

# **INTEGRA® Dermal Regeneration Template**

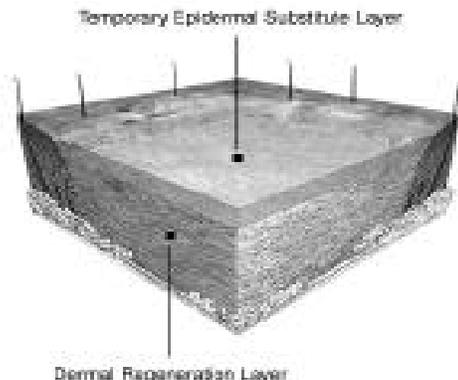
**Whitney Michalek**

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## **Biomedical Engineering Seminar I**

The INTEGRA® Dermal Regeneration Template is an artificial skin used as a treatment for life-threatening burn injuries, as well as for reconstructive surgery for the repair of scar contractures when other therapies have failed. INTEGRA® DRT is manufactured and distributed by Integra LifeSciences located in New Jersey.

INTEGRA® DRT is a biodegradable product made up of two layers (called the "neoskin"). The outer layer is a thin silicone film which acts as the epidermis, protecting from infection and controlling heat and moisture loss. The inner layer, made to resemble the dermis, is a porous matrix made up of cow collagen (protein) and glycosaminoglycan from shark cartilage. This layer acts as a framework which allows the regeneration of dermal skin cells into the matrix, producing a new, functional dermal skin layer.



At the time of surgery, INTEGRA® DRT is placed in the area of the removed (injured or scarred) tissue and fluids immediately begin to occupy the matrix. Over the next 7-14 days, dermal skin cells travel into the template, vascular formation progresses, and the INTEGRA® collagen is gradually replaced by the body's natural collagen produced from the new skin cells. On the 21<sup>st</sup> day after the initial surgery, the silicone layer is removed. By now, the biodegradable collagen template has absorbed into the body, leaving the newly functional skin. An epidermal autograft, 4 mm – 6 mm thick, is

applied over the new dermal skin to close the wound. The regenerated skin should be completely healed and fully functional within 25-56 days from surgery.

INTEGRA® DRT is a huge advantage in the medical world today as compared with older methods of burn or reconstructive surgeries. With the use of INTEGRA®, the dermis is regenerated and grows as the patient grows and the dermis maintains shape and strength. Since the epidermal graft is only a few millimeters thick, the donor site is able to heal quicker and leaves less scarring than other grafting techniques. After surgery, the skin is left smooth, evenly healed, and flexible. The surgery enables immediate wound closure, does not require the patient to wear temporary coverings over the wound, and to this date, there have been no reports of rejection of the artificial skin.

There are not many risks, however, the most common complication is infection (sepsis), but these infection rates were consistent with the rates of other burn surgeries. There is a possibility that infection can lead to the loss of the INTEGRA® Template. This product is not intended for use by patients that are allergic to cow collagen or silicone or infected patients. The product has not yet been tested on pregnant women.

The FDA has approved the INTEGRA® DRT for the described uses. This product has also received a CE Mark as a class III medical device in Europe. The product costs about \$2,000 for an 8x10 inch sheet and is usually covered by health insurance.

### **Sources:**

<http://seattlepi.nwsource.com/local/burn231.shtml>  
<http://www.skinhealing.com>  
<http://www.integra-ls.com>  
<http://www.fda.gov>  
<http://www.plasticsurgery.org>  
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