Experiential Learning in Dermatologic Surgery: Evaluating an Interactive Surgical Manikin

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Disclosure

• Inventor of U.S. Patent US8814573B2
  Interactive Surgical Manikin
Objectives

1. Why create an interactive surgical manikin (ISM)?
2. Fabrication of the ISM.
3. Evaluating the efficacy of the ISM.
4. Who is using ISM?
5. Conclusion
# Increasing Trends in Dermatologic Procedures

<table>
<thead>
<tr>
<th>Survey #1</th>
<th>Survey #2</th>
<th>Survey #3</th>
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</thead>
<tbody>
<tr>
<td>Local Skin Flaps</td>
<td>34%</td>
<td>58%</td>
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<tr>
<td>Skin Grafts</td>
<td>21%</td>
<td>61%</td>
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<tr>
<td>Mohs Surgery</td>
<td>11%</td>
<td>40%</td>
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<tr>
<td>Skin Cancer Procedures</td>
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Disparity in Surgical Training Programs

Low-fidelity Surgical Models Published in Dermatology Literature

- **Rat Skin**
  - 2003: Altinyazar et al.

- **Biosynthetic Dressing**
  - 2005: Garcia et al.

- **Latex-free Elastic Bandage**
  - 2010: Maher et al.


Low-fidelity Surgical Models Used in Dermatology Residency Programs

- Pig’s feet (84%)
- Synthetic (12%)
- Live animals (3%)
- Virtual reality (Computer based) (3%)

Low/High-fidelity Surgical Model

- Cadavers (9%)
  - Low-fidelity = Dated cadavers in formaldehyde
  - High-fidelity = Fresh cadavers

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ISM Skin-Simulant Testing

Instron E 3000

- Instron E 3000 testing at Dayton Community Tissue Biomechanics Laboratory, 2009 – 2010.
Comparison of Mechanical Skin Properties of Fresh Cadavers vs. Interactive Surgical Manikin


Instron E 3000 testing at Dayton Community Tissue Biomechanics Laboratory, 2009 – 2010.

Interactive Surgical Manikin
Danger Zone
Interactive Surgical Manikin
Flap Design Concept Video
Interactive Surgical Manikin
Basic Model Tumor – free Margin Concept
Interactive Surgical Manikin
Advance Model Pentagonal Wedge Resection
Interactive Surgical Manikin
Estlander Flap
Interactive Surgical Manikin
Paramedian Forehead Flap
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ISM Surgical Workshop
ISM Surgical Workshop

Dermatology Programs

- 12 ACGME Dermatology Programs
- 7 AOCD/AOA Dermatology Programs
- 35 Residents

<table>
<thead>
<tr>
<th>Columbia Hospital</th>
<th>Northwestern University</th>
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<tr>
<td>Dartmouth-Hitchcock Medical Center</td>
<td>Ohio University</td>
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<tr>
<td>Genesys Regional Medical Center</td>
<td>Ohio State University</td>
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<tr>
<td>Indiana University</td>
<td>Rush University Medical Center</td>
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<td>Loyola University</td>
<td>Stanford University COM</td>
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<tr>
<td>St. Joseph Mercy Health System</td>
<td>TUCOM/Valley Hospital Medical Center</td>
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<tr>
<td>MWU/Arizona College of Osteopathic Medicine</td>
<td>University of Chicago</td>
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<tr>
<td>National Naval Medical Center</td>
<td>University of TN Health Science Center</td>
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<tr>
<td>Barnabas Hospital</td>
<td>University of Wisconsin</td>
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<td>West Virginia University</td>
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ISM Surgical Workshop

Surgical Lectures: 1 hr

Surgical Lab: 4 hrs

Flap demonstrations: 10 mins

Resident closures: 30 mins
- Advancement flap
- Rotation flap
- Transposition flap
- Z-plasty
Results of Workshop

Residents’ Rating of Training Modalities

Rating Scale: 1= Weak and 10 = Strong

- Pig’s Feet: 4.38 (SD ± 2.24)
- Cadavers: 5.29 (SD ± 3.85)
- ISM: 7.96 (SD ± 1.97)
- MOHS Surgery: 8.06 (SD ± 1.52)
- Supervised Surgeries: 8.67 (SD ± 1.92)
Results of Workshop

Resident’s Rating of Surgical Skill Improvement and ISM Supplementing Their Surgical Curriculum

- Improved Surgical Skills: 30.21% ± 18.24
- Supplement Training: 80% ± 1.59
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2012 ASDS ANNUAL MEETING

OCTOBER 11-14, 2012

Hyatt Regency Atlanta on Peachtree Street
**Tired of trying to visualize procedures with pig's feet?**

**ASDS offers you realistic hands-on practice using high-fidelity cutaneous training models!**

"The artificial demos were as close as you can get to the real thing. Not only do you get to sample the fillers, but you can work on technique and see real time results!"
— Omar Qutub, MD

"Being able to practice on the models was awesome and allowed me to practice tips I had just learned."
— Holly Gunn, MD

Instead of just reading about improved techniques, or practicing them on pig's feet — you will get to practice them yourself using new high-fidelity cutaneous surgical models.* These models accurately simulate anatomy, including sub-mucosal structure, providing you with realistic hands-on training of basic and complex techniques.

**These courses provide an unequalled opportunity to strengthen your skills!**

**Hands-on Workshop:**
**Tumor Excision/Wound Repair and Injectables**
(Young Dermatologic Surgeons ONLY)
**WEDNESDAY, NOV. 2 • 1:00 – 5:30 pm**
Moderator(s): Naomi Lawrence, MD; Patrick K. Lee, MD
Fee $125

**Hands-on Workshop:**
**Fillers and Injectables**
(Residents/Post-residency Trainees/Young Dermatologic Surgeons ONLY; Limited to 30)
**SATURDAY, NOV. 5 • 3:45 – 5:15 pm**
Moderator(s): Dee Anna Glaser, MD; Rhoda S. Narins, MD
Fee $125

**Hands-on Workshop:**
**Tumor Excision/Wound Repair and Injectables**
(Residents/Post-residency Trainees ONLY; Limited to 30)
**SUNDAY, NOV. 6 • 8:00 – 11:30 am**
Moderator(s): Kavita Mariwalla, MD; Murad Alam, MD
Fee $85

*Invented by Keoni Nguyen, DO, of DermSurg Scientific.

Workshops made possible in part by generous educational grants from

ETHICON, inc.
a Johnson & Johnson company

MERZ AESTHETICS™
The Art and Science of Fillers and Injectables

September 10-11  Chicago, IL
October 15-16  New York, NY

"The artificial demos were as close as you can get to the real thing. Not only do you get to sample the fillers, but you can work on your technique and see real-time results." - Omar Qutub, MD

Live patient demonstrations and hands-on training through high-fidelity cutaneous surgical training models* make these courses an unequaled opportunity to strengthen your skills in the latest dermal fillers and injectables. Taught by experts, you will learn how to optimize current fillers and injectables; applications and techniques for new products; the best and safest way to customize and combine treatments to meet your patients' expectations; non-facial rejuvenation procedures; nerve blocks and anesthesia; how to avoid and treat complications, and effective ways to market procedures and manage patient expectations. Up to 12.0 AMA PRA Category 1 Credits™.

* invented by Keoni Nguyen, DO, of DermSurg Scientific

Funding provided, in part, by unrestricted educational grants from:

MERZ AESTHETICS  ALLERGAN  MEDICIS
Sharpen your skills with hands-on workshops!

ASDS hands-on workshops offer an interactive experience with personalized instruction by experts. Innovative, three-dimensional surgical and filler training models are used to practice basic to complex techniques. Carefully crafted by hand and accurately simulating human anatomy, all models feature lifelike skin, muscles and nerve anatomy. They look, feel and react like real skin!

Tumor Excision/Wound Repair and Injectable Techniques Workshop

Wed., 10 a.m. – 5:15 p.m. — Pre-conference - open to all attendees
Co-directors: Patrick K. Lee, MD; Ian A. Maher, MD

“I was quite impressed with the realistic feel and accurate structure and anatomy of your models. The complexity of the structures built-in provides an accurate feel for a true anatomical intervention. I find the use and feel of your products much better than the commonly used pig’s feet or suture pads used at present.” — Dr. Julio Garcia

“I was able to demonstrate some advanced closures such as a layered eyelid closure, a composite ear flap and a mastoider lip transposition closure with realistic experiences.” — Jeffery Atman, MD

Sun., 8:30 – 11:30 a.m. — Specifically designed for Residents and Post-residency Trainees (Restricted)
Co-directors: Allison M. Hanlon, MD, PhD; Rebecca G. Tung, MD

Improve your surgical technique with expert instruction on patient positioning, tumor excision using standard and Mohs techniques, complex linear closures, Z-plasty repairs, rotation and advancement flaps, standard closure enhancements, facial anatomy and injection techniques for hyaluronic acid fillers and neuromodulators.

Advanced Suturing Techniques Mini-workshop
Thurs., 1:30 – 3 p.m.
Moderators: Gary S. Chuang, MD; Ian A. Maher, MD

Master different layers of surgical closures including selecting appropriate materials, techniques and placement to optimize outcomes and promote wound edge evasion. Suturing skills practiced on partial face/abdomen models and skin block samples.

Soft-tissue Fillers and Neuromodulators Mini-workshop
Sat., 4 – 5:30 p.m.
Moderators: Miriam P. Cummings, MD; Hema Sundaram, MD

Master techniques with blunt microcannulas and assisted filler injection devices, multi-plan “sandwich” injection techniques, determination of appropriate toxin dosages and clinical applications of recent research into facial fat compartment and filler and toxin science.

Register early as seating is limited and in high demand! See registration form, special programs section.
The Closure Course

MAY 20-21, 2015

Hyatt Regency Grand Cypress
Orlando, Florida

Directors:
Kenneth Gross, M.D.
Alexander Miller, M.D.

Educational Objectives
Following participation in this activity, physician attendees should be able to:

■ Demonstrate improved skill levels in the closure of skin surgery defects.
■ Incorporate new techniques and closure types, including flaps, grafts, and fusiforms.
■ Apply specific closure techniques as appropriate for different anatomic regions.
■ Recognize optimal reconstruction options for specific surgical defect types and anatomic locations.

Accreditation Statement
This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of Scott & White and the American Society for Mohs Surgery (ASMS). Scott & White is accredited by the ACCME to provide continuing medical education to physicians.

Credit Designation Statement
Scott & White designates this live activity for a maximum of 17.25 AMA PRA Category 1 Credits™. Physicians should claim only the credit commensurate with the extent of their participation in the activity.
Australia Surgical Workshop
Australia Surgical Workshop
Australia Surgical Workshop
Australia Surgical Workshop
Face & ear workshop

The 3 day face & ear reconstruction workshop

Doctors who have completed the five day skin cancer workshop are invited to return for the advanced three day workshop. This event focuses on face and ear reconstruction following skin cancer excision.

In this program life like plastic models of human heads are used to practice reconstruction techniques in the most realistic scenario available in reconstruction training short of practice on humans themselves.

The advanced weekend concentrates on difficult areas of the body: lip, ear, nose, eyelid, and cheek. 15 reconstructions are explained, demonstrated and then practised on the plastic model.

The program includes 6 sessions of 2.5 hours and 3 sessions of 1 hour.

The cost of the 3 day weekend program is $2,700 - including the hire cost of the plastic head manikin.

The program will be run by Professor Dixon in conjunction with Dr. Keoni Nguyen (Dermatologist, USA)

PROGRAM:

Day 1
7:45 Registration / coffee
8:00 - 10:30
Welcome
Great Barrier Reef
Italy Surgical Workshop
Pisa, Italy Surgical Workshop

Corso Pratico Avanzato
“Hands-On” di Dermochirurgia

Pisa, 11-12 Giugno 2012
Auditorium “Opera Del Duomo”

Comitato Scientifico: Gian Marco Vezzoni, Keoni Nguyen,
Paolo Barachini, Michele Fimiani, Maurizio Biagioli

Tutors: Paolo Barachini, Maurizio Biagioli, Franco Buttafarro, Giorgio Leigheb, Willy Pagani,
Thi T. Tran, Giampaolo Vezzoni

Corso chirurgico su Modelli Anatomici
“Testa e Collo” ad alto realismo
Italy Surgical Workshop
Italy Surgical Workshop
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Conclusion

• Applications: Facial Anatomy, Mohs Surgery Layers, Advanced Reconstruction

• The Efficacy of the ISM

• A standardized method of ensuring surgical competency
Acknowledgements

Thomas G. Olsen, MD
Heidi Donnelly, MD
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David Roy, DO
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Maurizio Biagioli, MD
Willy Pagani, MD
Giampaolo Vezzoni, MD
Thank You!