

# **VSP** Reconstruction



# **VSP Reconstruction**



# Virtual Surgical Planning

VSP Reconstruction is a digital planning solution for maxillofacial surgical procedures.

Common VSP Reconstruction applications include planning for maxilla/mandible reconstruction using the fibula free-flap, facial trauma and distraction osteogenesis.

- Simulate cranio-maxillofacial procedures on your patient's CT/CBCT.
- Optimisation of surgeon defined osteotomies and bony movements prior to surgery.
- Transfer the virtual plan to surgery using patient specific osteotomy and positioning guides.

Part number	Description
VSPRECON	VSP Reconstruction mandibular/maxillary case bundle (metal inserts included)

\*Part number may vary based on case deliverables

For information regarding CT scanning protocols please refer to the CT scanning protocol or your Stryker sales representative.

- 1. Hirsch DL, Garfein ES, Christensen AM, Weimer KA, Saadeh PB, Levine JP: Use of computer-aided design and computer-aided manufacturing to produce orthognathically ideal surgical outcomes: a paradigm shift in head and neck reconstruction. J Oral Maxillofac Surg 67:2115-2122, 2009
- 2. Bell RB: Computer planning and intraoperative navigation in cranio-maxillary surgery. Atlas Oral Maxillofacial Surg Clin N Am 22:135-156, 2010
- 3. Hanasono MM, Jacob RF, Bidaut L, Robb GL, Skoracki RJ: Midfacial reconstruction using virtual planning, rapid prototype modeling, and stereotactic navigation. Plast Reconstr Surg 126(6):2002-2006, 2010
- 4. Sharaf B, Levine JP, Hirsch DL, Bastidas JA, Schiff BA, Garfein ES: Importance of computer-aided design and manufacturing technology in the multidisciplinary approach to head and neck reconstruction. J Craniofac Surg 21(4):1277-1280, 2010
- 5. Tepper OM, Sorice S, Hershman GN, Saadeh P, Levine JP, Hirsch D; Use of virtual 3-dimensional surgery in posttraumatic craniomaxillofacial reconstruction, J Oral Maxillofac Surg 69:733-741, 2011
- 6. Bell, RB, Weimer KA, Dierks EJ, Buehler M, Lubek JE: Computer planning and intraoperative navigation for palatomaxillary and mandibular reconstruction with fibular free flap. J Oral Maxillofac
- 7. Bui TG, Bell RB, Dierks EJ: Technological advances in the treatment of facial trauma. Atlas Oral Maxillofacial Surg Clin N Am 20:81-94, 2012
- 8. Seruya M, Borsuk D, Khalifian S, Carson B, Dalesio N, Dorafshar A: Computer-aided design and manufacturing in craniosynostosis surgery. J Craniofac Surg 24: 1100-1105, 2013
- 9. Jacobs JMS, Dec W, Levine JP, McCarthy JG, Weimer KA, Moore K, Ceradini DJ: Best face forward: virtual modeling and custom device fabrication to optimize craniofacial vascularized composite allotransplantation, Plast, Reconstr. Surg. 131: 64, 2013
- 10. Matros É, Albornoz C, Rensberger M, Weimer K, Garfein E: Computer-assisted design and computer-assisted modeling technique optimization and advantages over traditional methods of osseous flap reconstruction. J Reconstr Microsurg 29(3)173-180, 2013
- 11. Mardini S, Alsubaie S, Cayci C, Chim H, Wetjen N: Three-dimensional preoperative virtual planning and template use for surgical correction of craniosynostosis. J Plast Reconstr & Asthetic Surg 67 (3) 336-343, 2014
- 12. Chim H, Wetjen N, Mardini S: Virtual surgical planning in craniofacial surgery. Semin Plast Surg 28:150-158, 2014.

### **Accuracy/outcomes**

- 13. Roser SM, Ramachandra S, Blair H, Grist W, Carlson GW, Christensen AM, Weimer KA, Steed MB: The accuracy of virtual surgical planning in free fibula mandibular reconstruction: comparison of planned and final results, J Oral Maxillofac Surg 68:2824-2832, 2010
- 14. Antony AK, Chen WF, Kolokythas A, Weimer KA, Cohen MN: Use of virtual surgery and stereolithographyguided osteotomy for mandibular reconstruction with the free fibula. Plast Reconstr Surg 128(5):1080-1084, 2011
- 15. Markiewicz MR, Bell RB: The use of 3D imaging tools in facial plastic surgery. Facial Plast Surg Clin N Am 19:655-682, 2011
- 16. Haddock NT, Monaco C, Weimer KA, Hirsch DL, Levine JP, Saddeh PB: Increasing bony contact and overlap with computer-designed offset cuts in free fibula mandible reconstruction. J Craniofac
- 17. Hanasono M, Skoracki R: Computer-assisted design and rapid prototype modeling in microvascular mandible reconstruction. Laryngoscope 000:000-000, 2012
- 18. Broer P, Tanna N, Franco P, Thanik V, Levine S, Garfein E, Saadeh P, Ceradini D, Hirsch D, Levine J: Ten-year evolution utilizing computer-assisted reconstruction for giant ameloblastoma. J Reconstr Microsurg 29: 173-180, 2013
- 19. Doscher M, Garfein E, Bent J, Tepper O: Neonatal mandibular distraction osteogenesis: converting virtual surgical planning into an operative reality. International Journal of Pediatric Otorhinolaryngology 78: 381-384, 2014
- 20. Saad A, Winters R, Wise MW, Dupin C, St. Hilaire H: Virtual surgical planning in complex composite maxillofacial reconstruction. Plast Reconstr Surg 132 (3): 626-633, 2013
- 21. Foley B, Thayer O, Honeybrook A, McKenna S, Press S: Mandibular reconstruction using computer-aided design and computer-aided manufacturing" an analysis of surgical results. J Oral Maxillofac Surg 71: e111-e119, 2013

- 22. Xia JJ, Gateno J, Teichgraeber JF: A new paradigm for complex midface reconstruction; a reversed approach, J Oral Maxillofac Surg 67:693-703, 2009
- 23. Chandran R, Keeler GD, Christensen AM, Weimer KA, Caloss R: Application of virtual surgical planning for total joint reconstruction with a stock alloplast system. J Oral Maxillofac Surg 69:285-294, 2011
- 24. Markiewicz MR, Bell RB; Modern concepts in computer-assisted craniomaxillofacial reconstruction. Curr Opin Otolaryngol Head Neck Surg 19:295-301, 2011
- 25. Patel A, Levine J, Brecht L, Saadeh P, Hirsch DL: Digital technologies in mandibular pathology and reconstruction. Atlas Oral Maxillofacial Surg Clin N Am 20:95-106, 2012
- 26. Sink J, Hamlar D, Kademani D, Khariwala SS: Computer-aided stereolithography for presurgical planning in fibula free tissue reconstruction of the mandible. J Reconstr Microsurg 28:395-404, 2012
- 27. Haq J, Patel N, Weimer K, Matthews SN; Single stage treatment of ankylosis of the tempromandibular joint using patient-specific total joint replacement and virtual surgical planning. British J of Oral Maxillofac Surg. 52:350-355, 2014
- 28. Levine J, Soo Bae J, Soares M, Brecht L, Saadeh P, Cerandini D, Hirsch D: Jaw in a day: total maxillofacial reconstruction using digital technology. Plast. Reconstr. Surg. 131:1383, 2013 Updated

## CMF

This document is intended solely for the use of healthcare professionals. A healthcare professional must always rely on his or her own professional clinical judgment when deciding whether to use a particular product when treating a particular patient.

Stryker does not dispense medical advice and recommends that healthcare professionals be trained in the use of any particular product before using it in surgery. The information presented is intended to demonstrate the breadth of Stryker product offerings. A healthcare professional must always refer to the package insert, product label and/or instructions for use before using any Stryker product. Products may not be available in all markets because product availability is subject to the regulatory and/or medical practices in individual markets. Please contact your Stryker representative if you have questions about the availability of Stryker products in your area.

Stryker Corporation or its divisions or other corporate affiliated entities own, use or have applied for the following trademarks or service marks: Stryker. All other trademarks are trademarks of their respective owners or holders.

The products depicted are CE marked in accordance with applicable EU Regulations and Directives.

This material is not intended for distribution outside the EU and EFTA.



CMF-FL-60 14137EN DLS 03/2018 2017-16464

Copyright © 2018 Stryker stryker.com

www.3dsystems.com/medicaldata for digital transfer of DICOM images



3D SYSTEMS

## Manufactured by:



3D Systems 5381 South Alkire Circle Littleton, Colorado 80127 USA

t: +1 844.643.1001 (toll-free US/Canada)

t: +1 720.643.1001

f: +1 720.643.1009

www.3dsystems.com/healthcare vsp@3dsystems.com

MM-562 Rev A

Distributed by: Stryker Craniomaxillofacial Stryker Leibinger GmbH & Co. KG Bötzinger Straße 41 79111 Freiburg Tel: +49 (0) 761 4512-0