xenys

The graft revolution

# Cranial reconstructive surgery

# EstRem®: the quality of a bone graft of natural origin

The effectiveness of a bone substitute of xenogeneic origin depends not simply on the origin or quality of the source tissue, but on the ability of the processing method to selectively remove cellular, antigenic and potentially immunogenic components while preserving the integrity of the extracellular matrix (ECM).

For this reason, Tiss'You has developed and patented **EstRem®** (Esterification Cell-Removal Technology): an exclusive tissue-processing method designed to produce fully biocompatible grafts of animal origin while preserving the biological, structural and biomechanical properties of the extracellular matrix.



Equine heterologous bone inside the EstRem® bioreactor

### Fast & effective

Controlled, rapid and effective removal of all potentially immunogenic and antigenic components.

### Fully preserved ECM

Maximum preservation of the graft's biological and biomechanical properties.

### Quality & safety

Bone grafts of outstanding quality and safety.

xenys MATRIX

**Fully preserved extra-cellular matrix**

**Xenys Matrix** is Tiss'You's new range of high-quality natural bone grafts with a fully preserved extra-cellular matrix, produced using its EstRem® processing system. Once rehydrated, **Xenys Matrix** grafts behave like natural bone tissue in terms of elastic modulus, hydrophilicity and healing of the bone defect, faithfully reproducing the physiological process of new bone tissue formation.

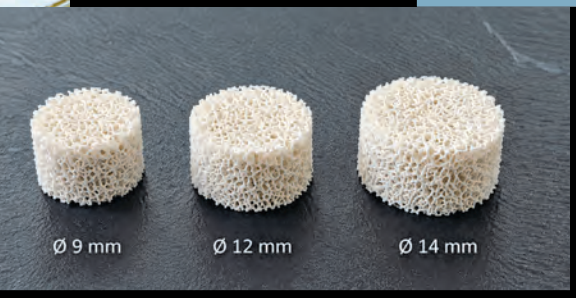
xenys DEM

**Partially demineralized extra-cellular matrix**

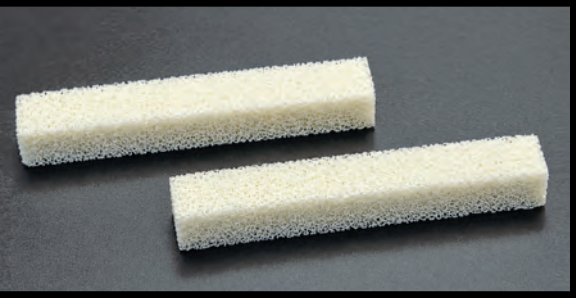
Following the EstRem® process, **Xenys DEM** grafts undergo a controlled demineralization process that gives them truly unique flexibility and elasticity while maintaining the three-dimensional structure of the matrix. Once rehydrated, the cancellous-bone DEM grafts behave like a soft, elastic sponge that readily adapts to the spaces at the implant site, while the cortical plates can be easily bent, rolled, cut, drilled and fixed with screws. Xenys grafts can also be used in combination with haemostatic agents, fibrin glue, growth factors and antibiotics. The latter feature makes them unique and provides strong protective action in cases at risk of infection.

# Product range

| | |
|---|---|
| **XYM-SD0971** | Xenys Matrix cancellous dowel Ø 9 x 7 mm |
| **XYM-SD1271** | Xenys Matrix cancellous dowel Ø 12 x 7 mm |
| **XYM-SD1471** | Xenys Matrix cancellous dowel Ø 14 x 7 mm |
| **XYD-SS608L2** | Xenys DEM cancellous strips 60 x 8 x 10 mm - 2 pcs |
| **XYD-CP2525C1** | Xenys DEM cortical plate 25 x 25 x 0.8 - 1.2 mm |
| **XYD-CP5025C1** | Xenys DEM cortical plate 50 x 25 x 0.8 - 1.2 mm |
| **XYD-CP5050C1** | Xenys DEM cortical plate 50 x 50 x 0.8 - 1.2 mm |




Xenys MATRIX Cancellous Dowels



Xenys DEM Cancellous Strips



Xenys DEM Cortical Plates

## Applications in cranial reconstructive surgery

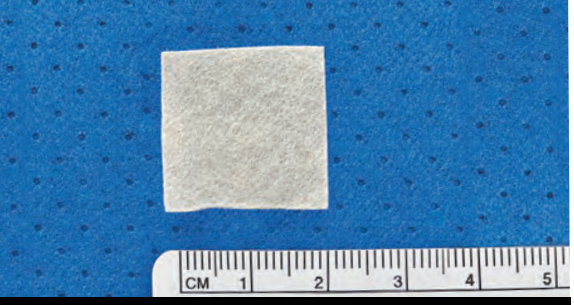
Filling of defects of the cranial vault or skull base resulting from:

**burr holes**

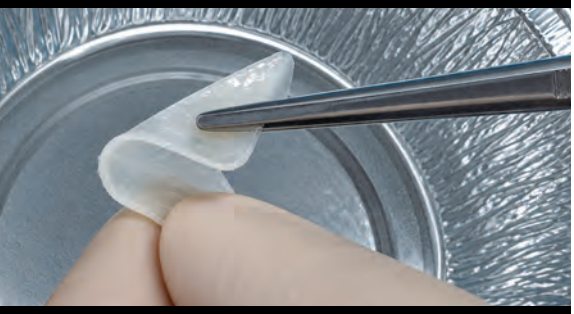
**gaps in the bone flap following craniotomy / craniectomy**

**skull base surgery using transsphenoidal approaches**

# Reconstruction of skull defects via the transsphenoidal approach



Xenys DEM Cortical plate before hydrao



Xenys DEM Cortical plate after hydration



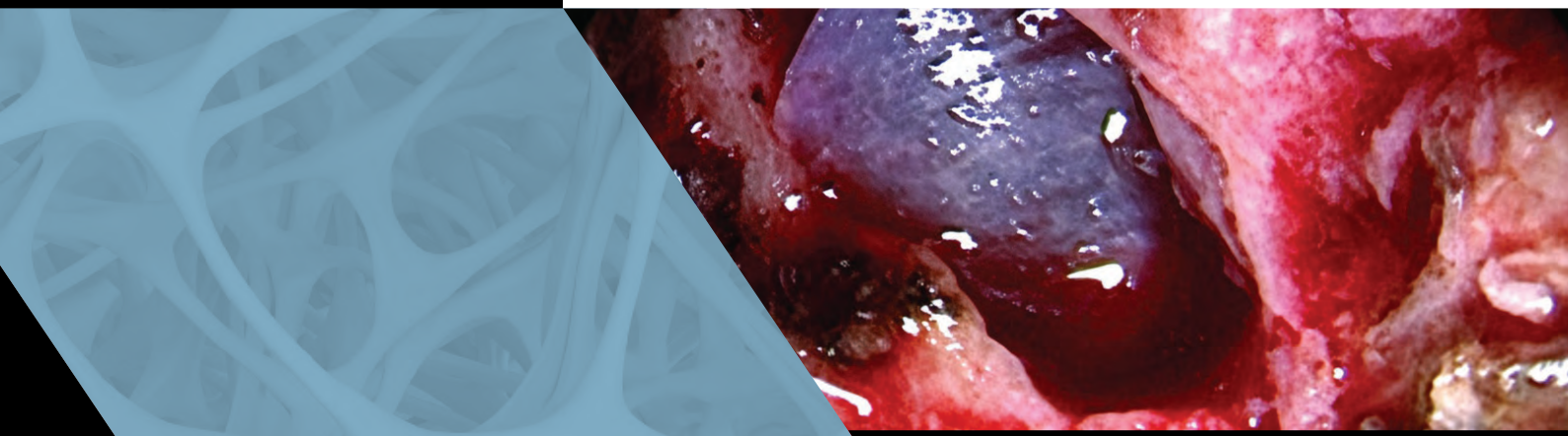
The cortical plate can be easily adjusted to the required size

Once rehydrated for a few minutes in saline solution, the **Xenys DEM** cortical plate becomes highly flexible and malleable, allowing it to be easily adapted to the geometry and dimensions of the skull base defect.

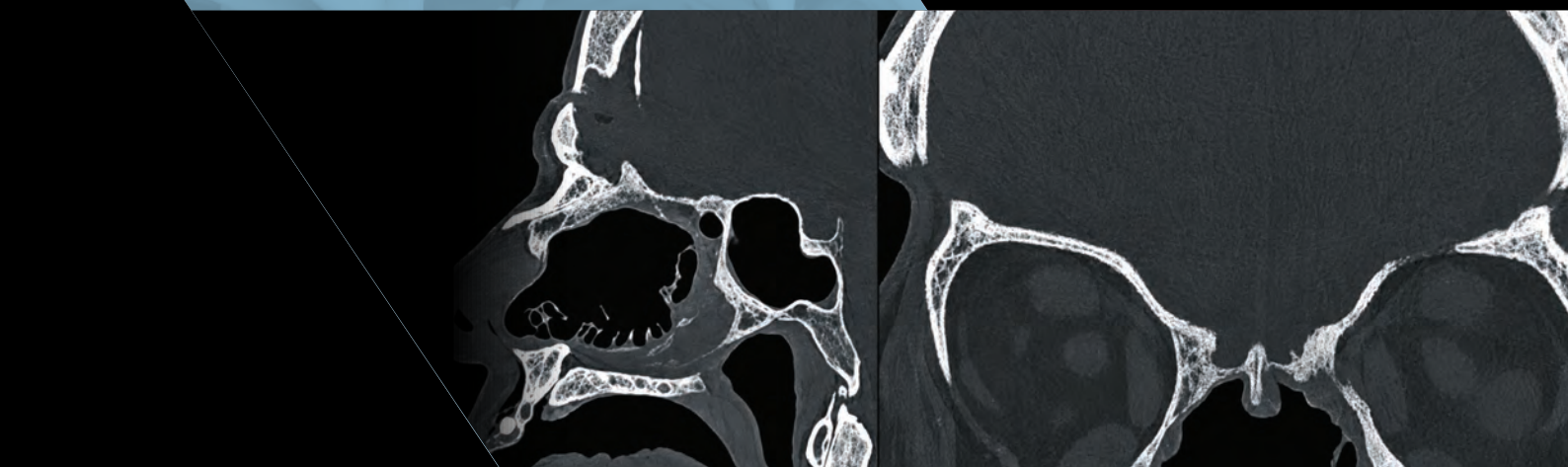
Once shaped as required, the plate can be easily rolled up and introduced transnasally, facilitating placement even through a narrow endoscopic transsphenoidal approach.

Once the reconstruction site has been reached, the plate can be easily unfolded and positioned to cover the defect, conforming to the surface of the skull base and restoring a structural barrier to support reconstruction.

**Images courtesy of Prof. Corrado Iaccarino, Unimore University of Modena and Reggio Emilia**



Revision surgery for sepsis: Transsphenoidal ethmoidal reconstruction with cortical plate



6 months post-operative CT scan

# Cranial reconstruction: continuity & completeness of the reconstruction

Repositioning the cranial bone flap is a key step in the cranioplasty procedure. Completing the reconstruction by integrating the flap with **Xenys MATRIX** and **DEM** bone grafts helps optimize flap fit and restore continuity of the cranial surface.

After the bone flap has been repositioned and secured in its anatomical location, the burr holes can be easily filled with **Xenys MATRIX** cancellous bone dowels, available in diameters of 9, 12 and 14 mm.

They can be inserted easily and precisely using an impactor, helping restore continuity of the bone contour. The flexible **Xenys DEM** cancellous bone strips are designed to address residual peripheral gaps between the bone flap and the surrounding cranial bone.

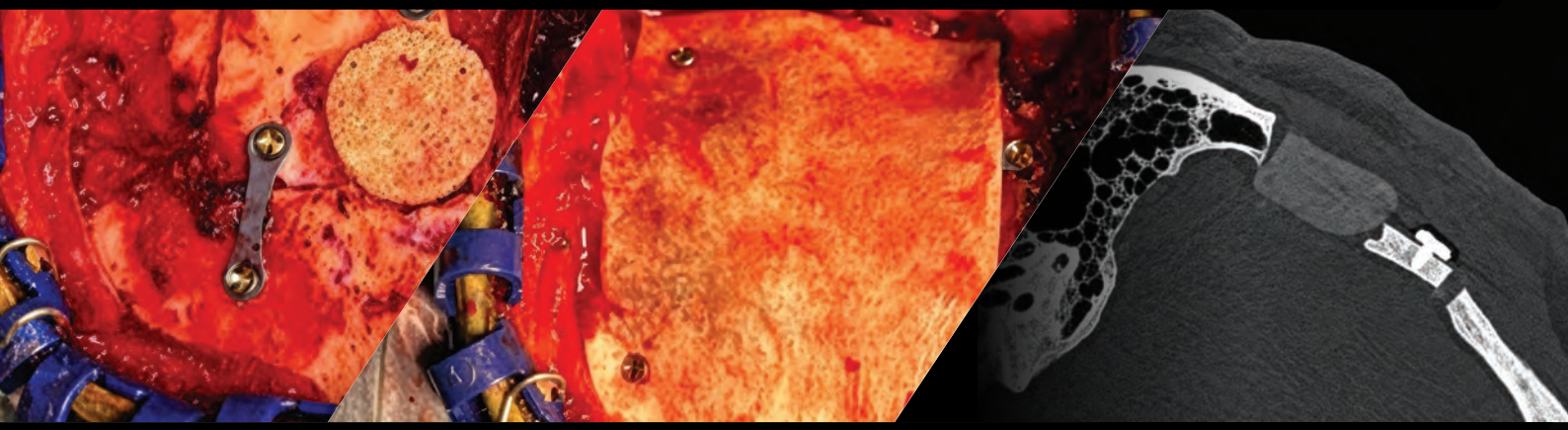
Once rehydrated, including in an antibiotic solution, the strips become highly flexible and can be easily trimmed, shaped and adapted to the geometry of the junction, helping optimize contact between the repositioned flap and the surrounding cranial bone.

**Images courtesy of Prof. Corrado Iaccarino, Unimore University of Modena and Reggio Emilia**

Craniectomy gap filled by cancellous bone

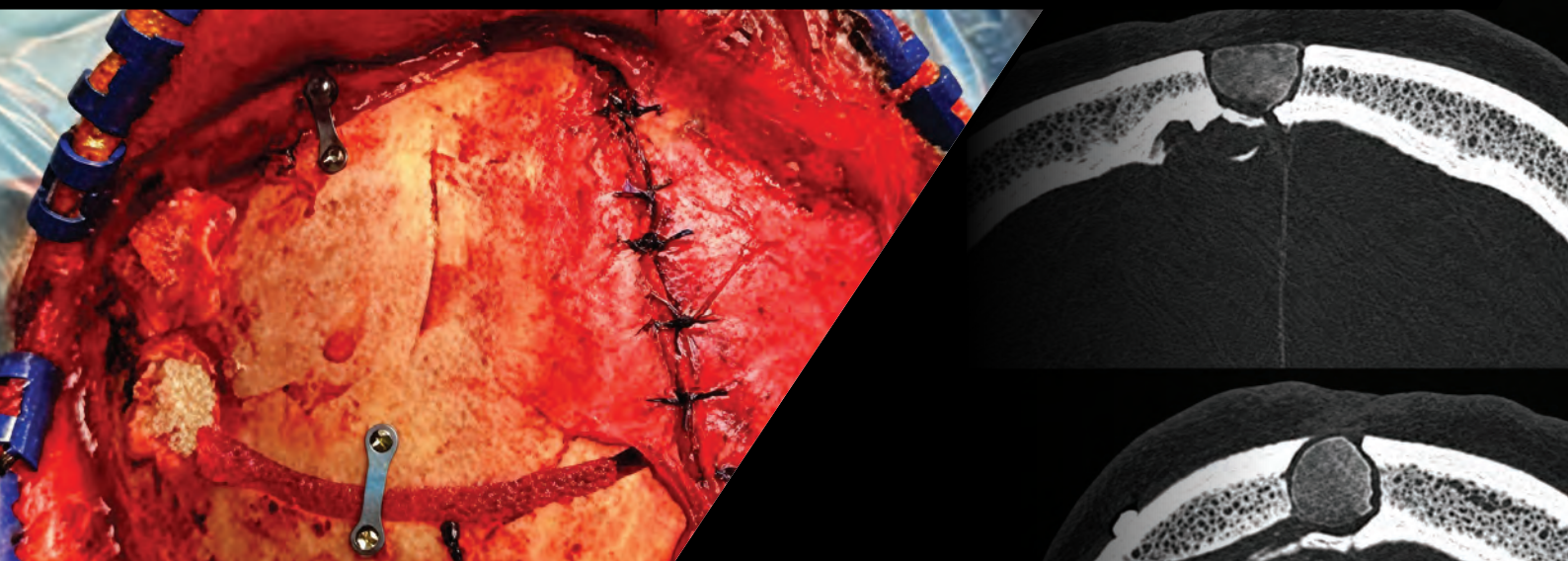
Cortical plate (50 x 50 mm) covers the bone flap

4 months post-operative CT scan



Craniotomy gap filled by cancellous bone

4 months post-operative CT scan



# xenys

The graft revolution

**Xenys** is the line of natural bone graft substitutes of equine origin, for applications in dental and oro-maxillofacial surgery, orthopedics, traumatology and neurosurgery.

## XENYS GRAFTS ARE AVAILABLE IN THE FOLLOWING VARIANTS

### xenys MATRIX

With totally preserved extra-cellular matrix

### xenys DEM

Partially demineralized and flexible

### xenys APATITE

With only natural bone mineral

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