Overview Brochure

Accuracy
Efficiency
Patient Benefit
OVERVIEW

TRUMATCH® CMF SOLUTIONS
Deliver advanced technology and procedural support for facial reconstruction, orthognathic surgery, distraction and cranial reconstruction.

Our total solution seamlessly integrates virtual surgical planning, intraoperative patient-specific tools and personalized implants to help achieve your goals of:

Accuracy
through visualization of anatomy and identification of surgical challenges within a 3D planning environment, intraoperative patient-specific tools to accurately transfer the plan to the OR, and personalized implants

Efficiency
through virtual surgical planning assisted by experienced clinical engineers to optimize preparation, surgical time and the number of procedural steps

Patient Benefit
by striving to achieve satisfying aesthetic results and minimizing operative time
The design of the TRUMATCH® CMF Patient-Specific Plates for Mandible is individually engineered to meet the needs of each patient and surgeon. By selecting plate design features, surgeons can customize the reconstruction plate to create a patient-specific solution. The Patient-Specific Plates for Mandible are 3D-milled to the planned patient anatomy, eliminating the time needed for intraoperative adaption and creating a stronger plate* with a lower overall profile.

The plates are never bent, consequently there is no induced stress due to bending.

**INTENDED USE**
Patient-Specific Plates for Mandible are intended for oral, maxillofacial surgery.

**INDICATIONS**
Trauma and reconstructive surgery.

**Features and Benefits**

**Derived from Patient CT Data**
- Design fits the planned outcome for easy positioning of the grafts at the planned location
- Integration with virtual surgical planning service** for seamless transfer of the surgical plan into the OR, using patient-specific surgical guides** with built-in drill guides that align with the plate holes (optional)

**Customizable Design Features**
- Screw hole positions and angulations defined individually to avoid screw interference with nerves, tooth roots, osteotomies, existing or future implants
- Screw length prediction and pre-visualization of screw trajectories to ensure a collision-free construct
- Compatible with MatrixMANDIBLE Condylar Head Add-on

**Strength with Low Profile**
- 2.0 mm and 2.5 mm plate thicknesses for improved fatigue strength* with lower profiles compared to standard reconstruction plates

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* Patient-Specific Plates for Mandible fatigue testing data shows increased fatigue life of both 2.0 and 2.5 mm profiles in comparison with MatrixMANDIBLE 2.5 mm thick plates. Test data does not indicate clinical performance. Test data on file at DePuy Synthes.

**Manufactured by Materialise and distributed by DePuy Synthes.**
PEEK MILLED IMPLANTS
Derived from CT data for satisfying reconstructive results*

• Better anatomic fit versus conventional fixation/reconstruction methods*
• Implant fixation with DePuy Synthes plates and screw systems
• Suitable material for definitive treatment
• Impact and fracture resistant for protection of underlying structures**

Features and Benefits

• Better anatomic fit versus conventional fixation/reconstruction methods*
• Reduced operating time compared to traditional reconstruction methods that require extensive contouring*
• Satisfying aesthetic results for surgeon and patient*
• Suitable materials for definitive treatment
• Impact and fracture resistant for protection of underlying structures**
• Any necessary modifications of a PEEK implant (e.g., drainage, monitoring devices) can be performed in the OR with standard instruments
• Implant fixation with DePuy Synthes plates and screw systems
• Short turnaround time

PEEK (Polyetheretherketone)

• Engineered for strength, and stability
• Radiolucent (minimal MRI artifact)
• Bone-like stiffness and strength
• Surgeon can determine plate and screw placement during surgery
• Lightweight
• Autoclavable

Other Services Offered

• One-to-one online design sessions for preoperative surgical planning
• Online surgeon accounts
• 3D tools for implant reviews
• Supply of 3D data (format STL)

* Results from case studies are not predictive of results in other cases. Results in other cases may vary.
** Mechanical test data on file at DePuy Synthes. Mechanical test results are not necessarily indicative of clinical performance.
TITANIUM 3D PRINTED PLATES*
Guided system for bone part repositioning

TRUMATCH CMF Titanium 3D Printed Plates and Guides is a direct and fully guided system for bone part repositioning. The system consists of patient-specific osteotomy and drill guides and patient-specific plates for the accurate transfer of the surgical plan to the operating room.

Orthognathics

Features and Benefits

Patient-Specific Plate Design
The location of screws and drilling vectors are defined in the planned position. Surgical access, bone volume and the avoidance of anatomical obstacles such as nerves and tooth roots are considered.

Retro Planning
Predetermined screw locations in the planned position are transposed back to the initial position.

Osteotomy and Drill Guide Design
Planned osteotomies, drill pilot hole locations and drilling vectors are integrated into the guide design, accurately transferring the surgical plan to the operating room.

Plate-Guide Color Coding
The guide and matching plate are color coded to help with identifying the right combination when multiple devices are used for the same surgery.

Designed for Matrix Compatibility
The plates and guides are designed and validated for compatibility with the MatrixMANDIBLE™, MatrixMIDFACE™, MatrixORTHOGNATHIC™ and MatrixNEURO™ screws and drill bits, depending on the application.

INDICATIONS
Intended for bone repositioning surgical operations for different indications:
• Orthognathic surgery
• Trauma reconstruction secondary osteotomy and repositioning of bone segments
• Reconstruction surgery

CONTRAINDICATIONS
• Doubt on the reliability of patient’s anatomical scan, as the scan data may not guarantee that a patient’s anatomy is accurately represented, making it difficult for the patient unable to accept or to follow postoperative precautions,
• Smoking,
• Bad quality or insufficient bone tissue, or blood circulation issues,
• High sensitivity to metallic materials,
• In the presence of active or latent infections,
• Pregnancy

* Manufactured by Materialise
TITANIUM 3D PRINTED IMPLANTS*
Flexible design for every clinical situation

Features
• Porous structure
• Complex anatomical shape
• Predetermined screw locations
• No additional fixation plates needed
• Designed for energy absorption in case of crash (local plastic deformation of implant)**

Specific Design Features
• Anatomical anchors & suture holes
• Drainage
• Variable thickness
• Combination of continuous and porous structures is possible

INDICATIONS
Intended for bone reconstruction and restoration of bone defects of the cranial, frontal, parietal, occipital, zygoma, maxilla, mandible and other facial bones. The implants can also be used for volumetric increase of facial skeleton (for example: chin, cheeks, mandibular angles).

CONTRAINDICATIONS
• Doubt on the reliability of patient’s anatomical scan, as the scan data may not guarantee that a patient’s anatomy is accurately represented.
• Mental or neurological health troubles making the patient unable to accept or follow postoperative precautions.
• Smoking.
• Bad quality or insufficient bone tissue, or blood circulation issues.
• High sensibility to metallic materials.
• In the presence of active or latent infections.
• Pregnancy.

Orbital Reconstruction
• Clinical applications include orbital floor, orbital floor and zygoma, supraorbital regions
• Compatible with the Matrix MIDFACE™ screws and drill bits

Midface Reconstruction
• Clinical applications include zygoma, central midface, maxilla
• Dental implants support
• Compatible with the Matrix MIDFACE™ screws and drill bits

Mandible Reconstruction
• Clinical applications include mandible volumetric reconstruction, graft containment
• Compatible with the Matrix MANDIBLE™ screws and drill bits

Volumetric Increase of Facial Skeleton
• Clinical applications include chin, zygoma and mandibular angle
• Compatible with the Matrix MIDFACE™ and Matrix MANDIBLE™ screws and drill bits

Cranial Reconstruction
• Clinical applications include frontal, parietal, occipital regions
• Osteotomy guides available
• Compatible with the Matrix NEURO™ screws

* Manufactured by Materialise
** Test data on file at Materialise
PROPLAN CMF*

Technology for precise and accurate surgical planning

- 2D and 3D preoperative visualization of the patient anatomy and condition
- Virtual simulation and optimization of the skeletal osteotomies and reconstruction
- Improved communication between patient and surgery team
- Reduced surgical time¹–³
- Making critical clinical decisions preoperatively
- Multiple cephalometric analysis options
- Soft-tissue simulation and photomapping (2D and 3D)
- Live interactive virtual planning session with a knowledgeable clinical engineering team
- No software installation or software knowledge required

ProPlan CMF is the virtual surgical planning platform consisting of three modules:

ProPlan CMF

Used to perform the virtual surgical planning. It is operated mostly by the clinical engineers located at Materialise during the live interactive sessions.

ProPlan CMF Online

Web-based module intended to exchange information between DePuy Synthes sales representative, DePuy Synthes TRUMATCH CMF Team and Materialise.

ProPlan CMF Connect

The module for the surgeon use. It allows case creation, data exchange, tracking and visualization of surgical plans, tools and implants.

Mandible and Midface Reconstruction

- Preoperative planning for virtual simulation of resection, grafting and reconstruction
- Soft tissue simulation

Orthognathic Surgery

- Preoperative planning for virtual simulation of maxillary and mandibular osteotomies
- Cephalometric analysis
- Occlusion-based positioning
- Soft tissue simulation
- Photomapping

Distraction Osteogenesis

- Preoperative planning for virtual simulation of osteotomies, positioning of DePuy Synthes distractors and placement of footplates

Cranial Vault Reconstruction

- Preoperative planning for virtual simulation of resection, grafting, reconstruction of bony segments
- Soft tissue simulation

¹ Manufactured by Materialise

² Results from case studies are not predictive of results in other cases. Results in other cases may vary.


PATIENT-SPECIFIC SURGICAL GUIDES*

Designed to assist with osteotomies and to accurately transfer the virtual surgical plan to the surgical site

Some examples include, but are not limited to:

- Mandible and midface resection and drilling guides
- Graft harvesting and drilling guides (e.g. fibula, iliac crest, scapula)
- Osteotomy and plate positioning guide for placement of distractor footplates
- Surgical guides for segment and/or graft resection and segment (re)placement in cranial vault reconstruction
- Osteotomy and drill guide for orthognathic surgery (3D printed Titanium)
- Osteotomy and drill guide for secondary osteotomy and repositioning of the Zygoma (3D printed Titanium)

* Manufactured by Materialise
PATIENT-SPECIFIC ORTHOGNATHIC SPLINTS*

- TRUMATCH CMF orthognathic splints are patient-specific surgical tools used to transfer the virtual plan to the OR, indicating the steps of the surgery based on the dentition (occlusal) information
- Intermediate and final occlusion splints available
- Multiple impression depth and buccal contour width available
- Various options to submit occlusion data: physical plaster models, optical scans of the plaster models or intraoral scan (no plaster model needed at all)
- Made of sterilizable clear acrylic

ANATOMIC MODELS*

- Tactile representation of the anatomy or preoperative plan for surgical simulation and communication to the patient
- Facilitate communication with the surgical team and patient
- Highlighted critical anatomical structures like tooth roots and nerves

* Manufactured by Materialise
The process for orthognathic surgery, distraction and cranial vault reconstruction follows a similar workflow.

VIRTUAL SURGICAL PLANNING, PLATES, GUIDES AND MODELS

- Start by downloading the ProPlan CMF Connect and request a new account via the web interface (visit the International section on www.trumatchcmf.com to access the download link and instructions)
- Alternatively, ask your sales consultant for support
- Create a new case, upload the patient CT Scan and fill in the preferences for the planning, guides, splints, models and implants
- Join the interactive virtual surgical planning session with an experienced clinical engineer
- Validate your virtual surgical plan, then the patient-specific tools and finally the personalized implants
- The guides, models and implants are manufactured and delivered to you
- You can now transfer the virtual plan to the patient, as you imagined it
- The same process applies for the milled and 3D printed plates

PEEK (MILLED) AND TITANIUM (3D PRINTED) IMPLANTS

- Start by filling a Request for Service and upload the CT scan
- We will design the implant according to your instructions and provide a quote; if required, an interactive design session can be done
- Approve the implant when you are satisfied and place an order; your sales representative can help you with this
- We will manufacture the implant through milling or 3D printing, depending on the choice of implant
- The implant will be delivered to you

* The process for orthognathic surgery, distraction and cranial vault reconstruction follows a similar workflow. The process can be performed without personalized implants as well.
Personalized Implants

- Patient-Specific Plates for Mandible
- PEEK Milled Implants
- Titanium 3D Printed Plates*
- Titanium 3D Printed Implants*

Virtual Surgical Planning*

- Planning kits
- Soft tissue simulation
- Photo mapping
- Outcome analysis
- STL file transfer

Patient-Specific Tools*

- Surgical guides
- Orthognathic splints
- Anatomic models