OssDsign is an innovator, designer and manufacturer of implants and material technology for bone regeneration. We are surgeons, scientists and engineers – committed to improving outcomes in cranioplasty and facial reconstructive surgery.

OssDsign currently operates out of its headquarters in Uppsala, Sweden, with in-house product development and manufacturing. By combining the latest clinical insights and implant designs with a proprietary technology platform based on clinical development at Karolinska University Hospital in collaboration with material science experts at Ångström Laboratory at Uppsala University, OssDsign supplies an expanding range of tailored solutions for cranial repair and facial bone reconstruction.

To learn more, visit our website at ossdsign.com

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References:

OssDsign, Data on file, Pending publication

2016-2059 Rev01
OSSDSIGN® CRANIAL PSI
BRINGING LIFE TO CRANIOPLASTY

Low rate of infections
Vascularisation and tissue integration

Improved soft tissue healing
Upregulation of collagen in soft tissue covering the implant

Sustained bone remodelling
Through cell-mediated resorption and stimulation of new bone formation
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PATIENTS

DESERVE A

BETTER

IMPLANT

SOLUTION

STABILITY AND
PROTECTION
Based on the 3D printed titanium skeleton

EASY FIXATION
With predesigned fixation arms

PERFECT AESTHETICS
Based on CAD design and 3D printing

MOSAIC TILE DESIGN
Transfers load to the titanium skeleton
Allows for tissue ingrowth and vascularisation

OUTSTANDING HEALING PROPERTIES
Due to the unique bioceramic material

References:
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Infiltration by blood allows for biochemical signalling leading to production of pro-angiogenic growth factors.

Patient histology 50 months post-implantation of OSSDSIGN Cranial.

Gene expression analysis 9 months following implantation of OSSDSIGN Cranial.

OSSDSIGN Cranial integrated and vascularised at 50 months post-op.

Arrows indicate the borders of OSSDSIGN Cranial.

The hydrophilicity of an implant's surface is known to have a positive effect on the production of pro-angiogenic growth factors, enabling a rapid vascularisation and tissue integration. The picture in the middle shows how OSSDSIGN Cranial, due to its hydrophilic surface, has the capacity to retain blood containing immune cells and matrix proteins. For comparison, the picture on the left shows how an acrylic implant displays hydrophobicity and repels blood. The picture on the right shows histology from a patient 50 months post-treatment with OSSDSIGN Cranial. The biopsy was taken from a ceramic tile in the centre of the implant. It reveals that the ceramic material has remodelled to solid bone, perfused by a blood vessel. A well vascularised tissue is a prerequisite for the immune system's ability to reach the implant site and resist infections.

The picture on the left was taken during a revision procedure 50 months post-treatment with OSSDSIGN Cranial. The patient experienced problems with a titanium plate used to fixate the implant. A revision was carried out during which a biopsy was taken from a ceramic tile at the centre of the implant. The histology shows how the bioceramic material in OSSDSIGN Cranial has remodelled into well vascularised compact bone with numerous osteocytes present.

Another patient had a combined 18F PET/CT scan performed 27 months after surgery. The results, in the right picture, show bone activity within the entire implant, similar to adjacent cranial bone. This further supports that OSSDSIGN Cranial becomes well vascularised and has the capacity to generate sustained bone remodelling.

The intraoperative picture on the left shows a patient treated with OSSDSIGN Cranial following failed attempts using autologous bone and a PMMA implant. 9 months post-implantation, tissue samples were obtained and analysed for gene expression. The analysis showed an upregulation of Collagen 1A1 expression in soft tissue covering the implant, as compared to soft tissue distant from the implant site. Collagen type 1 is a key protein component of various soft tissues, such as blood vessels, connective tissue and skin. The high expression may contribute to reducing the number of postoperative complications, especially late-onset weakening of covering soft tissue that can lead to implant exposure.
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