

lation of patients with CP. Another key component of this study has been the ability of our SLP to remotely train a health care provider who is not a speech-language pathologist to teach and reinforce SLP techniques on a weekly basis between monthly teleconference therapy sessions. This was accomplished through initial education in the anatomy of clefting and VPI as well as normal speech development during childhood. The chosen health care provider in Nicaragua had training in physical therapy but no specific training in SLP. After every monthly session, a postsession conference between our speech-language pathologist and their health care provider occurred in order to define future goals for each child, including therapeutic techniques to use to work toward those objectives. Parents were also instructed on exercises and goals to perform and reinforce on a daily basis with the children at home, much the same as we do for parents in the United States.

One limitation of this study is the use of an English-speaking speech-language pathologist to provide therapy for Spanish-speaking children through an interpreter. Prior to beginning this study, our speech-language pathologist studied the linguistics of Spanish speech development, reviewed the correct pronunciation of various Spanish phonemes with native speakers, and studied the proper mode, manner, and placement of Spanish phoneme production. The ideal situation would be to have a speech-language pathologist who was not only bilingual but also spoke in the dialect specific to Nicaragua. However, to our knowledge there is no such specialist in Nicaragua or the United States. Given the preliminary results shared in this article, we believe that, through an interpreter who speaks the native dialect, our English-speaking speech-language pathologist has been able to improve the speech of these patients. We believe this model is applicable to and more feasibly implemented by more health care providers performing this type of humanitarian work.

Our overall goal is to demonstrate the power of telepractice in overcoming longstanding disparities in the care of international patients.

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1. Samanich J. Cleft palate. *Pediatr Rev.* 2009;30(6):230-232.
2. Damiano PC, Tyler MC, Romitti PA, et al. Health-related quality of life among preadolescent children with oral clefts: the mother's perspective. *Pediatrics.* 2007;120(2):e283-e290.
3. Furr MC, Larkin E, Blakeley R, Albert TW, Tsugawa L, Weber SM. Extending multidisciplinary management of cleft palate to the developing world. *J Oral Maxillofac Surg.* 2011;69(1):237-241.
4. Working Group on Telepractice. Speech-language pathologists providing clinical services via telepractice. American Speech-Language-Hearing Association Web site. <http://www.asha.org/docs/html/PS2005-00116.html>. Accessed August 23, 2011.
5. Mashima PA, Birkmire-Peters DP, Syms MJ, Hottel MR, Burgess LP, Peters LJ. Telehealth: voice therapy using telecommunications technology. *Am J Speech Lang Pathol.* 2003;12(4):432-439.
6. Mashima PA, Doarn CR. Overview of telehealth activities in speech-language pathology. *Telemed J E Health.* 2008;14(10):1101-1117.
7. Goldstein B, Iglesias A. *Contextual Probes of Articulation Competence—Spanish: CPAC-S* [CD-ROM]. Greenville, SC: Super Duper Publications; 2006.
8. Boseley ME, Cunningham MJ, Volk MS, Hartnick CJ. Validation of the Pediatric Voice-Related Quality-of-Life survey. *Arch Otolaryngol Head Neck Surg.* 2006;132(7):717-720.
9. Zur KB, Cotton S, Kelchner L, Baker S, Weinrich B, Lee L. Pediatric Voice Handicap Index (pVHI): a new tool for evaluating pediatric dysphonia. *Int J Pediatr Otorhinolaryngol.* 2007;71(1):77-82.

Addressing Challenges of Cleft Lip and Palate Deformity in Afghanistan

The purpose of this report is to describe my experience with evaluating and treating cleft lip with and without cleft palate (CL/P) deformity in pediatric patients in Afghanistan from November 2009 to November 2010. Pediatric patients in Afghanistan are plagued by numerous challenges, including poor nutrition, limited access to health care, and lack of educational resources. The lack of plastic surgery care in Afghanistan was recently highlighted by *Time*.¹

Report of Cases. The literature is deplete of reports of congenital malformations in Afghanistan. One older study² prospectively evaluated congenital malformations at birth among live-born infants. The incidence of major and minor malformations was 2.4% and 3.1%, respectively. This increased incidence reflected a higher occurrence of CL/P. The history of parental consanguinity was notably higher among parents of infants with major congenital malformations compared with unaffected control infants.² The Combat Support Hospital (CSH) at Bagram Airfield, Afghanistan, has been operational since 2002.³ Most patients seen are Afghani local nationals (81%), of whom 35% are younger than 18 years. This facility represents



Figure 1. A 5-year-old girl with a right-sided unilateral cleft lip and palate deformity. A, Presurgical photograph. B, The patient after modified Millard advancement-rotation repair was performed.

a scaled-down level I hospital with 10 intensive care unit beds; 18 medical and surgical beds; 3 operating rooms; and emergency, laboratory, pharmacy, and radiology services. This report examines 17 case reports of CL/P deformities in pediatric patients seen at the CSH.

Assessment for birth weight, health status, syndromes, and parasitic disease was performed on every child. If the child was deemed to be of too poor nutritional status or weight, then surgery was delayed and either a feeding tube or supplemental nutrition was offered. Repair of both CL/P deformities was offered. Follow-up was performed by the otolaryngology clinic.

The CSH at Bagram Airfield evaluates and treats local Afghan national citizens on a humanitarian basis. In the period from November 2009 to November 2010, 17 patients with CL/P deformities were treated. Thirteen patients (76%) with CL/P were treated, while 4 (24%) were deemed to be of too poor health to undergo surgery due to low weight. These patients were offered nutritional support, and 1 patient received a nasogastric tube with feedings. The mean age at presentation was 5.9 years old (range, 1 month to 20 years). Eight patients presented with an isolated cleft lip or cleft palate, whereas the remainder (9) presented with CL/P. Of the remaining 9 patients, 4 patients underwent staged operations starting with a modified Millard rotation-advancement repair followed by the cleft palate repair at 1 month. A 5-year-old girl with right-sided unilateral cleft lip and palate deformity underwent this sequence of repair as shown in **Figure 1**. In her family, 3 of the 6 siblings were born



Figure 2. A 21-month-old patient born with a left-sided unilateral cleft lip with cleft palate. A, Presurgical photograph. B, The patient after modified Millard advancement-rotation repair was performed.

with CL/P. Her older sister underwent revision of her bilateral cleft lip and palate repair at the same operative setting. There was no genetics evaluation available. **Figure 2** depicts a 21-month-old patient born with a left-sided unilateral cleft lip with palate. Lateral displacement of the cleft-side nasal base and hooding of the ala contributed to the associated cleft nasal deformity. A deficiency in the red lip vermilion and attenuation of the orbicularis oris muscle on the cleft side were corrected using a modified Millard repair with cleft rhinoplasty techniques to reposition and align the left ala using soft-tissue dissection with buried horizontal mattress sutures. Given the lower lip pit, Van der Woude syndrome was suspected. **Figure 3** illustrates a typical bilateral cleft lip deformity that occurred in 4 children in this cohort (25%). The 6-year-old girl shown herein presented with a bilateral incomplete lip deformity with malpositioned dentition. She underwent bilateral cleft lip repair. Given her age, presurgical orthodontics were not performed. Most of the patients (82%) were seen for evaluation at an advanced age. They experienced the speech and feeding problems, tooth decay, and psychological effects of this deformity due to delayed treatment.

There were 3 complications, all secondary palatal fistulas following cleft palate repair at 1 month. One fistula resulted in the patient who received a combined CL/P operation. One fistula occurred in a patient who repeatedly finger-probed his repaired palate. The mean duration of follow-up was approximately 2 months.

There is female sex dominance among patients with CL/P deformity in this study. There were 13 girls (76%), with an average age of 4.5 years, and 4 boys (24%), with average age of 6.4 years, in the cohort. Considering weight for age percentiles according to the Centers for Disease Control and Prevention (CDC) growth charts for the United States, all children measured would be considered to be



Figure 3. A 6-year-old girl with a bilateral incomplete lip deformity with malpositioned dentition. A, Presurgical photograph. B, The patient after bilateral advancement-rotation repair was performed.

of low weight for their age, with 10 children (83%) not meeting the minimum weight for age listed on the charts.

Comment. The report herein presents the first contemporary study on the evaluation of patients with CL/P in Afghanistan. The mean age at presentation (5.9 years old) was older than that found in the United States. The sex dominance associated with this study has also been questioned in another study pertaining to pediatric facial traumas.⁴ In addition, 83% of children measured did not meet the minimum weight for age listed on CDC growth charts. Although one cannot transparently use CDC growth charts designed for US children with Afghan children, there are no comparable measurement charts for children in this region. In addition, considering that all children measured were of low weight for their age (<25th percentile) with 11 of the 14 being in the 10th percentile or less, a measure of malnutrition can be assessed. Four patients did not receive surgery owing to poor health and nutrition. Of these, 1 patient was offered long-term nutrition via a nasogastric tube at 2 months of age. The

initial weight at presentation was 2 kg, and the baby gained 3 kg while receiving feedings.

A public health system is lacking in Afghanistan. In addition, there is no formal birth registry. Patients without financial means do not have access to health care. In our cohort, none of the patients' families knew the month or day of their child's birth. Afghans live and work within tribal groups and seldom travel outside their region. The advantage of the CSH is that referrals from all regions of the country are ferried to the ear, nose, and throat specialist or facial plastic surgeon. The cohort described herein represents different tribal regions and racial groups from within Afghanistan. Because a formal birth registry is lacking, the prevalence of craniofacial disorders, including CL/P as presented herein, is not available.

There is a deficiency in specialty care for craniofacial anomalies in Afghanistan. Given 3 decades of war, specialists have fled the country. A multidisciplinary team is also lacking. In reviewing the literature, I found no studies detailing the challenges associated with cleft care in Afghanistan that have been described in this analysis. In addition, missions led by humanitarian organizations do not exist in Afghanistan.

The data presented herein compel future study. It is unclear why children with CL/P are first seen at an advanced age. We do not understand why there is sex dominance (female) in patients presenting with CL/P, and why girls were seen at the CSH earlier than boys. The impact of multidisciplinary care on early intervention and speech development should be addressed. Military and humanitarian organizations can cooperate to investigate the etiology of craniofacial disorders in Afghanistan to meet the needs of children in this country.

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1. Baker A. Afghan women and the return of the Taliban. *Time*. 2010;176(6):20-28.
2. Singh M, Jawadi MH, Arya LS, Fatima. Congenital malformations at birth among live-born infants in Afghanistan, a prospective study. *Indian J Pediatr*. 1982; 49(398):331-335.
3. Statler JD, Tempel CG, Harcke HT. Computed tomography of craniofacial trauma at a combat support hospital in Afghanistan. *Mil Med*. 2005;170(3):206-210.
4. Creamer KM, Edwards MJ, Shields CH, Thompson MW, Yu CE, Adelman W. Pediatric wartime admissions to US military combat support hospitals in Afghanistan and Iraq: learning from the first 2,000 admissions. *J Trauma*. 2009; 67(4):762-768.