Global Reconstructive Surgery Education: The ReSurge Model

Paige Fox MD, PhD
James Chang MD
Lancet Commission on Global Surgery - 2015

5 billion people do not have access to surgical care
Financial Impact of Reconstructive Surgery

Benefit: a lifetime of independent hand function
Child born with a cleft hand

Benefit: a lifetime of assimilation and function
The world’s poorest third only receive 3.5% of all surgeries.
The Current Global Need for Congenital & Trauma Reconstruction

- Five in 100 children in Vietnam are born with an abnormality.
- More than 400,000 are injured annually in traffic accidents.
- Many of these children have disabilities repairable with reconstructive surgery.

RMHC ReVAST Grant, 2014
The Current Global Need for Burn Reconstruction

- Burn trauma is an extremely common source of injury and disability that causes 11 million injuries and over 200,000 deaths per year.

- The vast majority of which are borne by women and children in the developing world.

*WHO Burns Fact Sheet, 2014*
Capacity Building by Training
Reconstructive Surgeons In Country
Global Reconstructive Surgery

- Reconstructive surgery needs *throughout the world*
  - Clefts, burns, trauma, hand, microsurgery...
- Reconstructive surgery needs *throughout the body*
  - Head to toe
- Specific techniques that are useful and appropriate
  - *Throughout the world & throughout the body*
Key Points:
Global Reconstructive Surgery needs to be tailored to local needs & local hospital resources

Our Faculty and Residents can lead the way in teaching Global Reconstructive Surgery
Interplast Founded
Stanford beginnings
Dr. Donald Laub, former Chief of Plastic Surgery at Stanford University

1969

Year-round access begins in Nepal.

1999

Now Surgical Outreach in 12 countries, 84% of surgeries

2013

ReSurge reaches Surgical Milestone

2014

ReSurge reaches 100,000 surgeries

Training Launch
ReSurge establishes ReSurge Global Training Program & Academic Faculty

Led by Dr. James Chang, Chief of Plastic Surgery at Stanford University
ReSurge Delivers and Teaches ALL of Reconstructive Surgery
Direct Service
Volunteer Surgical Team Trips

• Volunteer surgical teams go around the world to perform free surgeries.

• Plastic surgeons, anesthesiologists, pediatricians, OR/recovery room nurses, translators, nurse educators, & hand/physical therapists.

Two-week trips: each performing 75 life-changing surgeries
Surgical Outreach Programs Year-Round

Provide 84% of surgeries annually, with ReSurge oversight, training and support

Creates year-round surgical capacity where none previously existed
Dr. Shankar Rai: Kirtipur Hospital, Kathmandu, Nepal
Dr. Jorge Palacios, Guayaquil, Ecuador
Dr. Shafquat Khundkar
Dhaka, Bangladesh
Continual Evolution of Resurge: 
ReSurge Global Training Program

• Bringing one child to Stanford for an operation

• Sending surgery team to developing country for 2 weeks

• Supporting outreach partners in country to perform surgery year-round

• Training the next generation of reconstructive surgeons in many countries
ReSurge Global Training Program
Capacity Building in Reconstructive Surgery

- Engage academic faculty across the world
- Build a complete *global reconstructive surgery* curriculum
- Identify optimal host programs and key trainees
- Arrange quarterly Visiting Educator trips
- Track development of trainees
- Build up other specialties such as anesthesia and nursing
- Fund the trained surgeons to continue operating
Step 1 - ReSurge Academic Faculty

The best teachers in the United States should lead the way in teaching the developing world
ReSurge International
Department of
Reconstructive Surgery

Academic Chair
Dr. James Chang – Stanford University

Cleft and Craniofacial Surgery
Dr. Seun Adetayo - Albany Medical College
Dr. Edward Buchanan – Baylor University/Texas Children's Hospital
Dr. Ghulam Qadir Fayyaz – SIMS Hospital, Lahore
Dr. Chris Gordon – University of Cincinnati
Dr. Arun Gosain – Northwestern University
Dr. Amanda Gosman – University of California, San Diego
Dr. Joseph Gruss – University of Washington
Dr. William Hoffman – University of California, San Francisco
Dr. Rohit Khosla – Stanford University
Dr. Peter Lorenz – Stanford University
Dr. Joe Losee – University of Pittsburgh
Dr. Delora Mount – University of Wisconsin, Madison
Dr. Rick Redett – Johns Hopkins University
Dr. Mitch Stotland – Sidra Medical Center, Qatar

Burn Surgery
Dr. Matt Donelan – Harvard University
Dr. Larry Gottlieb – University of Chicago
Dr. Yvonne Karanas – Stanford University
Dr. Matthew Klein – Stanford University
Dr. Pirkko Maguina – University of California, Davis; Shriners
Dr. Joseph Molnar – Wake Forest University
Dr. David Megee – University of Cincinnati
Dr. Vinita Puri – Seth GS Medical College & KEM Hospital, Mumbai
Dr. Shankar Rai – Kirtipur Hospital, Nepal
Dr. Deb Reilly – University of Nebraska
Dr. Roger Simpson – Long Island Plastic Surgical Group

Hand Surgery
Dr. James Chang – Stanford University
Dr. Kevin Chung – University of Michigan
Dr. Paige Fox – Stanford University
Dr. Jeff Friedrich – University of Washington
Dr. Warren Hammert – University of Rochester
Dr. Vincent Hentz – Stanford University
Dr. Scott Kozin – Shriners Hospital, Philadelphia
Dr. David Kulber – Cedars-Sinai Medical Center
Dr. Subhro Sen – Stanford University

Dr. Jennifer Waljee – University of Michigan
Dr. Andrew Zhang – University of Texas, Galveston
Dr. Ryan Endress – University of Kansas
Dr. Aaron Berger – Miami Children’s Hospital

General Reconstructive Surgery
Dr. Richard Agag – Albany Medical College
Dr. Mike Bentz – University of Wisconsin
Dr. Damon Cooney – Johns Hopkins University
Dr. Thomas Davenport – Long Island Plastic Surgical Group
Dr. Drew Davis – Stanford University
Dr. Ron Gemberling – Stanford University
Dr. Shafruat Khundkar – Dhaka, Bangladesh
Dr. Tan Bien Keem – Singapore General Hospital
Dr. Gordon Lee – Stanford University
Dr. Deepak Narayan – Yale University
Dr. Rahim Nazerali – Stanford University
Dr. John Nigriny – Dartmouth University
Dr. Jorge Palacios – Ecuador
Dr. Hani Sbitany – University of California, San Francisco
Dr. Charles Thorne – New York University
Dr. David Young – University of California, San Francisco
Step 2 - ReSurge Curriculum
All Surgery Talks Converted to Videos

Face Burn Reconstruction

Matthew B. Klein

ReSurge Global Training Program Curriculum
Step 3: Identify Host Programs

World Headquarters
Sunnyvale, California

Latin America
Bolivia, Ecuador, Nicaragua, Peru

Asia
Bangladesh, Bhutan, India, Nepal, Sri Lanka, Vietnam

Africa
Ghana, Mali, Mozambique, Tanzania, Zambia, Zimbabwe
Step #4: Visiting Educator Trips: Charles Thorne MD
Cartilage Harvested From the Rib
### Step 5: Tracking Trainees with Milestones

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<th>Office: kushaeron@yahoocom</th>
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<tr>
<th>Contact Details</th>
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<th>Contact Information</th>
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<td></td>
<td>Rausky, Jonathan</td>
<td>9/26/2014</td>
<td>Dehradun</td>
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<td>Surgery</td>
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<td>Burn Reconstruction</td>
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<td>4: Able to independently perform secondary local and regional flaps for reconstruction after scar release. Understands the anatomy and surgical principles of secondary flap reconstruction.</td>
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<td>Lower Extremity Burn</td>
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<td>Amputations &amp; Mutilated</td>
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| Cleft and Craniofacial Surgery | 4: Able to independently perform secondary cleft lip surgery and cleft rhinoplasty. Understands the anatomy and surgical principles of secondary cleft lip and nasal deformities. |
| Cleft Lip Surgery | |
Dr. Kush Aeron, son of Dr. Yogi Aeron, has been a ReSurge partner in Dehradun, India since 2008. He trained at Ghandi Medical College in Bhopal, and completed his residency at Loknayak Jai Prakash Narayan Hospital.

**Milestones**

1. Early Burn Management
2. Skin Free Flaps
3. Face and Neck Burns
4. Hand Fracture Reconstruction
5. Wound and Scar Reconstruction
6. Upper Extrem. Burns
7. Lower Extrem. Burns
8. Nasal Reconstruction
9. Lip Reconstruction
10. Muscle Free Flaps

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Dr. Kush Aeron: India
Visiting Educator Trips
Procedures Performed During Trips to Hue 2014-2019

- Cleft, 16, 26%
- Hand, 11, 18%
- Breast, 14, 22%
- Micro, 8, 13%
- Other CF, 5, 8%
- Microtia/otoplasty, 6%
- Craniosynostosis, 4, 1, 2%
- Other, 3, 5%
Step 6 — Build up other specialties

Therapy

Peri-operative Nursing
IMPACT of Investment in Dr. Shankar Rai:

- 50-person reconstructive plastic surgical team, largest in Nepal
- 9 of the country’s 16 reconstructive plastic surgeons
- Annually restore 1,500 patients after burns, injuries, hand conditions, clefts
- Treated 800+ earthquake victims
ReSurge’s Position on The Role of US Residents and Fellows

Residents/Fellows serve as Ambassadors and Teachers
What are the local objections to education of US trainees?

✧ “Practicing” on local patients
✧ Cultural sensitivities
✧ Prevents local trainees from learning
What are the potential upsides of educating US trainees in global settings?

- Seeing the need around the world
- Learning simpler techniques
- Learning to operate with limited equipment
- Appreciating the resources in the US
How does education of US trainees help or hinder education of local surgeons?

- Done properly, the US trainee can greatly enhance the education of local surgeons
  - Help organize ReSurge VE trips
  - Teach local surgeons and staff at an appropriate level
  - Bond with local surgeons for long-term relationships
  - Provide access to journal articles, websites, etc
Does education pose a barrier to health care delivery in global health?

✴ Possible unintended negative effects:

✴ Overseas surgeons trained in the US may return to their local environment without the same equipment and supplies
✴ Brain drain of trained local surgeons
Final Thoughts on Global Reconstructive Surgery

- There is a lot of work to do
- Organizations should share the work & share the credit
- Developing sustained training programs is essential
- Need the best faculty to train the world
- Our residents play a critical role as conduits between faculty and overseas trainees
Thank You!

Stanford Medicine

ReSurge International