The SOBRAPAR Hospital Craniofacial Surgery Fellowship: Wide Craniofacial Surgery Training Based on Historical and Evolving Principles

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"Complex procedures are mostly done to improve the quality of life and to prepare patients for a better future in their many years to come" —Mutaz B. Habal

"The principles last forever and the techniques do not" —Mutaz B. Habal

In the 1970s, the Brazilian Society for Research and Care of Craniofacial Rehabilitation (SOBRAPAR) was established in Campinas, Brazil, by Professor Cassio Menezes Raposo do Amaral, a Converse- and Tessier-trained craniofacial and plastic surgeon. ''It quickly became a mecca for children with severe craniofacial deformities throughout all of South America,'' as emphasized by Dr. McCarthy.[1] In the 1980s, Dr. Tessier and others traveled to operate with Raposo do Amaral on his seemingly endless supply of craniofacial malformations, thus resulting in many new and useful craniofacial surgery techniques.[2] In addition, pioneers of craniofacial surgery have visited and significantly influenced all surgeons who graduated from the craniofacial and plastic surgery training program established by Raposo do Amaral.[3,4]

Although Raposo do Amaral died in 2005, his memory has lived on at several meetings and events,[1,3–6] including a reflection by Mutaz Habal, the editor-in-chief of this journal.[6] Raposo do Amaral's legacy was continued by his wife (Dr. Vera Adami Raposo do Amaral), his craniofacial plastic surgery resident (Dr. Celso Luiz Buzzo), and, more recently, his 2 sons who are also craniofacial plastic surgeon (Dr. Cassio Eduardo Raposo-Amaral and Dr. Cesar Augusto Raposo-Amaral).[2] The SOBRAPAR Hospital has been changing lives and giving hope to underprivileged patients with cleft and craniofacial deformities for the last 39 years.[2] At the time of this writing, >1,200 surgeries are performed every year, and there are 20,000 clinical attendances per year in different multidisciplinary areas, including plastic surgery, otolaryngology, psychology, speech pathology, and orthodontics.[2]

The 12-month SOBRAPAR Hospital Craniofacial Surgery Fellowship is reviewed here to highlight the treatment of a wide spectrum of cleft and craniofacial deformities by adopting historical and evolving principles. This letter may act as a guidance tool for those considering craniofacial surgery training at this center, which is directly linked with the history of craniofacial surgery.[1–7]

Overall, the craniofacial surgery fellowship (Table 1) comprised a combination of clinical, operative, and research activities

TABLE 1. The SOBRAPAR Hospital Craniofacial Surgery Fellowship Structure

Key Points	Characteristics
Fellowship supervisor	Cassio Eduardo Raposo-Amaral
Faculty members	4
Length of fellowship	12 mo (with a possibility of extension)
Start date	March 1 (Brazilian fellows); open date (International fellows)
Number of fellowship positions	1 Brazilian fellow; 1 international fellow
Selection criteria	Committed and hardworking candidates screened by written test, interviews, and curriculum analysis (Brazilian fellows) or letters of recommendation, interviews, and curriculum analysis (international fellows)
Requirement/experience	Residency/training of plastic surgery, head and neck surgery, and/or otolaryngology
Resident support	
Accommodation	Availability varies according to hospital policies in that particular year
Salary payment	
Peculiarities	Diagnosis, treatment planning, and surgical repair of a high volume and wide variety of syndromic and nonsyndromic craniofacial deformities and clefts
Research	Generous opportunities; research projects and related publications are encouraged
Academic facilities	Internet and Brazilian libraries accesses, and opportunity to participate in educational activities of the residents who are preparing for their exams
Meetings	Minimum of 1 meeting/y (not paid)
Vacation	Optional (2–4 wk)

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TABLE 2. Surgical Interventions (n = 389) Related to the 12-month SOBRAPAR Hospital Craniofacial Surgery Fellowship

Types of Surgical Interventions	No. of Procedures (%)
Premaxillary setback and lip adhesion	8 (2.1)
Primary cleft lip repair	76 (19.5)
Cleft palate repair	44 (11.3)
Alveolar bone grafting	23 (5.9)
Secondary cleft rhinoplasty	8 (2.1)
Orthognathic surgery	13 (3.3)
Distraction osteogenesis of the mandible	1 (0.3)
Osseous genioplasty	4 (1.0)
Rare Tessier cleft reconstruction	2 (0.5)
Autologous microtia reconstruction	9 (2.3)
Nasal reconstruction	
Split parietal bone grafting	2 (0.5)
Rib bone grafting	4 (1.0)
Forehead flap	2 (0.5)
Craniofacial contour deformity reconstruction	
Split parietal bone grafting	1 (0.3)
Rib bone grafting	5 (1.3)
Fat grafting	36 (9.3)
Tissue expansion in craniofacial reconstruction	9 (2.3)
Craniofacial bone tumor resection/reconstruction	10 (2.6)
Craniofacial soft-tissue tumor resection/reconstruction	21 (5.4)
Craniofacial fracture management	
Reduction and plating	25 (6.4)
Reconstruction of late sequelae	10 (2.6)
Craniofacial burn reconstruction	5 (1.3)
Temporomandibular joint ankylosis surgical treatment	1 (0.3)
Craniosynostosis repair	
Posterior distraction	4 (1.0)
Fronto-orbital advancement	9 (2.3)
Cranial vault remodeling	13 (3.3)
Le Fort III advancement with distraction osteogenesis	4 (1.0)
Monobloc bipartition distraction	1 (0.3)
Facial bipartition	2 (0.5)
Orbital box osteotomy	2 (0.5)
Surgical repair of Apert's syndactyly	13 (3.3)
Mixed procedures*	22 (5.7)

*Medial canthopexy, lateral canthopexy, Converse scalping flap, or forehead flap.A greater number and type of surgical procedures were performed during this year; these surgeries (n = 389) were only the procedures related to the author's participation.

(ie, 3 pillars of training) based on the mentorship model with weekly rotations. The team was composed of a faculty member, a craniofacial fellow, and plastic surgery residents for each rotation. The craniofacial fellow's responsibilities were separate from those of the residents, and the fellow positively influenced residents. On Monday, Wednesday, and Thursday mornings, the outpatient clinics were filled with patients from various regions of Brazil. Because a limited number of craniofacial plastic surgery centers were distributed throughout the most developed region of Brazil (ie, southeastern),[7–9] these clinics had a high volume and diversity of syndromic and nonsyndromic clefts and congenital and acquired craniofacial deformities with no previous treatment or with sequelae of prior interventions. In addition to exposure to accurate diagnoses, detailed surgical planning, and proper follow-up approaches, these clinics also provided multidisciplinary rounds for the discussion of multiple protocols and longitudinal evaluations of the relevant cleft and craniofacial outcomes.

A wide variety of cleft and craniofacial surgeries were performed on Mondays, Wednesdays, and Thursdays (morning or afternoon depending on the weekly clinical rotation). I directly participated and assisted in 389 surgeries from March 2017 to February 2018 (Table 2). In addition to surgical training to treat patients with cleft lip with or without cleft palate, velopharyngeal insufficiency, rare Tessier craniofacial clefts, oculo-auriculo-vertebral spectrum, Treacher Collins syndrome, microtia, vascular anomalies, craniofacial bone/soft tissue tumors, or craniofacial fractures, the craniofacial fellowship also permitted one to acquire important concepts, strategies, and skills to perform craniofacial osteotomies for the reconstruction in patients with hyperteleorbitism, Crouzon syndrome, Apert syndrome, and nonsyndromic craniosynostosis. Early surgical intervention for Apert syndactyly was also part of the fellow's routine.

As the third pillar of the craniofacial fellowship, scientific rounds were designed to allow fellows at any level to perform scholarly investigation. This was distributed throughout the year of training during the clinical and surgical routines because scientific research complements and reinforces surgical training, as in a translational model. The number of presentations at the cleft and craniofacial surgery meetings and the number of peer-reviewed manuscripts published were based on the scientific background and engagement of each fellow.[10]

In conclusion, the uniqueness of this challenging learning environment for surgical training revealed that the historical and evolving principles of craniofacial surgery were integral in daily practice (time spent in the operating room, hours spent caring for patients, and the dedication to improving surgical techniques and outcomes). These routinely existing principles (eg, successful marriage of bone and soft tissue reconstruction based on the balance between bone and soft tissue surgeries and functional surgery-first approach to achieve optimal functionality and aesthetically pleasing outcomes)[10] are core skills for all surgeons dedicated to repairing cranio-orbito-facial anomalies. Learning the philanthropic philosophy of this hospital (previously described as the "SOBRAPAR Model" in this journal[2]) was also extremely important because it allowed the fellows to absorb the essence of management to adapt in an environment that lacks support from the Brazilian government and to manage patients with cleft or craniofacial deformities.[7–9]

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REFERENCES

1. McCarthy JG. Reflections from North America. *J Craniofac Surg* 2006;17:8–9
2. Raposo-Amaral CE, Raposo-Amaral CA. Changing face of cleft care: specialized centers in developing countries. *J Craniofac Surg* 2012;23:206–209
3. Wan DC, Kwan MD, Bradley JP. Highlights of the proceedings from the 12th International Congress of the International Society of Craniofacial Surgery: ISCFS 2007. *J Craniofac Surg* 2008;19:551–554
4. Margaride LA. Reflections from South America. *J Craniofac Surg* 2006;17:9–10
5. Raposo-Amaral CE, Warren SM. Highlights from the 11th International Congress on Cleft Palate and Related Craniofacial Anomalies. *J Craniofac Surg* 2011;22:781
6. Habal MB. Reflections from the Editorial Board. *J Craniofac Surg* 2006;17:10
7. Raposo-Amaral CE, Denadai R, Ghizoni E, et al. Family of Crouzon syndrome represents the evolution of the frontofacial monobloc

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advancement technique: from immediate movement to monobloc distraction to monobloc bipartition distraction. *J Craniofac Surg* 2015;26:1940–1943
8. Denadai R, Samartine Junior H, Denadai R, et al. The public recognizes plastic surgeons as leading experts in the treatment of congenital cleft and craniofacial anomalies. *J Craniofac Surg* 2015;26:e684–e689
9. Denadai R, Muraro CA, Raposo-Amaral CE. Residents' perceptions of plastic surgeons as craniofacial surgery specialists. *J Craniofac Surg* 2015;26:2334–2338
10. Denadai R, Raposo-Amaral CA, Buzzo CL, et al. Autologous free fat grafting for management of the facial contour asymmetry. *J Craniofac Surg* 2018;29:878–886

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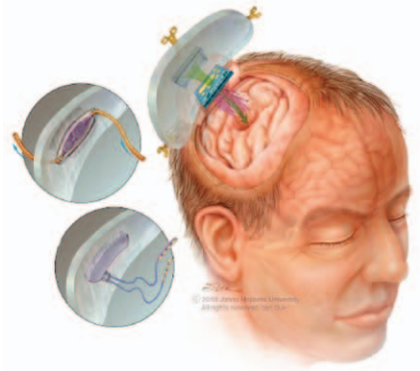

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