International Society of Craniofacial Surgery

ISCFS NEWSLETTER

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MESSAGE FROM THE EDITOR

Colleagues and friends,

As we enter the spring of 2026, it is a fitting moment to reflect on the remarkable strength of the global craniofacial community. Few fields in surgery are as inherently international as ours. The patients we serve - children and adults born with, or affected by, craniofacial differences - exist in every corner of the world, and the solutions we develop emerge from collaboration that transcends geography, language, and political boundaries.

In recent years, we have seen the extraordinary impact that international collaboration can have on advancing our field. Surgical techniques evolve through shared experience. Innovations in imaging, virtual planning, and craniofacial reconstruction spread rapidly when surgeons communicate openly across borders. Training and mentorship thrive when the next generation of surgeons has access to colleagues and teachers from diverse backgrounds and institutions.

At the same time, we cannot ignore that the broader geopolitical climate has grown increasingly complex. Around the world, governments and institutions sometimes appear to be drifting apart rather than drawing closer together. Yet our profession reminds us of a different truth: that medicine, and surgery in particular, has always been a bridge between cultures and nations. Our patients do not recognize political divisions, and neither should our commitment to improving their lives.

For this reason, the International Society of Craniofacial Surgery remains deeply committed to fostering transnational collaboration and collegiality. The strength of our society lies in the relationships among surgeons who share a common purpose: advancing the care of individuals with craniofacial differences through innovation, education, and mutual support.

One of the most powerful ways we sustain this global dialogue is through our meetings and educational programs. We are particularly excited about the upcoming **ESCFS Congress in Ankara in September**, which promises to bring together many of Europe's leading craniofacial surgeons along with colleagues from across the world. Meetings such as this provide an invaluable opportunity not only to share new scientific insights, but also to strengthen the professional and personal connections that make our community unique.

Looking further ahead, preparations are already underway for the

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ISCFS Biennial Congress in Rotterdam in 2027. Rotterdam, a city long defined by its openness to global exchange, is a fitting setting for a gathering dedicated to international collaboration. The meeting will showcase the importance of **team care** alongside the latest advances in craniofacial surgery, from complex cranial vault reconstruction and midface advancement to emerging applications of digital planning and biologic innovation. Equally important, it will provide a forum where established leaders and young surgeons alike can learn from one another and develop partnerships that will shape the future of our specialty.

Education, of course, is not limited to in-person meetings. Our society continues to expand its digital offerings, allowing members from every region of the world to participate in meaningful educational exchanges. I encourage all members to join us for our upcoming **ISCFS Webinar on June 16th at 6:00 PM EST**, which will focus on **cleft orthognathic surgery**. This topic sits at the intersection of craniofacial surgery, orthodontics, and multidisciplinary care, and it remains one of the most technically demanding and impactful areas of our work. By bringing together experts from different regions and practice environments, the webinar will provide a rich discussion of surgical planning, timing, and outcomes in patients with cleft-related dentofacial deformities.

These educational initiatives reflect a broader principle that defines our society: knowledge grows when it is shared. The lessons learned in one operating room can improve care for patients thousands of miles away. A technical insight developed in one country may transform outcomes in another. When we exchange ideas openly and respectfully, the entire field advances.

Perhaps even more importantly, our society reminds us that we are part of a global brotherhood and sisterhood of surgeons. The bonds formed through shared training, collaboration, and service create a professional community that extends far beyond individual institutions or nations. When surgeons from different parts of the world work together, they embody the highest ideals of medicine: compassion, curiosity, and a commitment to improving the lives of others.

As we look ahead to the coming year - with the ESCFS meeting in Ankara, the ISCFS Biennial Congress in Rotterdam on the horizon, and our ongoing educational programs - I encourage each of you to remain actively engaged in this international dialogue. Attend meetings, participate in webinars, mentor young surgeons, and share your experiences with colleagues from around the globe in this newsletter.

In doing so, we reaffirm a simple but powerful truth: while governments may sometimes drift apart, the global community of craniofacial surgeons continues to move closer together. Our shared mission - to care for individuals affected by craniofacial differences - unites us in purpose and in action. Thank you for your continued commitment to this remarkable field and to the patients and families we serve.

JESSE TAYLOR
ISCFS Secretary-Treasurer
UNITED STATES

MESSAGE FROM THE PRESIDENT

Dear members of the Society,

Our next Congress on September 7-10, 2027 in Rotterdam is slowly approaching. The theme of the Pre-Congress Symposium on Tuesday, September the 7th will be TEAM WORK. Colleagues from anesthesiology, pediatric intensive care, ENT, ophthalmology and radiology will present on all the topics that are highly relevant for our patients, but that we know too little about ourselves.

Presentations on diagnosing and treating breathing issues and dealing with a difficult airway will be included, in addition to imaging of the eyes and brain. Also, there will be plenty of time for case discussions among teams to learn from each other's approaches.

Next to the clinical aspects of all types of craniofacial anomalies, we will also include a session on outcome of care. This session will deal for instance with collecting the relevant outcome parameters and how to establish or join a scientific research group.

All in all, the Pre-Congress Symposium will be of interest to all specialties at all levels of expertise. With every coming newsletter, more highlights of the upcoming ISCFS Congress will be provided, hopefully fueling your interest to join us next year.

I wish you all the best for 2026.

Irene Mathijssen -
President
The Netherlands

IRENE MATHIJSSEN
ISCFS President
THE NETHERLANDS

"There will be plenty of time for case discussions among teams to learn from each other."

NEXT WEBINAR TOPIC – JUNE

Cleft Orthognathic Surgery

June 16th 2026 | 6:00 pm New York time

Join us on June 16th 2026,
at 6:00 pm New York time for an
in-depth discussion.

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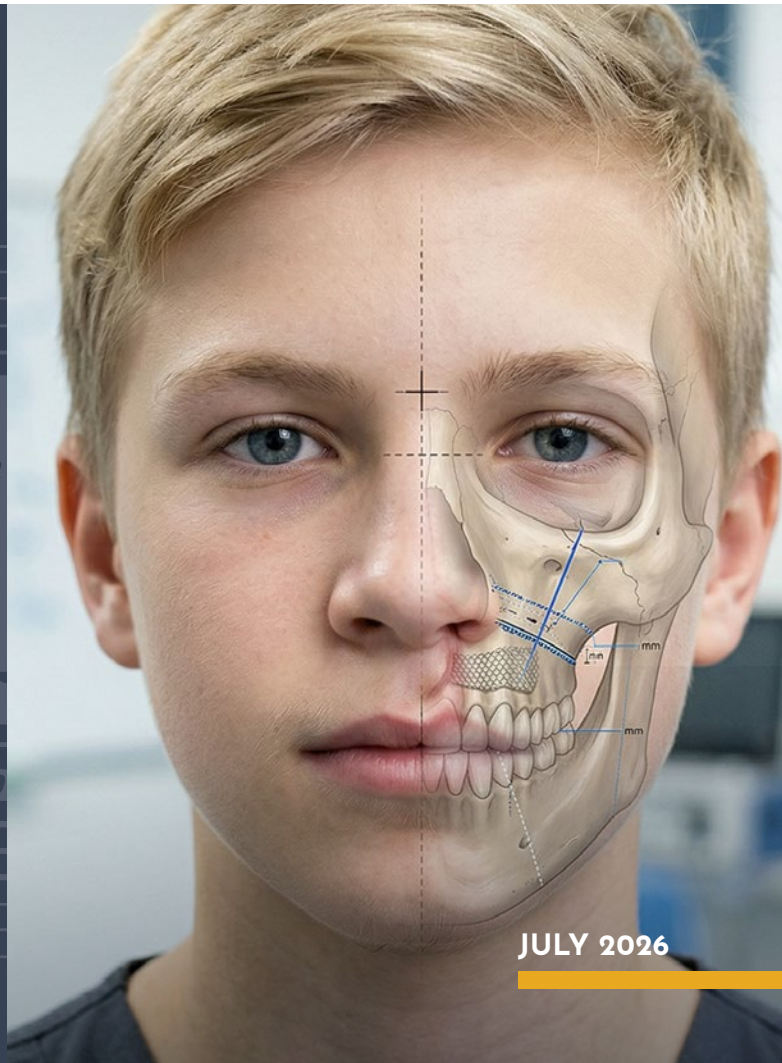
MEMBERS! Please write an article for

MY WAY:

Cleft Orthognathic Surgery

To submit an article of 750-1000 words with up to 5 JPG images as needed, send it to admin@iscfs.org no later than Monday, June 15, 2026.



JULY 2026

WINDOW INTO HISTORY

JACQUES-MATHIEU DELPECH: THE FIRST NASAL RECONSTRUCTION IN FRANCE PERFORMED FOR A NASO-OCULAR CLEFT

The development of European nasal reconstruction in the modern era began in England with Joseph Constantine Capue (1764-1846). He repaired a nasal defect in two patients using a forehead flap. In 1816, he published a detailed report about this operation, which constitutes the first textbook on nasal reconstruction in recent times.[1] The impact of the results achieved by Carpue was enormous. Shortly afterwards, in Germany and France, nasal reconstrucion was attempted and carried out to correct nasal defects for different causative factors.

In France, Jacques-Mathieu Delpech (1777-1832) performed the first nasal reconstruction using a forehead flap in a case of congenital anomaly (naso-ocular cleft or Tessier No. 3).

Life - Born in Toulouse (Southern France), Jacques Mathieu Delpech completed his medical studies in 1801 in Paris and continued his training with Prof. Raphaël Sabatier (1732-1811) and Baron Guillaume Dupuytren (1777-1835). In 1812, he was appointed Professor of Surgery at Montpellier University, becoming the head surgeon at the St. Éloi Hospital. He dedicated himself not only to management of orthopaedic and musculoskeletal diseases, but also to reconstructive surgery. His contributions to plastic surgery were particularly impressive, mainly in the field of rhinoplasty, cheiloplasty and blepharoplasty. He was the founder of the *Journal de Chirurgie Clinique de Montpellier* and was at the same time a prolific writer. He published two major works: *Chirurgie Clinique de Montpellier, ou Observations et Réflexions tirées des travaux de Chirurgie Clinique de cette École* (Surgical Clinic of Montpellier or Observations and Considerations drawn from the Surgical Clinical works of that School) (1823-

RICCARDO F. MAZZOLA
History Editor
ITALY

"He dedicated himself not only to management of orthopaedic and musculoskeletal diseases, but also to reconstructive surgery."

28), and a two-volume textbook *De l'Orthomorphie, par rapport à l'espèce humaine* (On the Orthomorphy, in relation to the human species) (1828). He died in 1832 shot by a patient he had operated on for varicocele.

Report on the first nasal Reconstruction in France – In volume 2 of *Chirurgie Clinique de Montpellier*, issued in 1828, Delpech reported his experience on nasal reconstruction: in a long chapter entitled *Observations et Réflexions sur l'Opération de la Rhinoplastique* (Observations and Considerations on the Operation for Rhinoplasty).[2]

Let's see what Delpech writes: "In April 1820, on the streets of Montpellier, we met a young beggar, aged 12 years, with a peculiar congenital deformity which stimulated our curiosity. We invited him to come to the clinic for a more accurate examination. Whereas the appearance and contour of the right side of the face were regular and pleasant, the left side was horribly disfigured with an unusual opening of the nasal cavity. (…) The inner half of the lower eyelid and the corresponding tarsal cartilage were missing. The outer half of the same eyelid, having no insertion at the inner canthus, was laterally stretched, and almost reversed due to the contraction of the remnants of the orbicularis muscle. (…) We conceived the idea of treating this deformity. For instance, a skin flap outlined in the forehead region could close the cleft and at the same time restore the lacrimal apparatus and the inner half of the lower eyelid. (…)

Figure 1 – Left – Preoperative view of the patient affected by naso-ocular cleft (Tessier No. 3); Center – A midline forehead flap was turned down and twisted to close the naso-ocular defect; Right – Final result.

The patient was accordingly operated upon on the 21st of June 1820, in the presence of a number of attendees. He was placed upon a strong chair and fixed in this position by various aids. (…) We cut out a paper model exactly in the form of the amount of skin to be engrafted to repair the breach we had to fill in. Having reversed the model on the midline of the forehead, we marked the incisions we had to make with ink. (…) The location of the flap being thus arranged, we made the incisions following the traces as we had marked out respecting form and size. We cut it along the three upper sides, and outlined its pedicle, which corresponded to the radix of the nose, between the eyebrows. We separated the flap from the forehead, care being taken not to denude the skull and to leave a good amount of soft tissues attached to the bone. The flap was turned down and twisted to reach the place it should occupy. It was perfectly adapted, even in relation to the excess we had planned. (…) ***(Figure 1 center)***

Numerous points of suture were made to approximate the margins as precisely as possible. Having this aim and relying upon the fact that the flap, thicker than the rest in certain points, could make a bulge and overtaking the adjacent parts. (…) With this trick, we could realize the project we had initially planned that is to mimic the form of the alae by means of a swelling of the outer margin of the flap. The margins of the forehead defect were approximated and maintained in this situation by means of agglutinating strips which considerably reduced the extension of the loss of substance. This was covered later by the return of the flap's pedicle. (…) The nasal sutures were left open, as well as the flap. The whole area was washed several times per day, using a mini-brush.

Immediately after the operation, the patient received a grain of opium. He was placed immediately in his bed, with the head and shoulders elevated by means of pillows."

The author gave a detailed report of the post-operative course, which was basically uneventful. At day sixteen, the union between the flap and the adjacent tissues was perfectly accomplished. "At this point" – the author says – "we carried out the section of the pedicle in the following manner. With the patient seated and strongly held on the chair, we passed a grooved probe under the twisted flap's pedicle, as guidance for the scalpel's blade. The pedicle was sectioned, becoming immediately pale, but it resumed its natural colour within a few hours. Some points of suture were placed between the flap and the forehead defect, which were removed five days later. At the end of August, that is almost two and a half months after the onset of the operation, the patient left the hospital. He was particularly happy about the result obtained so far." ***(Figure 1 right)***

Conclusions – It is interesting to note that the first nasal reconstruction carried out in France using a forehead flap was not for a typical sequela of trauma, but for repairing a congenital facial deformity, a naso-ocular cleft (Tessier No. 3). [3]

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MY WAY:
RECONSTRUCTIVE ONLAY CRANIOPLASTY

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Overview

Secondary cranial contour deformities are a common long-term sequela of craniosynostosis reconstruction, trauma, or prior craniotomy. Although these deformities rarely affect intracranial function, they can produce visible cranial asymmetry and significant psychosocial impact. In our practice at the Children's Hospital of Philadelphia (CHOP), secondary contouring cranioplasty using calcium phosphate cement (CPC) has become a reliable method for restoring smooth cranial curvature while minimizing donor-site morbidity.[1,2]

Figure 1 – Case example of nonsyndromic craniosynostosis secondary contouring cranioplasty. At skeletal maturity, this patient presented with typical stigmata stemming from fronto-orbital advancement performed during infancy for metopic craniosynostosis. Note the bony frontal contour irregularities and soft tissue temporal hollowing (A-C). Intraoperative photographs demonstrate bicoronal exposure with temporalis muscle recession, application of CPC as a thin onlay layer, and resuspension of temporalis muscle with adjunctive autologous grafting (D-G). 6 months postoperatively, the patient demonstrates durable contour improvement (H-J).

Patient Evaluation

Patients presenting with secondary cranial deformities typically have a history of early cranial vault reconstruction performed during infancy. Common deformities include frontal irregularities, bitemporal narrowing, and step-offs along prior osteotomy lines. Associated soft tissue deformities such as temporal hollowing may further contribute to contour irregularities. These abnormalities frequently become more apparent during adolescence following puberty, hairline recession, and stability of calvarial growth.

Preoperative evaluation includes clinical examination of the frontotemporal bony and soft tissue anatomy and three-dimensional CT imaging to assess cranial bone thickness and identify retained hardware or frontal sinus proximity. Most patients undergoing contour cranioplasty have partial-thickness contour irregularities of the frontal region, rather than large structural defects. In our institutional experience, more than 90% of secondary cranioplasties involve the frontal bone. Patients are typically adolescents undergoing surgery after completion of most cranial growth, with a median age of ~16 years in reported cohorts.[3]

Operative Indications and Philosophy

Our indications for CPC cranioplasty include:

- Residual contour deformity after craniosynostosis reconstruction
- Persistent frontal bone irregularities or retrusion
- Temporal hollowing or bitemporal narrowing
- Focal bone defects

In our >25-year experience with CPC, the optimal candidate presents with a clean operative field, partial-thickness defects, and deformities distant from the frontal sinus. CPC is particularly well suited for thin onlay reconstruction, where it can be sculpted to smooth transitions between native bone segments.

Our operative philosophy emphasizes refinement rather than reconstruction. The goal is to restore natural cranial curvature while avoiding osteotomies or autologous graft harvest. CPC provides several advantages for this purpose. The material closely resembles the mineral phase of native bone and demonstrates osteoconductive properties that allow gradual replacement by host bone over time. Unlike autologous grafts, CPC eliminates donor-site morbidity and allows precise intraoperative contouring. These characteristics have made it an effective adjunct in aesthetic secondary cranioplasty.

Surgical Technique

The frontotemporal bones and superior orbital rims are exposed

typically through the prior bicoronal incision. The temporalis muscles, which may be atrophied or inferiorly malpositioned, can be reflected laterally when accessing the bony frontotemporal region. After exposure, irregular bone surfaces are contoured with a high-speed burr to create a smooth underlying platform. Existing hardware can be removed, although removal of hardware overlying the frontal sinus may risk cement infection. Meticulous hemostasis is critical prior to cement application.

The CPC is hand mixed and applied as a thin paste over the prepared cranial surface. The material typically sets within several minutes. During this phase, the surgeon sculpts the cement to recreate the desired contour. In cases involving full-thickness defects, titanium mesh or polylactic-co-glycolic acid (PLGA) plates, may be interposed to prevent transmission of dural pulsations and subsequent cement fragmentation. Once the bony contour is satisfactory, the soft tissues are assessed. Soft tissue

2A 2B 2C 2D 2E 2F 2G 2H

Figure 2 – Case example of syndromic craniosynostosis secondary contouring cranioplasty.
At 8 years of age, the patient was indicated for simultaneous subcranial LeFort distraction and secondary contouring cranioplasty stemming from stigmata associated from prior fronto-orbital advancement performed at an outside institution (A-C). Using custom contouring guides, the native frontotemporal bone and superior orbital rims are burred (D-E). CPC onlay is applied in addition to re-suspension of the temporalis muscles and reconstruction of posterior full thickness cranial defects using titanium mesh (F).

PEARLS	PITFALLS
• Select patients with partial-thickness contour deformities rather than large structural defects; CPC performs best as a thin onlay reconstruction. • Widely expose the frontotemporal skeleton through the prior bicoronal incision to allow smooth blending of contour transitions. • Contour the underlying bone with a burr to create a smooth substrate before cement application. Contouring down rather than building up decreases the amount of CPC required. • Apply CPC as a thin (~2–4 mm) layer and feather the edges to avoid visible step-offs between native bone and cement. • Sculpt the material during the early setting phase using a moistened gloved finger or spatula to recreate the natural curvature of the cranial vault. • Address associated soft-tissue deformities, such as temporal hollowing, with temporalis repositioning or fat grafting.	• Avoid placing CPC adjacent to contaminated fields or open frontal sinus mucosa, where infection risk is increased. • Thick cement layers may predispose to fragmentation or late contour irregularity. • Failure to achieve meticulous hemostasis before cement placement can compromise adherence and contour precision. • In full-thickness defects, lack of structural support may allow dural pulsations to weaken the cement over time; titanium mesh or absorbable plating can provide reinforcement.

Table 1 – Pearls and Pitfalls of CPC in Secondary Contouring Cranioplasty

reconstruction may involve re-elevation and suspension of the temporalis muscles and/or autologous fat grafting to the frontotemporal region. The wounds are irrigated and the scalp is closed in layers. A subgaleal drain is routinely placed.

Outcomes

In a recent cohort study of over 100 patients, aesthetic improvement was demonstrated by a reduction in Whitaker classification scores from a median of 2.3 preoperatively to 1.0 postoperatively.[3] Importantly, early postoperative improvements were maintained at later follow-up, suggesting that initial contour correction predicts long-term aesthetic success. Complications remain relatively uncommon. Reported complications include infection, persistent contour irregularity, and cement fragmentation, with an overall complication rate of ~13%. Studies focusing specifically on patients with syndromic craniosynostosis have similarly demonstrated improved forehead contour with complication rates below 10%, supporting the safety of this technique in complex craniofacial populations.[4]

Conclusions

Secondary contour deformities remain a frequent challenge in the long-term management of craniosynostosis patients. CPC provides a versatile and effective material for secondary contouring cranioplasty, allowing surgeons to refine cranial shape without the morbidity associated with autologous bone grafting. With careful patient selection and meticulous technique, CPC cranioplasty offers predictable aesthetic improvement and durable results.

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CASE STUDY

JIGSAW MODULAR CUTTING GUIDE WITH AUGMENTED REALITY ASSISTANCE FOR PRECISE VOLUMETRIC CONTOURING IN RECURRENT CRANIOFACIAL FIBROUS DYSPLASIA: A CASE REPORT

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INTRODUCTION

Recurrent monostotic craniofacial fibrous dysplasia (FD) poses significant surgical challenges, particularly in cases with distorted anatomy due to previous debulking procedures. Risk of incomplete or excessive bone resection persists due to limited visualization and challenging access in deep regions through inconspicuous incisions. Additionally, there is potential for regrowth[1,2] While traditional contouring relies on freehand burring or basic guides, these often yield unpredictable volumetric outcomes and suboptimal symmetry[3,4] Advancements in digital surgical planning, stereolithography 3D printing, and augmented reality (AR) navigation have enabled more precise, patient-specific approaches for complex craniofacial reshaping. These technologies facilitate the creation of custom surgical guides and real-time intraoperative feedback, thereby mitigating the inherent difficulties associated with accurately measuring lesion volume and precisely controlling instrumentation in anatomically complex regions.

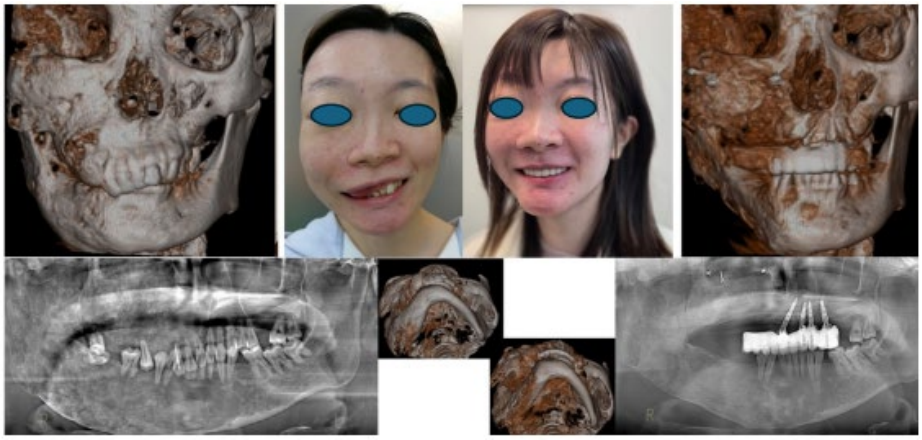
In October and December 2024, surgeons at the University of Hong Kong–Shenzhen Hospital treated a patient with recurrent right-sided craniofacial FD involving frontal, orbital, maxillary, and mandibular bones. A novel puzzle-like modular patient-specific cutting guide, 3D-printed in biocompatible LOCTITE® MED413 resin, combined with marker-based AR assistance, facilitated accurate volumetric bone reduction through limited craniofacial incisions. This case illustrates the use of a novel, modular guide in craniofacial FD contouring with good aesthetic/ functional outcomes and minimal complications. Surgical precision by postoperative CT parameters will be elaborated.

CASE REPORT

A 34-year-old female patient presented with recurrent right-sided craniofacial FD, 10 years after initial debulking surgery. She exhibited severe mid-facial expansile growth causing occlusal canting, and facial asymmetry. ***(Figure 1)*** Preoperative imaging included high-resolution CT, MRI, and 3D facial surface scanning, confirming extensive fibro-osseous expansion without optic nerve compression. Biopsy excluded malignancy.

VIRTUAL SURGICAL PLANNING

To facilitate precise contouring, Digital Imaging and Communications in Medicine (DICOM) data from the preoperative CT were imported into Mimics Medical 21.0 (MaterialiseTM, Leuven, Belgium) for surgical planning. The unaffected contralateral side was mirrored to determine the contour goal to be achieved by surgery. The aim was to attain a surgically achievable symmetry with a pleasing appearance instead of absolute symmetry, which may have been surgically impractical. Critical anatomical areas such as the mandibular condyle with its zygomatic component, were left untouched.



A 34-year-old female patient undergoing craniofacial bone contouring with 3D-printed guides for recurrent craniofacial fibrous dysplasia. Top row (from left to right): Preoperative CT frontal view; preoperative photo; postoperative 1 year photo; postoperative 1 year CT frontal view. Bottom row (from left to right): Preoperative OPG x-ray; Preoperative CT submental view; Postoperative 1 year CT submental view; Postoperative 1- year OPG x-ray.

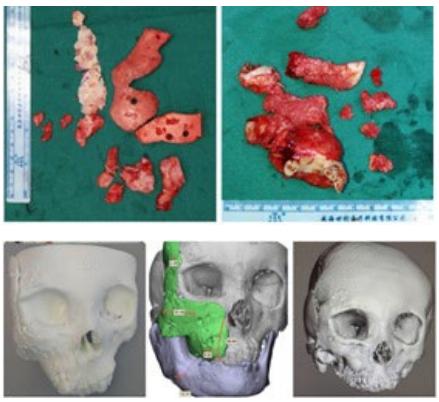


Figure 2 – Orbito-Zygomatic-Maxillary contouring with 3D printed guide. Top row: 3D printed guides and bone resected. Bottom row: 3D-printed guide fitted on facial bone model; Virtual surgical planning of bone to be resected; Target facial contour on virtual surgical planning.

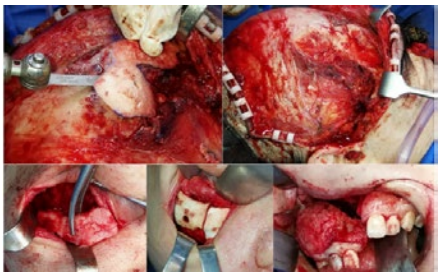


Figure 3 – Orbito-zygomatic maxilla region contouring with the aid of 3D-printed guide. Top row: Tangential osteotomy with the aid of 3D-printed guide at frontozygomatic region. Bottom row: Jigsaw assembly of 3D-printed guide after peri-orbital rim osteotomy and subnasal maxillectomy.

After the contour goal had been designed, the recontouring procedure was staged into two-phased operations: orbito-zygomatic-maxillary and subsequently mandibular contouring. Cutting guides were designed for these two parts correspondingly. The surgical guides were 3D-printed in LOCTITE® MED413 resin via stereolithography. For the orbito-zygomatic-maxillary phase, a novel jigsaw modular cutting guide was designed with segmented puzzle-like components featuring interlocking edges for precise intraoperative assembly. This allowed separate insertion and reassembly through limited incisions (coronal, subciliary, and

upper vestibular). The cutting guide delineated the areas to be contoured via tangential application of sagittal saw then chisel debulking. Figures 2 and 3 demonstrate a sub-nasal maxillectomy for complete resection of the mid-facial expansile outgrowth. ***(Figures 2-3)***

For the mandible phase, contouring was achieved by three sequential osteotomy cuts by surgical guides. It included an oblique cut for buccal faceting of the mandible body and symphysis, followed by buccal faceting of the ramal angle region and a transverse cut for contouring the inferior border of the mandible body. ***(Figure 4-5)***

A custom augmented reality App was developed using Unity (a 3D game engine) and Vuforia (an open-source 3D tracking engine) to show the preoperative bony deformity and operative contour goal overlaying on the patient's face. Tracking of the augmented reality image was achieved by marker-based tracking using a QR code on a specially designed platform anchored on the lower dentition as an anatomical landmark ***(Figure 5)***.

STAGE I SURGERY (ORBITO-ZYGOMATIC-MAXILLARY CONTOURING 29 OCTOBER 2024):

was achieved via coronal, subciliary, and upper vestibular incision. The modular guide segments were inserted individually and assembled intraoperatively. Guided volumetric reduction was verified by the interlocking of the modular guides. ***(Figures 2-3)***

Mandible contouring by sequential cutting guides for: Top row - buccal faceting of mandible body, symphyseal, ramus and inferior border. Bottom row- sagittal saw sequential guides and bone resection.

Mandible contouring by sequential cutting guides for: Top row - buccal faceting of mandible body, symphyseal, ramus and inferior border. Bottom row- sagittal saw sequential guides and bone resection.

STAGE II SURGERY (MANDIBULAR CONTOURING 25 DECEMBER 2024):

was achieved via transoral and submandibular incision. The three planned osteotomy faceting were performed in sequence with the aid of respective cutting guides to allow precise contouring of the chin and lower face. The augmented reality apps provided a real-time virtual overlay of the target mandible contour. ***(Figures 4-5)***

The two consecutive operations lasted a total of 14 hours and resulted in 280 mL of blood loss. No intraoperative or postoperative complications occurred, including no infection, hematoma, nerve injury, or worsening malocclusion.

In view of poor periodontal status of remaining upper left labial dentition, a modified All-On-4 immediate NobleActiveTM dental

implant bridge was successfully performed with virtual resection and drilling guides to reconstruct her dentition as an exit point of functional occlusion by January 2026.

VERIFICATION OF SURGICAL PRECISION

Post-operatively, superimposed CT analysis demonstrated high accuracy: mean linear error of 2.4 mm; regional volumetric discrepancies included cranio-periorbital region -4.86%, anterior maxilla -10.07%, anterior chin +0.65%, inferior mandibular border +1.28%, and symphyseal angle -0.16%. At 1-year follow-up, changes remained minimal (+0.068% to +0.45%), with stable contours and no evidence of regrowth. The patient reported excellent aesthetic satisfaction, improved occlusion, and no functional deficits.

DISCUSSION

Traditional cutting guides are often bulky[5], can be difficult for insertion in revision
surgery, and may be limited in access-constrained cases requiring extensive soft tissue dissection.[6] The jigsaw modular design addresses these by enabling piecemeal insertion/assembly, reducing soft tissue trauma while maintaining sub-centimeter precision. Marker-based AR navigation complements this by providing intuitive visualized information [7] of virtual plans overlaid on real anatomy, aiding accurate image overlay surgery [8] and targeting of resection margins to minimize over or under-resection risks. [9]

Literature supports patient-specific recontouring guides[10] and 3D virtual surgery planning in facial contouring, showing improved symmetry compared to 2D planning[11] and patient-specific approaches for precise bone recontouring in FD cases. [10]

CONCLUSION

In conclusion, the novel jigsaw modular cutting guide, fabricated via stereolithography in LOCTITE® MED413 resin and augmented by AR navigation, enables precise, access-optimized volumetric contouring in recurrent craniofacial FD. Quantitative CT outcomes confirm sub-centimeter accuracy and long-term stability. This approach advances digital workflows for rare, recurrent benign bone disorders, offering a tailored, minimally invasive paradigm for complex facial skeletal reshaping.

Disclaimer: The authors have no financial interest in any product mentioned in this article.

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CASE STUDY

TMJ ANKYLOSIS FOLLOWING MASTOIDITIS IN TODDLERS: A MULTIDISCIPLINARY SURGICAL APPROACH

"One of the major challenges in managing TMJ ankylosis in toddlers is safe airway control. "

OMRI EMODI
ISRAEL

Temporomandibular joint (TMJ) ankylosis in toddlers is a rare but potentially devastating condition that can significantly impair feeding, speech development, facial growth, and airway function. While trauma is the most common cause of pediatric TMJ ankylosis, infection, particularly severe otitis media complicated by mastoiditis, remains an underrecognized etiology in very young children.

Acute mastoiditis has become uncommon in developed countries due to widespread antibiotic use. Nevertheless, when diagnosis or treatment is delayed, local extension of infection can involve the TMJ, leading to progressive ankylosis. In toddlers aged one to three years, this condition is especially challenging, as established treatment protocols and reconstructive options are largely designed for older children.

We report our experience with a small cohort of toddlers who developed unilateral TMJ ankylosis following mastoiditis and were treated using a modified, age-adapted protocol based on interpositional gap arthroplasty and close multidisciplinary collaboration.

MULTIDISCIPLINARY PLANNING AND 3D ASSISTANCE

One of the major challenges in managing TMJ ankylosis in toddlers is safe airway control. Severe limitation of mouth opening makes intubation hazardous. To address this, we incorporated in-house three-dimensional (3D) printing into the preoperative workflow. CT-based segmentation of the bony nasal airway allowed the pediatric anesthesiology team to assess nasal patency, select the optimal nostril, and determine the appropriate endotracheal tube size before entering the operating room.

This approach improved confidence and reduced airway-related risk.

Additional 3D models of the ankylosed ramus-condyle-fossa unit were used intraoperatively to assist with orientation, identification of the sigmoid notch, and estimation of the ankylotic mass to be resected.

SURGICAL TECHNIQUE ADAPTED FOR TODDLERS

Surgery was performed using a modified preauricular–endaural approach. A 1-cm gap arthroplasty was created, followed by careful inferior mobilization of the mandibular ramus to release surrounding soft tissue contracture. A supramuscular temporalis fascia flap was used as interpositional tissue.

Several technical modifications were emphasized to reduce complications in this age group. The temporoparietal fascia was separated anteriorly from the temporalis fascia in a controlled manner to minimize tension on the temporal branch of the facial nerve. Only temporalis fascia was used for interposition, avoiding muscle herniation and temporal hollowing. Notably, coronoidectomy was not required in any patient, likely reflecting the benefit of early intervention before secondary muscular restriction developed.

POSTOPERATIVE BITE BLOCKS AND PHYSIOTHERAPY

Postoperatively, bilateral posterior bite blocks were fabricated while the patients were still intubated. In toddlers, conventional orthodontic appliances are impractical, and bite blocks proved to be a simple and effective method to maintain the surgically created gap and counteract soft tissue contraction Aggressive physiotherapy was initiated on the first postoperative day, with parents playing a central role. Frequent assisted mouth opening and stretching exercises were continued for several weeks, emphasizing the importance of family compliance for long-term success.

CLINICAL OUTCOMES AND LESSONS LEARNED

All treated patients demonstrated a dramatic improvement in mouth opening, with postoperative maximal interincisal opening exceeding 30 mm and no early recurrence during follow-up. Minor complications, including transient temporal branch weakness and a localized postoperative infection, resolved with conservative management.

TMJ ankylosis in toddlers is rare but demands an age-specific approach. A multidisciplinary strategy - integrating pediatric anesthesiology, maxillofacial surgery, orthodontics, and physiotherapy - can achieve excellent functional outcomes while minimizing morbidity.

Early recognition and tailored intervention are key to restoring function and supporting normal craniofacial development.

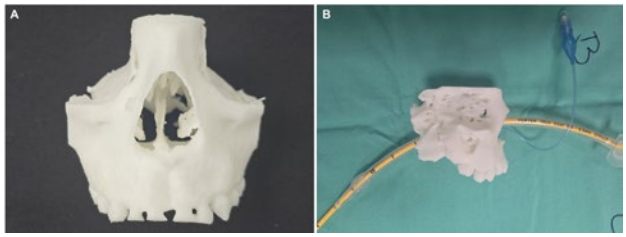


Figure 1– Three-dimensional model of the nasal airway. A. Anterior view of the nasal cavity depicting the inferior conchae and the nasal septum. B. Simulation of a nasal endotracheal tube passed through the 3D printed nasal airway.

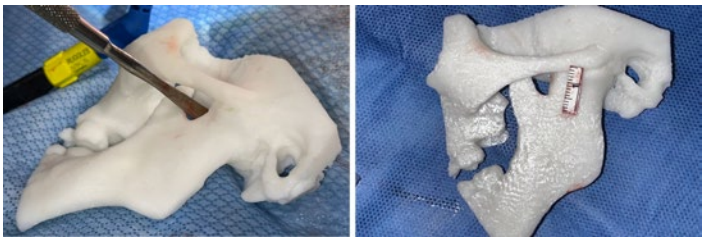


Figure 2 – Three-dimensional model of the ankylotic mass including ramus-condyle-fossa unit. A. Identification of the sigmoid notch as a crucial landmark for the inferior osteotomy. B. Evaluation of the ankylosis mass vertical distance as an intraoperative orientation aid.

Figure 3 – Ankylosis of the right TMJ. A sigmoid notch is exposed and confirmed with a surgical tool, serving as a reference point for inferior osteotomy.

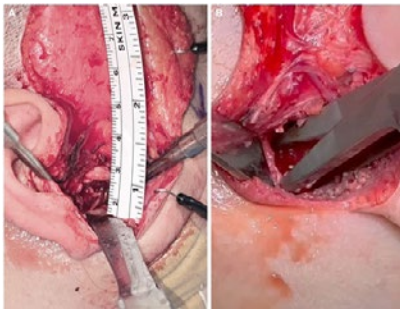


Figure 4. Gap created after resection of the ankylotic mass. A. One cm of gap is confirmed. B. Spreader is used in the resected gap to confirm complete resection of the medial side. Additionally, repetitive spreading is performed to displace the ramus downward, thereby releasing the contracture of the surrounding soft tissue.

Figure 5 – Postoperative demonstration of bilateral posterior bite blocks.

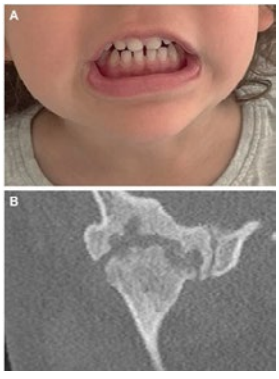
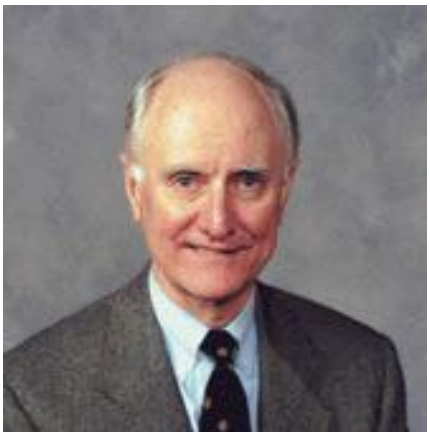


Figure 6 – Preoperative A. Functional limitation of the mouth opening. B. Coronal CT demonstrating right ankylosed TMJ.

IN MEMORIAM

LINTON A. WHITAKER, MD

FOUNDING MEMBER, INTERNATIONAL SOCIETY OF CRANIOFACIAL SURGERY



The International Society of Craniofacial Surgery mourns the passing of **Linton A. Whitaker, MD**, a founding member of our Society and one of the true architects of modern craniofacial surgery. His death marks the passing of a generation of pioneers who defined the field not only through technical innovation but through personal conviction. His influence endures in every multidisciplinary team that cares for children with craniofacial differences.

For Dr. Whitaker, craniofacial surgery was never merely a profession. It was his life's calling. It shaped his identity, animated his intellect, and defined his daily work. He did not separate who he was from what he did; the field was woven into the fabric of his character.

Born and raised in Texas, Linton carried with him the unmistakable imprint of his origins. He possessed the directness, confidence, and quiet resolve often associated with the American Southwest. There was a steadiness about him—measured in speech, firm in conviction, unafraid of complexity. He approached surgical problems with clarity and decisiveness, yet balanced this with warmth and an ease that immediately put patients, families, and colleagues at ease. That blend of strength and approachability became a hallmark of his leadership.

As a founding member of the **International Society of Craniofacial Surgery**, Dr. Whitaker stood among the early pioneers who believed that the treatment of craniofacial anomalies demanded global dialogue and academic rigor. He understood that this emerging discipline required more than operative bravery—it required structure, scholarship, and international collaboration. The Society's enduring commitment to open scientific exchange reflects the vision he helped establish.

At the **Children's Hospital of Philadelphia** and the **University of Pennsylvania**, Dr. Whitaker built one of the world's premier craniofacial programs. He understood long before it was commonplace that optimal care required true multidisciplinary integration—plastic surgery, neurosurgery, orthodontics, speech pathology, anesthesiology, psychology, and nursing working as one cohesive unit. Under his leadership, the program became synonymous with comprehensive care and surgical innovation.

Technically, Dr. Whitaker was fearless. He embraced the formidable challenges of craniosynostosis, hypertelorism correction, midface advancement, and secondary cleft deformities at a time when outcomes were less predictable and morbidity more substantial. Yet his boldness in the operating room was matched by intellectual discipline. He insisted on rigorous follow-up, honest appraisal of results, and continuous refinement of technique. In his view, innovation demanded accountability.

Those who trained under him remember not only his surgical precision but his insistence on understanding first principles. He asked difficult questions. He expected preparation. He demanded excellence, not for personal recognition, but because a child's future depended on it. Many of today's leaders in craniofacial surgery carry forward habits of thought and standards of care forged under his mentorship.

Behind his formidable professional life stood an equally profound personal foundation: his 62-year marriage to Renata. Their partnership was a constant throughout his long career. Renata's presence at meetings,

gatherings, and professional milestones reflected a shared journey rather than a parallel one. Friends and colleagues observed a steadiness and mutual respect in their marriage that mirrored the discipline and loyalty he brought to his work. His devotion to family was not separate from his professional life. It grounded it.

What distinguished Linton most profoundly was the seamless integration of conviction, intellect, and loyalty. Craniofacial surgery did not begin when he entered the hospital, nor end when he left it. It informed his scholarship, his international collaborations, his mentorship, and his friendships. He debated vigorously, listened carefully, and celebrated the progress of others because he viewed the advancement of the field as a collective achievement.

The International Society of Craniofacial Surgery exists today in part because of the foundation he helped lay. Our scientific exchanges, our collegial spirit, and our global fellowship reflect the principles he embodied: rigor, courage, collaboration, and steadfast dedication. Linton Whitaker did not simply help build a specialty—he gave his life to it. And he did so with the steadiness of a Texan, the discipline of a pioneer, and the enduring partnership of a 62-year marriage that anchored him throughout.

We honor him with gratitude and commit ourselves to carrying forward the standards he set—for our profession, our Society, and the children we serve.

Jesse Taylor

NEUROSURGERY CORNER

JAY JAYAMOHAN
Neurosurgery Editor
UNITED KINGDOM

"However, as we are all at pains to say, our patients are not the same as each other, and indeed in the cohort of patients who are syndromic, are very much different from each other."

I have had to completely rewrite this newsletter entry in the last week. We've had a very difficult case that emphasises a lot of learning points for those of you just starting out on your craniofacial career.

The short version of the details is that we had a young child with an unusual craniofacial condition with highly vascular bone. She had a very difficult and almost life-threatening lateral panel release last year. She presented now with an otogenic posterior fossa empyema and cerebellitis (although no doubt related to her underlying genetic syndrome).

The first learning point is whenever an unusual patient presents with unusual conditions I recommend getting views of others, especially neuroradiology. We did that and sat as a large group of neurosurgeons and plastic surgeons with our radiologist and went through the records and the scans in detail. Importantly we could not seem to understand any link between the previous surgery and this presentation and were able to layout a 'most likely' hierarchy to help empirical treatment. We were, frankly, sitting with a child with 80% mortality without drainage, but with a suggested 99% mortality if operated on, so we ploughed on with antibiotics.

The second point to take home is the occasional reality of being a neurosurgical member of a craniofacial team. While our plastics and maxillofacial colleagues will receive significant plaudits for helping the appearance related aspects of a child's condition, and while we both share the intraoperative stresses of reconstruction surgery, ultimately the majority risks of these operations, and indeed postoperative, lie within the realm more of neurosurgery.

Venous sinus bleeding, cerebral injury, dural tears with CSF leak, meningitis and postoperative complications of infection and hydrocephalus are all things that we as a neurosurgical team need to understand and be ready to deal with. Again, I emphasise that neurosurgeons should not be 'cut and pasted' into a procedure – planning and scan review is vital.

The complexity of our patients is often slightly forgotten because they are often clinically well (at least compared to other neurosurgery cohorts). We are then, not infrequently, faced with having to put a child through procedures that risk life and limb. There is a constant subconscious battle that goes on in my head about whether these operations are the correct thing to do and whether the risks are worthwhile.

I do, of course, remain convinced that they are, but it behoves all of us to constantly question our indications for each child to ensure that we are doing only treatments that are indicated.

We did end up operating on this patient. While we got them through the case, they continued to deteriorate, and sadly died the next day. This was despite the operation having been successful at draining the pus.

It was a really tough case and we're all feeling slightly bruised, as all teams do from time to time. But being able to face ourselves and say that we did the right thing for the right reasons makes the pain slightly easier. The family were of course involved throughout and were grateful for the care we had provided. They still felt that operating was worth it, and this is an important thing that will give them some level of comfort in the months and years to come. This is not to be underestimated long term.

The last thing that this case brought home is how important it is to have a team around the care of such a patient. We are fortunate to have a very close-knit group of surgeons, allied health professionals and colleagues who share the care of these patients. They were hugely supportive to me and my neurosurgical colleagues during this time period.

This is the sort of support that can only really have been there and got several T-shirts (and scars). For those who are beginning, or perhaps are part of a newish team, I recommend not trying to take on such difficult patients without experienced backup. If that means going outside your own team to get that, then swallow your pride if you need to, and make the call.

I hope none of you are in this situation, but sadly you almost certainly will be at some point in your careers. I wish you good luck and hope you have as good a team as we have had around us in this situation.

ORTHODONTIC CORNER

ORTHOPAEDIC PROTRACTION OF THE POSTERIOR SEGMENTS IN PATIENTS WITH BCLP TO AVOID PREMAXILLARY SURGICAL SET-BACK

MARIA COSTANZA MEAZZINI
ITALY

LEONARDO DEMONTE
ITALY

LUCA AUTELITANO
ITALY

INTRODUCTION

Secondary autogenous bone grafting (SBG) is commonly performed to repair alveolar clefts. Successful outcomes require an adequate amount of healthy attached gingiva (Lino et al., 2001). However, in wide alveolar clefts, closure using attached gingiva may be difficult or impossible, and soft-tissue deficiency can lead to postoperative wound dehiscence and infection, potentially resulting in loss of the bone graft. In such cases, a buccal mucosa rotation flap or a tongue flap may be considered (Jackson, 1972; Kim et al., 2001), though these are demanding for patients and do not provide an ideal substitute for attached gingiva, particularly regarding tooth eruption or orthodontic movement into the cleft area.

Segmental distraction osteogenesis (DO) can reduce the size of wide alveolar clefts, allowing not only bone lengthening but also soft-tissue expansion (Yen et al., 2001). In growing patients, circum-maxillary sutures are usually still patent, enabling sutural distraction without surgery (Meazzini et al., 2019). The aim of this study was to demonstrate the potential of orthopeadic protraction of lesser segments in cleft patients with wide alveolar clefts before bone grafting.

MATERIALS AND METHODS

Six growing patients with bilateral complete cleft lip and palate (BCLP) were prospectively selected, all presenting with large soft-tissue and bony alveolar defects prior to bone grafting. Selection criteria included bony gaps larger than 8 mm, or gaps between 5 and 8 mm with deficient or scarred soft tissues; ages ranged from 8 to 14 years. Records were collected at baseline (T0), at the end of protraction (T1), and at least one year after bone grafting (T2), with follow-up from

1 to 6 years. These patients were treated with a bonded RPE and lesser segments were advanced with a face mask. ***(Figures 1-3)***

RESULTS

At T0, alveolar cleft width ranged from 6 to 13 mm. In all patients, protraction of the lesser segments allowed successful bone grafting. The average amount of protraction was 5 mm (range 4–12 mm). At T1, cleft width ranged from 2 to 4 mm. Surgery and postoperative healing were uneventful, and no oro-nasal fistulas occurred after bone grafting. Bone graft material was harvested from the iliac crest in five patients and from the vomerine bone in one patient.

DISCUSSION

Alveolar clefts are typically treated with bone grafting, but in wide clefts the risk of failure increases due to insufficient soft tissue in the cleft region. Soft tissues may also be compromised by chronic inflammation from oro-nasal fistulas or by primary cleft treatment. Distraction procedures can help close alveolar clefts without buccal or lingual flaps, promoting formation of new bone and mucosa through controlled mechanical distraction. Liou et al. (2000) suggested that clefts wider than the maxillary canine (8–9 mm) could be reduced through interdental distraction, though a disadvantage of DO is the need for an additional surgical procedure and the risk of extra scar formation.

In growing patients, as in this study, patent circum-maxillary sutures allow orthopaedic protraction without surgery, enabling bone transport to reduce large oro-nasal fistulas while avoiding additional procedures. Interestingly, in all of these patients, a surgical alternative had been proposed elsewhere - premaxillary setback with bone grafting followed by orthognathic surgery or DO - but premaxillary set-back was successfully avoided through orthopaedic protraction. Orthodontic dentoalveolar protraction promotes the formation of new alveolar bone and attached gingiva, leaving a smaller residual cleft with improved conditions for bone grafting. In one patient, the limited remaining cleft allowed graft harvest from the vomerine bone, simultaneously correcting nasal septum deviation (Autelitano, and Meazzini, 2023). Expansion devices were adapted to patient age: face mask protraction in patients younger than 10-11 years, and the Alt-RAMEC technique

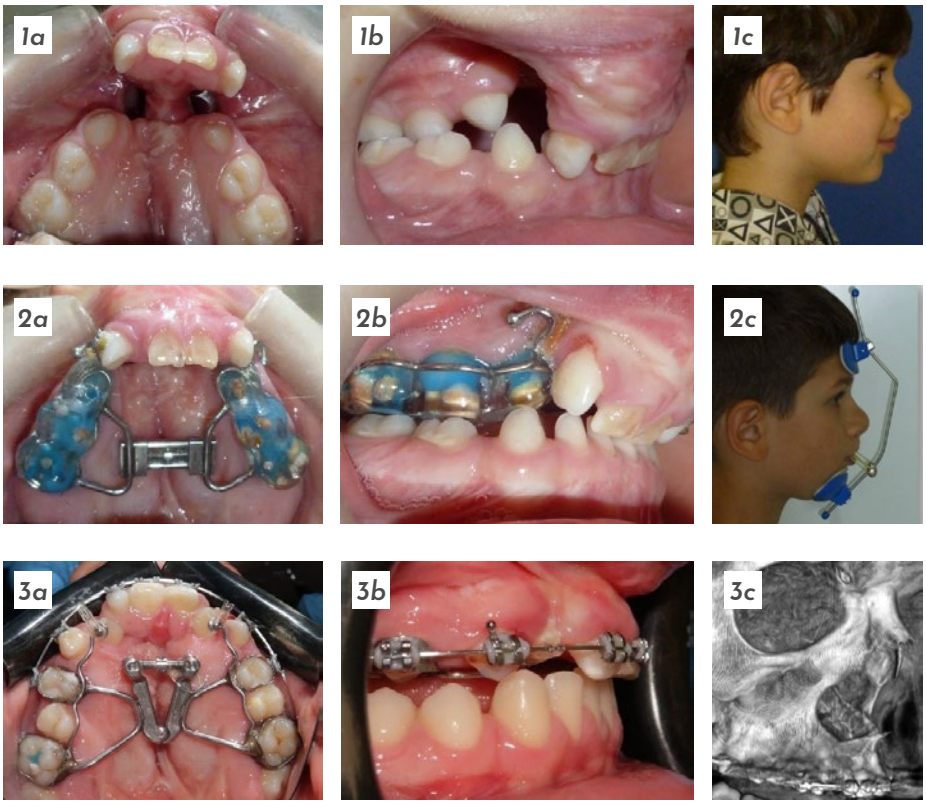


Figure 1-3 – Representative case of a patient with bilateral complete cleft lip and palate (BCLP) presenting with large alveolar gaps at baseline. He was offered in the centre where he had had primary surgery a premaxillary set-back and bone grafting, followed by maxillary distraction. (1a-c) Occlusal and lateral view at T0 showing wide bilateral alveolar clefts with deficient soft tissues, and lateral extraoral view of the patient. (2a–c) After RPE expansion and orthopaedic protraction with protraction face mask: occlusal and lateral views showing significant reduction of cleft width and improved soft-tissue conditions at T1. (3a–b) Occlusal and lateral views 7 years after secondary alveolar bone grafting (T2); (3c) CBCT scan confirming long term successful bone fill of the grafted area.

in those nearing the end of craniofacial growth (vertebral maturation stages V2–V3), with significant maxillary advancement in cleft patients confirmed by Meazzini (2025).

CONCLUSION

The method presented here is particularly useful in growing patients with wide alveolar clefts, where patent circum-maxillary sutures allow orthopaedic protraction of the posterior segments without surgery. This approach reduces cleft width and the overall treatment burden prior to secondary bone grafting and eliminates the need for surgical premaxillary set-back.

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YOUNG SURGEONS' EXPERIENCE

"These relationships have provided a meaningful forum for case discussion, perspective, and professional mentorship, and have helped shape my clinical thinking."

DAVID PERRAULT
UNITED STATES

The International Society of Craniofacial Surgery (ISCFS) has played an important role in my development as a craniofacial surgeon, particularly through its emphasis on mentorship, shared learning, and thoughtful exchange of ideas. One of its greatest strengths is the community it fosters. Through ISCFS, I have had the opportunity to engage with surgeons across all stages of practice, from trainees to senior leaders in the field. These relationships have provided a meaningful forum for case discussion, perspective, and professional mentorship, and have helped shape both my clinical thinking and long-term career trajectory. The ability to discuss complex cases with a diverse group of experienced surgeons has been especially valuable in developing a more nuanced and thoughtful approach to patient care.

The international nature of the society is especially important. Craniofacial surgery has long advanced through the exchange of ideas across institutions and countries, and ISCFS reinforces the importance of that global dialogue. I have benefited greatly from exposure to techniques, innovations, and approaches developed outside the United States, many of which reflect different resource environments and creative problem-solving. Equally impactful has been early access to and discussion of high-quality international research, often before it is widely disseminated. These opportunities provide not only insight into emerging ideas, but also a deeper understanding of how evidence is interpreted and applied across different settings.

The ISCFS webinar discussions have also been particularly impactful. They create a collegial and open space for the discussion of challenging problems, where experienced surgeons share not only their successes, but also their judgment, reasoning, and decision-making processes. For those earlier in their careers, this type of exposure is invaluable. It allows for insight into how leaders in the field approach complexity, uncertainty, and variation in practice, which is often difficult to capture through traditional didactic formats.

Beyond these tangible intellectual and professional benefits, participation in ISCFS has been quietly inspiring. It offers a view of a field that is collaborative, evolving, and grounded in a shared commitment to improving patient care. Observing the way in which leaders engage with one another reinforces the values that define craniofacial surgery as a specialty.

Looking ahead, there is an opportunity to extend the society's existing strengths in mentorship through the creation of a recurring young-faculty case forum with a rotating group of young and senior faculty. Hosted virtually between formal ISCFS meetings, a twice-yearly, case-based session focused on complex, decision-driven scenarios could provide early-career surgeons with a structured venue to present challenging cases and engage in thoughtful discussion. These sessions could emphasize not only technical considerations, but also clinical judgment, decision-making, and longitudinal outcomes. Over time, such a forum could become a durable platform for mentorship and case-based dialogue, helping to further connect the community and support the next generation of craniofacial surgeons.

HUMANITARIAN WORK AND MISSIONS

RAISING THE BAR: PARTNERING TO ADVANCE MAXILLOFACIAL SURGERY IN RESOURCE-CONSTRAINED SETTINGS

MATTHEW E. PONTELL
UNITED STATES

JORDAN SWANSON
UNITED STATES

Craniomaxillofacial surgery is primarily delivered at tertiary hospital centers in high- and middle-income countries. This has advantages including concentration of patients with complex and relatively rare diseases, accruing substantial patient volume, and concentrating resources to assure safety and outcome consistency. However, a growing need for maxillofacial care in low- and middle- income countries (LMICs) has arisen from advances in cleft lip and palate care. Cleft teams and outreach programs initially oriented towards primary lip and palate repair are increasingly striving to perform comprehensive cleft care, including orthognathic surgery.

While primary lip and palate repairs are commonly performed during humanitarian outreach missions, access to reconstructive procedures later in the timeline remains extremely limited in many resource-constrained areas. These procedures, namely orthognathic surgical procedures, are essential for the rehabilitation of speech, occlusion, mastication, and facial balance.
Global Smile Foundation is one such example which has been active in Guayaquil, Ecuador for over 30 years with a small team of year-round clinicians supplemented by twice-yearly two-week surgical and sustainable health programs (SHP) serving children in southern Ecuador. The consistent commitment has garnered trust from local patients who are in constant need of presurgical orthopedics, lip/palate repair, alveolar cleft repair, fistula repair and the management of malocclusion. In response, a bi-directional, multi-disciplinary partnership consisting of local and visiting surgeons, dentists, orthodontists, speech language pathologists, nutritionists, and psychologists has been established. Through these partnerships, we have been able to expand the care timeline in Guayaquil, offering orthognathic surgical procedures during outreach medical trips.

The foundation of this outreach orthognathic program is a partnership with the Universidad de Especialidades Espíritu Santo (U.E.E.S.), an Ecuadorian University that specializes in dental and orthodontic training. Through this partnership, local patients in need of orthognathic surgery have been enrolled in comprehensive treatment plans. We have established a virtual pipeline for patients to be evaluated by both local and visiting teams. Candidates then begin phase 2 and/or 3 orthodontics by local teams with virtual assistance from visiting

teams. This allows for pre-surgical care coordination between outreach trips to ensure that patients are set up for a successful surgical procedure during an SHP. Using local X-rays and open-source, web-based cephalometric software, a high-fidelity, pre-surgical planning pipeline has been developed ***(Figure 1)***.

During the target outreach trip, patients are examined on-site by the operating surgeon and the local orthodontist, and the final surgical approach is decided which has included multi-piece LeFort 1 and sagittal mandibular conventional osteotomies, as well as LeFort 1 osteotomies followed by placement of external distractors. The local team then fabricates stone models to create a final splint for those undergoing conventional osteotomies and a palatal splint for those undergoing distraction with concern for persistent alveolar clefts, given the risk of instability after downfracture in this scenario ***(Figure 2)***. The use of distraction osteogenesis after maxillary osteotomy has increased given the versatility of the procedure in treating patients before and after skeletal maturity, as well as those with significant negative maxillary overjets. Additionally, external distractors can easily be reused, thereby saving critical resources. The local dental and orthodontic teams are present in the operating room so they may visualize the exact procedure being performed and receive direct sign out from the operating surgeon ***(Figure 3)***.

Postoperatively, patients follow with the local team who manage postoperative diet restrictions, oral hygiene, antibiotics, maxillomandibular fixation, distractor activation and postoperative elastics/phase 4 orthodontics. The local team is trained on arch bar and external distractor removal to enable timely treatment. Constant bi-directional

Figure 1 – Patients are screened by the local team. Clinical and occlusal photographs are taken, along with lateral cephalograms and cephalometric analysis, which are transmitted to the visiting team. During virtual consultation, the local and visiting teams decide if the patient is a candidate for orthognathic surgery during the subsequent outreach medical program.

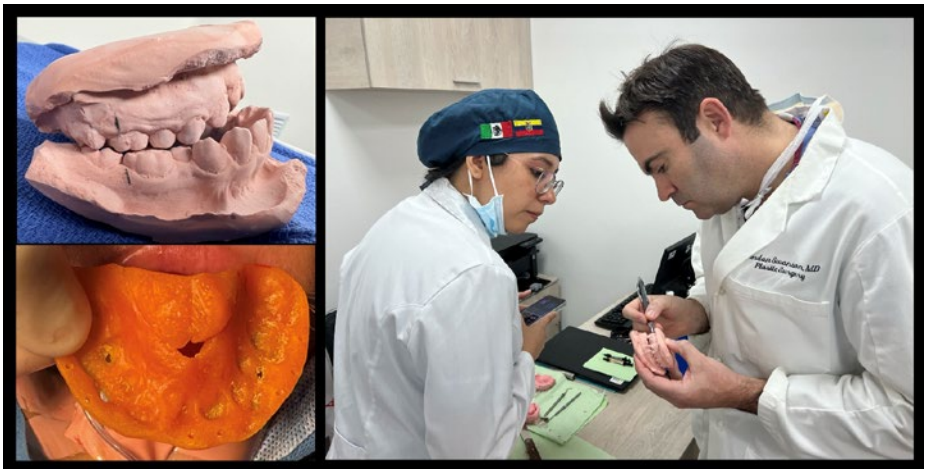

Figure 2 – During the outreach program, the patient is examined by the local and visiting teams. The local teams fabricate stone models and splints. The decision to proceed with a surgery-first maxillary distraction is made together.

Figure 3 – The local dental and orthodontic teams are present in the operating room throughout the surgery.

communication between local and visiting teams ensures that patients are recovering well and that they are monitored for the development of complications ***(Figure 4)***.

At the subsequent outreach trip, patients are seen in 6 month follow up and scheduled for hardware removal if needed (i.e., bone-borne distractor anchors, etc.). Patients are then followed locally and at six-month intervals by the visiting team ***(Figure 5)***.

The benefits of establishing a bi-directional maxillofacial surgical partnership in an outreach setting are numerous. Patients now have access to the entirety of the cleft care timeline, raising the bar towards the standards set in high-resourced areas. This is critical as even with the best lip and palate repairs, maxillary hypoplasia can cause significant functional and psychosocial dysfunction. This also empowers local teams by supporting their educational training in advanced maxillofacial surgery. Specifically, for young orthodontists and maxillofacial surgeons seeking to create livelihoods in these settings, helping them to develop these skill sets allow them to use them in their private practices for cleft and non-cleft patients. From a research standpoint, the consolidation of rigorous pre- and post-operative data will allow for continuous benchmarking against resourced programs while also studying the effects of foundational cleft surgeries on jaw development in resource-constrained areas. The foundation of this program was recently published.[1] Looking forward, we aim to develop high-fidelity virtual surgical planning pipelines through the use of local CTs/CBCTs, intra-oral scanners and 3D printers now that segmentation software is becoming more accessible.

Figure 4 – After the visiting team departs, the patient is seen by the local team weekly during activation. Clinical and occlusal photographs, along with distractor measurements and lateral cephalograms are sent weekly and the patient is discussed virtually.

Figure 5 – The patient is examined by local and visiting teams during subsequent outreach programs.cephalograms are sent weekly and the patient is discussed virtually.

By introducing advanced procedures in collaboration with local surgeons, orthodontists, speech therapists, and anesthesiologists, we are working toward a sustainable model of cleft care that can continue to evolve within partner institutions and ultimately become autonomously functioning. This also facilitates the development of new craniomaxillofacial surgery centers in countries that do not yet have them. As global surgery continues to evolve, the future of humanitarian cleft care will depend not only on the number of operations performed, but on the ability to establish durable systems that provide the full continuum of craniomaxillofacial treatment. Expanding access to orthognathic surgery represents an important step toward achieving that goal.

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1. Pontell ME, Hania M, Lim HJ, Roman Rodriguez L, Risco Gomez JC, Macio Centeno JJ, Lanata Flores AG, Caamones Villafuerte TS, Barona Terán J, Hamdan U, Swanson JW. Globalizing Cleft Orthognathic Surgery: Technical Guidance and a Multidisciplinary Roadmap. Ann Plast Surg. 2026 Feb 13. doi: 10.1097/SAP.0000000000004696. Epub ahead of print. PMID: 41687059.

After the Russian missile attack on Okhmatdyt hospital in 2024.

HUMANITARIAN WORK AND MISSIONS

PAEDIATRIC CRANIOFACIAL SURGERY IN WARTIME: STANDING WITH THE CRANIOFACIAL TEAM AT THE NATIONAL SPECIALIZED CHILDREN'S HOSPITAL OKHMATDYT IN KYIV, UKRAINE

HANNA LIF
SWEDEN

ROMAN KHONSARI
FRANCE

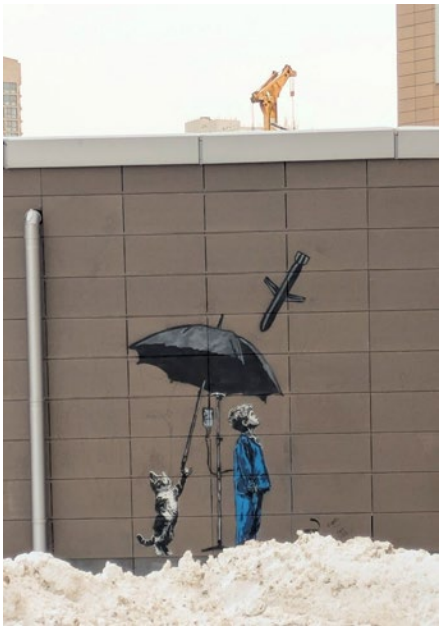
ELLIOT PATTOU
FRANCE

The name of Ukraine's largest children's hospital, Okhmatdyt, is an acronym meaning *'the protection of motherhood and childhood'* (*охорона материнства та дитинства*). On July 8, 2024, the hospital was struck by a Russian missile, resulting in several casualties, deaths and severe damage to its buildings. A paediatric nephrologist, Dr. Svitlana Lukyanchuk, was killed, and the treatment of many children with critical conditions was challenged. Now, more than four years into Russia's full-scale invasion of Ukraine, the question remains: under the conditions of war, how can motherhood and childhood still be protected?

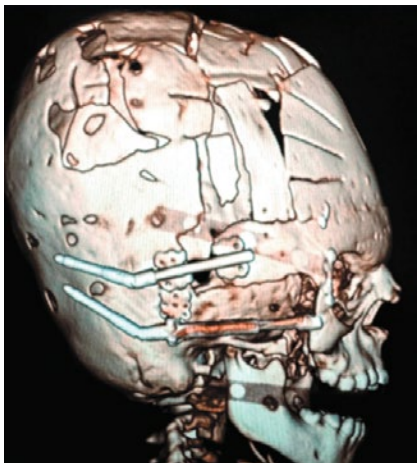
Modern craniofacial surgery itself was born from war - from the necessity to restore faces and lives shattered by conflict, led by pioneers such as Harold Gillies and Archibald McIndoe. One of the key figures who shaped craniofacial surgery, Daniel Marchac, was

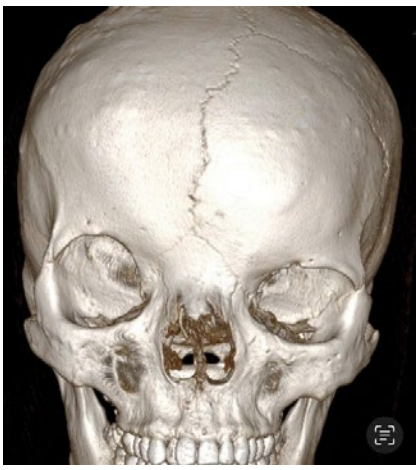
of Kyiv heritage - linking in an unexpected way the history of the field back to Ukraine. Today, most craniofacial surgeons work far from active war zones. Yet since 2022, Professor Roman Hossein Khonsari from Hôpital Necker – Enfants Malades AP-HP (Paris, France) has initiated and led craniofacial missions to Okhmatdyt in Kyiv. These missions now take place three times per year and have opened a path for younger surgeons to participate, learn, and contribute. Taking part in these missions early on in our careers has been particularly impactful. It has not only strengthened our interest in craniofacial surgery, but more importantly reinforced the motivation to acquire the level of expertise required to one day contribute as a senior surgeon in such international collaborations.

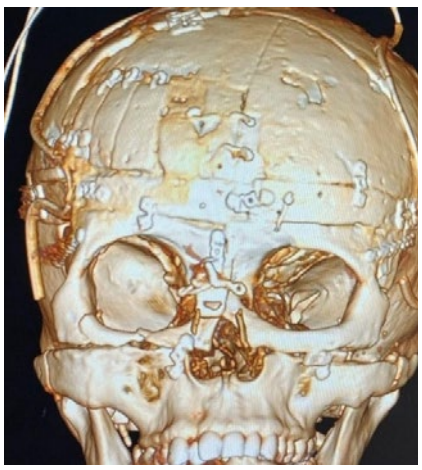
The work has been intense. In March 2024, the first fronto-facial monobloc advancement in Ukraine was performed on a 4-year-old patient with Apert syndrome. Later that year, the first box osteotomy for an adult case of craniofrontonasal dysplasia with severe hypertelorism followed. Across successive missions, over twenty-five complex craniofacial procedures have been performed safely and successfully. Each visit builds on the last. The next 2026 craniofacial mission planned for the end of August will be a busy week: one box osteotomy, one fronto-facial monobloc advancement, three total cranial vault remodellings and one fronto-orbital advancement.



Wall painting outside Okhmatdyt hospital, with one of the cranes re-building the hospital after the missile attack in the background.







First fronto-facial monobloc advancement in a 4-year old case of Apert syndrome and first box ostetomy for hypertelorism and orbital dystopia in an adult case of craniofrontonasal dysplasia performed in Ukraine 2024.

The purpose of these missions is not simply to 'come and operate.' The Ukrainian craniofacial team already possesses excellent technical and clinical expertise. The goal is to work side by side in order to create a long-lasting multidisciplinary team: exchange of knowledge, refinement of approaches, and strengthening of the systems of care. Progress has been tangible. In 2025, Okhmatdyt hospital became an affiliate member of ERN CRANIO, the European Reference Network

for rare craniofacial conditions. Collaborations have expanded to include hands-on workshops, the development of genetic testing, and research initiatives including formal collaborations with the Bogomolets National Medical University, as well as the Kyiv Polytechnic Institute in the field of AI-based decision making for the management of ballistic war injuries. Surgical instruments and essential equipment including RED II frames and springs have been donated and implemented. Step by step, the larger goal is to empower the future of craniofacial surgery in Ukraine with the Okhmatdyt team and create a national reference center following the ERN standards within a functional rare disease network with optimized referrals and lower rates of diagnostic wandering.

"Our children are our greatest treasure. They are our future. Those who abuse children tear at the fabric of our society." These words by Nelson Mandela resonate with a particular force at Okhmatdyt. In times of war, the care of injured children is an obvious priority, but congenital conditions do not pause and wait for peace. They continue to persistently emerge, demanding the same attention, precision, and care. Life continues to insist on itself. What becomes clear in Kyiv is that this work is not only about surgery. It is about continuity. About maintaining standards when circumstances push relentlessly in the opposite direction. About choosing to build, even when surrounded by destruction. When the fundamental value of life is under threat, priorities sharpen; family, responsibility, solidarity, and the obligation to act.

Beyond the surgical aspects, one of the key reasons for our presence in Ukraine has been to support our Ukrainian colleagues and the people we met there. This support does not rely solely on work in the operating room, but also on demonstrating that meaningful, non-war-related collaborations – even though they may seem illusive in such a context – are still possible and actively ongoing. We cannot contribute on the same scale as our Ukrainian colleagues, who have carried an overwhelming burden over these years, but as a craniofacial community, our role is not to stand by and watch. Supporting those who protect children in wartime is not an extraordinary act – it is a necessary one. What our Ukrainian colleagues are doing is more than surgery. It is the careful reconstruction of a future built step by step, in the most fragile of circumstances.

To the craniofacial team at Okhmatdyt: thank you for the honour of working alongside you.

Thank you for your trust to aid in caring for your patients, for your openness, and our collaboration. Thank you for your surgical excellence, your decisiveness, and your resilience in circumstances few of us can only begin to understand. A special thank you to Dr. Tetiana Pavlychuk for making these missions possible and for your tireless organisation of patient care; to Dr. Pavlo Plavskyi and Professor Andryi Kopchak for welcoming us into your departments; to Dr. Oleksandr Voloshchuk, Dr. Oleh Holubchenko, Dr. Yana Demchenko, Dr. Yevhenii Neimanovskyi, Dr. Victoria Matviichuk, Dr. Enes Lamaashy, Dr. Andryi Garkusha, Dr. Ihor Kolodka, Dr. Stanislav Shkolnyi, Dr. Yarema Vares, Sergii Stirenko, Yuri Gordienko, Oleksandr Kopchak, and Professor Iurii Kuchyn for your engagement, for working alongside us in a truly collaborative effort, and for the successful outcomes we achieved together.

You have our deepest respect.

Greetings from soldier parents at the office of the paediatric neurosurgery unit chairman Dr. Pavlo Plavskyi.

HUMANITARIAN WORK AND MISSIONS

PROVIDING COMPREHENSIVE CARE FOR CHILDREN WITH HIGHLY COMPLEX CRANIOFACIAL CHALLENGES

DIEGO STEINBERG
ARGENTINA

AKIRA YAMADA
UNITED STATES

CARLOS RAUL BARCELO
UNITED STATES

DAVID CHONG
AUSTRALIA

ARUN GOSAIN
UNITED STATES

CHRISTOPHER GORDON
UNITED STATES

JOSE ROLANDO PRADA
COLOMBIA

DEREK BRUCE
UNITED STATES

DOMENICO SCOPELLITI
ITALY

Significant global efforts over the past several decades have expanded access to cleft lip and palate repair. Despite this progress, a smaller but equally important population remains underserved: children with highly complex craniofacial conditions requiring comprehensive care.

The World Health Organization estimates that approximately 1 in 700 children - about 270,000 annually - are born with craniofacial deformities worldwide. While the majority of cleft lip and palate cases are addressed through established international programs, an estimated 15% - approximately 40,000 children each year - present with more complex craniofacial conditions and often lack access to adequate treatment. These children represent the primary focus of the World Craniofacial Foundation (WCF).

Founded in 1989 in Dallas, Texas by Dr. Kenneth E. Salyer, WCF was established to provide free medical care to patients with complex craniofacial pathologies, particularly those in poor social and economic circumstances. From its inception, the Foundation has focused on facilitating care in parts of the world where appropriate specialized craniofacial treatment may not be readily available.

Between 2018 and 2025 (with no surgeries performed in 2020-2021 due to COVID-related travel restrictions), 125 children were treated through the Foundation's efforts. These patients traveled from Africa, Asia, Eastern Europe, Latin America, and North America to receive care at 11 dedicated craniofacial centers located in Argentina, Colombia, China, Italy, India, Mexico, the Philippines, Taiwan, and the United States.

Among the more common pathologies treated within WCF's experience are Syndromic and Non-Syndromic Craniosynostosis, Complex Facial Clefts, Hypertelorism, Hemifacial Microsomia, and Treacher Collins syndrome. These conditions often require coordinated surgical planning and multidisciplinary management within our established craniofacial centers.

Each case is evaluated by WCF's medical directors, taking into account the child's diagnosis as well as cultural background and ethnicity to determine the most appropriate treatment approach and center within the Foundation's network of dedicated craniofacial centers. This process ensures that care is coordinated within an institution suited to the child's clinical needs and circumstances. The Foundation operates through partnerships with specialized craniofacial centers rather than temporary outreach missions. By working within institutions already equipped to manage complex cases, care can be delivered in an environment structured for comprehensive treatment and follow-up.

WCF has been involved in some of the most technically demanding procedures in our specialty: the separation of conjoined twins. Most recently, WCF Medical Director Dr. Chris Gordon led the successful separation of conjoined twin boys, Augusto and Pedro, from Guatemala at Dayton Children's Hospital, one of the WCF's partner centers. The separation required extensive planning and close collaboration between craniofacial and neurosurgical teams.

WCF's involvement in twin separation is not new. In 2003, Dr. Salyer, was part of the team that successfully separated Egyptian conjoined twin brothers Mohamed and Ahmed in Dallas. These cases represent the highest level of complexity in craniofacial surgery and neurosurgery and require extraordinary coordination, technical precision, and institutional support. The recent separation of Augusto and Pedro reflects the continuation of that legacy within WCF's global partnerships.

Practical barriers often represent the principal obstacle for families. Even when expertise exists, geography and financial limitations may prevent access. WCF therefore provides funding for transportation, lodging, and food for the child and caregiver so that financial constraints do not prevent treatment at an appropriate center. Removing these barriers is central to making comprehensive care realistically attainable.

" WCF has been involved in some of the most technically demanding procedures in our specialty: the separation of conjoined twins. "

In parallel with direct patient care, WCF places strong emphasis on education and professional development. The Foundation supports elective rotations and scholarships and maintains a dedicated craniofacial fellowship program. The fellowship program provides structured exposure to complex craniofacial cases and fosters professional exchange among institutions. The advancement of our field depends not only on technical proficiency, but also on sustained mentorship, shared expertise, and institutional continuity.

The interruption of surgical activity during 2020–2021 highlighted the challenges inherent in international referral models. Surgical care was paused during that period, reinforcing both the dependence on cross-border mobility and the importance of durable institutional partnerships.

The experience of the past seven years demonstrates the feasibility and significance of a structured global craniofacial program tailored to meet the needs of children with highly complex craniofacial challenges on a charitable basis. While the number of children treated represents only a portion of the global need, the model illustrates how organized partnerships, rigorous case evaluation, and practical family support can extend comprehensive care beyond geographic and economic limitations.

The World Craniofacial Foundation demonstrates that comprehensive care for children with the most complex craniofacial conditions - including Apert and Crouzon syndromes, craniosynostosis, and conjoined twin separation - can be delivered globally through structured collaboration among established centers. Sustaining and expanding such efforts will depend on continued engagement across our specialty and on preserving the legacy of excellence that defines craniofacial surgery.

SURVEYS

HELP US CIRCULATE A SURVEY ON PSYCHOLOGICAL SUPPORT IN CRANIOFACIAL CARE WITHIN ERN CRANIO

KRISTIN BILLAUD FERAGEN
NORWAY

A research group recently conducted a European survey on access to mental health care services within the European Reference Network for Rare and/or Complex Craniofacial Anomalies and Ear, Nose and Throat (ERN CRANIO). Our research group is currently carrying out a new survey on the same topic from the perspectives of patients and parents. Based on the findings, the Psychologist Working Group within ERN CRANIO aims to develop European recommendations for mental health care in craniofacial teams (cleft lip and/or palate and other rare craniofacial conditions).

The survey is currently limited to ERN CRANIO member countries, but we are discussing broadening the scope of the project to include countries outside ERN CRANIO as well. If you would be interested in discussing this, please contact the project manager Kristin Billaud Feragen. Email: krifer@ous-hf.no

The survey is available in 17 European languages. We hope that you and your teams can help us share it with patients and parents with lived experiences in your country by distributing the survey link within your networks and to relevant patient organisations, and/or posting information about the survey in patients' waiting rooms.

You can find posters or flyers with a QR code in available translations/languages for dissemination on the ERN CRANIO website at this link: https://www.ern-cranio.eu/post/help-us-improve-psychological-services-in-craniofacial-care-a-european-survey-of-patients-and-pare

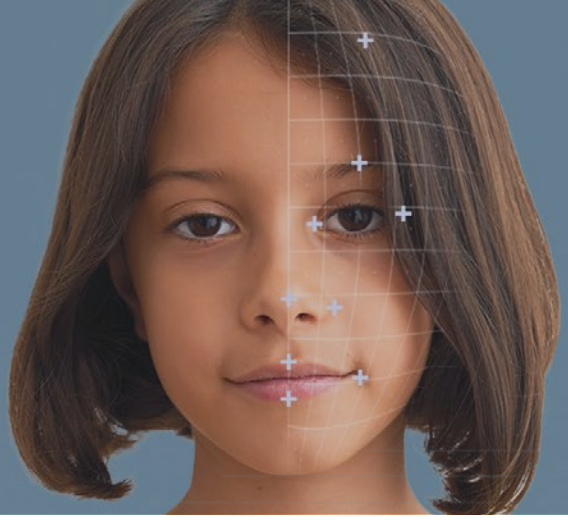
Thank you for taking the time to support and share this survey.

REFERENCE

Feragen KJB, Gavelle P, Millgård M, Kljajić M. A European Survey on Access to Mental Health Care Services within ERN CRANIO. J Craniofac Surg. 2025;36(8):2984-2989. doi:10.1097/SCS.0000000000011282

BECOME AN ISCFS MEMBER

The next vote to admit new members will be in June.



We welcome membership applications in Active, Associate, Corresponding, Orthodontic, Research, and Resident/Registrar/Fellow categories and have created a simple on-line process. Current member specialties include plastic, craniofacial, oral and maxillofacial surgeons, neurosurgeons, orthodontists, otorhinolaryngologists, dentists, and those involved in related research.

There is a $75 application fee and annual fees are $200 for Active/Associate members and $75 for Resident/Registrar/Fellow members. Our website includes information about qualifications for membership and frequently asked questions at this link: https://iscfs.org/membership/

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INTERNATIONAL SOCIETY OF CRANIOFACIAL SURGERY

INTERNATIONAL SOCIETY OF CRANIOFACIAL SURGERY

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EVENT CALENDAR

EACMFS

28th Congress of the European Association for Cranio Maxillo Facial Surgery
Location: Athens, Greece
Date: September 15-19, 2026
Website:
www.eacmfs-congress.com

ESCFS

European Society of Craniofacial Surgery Congress
Location: Ankara, Türkiye
Date: September 17-19, 2026
Website:
www.escfs2026.org

ISAR 2027 CONGRESS

4th World Congress - International Society for Auricular Reconstruction
Location: Utrecht, Netherlands
Date: June 3-5, 2027
Website:
https://isar-ear.com

ISCFS 2027

22ND BIENNIAL CONGRESS

Location: Rotterdam, Netherlands
Date: September 7–10, 2027
Website: www.iscfs.org

To submit a meeting to the calendar in our next issue, send the following information to admin@iscfs.org: Meeting Title, Location, Dates, Website.

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ISCFS 2027

INTERNATIONAL SOCIETY OF CRANIOFACIAL SURGERY

7-10 SEPTEMBER

Rotterdam | Netherlands

SAVE THE DATE

The International Society of Craniofacial Surgery invites you to Rotterdam, Netherlands for the 22nd Congress on September 7-10, 2027.

Prof. Dr. Irene Mathijssen
ISCFS Congress President (Rotterdam)

SEE YOU IN ROTTERDAM!