive. Unforeseen complications may occasionally occur. In special patient groups, the actual risks may be different. Please discuss with your doctor for more specific details.