How to Leverage First-World Technology to Build Long-Term Capacity & Sustainability During International Surgical Outreach

Raj M. Vyas, MD FACS, Lohrasb R. Sayadi, MD, Usama S. Hamdan, MD FACS
1 UC Irvine Department of Plastic Surgery, Orange, CA; 2 Global Smile Foundation, Boston, MA

**OBJECTIVES**

First world technology platforms can be leveraged to increase connectivity and promote knowledge/skill transfer.

Augmented Reality (AR) permits a remote yet “hands-on” virtual interactive presence (Fig 1).

A 2014 multi-center proof-of-concept study demonstrated AR is safe, reliable, and accurate (<1mm) when remotely teaching cleft surgery to overseas surgeons (Fig 2).

We built an AR-based educational platform and assessed its efficacy in transferring cleft knowledge and skills to overseas colleagues

**METHODS**

A 13-month cleft curriculum combined 3 overseas site visits (SV) & 10 AR-based remote visits (RV)

After shaded SV/RVs (Fig 3), a Visual Analog Scale was used to assess longitudinal improvements in 7 components of cleft capacity.

**RESULTS**

2 plastic surgeons without specialized cleft training were recruited in Trujillo, Peru and taught Mulliken’s unilateral & bilateral cleft repair

- 26 SV cleft repairs (21 UCL, 5 BCL)
- 17 RV cleft repairs (14 UCL, 3 BCL)

**Capacity:** SVs preferentially build capacity for: Diagnosis, Principles of repair, Techniques of repair, & Intraop decision-making (p<0.05).

**Sustainability:** Progressive, sustained gains were found over time (Fig 5). At 30 month F/U, study surgeons operating independently with non-syndromic children with cleft lip transferred to Lima

**Acknowledgements:** Grant support from Cleft Palate Foundation & Plastic Surgery Foundation