

# Integra™

Wound Matrix and Bilayer Wound Matrix

TRAUMA  
CASE STUDIES



INTEGRA™   
LIMIT UNCERTAINTY

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### Robert Reddix, MD

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## Integra™ Bilayer Wound Matrix

Limit uncertainty with a matrix designed for immediate wound closure. Integra™ Bilayer Wound Matrix is an advanced wound care device comprised of a porous matrix of cross-linked bovine tendon collagen and glycosaminoglycan and a semi-permeable polysiloxane (silicone) layer. The semi-permeable silicone membrane controls water vapor loss, provides a flexible adherent covering for the wound surface, and adds increased tear strength to the device. It provides a scaffold for cellular invasion and capillary growth. The scaffold is eventually remodeled as the patient's cells rebuild the damaged site.

## How Integra™ Bilayer Wound Matrix Functions

Integra™ Bilayer Wound Matrix is placed on a surgically debrided or excised wound, it provides the needed framework for the blood vessels and dermal cells to remodel the damaged site.

As skin cells migrate into the matrix, the collagen is slowly absorbed and replaced with collagen produced from the person's own cells. In approximately 14 to 21 days, the scaffold is remodeled as the patient's cells rebuild the damaged site and the silicone layer is removed. Complete wound closure occurs as epidermal cells migrate from the wound edges. For larger wounds, a thin skin graft of the patient's epidermis may be applied to the wound area to facilitate complete wound closure. Wound closure is typically complete within 30 days. The patient is left with a healed wound created from their own tissue.

## Matrix Properties

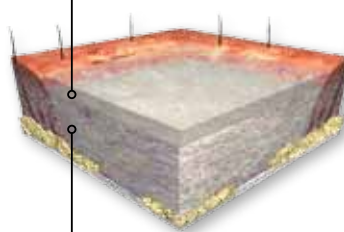
Porous matrix of fibers of cross-linked Collagen/ Glycosaminoglycan (GAG)

- Pore volume fraction of 98%
- Average pore diameter is 130  $\mu\text{m}$
- Collagen/GAG ratio of 92/8 (type I bovine tendon collagen/chondroitin 6-sulfate)
- Specified resistance to degradation by collagenase
- In vivo degradation rate,  $T \approx 30$  days

## How it Works

### Semi-permeable silicone membrane

- Controls water vapor loss
- Provides a flexible adherent covering
- Adds increased tear strength



### Collagen-glycosaminoglycan biodegradable matrix

- Provides a scaffold for cellular invasion and capillary growth
- Scaffold is eventually remodeled as the patient's cells rebuild the damaged site

## Summary of Wound Bed Preparation

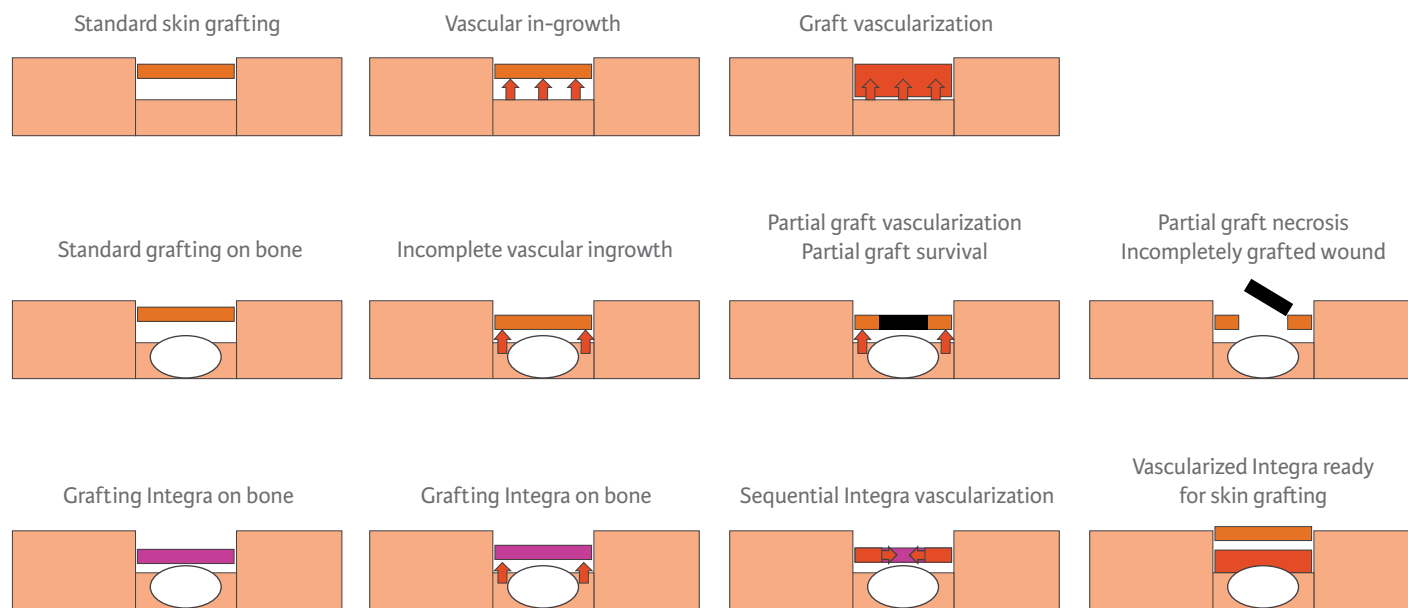
- A prepared wound bed must be free from contamination and infection. All necrotic and devitalized tissue must be removed. Pre-Operative routines should follow normal surgical center protocols. This may include the use of systematic broad spectrum antibiotics. If wound infection is detected, treat topically and/or systemically according to unit protocols.
- Achieve an adequate vascular supply prior to the application of Integra™ Bilayer Wound Matrix. Punctate, uniform capillary bleeding indicates adequate removal of the affected tissue. Signs of a viable wound bed include white dermis, pure yellow fat, and glistening fascia.
- The wound bed must be dry with no signs of bleeding. Meticulous hemostasis needs to be achieved to prevent hematomas or excessive fluid accumulation. Epinephrine, pinpoint electrocautery, thrombin spray, thrombin-soaked gauze, or other topical hemostats should be used. Avoid broad area cauterization, which can lead to devitalized tissue.
- To ensure intimate contact with Integra™ Bilayer Wound Matrix the wound bed must be uniform and flat. Achieve level tissue planes and when necessary, marsupialize edges to avoid large step-offs between the wound bed and normal skin.

## Schematic demonstrating how Integra works

(Top) Standard split-thickness grafting requires vascular ingrowth for successful vascular ingrowth and graft take.

(Center) Because cortical bone and tendon are poorly vascularized, there is incomplete vascular ingrowth into a split-thickness graft over these tissues. Graft is unable to be sustained while waiting for delayed vascular ingrowth.

(Bottom) Because Integra is not reliant on vascular ingrowth, vascularization over a period of several weeks can be accomplished and split-thickness grafting can be performed over a well-vascularized bed of neodermis.

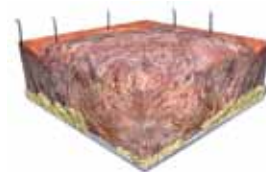


## Clinical Sequence

### Day 0: Pre-Treatment

All traumatic wound patients must have accurate diagnosis and treatment of underlying disease and risks. There must be thorough pre-operative control of inflammation, ulceration, debris and bioburden, and edema (as best as the disease and available treatments permit).

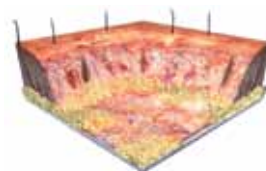
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### Day 1: Debridement

Prepare wound bed using standard methods to ensure wound is free of debris and necrotic tissue. Regardless of how well the wound has been prepared and how healthy it looks, Integra™ Bilayer Wound Matrix must not be placed on an existing wound surface. The entire existing wound must be completely excised or surgically debrided to ensure the wound bed and edges contain viable tissue.

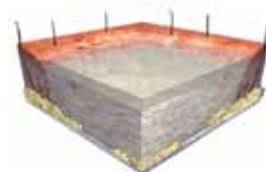
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### Day 1: Application

Integra™ Bilayer Wound Matrix is applied to the excised wound bed. Fluids invade the matrix within minutes of application, adhering it to the wound. The Integra must conform to and contact the wound surface. Tension within the material will shear the matrix from the silicone, so the material must not be stretched. It can be affixed with sutures, staples, or any suitable alternative.

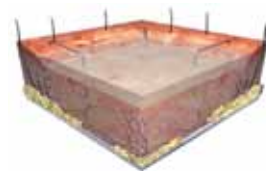
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### Day 7-14: Cellular Invasion and Capillary Growth

Dermal cells begin migrating into the matrix and establish a new vascular network. The scaffold is eventually remodeled as the patient's cells rebuild the damaged site.

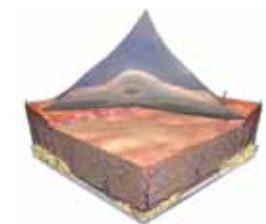
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### Day 21+: Silicone Removal

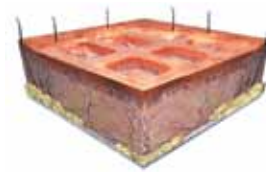
The silicone layer is removed. The collagen template biodegrades and is absorbed into the body.

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### Day 21-56: Wound Closure

Epidermal cells migrate from the wound edges to complete wound closure. For larger wounds, a thin epidermal autograft may be considered to facilitate wound closure. A thin 0.004 – 0.006 in. (0.1016 - 0.1524 mm) epidermal autograft may be applied over the new remodeled skin. Epidermal coverage over the wound yields a permanent and lasting wound closure.



# Surgeon Profiles

## Vineet Mehan, MD

Dr. Mehan completed his doctorate in medicine from the MCP-Hahnemann School of Medicine, Drexel University in 2000. As a resident, he trained in the Department of Surgery from 2000-2005 at Einstein Medical Center and in the Department of Plastic Surgery from 2005-2008 at Brown University. Dr. Mehan has been in private practice at the Greater Washington Plastic Surgery Associates since 2008.

Dr. Mehan's Case Studies are featured on pages 12-17

## Robert Reddix, MD

Dr. Reddix obtained his doctorate of medicine from the Baylor College of Medicine, Houston, Texas. He also holds a bachelors degree in Mechanical Engineering (Aerospace) from the United States Military Academy at West Point. Along with being a member of the leading Medical associations of the country, Dr. Reddix is involved in several research projects. He is the Director of Orthopaedic Trauma at John Peter Smith Hospital in Fort Worth, TX.

Dr. Reddix's Case Studies are featured on pages 6-8

## Daniel R. Schlatterer, DO, MS

Dr. (Daniel) Schlatterer received his doctorate of Osteopathy in 1999 from The New York College of Osteopathic Medicine, NY. He completed his surgical internship at Montefiore Medical Center in Bronx, NYC, and his orthopaedic residency at The University of Buffalo, Buffalo, NY. An Orthopaedic Trauma Fellowship was then completed at Wake Forest University in Winston-Salem, NC in 2005. He is currently the Vice Chairman, Orthopaedic Surgery Residency Program and the Associate Director of Orthopaedic Trauma at Atlanta Medical Center, Atlanta, Georgia. Dr. Schlatterer's clinical research interests include management of traumatic soft tissue wounds.

Dr. Schlatterer's Case Studies are featured on pages 9-11

# Case Study 1

Case study and pictures courtesy of Robert Reddix, MD, Fort Worth, Texas

**Type of Wound:** Left open pilon fracture with a traumatic opening measuring 10 cm

**Mechanism of Injury:** Motor vehicle accident with ejection

**Patient:** 14 year-old female

The patient is a 14 year-old female involved in a motor vehicle accident with ejection. In addition to her traumatic brain injury, she also suffered a left open pilon fracture with the traumatic opening initially measuring 10 cm x 4 cm (Figures 1-1 and 1-2). On the night of presentation, she underwent irrigation and debridement of her wound. There was also placement of an ankle spanning external fixator device as well as Negative Pressure Wound Therapy (NPWT). Due to gross contamination of her wound, she underwent three serial debridements prior to definitive open reduction and internal fixation of her fracture on post injury day #11. Four days later she underwent Integra placement and NPWT at -75 mm Hg continuous setting for 10 days, after which she had an uneventful split thickness skin graft placement. At her final follow-up, three months later, the wounds had an excellent clinical outcome and she had returned to normal activity (Figure 1-3).



Intraoperative photo of traumatic wound at the time of Integra placement



Clinical Photo three months after Integra placement

“In this patient’s case, Integra allowed coverage of exposed bone and soft tissues in preparation for split thickness skin grafting.”

-Dr. Reddix

# Case Study 2

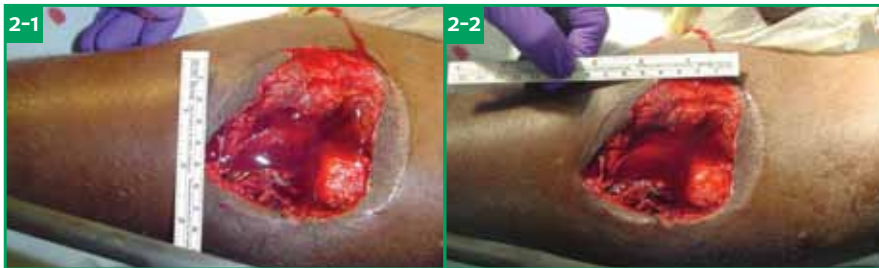
Case study and pictures courtesy of Robert Reddix, MD, Fort Worth, Texas

**Type of Wound:** Grade III B open tibia fracture

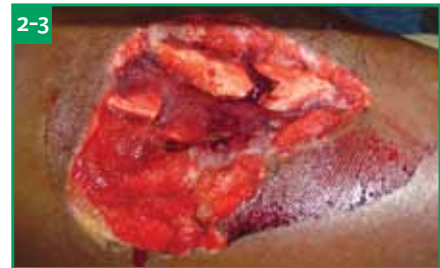
**Mechanism of Injury:** Gun shot wound with a large caliber handgun at close range

**Patient:** 23 year-old male

The patient is a 23 year-old African American male who was shot in his left tibia at close range with a large caliber handgun. On the date of injury, he underwent irrigation and debridement of his traumatic wound (Figures 2-1 and 2-2). He also received placement of a leg spanning external fixator device and application of Negative Pressure Wound Therapy (NPWT) for his 8 cm x 6 cm wound. Six days later he underwent open reduction and internal fixation of his fracture with bone grafting (Figure 2-3), as well as Integra placement (Figure 2-4) and NPWT (Figures 2-5 and 2-6). Ten days later he received a gastrocnemius rotational flap for coverage of his wound, as well as split thickness skin grafting and application of NPWT for 5 additional days. At final follow-up four months later he had excellent soft tissue coverage and had returned to normal activities (Figures 2-7 and 2-8).



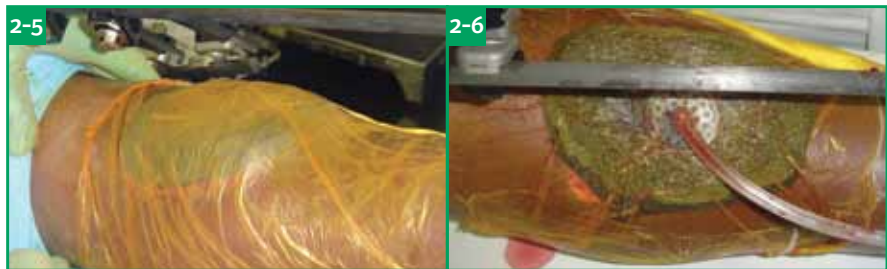
Intraoperative photographs of the traumatic wound on the date of injury



Intraoperative photograph of traumatic wound after 6 days of NPWT



Intraoperative photograph of wound after placement of Integra



Intraoperative photograph of wound with Integra and NPWT



Clinical photograph of appearance of the wound four months after Integra placement, gastrocnemius rotational flap coverage, and split thickness skin grafting

“In this case, Integra served as an intermediate covering over exposed hardware and bone in preparation for flap coverage.”

-Dr. Reddix



# Case Study 3

Case study and pictures courtesy of Robert Reddix, MD, Fort Worth, Texas

**Type of Wound:** Below the knee amputation

**Mechanism of Injury:** Motorcycle accident

**Patient:** 51 year-old female

The patient is a 51 year-old female involved in a motorcycle accident. As a result of her multiple orthopaedic injuries, she underwent a left below knee amputation that subsequently became infected with fungal species (Figures 3-1 and 3-2). After multiple debridements and culture specific intravenous antibiotics to clear her infection, Integra was placed over the area with placement of Negative Pressure Wound Therapy (NPWT) at -75 mm Hg continuous setting for 16 days. She subsequently underwent uneventful split thickness skin graft placement (Figure 3-3). At final follow-up three months later, her wounds had an excellent clinical outcome.



Intraoperative photograph of below knee amputation site just prior to Integra placement



Clinical photograph of wound three months after split thickness skin grafting

“The use of Integra here provided a uniform surface for split thickness skin grafting to make this amputation stump more conducive to prosthetic usage.”

-Dr. Reddix

# Case Study 4

Case study and pictures courtesy of Daniel R. Schlatterer, DO, MS; Atlanta, GA

**Type of Wound:** Grade III B open tibia fracture

**Mechanism of Injury:** Tour bus operator, the bus rolled over

**Patient:** 40 year-old male, otherwise healthy

The patient is a 40 year-old male who was injured when the tour bus he was driving rolled over. He was admitted to the trauma service with closed fractures of the humerus, acetabulum, femur, and a grade III B tibia fracture (III B indicating an open fracture requiring bony coverage with a local or free muscle flap). Debridement took place immediately upon admission and then on hospital days (HD) #3 and #12. Plastic surgery placed a latissimus dorsi free muscle flap on HD #12. The initial tibia/leg wound was 10 cm x 25 cm with an exposed bony area of 4 cm x 15 cm (Figure 4-1). The latissimus dorsi free flap covered all of the bone, however a 1 cm x 3 cm area of tibia bone became re-exposed two months later (Figures 4-3 and 4-4). The key point of this newly exposed bone was that it did not bleed when drilled to check for vascularity. Furthermore, and most important, options for repeat bony coverage were limited. The local muscle bed was not suitable for a rotational flap and a free flap had already been placed. Bony coverage was attained through the application of Integra and Split Thickness Skin Grafting (STSG). The Integra most likely incorporated from a side-to-side direction as opposed to the typical integration from the wound bed up. This was possible due to the small size of the lesion, which had a distance no greater than one centimeter from any one wound edge to another. The Integra Bilayer Wound Matrix was “pie-crusting” and slits were created to facilitate Negative Pressure Wound Therapy (NPWT). The Integra was set in place for nine days with NPWT prior to STSG application (silicone layer must be removed before STSG). The NPWT was used for an additional four days over the STSG/Integra before the NPWT was removed. The NPWT was always on a continuous setting of -125 mm Hg. Definitive fixation for the tibia fracture involved removing the uniplanar external fixator and placing a multiplanar circular external fixator. The tibia united without any sequelae.



4-1  
Intraoperative photo at time of free latissimus dorsi muscle flap placement (10/11/05)



4-2  
AP radiograph of the tibia and fibula on the day of presentation



4-3  
Intraoperative photos of the exposed tibia roughly two months after free muscle flap placement. The close-up image in Figure 4-4 reveals the three attempts at drilling into the bone. No bleeding was noted at any time from the bone. (12/10/05)



4-4  
The close-up of image 4-3



4-5  
4-6  
Clinical photos eight months after placement of Integra and STSG. No signs of failure, full healing noted. (8/2006)

“In this particular case the Integra and STSG provided coverage to a small avascular bony area. A local rotational muscle flap would have been very challenging in this situation, as would a second free muscle flap. The patient continues to do well and has been gainfully employed for several years. Most recent telephone contact was in August 2010.”

-Dr. Schlatterer

# Case Study 5

Case study and pictures courtesy of Daniel R. Schlatterer, DO, MS, Atlanta, GA

**Type of Wound:** Mangled lower extremity

**Mechanism of Injury:** Motorcycle collision

**Patient:** 48 year-old male, otherwise healthy

The patient was involved in a motorcycle collision in September of 2008. The mangled lower extremity could not be salvaged (Figure 5-1) and a Below Knee Amputation (BKA) was performed at an outside facility. The remaining muscles were rearranged to cover the tibial stump, however there was insufficient skin to cover the muscle (Figure 5-2). The muscle bed was healthy enough to support application of a Split Thickness Skin Graft (STSG), however, a STSG alone was thought to be potentially insufficient to withstand the demand of a prosthesis over the stump. A decision was made to first cover the muscle with Integra and then seven days later apply a STSG (Figures 5-3 and 5-4).

In summary, the mangled lower extremity underwent a below knee amputation at the time of admission. Then, serial debridements were conducted every other day for a week. Once the wound bed stabilized, Integra™ Bilayer Wound Matrix was “pie-crust” in order to facilitate Negative Pressure Wound Therapy (NPWT) for one week. The silicone layer was removed, followed by an application of STSG, and NPWT for five more days. The NPWT was always on a continuous setting of -125 mm Hg. Heterotopic Ossification (HO) developed three months after stump coverage. Development of HO is not uncommon in traumatic amputations. Excision of the HO was successful, and the patient is tolerating the use of a prosthesis.



Mangled lower extremity on day of injury



Below knee amputation site after one week of serial debridements



One week after application of Integra and NPWT



Intraoperative photo after placement of STSG over the Integra



14 days after application of STSG and NPWT

“Normally a BKA incorporates a posterior muscle and skin flap for coverage of the bony stump. In this particular case, the Integra and STSG provided a durable dermal substitute.”

-Dr. Schlatterer

# Case Study 6

Case study and pictures courtesy of Daniel R. Schlatterer, DO, MS, Atlanta, GA

**Type of Wound:** Open Ankle Fracture with additional exposed muscle, tendon, and bone proximal to the ankle fracture

**Mechanism of Injury:** Blunt trauma in a factory setting

**Patient:** 34 year-old female, otherwise healthy

The patient is a 34 year-old female who suffered blunt trauma to her leg while in a warehouse. The patient was treated within 24 hours of admission with debridement and definitive fixation of the ankle fracture. At this same index surgery, Integra was applied in conjunction with Negative Pressure Wound Therapy (NPWT) to the medial leg. Overall, the wound was 6 cm x 27 cm with the following proportions: 3 cm in length of exposed medial tibial diaphysis with no periosteum, 12 cm in length of exposed medial tibial diaphysis with periosteum, and 12 cm in length of exposed tendons (Figure 6-1). The Integra Bilayer Wound Matrix was “pie-crusting” and slits were created to facilitate NPWT. Integra and NPWT were on the wound for four days (Figures 6-2 and 6-3). The silicone layer was removed and a Split Thickness Skin Graft (STSG) and NPWT were applied over the Integra for six more days (Figures 6-5 and 6-6). The NPWT was always on a continuous setting of -125 mm Hg. The grafts healed uneventfully (Figures 6-7 and 6-8). At nearly a year later there have been no complications in terms of graft failure or infection.



6-1 Medial aspect of left leg and ankle on day of injury



6-2 Application of Integra over the medial leg wound. The Integra is covering exposed tendons and bone



6-3 Intraoperative photo four days after Integra placement. The silicone layer is being removed and a STSG will be placed. Care is taken to not pull up the Integra collagen layer



6-4 Intraoperative photo just after placement of the STSG and NPWT over the STSG



6-5 Clinical photos four months after Integra and STSG



6-7 Ankle radiograph on day of injury and post-operative image seven months later

“In this particular case the patient had exposed tendons and bone on the medial aspect of the distal leg. Successful dermal replacement was achieved using Integra, STSG, and NPWT. This treatment protocol negated the need for complex and potentially morbid procedures including muscle flaps.”

-Dr. Schlatterer

# Case Study 7

Case study and pictures courtesy of Vineet Mehan, MD, Annandale, VA

**Type of Wound:** Gustillo 3c injury to the lower extremity

**Mechanism of Injury:** ATV accident

**Patient:** Eight year-old female

Patient was presented with approximately 15 cm x 15 cm large soft tissue defect with bone exposure. She received multiple debridements and had hardware placed by the orthopaedic surgeons. An anterolateral thigh free flap was utilized. The medial portion of the wound had both tendon and hardware exposure. Integra was elected for coverage of the area. A bolster was not utilized to prevent any pressure on the free flap. Skin grafting occurred three weeks after the free flap coverage.



7-1 Gustillo 3c injury to LE



7-2 Large, soft tissue defect with bone exposure



7-3 After multiple debridements and placement of hardware by ortho



7-4 At time of soft tissue coverage



7-5 Hardware exposed requiring coverage



7-6 ALT free flap coverage. Medial portion of wound had tendons and hardware exposed. Integra was elected for coverage of this area. No bolster was utilized to prevent any pressure on free flap.



7-7 At time of skin grafting three weeks after free flap coverage



7-8 Skin graft complete



7-9

(Continued on page 13)

# Case Study 7 (Continued from page 12)



Approximately two weeks after skin grafting



Approximately six months after skin grafting



Free flap



Integra and skin graft. Pinchable skin graft

“Integra allowed me to salvage a case where the area of wound was larger than free flap selected. It allowed for a durable, pliable, and soft coverage of an area with significant motion in an Eight year-old patient.”

-Dr. Mehan

# Case Study 8

Case study and pictures courtesy of Vineet Mehan, MD, Annandale, VA

**Type of Wound:** Internal degloving to the lower extremity

**Mechanism of Injury:** Motorcycle Accident

**Patient:** 32 year-old male

This patient was involved in a motorcycle accident with a total wound size 20 inches (50 cm) by 15 inches (38 cm). After staged debridements and Negative Pressure Wound Therapy (NPWT), the patellar tendon was exposed. His knee joint was at severe risk for stiffness. Integra was applied for coverage. The NPWT was left on continuously after the silicone was removed. Manipulation under anesthesia by orthopaedic surgeon also resulted in additional tear to the patellar tendon. Area was primarily repaired and Integra was left intact on the surface. A skin graft was applied six weeks after initial debridement, and four weeks after Integra placement. Six months after grafting, patient had full range of motion.



8-1 Internal degloving injury after motorcycle accident. Prior to any debridement



8-3 After staged debridement and VAC. Patellar tendon exposed. Knee joint also at risk for stiffness. Integra was chosen for coverage.



8-4 Exposed patellar tendon



8-5 Patellar tendon still exposed



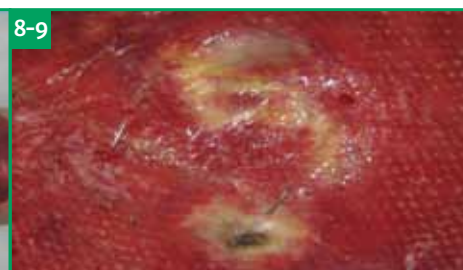
8-6 Placement of Integra



8-7 After Integra placement



8-8 Approximately three weeks after Integra placement



8-9

(Continued on page 15)

## Case Study 8 (Continued from page 14)



8-10  
VAC left on after removal of silicone.  
MUA by ortho also resulted in additional  
tear to patellar tendon secondary to stiffness



8-11  
Skin grafting



8-12  
Two months after grafting



8-13  
Six months after grafting.  
Full range of motion

“In this case, Integra allowed for full range of motion on a large degloving wound that would not have been possible with simple skin grafting.”

-Dr. Mehan



# Case Study 9

Case study and pictures courtesy of Vineet Mehan, MD, Annandale, VA

**Type of Wound:** Ankle Fracture

**Mechanism of Injury:** Motor vehicle accident

**Patient:** 19 year-old female

The young active patient had an ankle fracture and subsequent erythema and cellulitis one year after initial presentation. During the initial debridement, there was exposure of the ankle joint, bone, and soft tissue which measured 3 cm x 5 cm in size. Integra Wound Matrix was placed under the local rotational flap and also utilized on the donor site. Three months after skin grafting, the patient had full ankle range of motion and had resumed coaching of gymnastics.



MVA ankle fracture and subsequent erythema and cellulitis one year after initial presentation



At time of initial debridement, exposure of ankle joint, bone with soft tissue defect.



Bony and soft tissue defect



Prior to flap coverage after debridement



Local rotational flap coverage with Integra buried and also utilized for donor site



Placement of Integra in the office two weeks out



Skin grafting



Two to three weeks after skin grafting



Three months after skin grafting. Patient has full ankle ROM and is now coaching gymnastics and occasionally demonstrating

“Integra was used in this case to fill dead space over even potentially contaminated bone sites as well as to address the scarring on donor sites. It allowed for a smaller procedure for coverage and in my opinion saved this patient from a free tissue transfer.”

-Dr. Mehan

# Case Study 10

Case study and pictures courtesy of Vineet Mehan, MD, Annandale, VA

**Type of Wound:** Open Tibia fracture

**Mechanism of Injury:** Motor vehicle accident

**Patient:** 50 year-old male

This patient arrived with an Open Reduction Internal Fixation (ORIF) and closure of the initial soft tissue laceration. He subsequently had exposure of hardware and bone approximately one month after the initial accident and initial ORIF measuring 3 cm x 3 cm. He underwent a staged reconstruction with initial debridement and removal of hardware. Next, he had a placement of antibiotic beads and two washouts. He subsequently underwent a local flap reconstruction with a posterior-based local rotational fasciocutaneous flap. Also, the Integra was placed under the flap, which was on top of the bone. Integra was also placed on the donor site. Final coverage was obtained with a skin graft.



Resolved wound and the fasciocutaneous rotational flap which has been elevated. The fracture line is visible and is exposed prior to coverage



Flap elevated and rotated. Integra has been buried underneath the flap. The bilaminar matrix was placed on the donor site



One and a half weeks out post-operative from the skin graft. Flap is entirely viable and the skin graft has taken nicely



Post-operative results one to two weeks after skin grafting  
As a total of approximately five to six weeks after the original debridement procedure

“Once again, Integra allowed for filling of dead space that is often difficult to address with local flaps in lower third defects of the leg. In this case, we were able to address another lower third soft tissue defect with a local flap and Integra, without needing large free tissue transfer.”

-Dr. Mehan

## Integra™ Bilayer Wound Matrix

### Indications

Integra™ Bilayer Wound Matrix is indicated for the management of wounds, including partial and full-thickness wounds, pressure ulcers, venous ulcers, diabetic ulcers, chronic vascular ulcers, surgical wounds (donor sites/grafts, post-Moh's surgery, post-laser surgery, podiatric, wound dehiscence), trauma wounds (abrasions, lacerations, second-degree burns, skin tears), and draining wounds. The device is intended for one-time use.

### Contraindications

This device should not be used in patients with known sensitivity to bovine collagen or chondroitin materials. The device is not indicated for use in third-degree burns.

## Integra™ Meshed Bilayer Wound Matrix

### Indications

Integra™ Meshed Bilayer Wound Matrix is indicated for the management of wounds including: partial and full-thickness wounds, pressure ulcers, venous ulcers, diabetic ulcers, chronic vascular ulcers, surgical wounds (donor sites/grafts, post-Moh's surgery, post-laser surgery, podiatric, wound dehiscence), trauma wounds (abrasions, lacerations, second-degree burns, and skin tears) and draining wounds. Integra Meshed Bilayer Wound Matrix may be used in conjunction with negative pressure wound therapy. The device is intended for one-time use.

### Contraindications

This device should not be used in patients with known sensitivity to bovine collagen or chondroitin materials. This device is not indicated for use in third-degree burns.

When used with Negative Pressure Wound Therapy, follow Contraindications for the specific Negative Pressure Wound Therapy device utilized, such as in the presence of:

- Exposed arteries, veins, organs, anastomotic sites or nerves
- Malignancy in the wound
- Untreated osteomyelitis
- Untreated malnutrition
- Necrotic tissue (with or without eschar present)
- Non-enteric and unexplored fistulas
- Sensitivity to silver (if silver dressings are used)

## Integra™ Wound Matrix

### Indications

Integra™ Wound Matrix is indicated for the management of wounds, including partial and full-thickness wounds, pressure ulcers, venous ulcers, diabetic ulcers, chronic vascular ulcers, tunneled/undermined wounds, surgical wounds (donor sites/grafts, post-Moh's surgery, post-laser surgery, podiatric, wound dehiscence), trauma wounds (abrasions, lacerations, second-degree burns, skin tears), and draining wounds. The device is intended for one-time use.

### Contraindications

This device should not be used in patients with known sensitivity to bovine collagen or chondroitin materials. The device is not indicated for use in third-degree burns.

### Integra™ Bilayer Wound Matrix

| Catalog Number | Size                          | Units/Case    |
|----------------|-------------------------------|---------------|
| BMW2021        | 2 in x 2 in (5 cm x 5 cm)     | 1 Sheet/Box   |
| BMW202         | 2 in x 2 in (5 cm x 5 cm)     | 5 Sheets/Case |
| BMW4051        | 4 in x 5 in (10 cm x 12.5 cm) | 1 Sheet/Box   |
| BMW405         | 4 in x 5 in (10 cm x 12.5 cm) | 5 Sheets/Case |
| BMW4101        | 4 in x 10 in (10 cm x 25 cm)  | 1 Sheet/Box   |
| BMW410         | 4 in x 10 in (10 cm x 25 cm)  | 5 Sheets/Case |
| BMW8101        | 8 in x 10 in (20 cm x 25 cm)  | 1 Sheet/Box   |
| BMW810         | 8 in x 10 in (20 cm x 25 cm)  | 5 Sheets/Case |

### Integra™ Wound Matrix

| Catalog Number | Size                          | Units/Case    |
|----------------|-------------------------------|---------------|
| 52021          | 2 in x 2 in (5 cm x 5 cm)     | 1 Sheet/Box   |
| 52025          | 2 in x 2 in (5 cm x 5 cm)     | 5 Sheets/Case |
| 54051          | 4 in x 5 in (10 cm x 12.5 cm) | 1 Sheet/Box   |
| 54055          | 4 in x 5 in (10 cm x 12.5 cm) | 5 Sheets/Case |
| 54101          | 4 in x 10 in (10 cm x 25 cm)  | 1 Sheet/Box   |
| 54105          | 4 in x 10 in (10 cm x 25 cm)  | 5 Sheets/Case |
| 58101          | 8 in x 10 in (20 cm x 25 cm)  | 1 Sheet/Box   |
| 58105          | 8 in x 10 in (20 cm x 25 cm)  | 5 Sheets/Case |

### Integra™ Meshed Bilayer Wound Matrix

| Catalog Number | Size                          | Units/Case    |
|----------------|-------------------------------|---------------|
| MWM2021        | 2 in x 2 in (5 cm x 5 cm)     | 1 Sheet/Box   |
| MWM202         | 2 in x 2 in (5 cm x 5 cm)     | 5 Sheets/Case |
| MWM4051        | 4 in x 5 in (10 cm x 12.5 cm) | 1 Sheet/Box   |
| MWM405         | 4 in x 5 in (10 cm x 12.5 cm) | 5 Sheets/Case |
| MWM4101        | 4 in x 10 in (10 cm x 25 cm)  | 1 Sheet/Box   |
| MWM410         | 4 in x 10 in (10 cm x 25 cm)  | 5 Sheets/Case |
| MWM8101        | 8 in x 10 in (20 cm x 25 cm)  | 1 Sheet/Box   |
| MWM810         | 8 in x 10 in (20 cm x 25 cm)  | 5 Sheets/Case |

## Additional product platforms

### Integra™ Flowable Wound Matrix

Integra Flowable Wound Matrix is an advanced wound care matrix comprised of a granulated cross-linked bovine tendon and glycosaminoglycan. The granulated collagen - glycosaminoglycan is hydrated with saline and applied in difficult to access wound sites and tunneled wounds. It provides a scaffold for cellular invasion and capillary growth.

| Catalog Number | Size | Units/Case |
|----------------|------|------------|
| FWD 301        | 3cc  | 1 Unit/Kit |

### Integra® Dermal Regeneration Template

Integra Dermal Regeneration Template is a bilayer membrane system for skin replacement. The dermal replacement layer is made of a porous matrix of fibers of cross-linked bovine tendon collagen and glycosaminoglycan (chondroitin-6-sulfate) that is manufactured with a controlled porosity and defined degradation rate. The epidermal substitute layer is made of a thin polysiloxane (silicone) layer to control moisture loss from the wound.

| Catalog Number | Size                          | Units/Case    |
|----------------|-------------------------------|---------------|
| 32021          | 2 in x 2 in (5 cm x 5 cm)     | 1 Sheet/Box   |
| 32025          | 2 in x 2 in (5 cm x 5 cm)     | 5 Sheets/Case |
| 34051          | 4 in x 5 in (10 cm x 12.5 cm) | 1 Sheet/Box   |
| 34055          | 4 in x 5 in (10 cm x 12.5 cm) | 5 Sheets/Case |
| 34101          | 4 in x 10 in (10 cm x 25 cm)  | 1 Sheet/Box   |
| 34105          | 4 in x 10 in (10 cm x 25 cm)  | 5 Sheets/Case |
| 38101          | 8 in x 10 in (20 cm x 25 cm)  | 1 Sheet/Box   |
| 38105          | 8 in x 10 in (20 cm x 25 cm)  | 5 Sheets/Case |

For more information or to place an order, please contact:

Integra ■ 311 Enterprise Drive, Plainsboro, NJ 08536

USA and Canada: 877.444.1122 ■ 866.800.7742 (Fax)

609.275.0500 (Outside USA) ■ 609.275.5363 (Fax)

[integralife.com](http://integralife.com)

