

Curriculum Vitae

Date Prepared: July 1, 2018
Name: Dhruv Singhal, MD
Office Address: Beth Israel Deaconess Medical Center
Division of Plastic and Reconstructive Surgery
110 Francis Street, Suite 5A
Boston, MA 02215
Home Address: 35 Priscilla Road
Chestnut Hill, MA 02467
Work Phone: 617-632-7835
Work Email: dsinghal@bidmc.harvard.edu
Work FAX: 617-632-7840
Place of Birth: Allentown, PA

Education:

| | | | |
|-----------|--------------------|-----------------------------------|---|
| 1995-1999 | Bachelor of Arts | English Literature Mathematics | Cornell University, Ithaca, NY |
| 1999-2003 | Doctor of Medicine | | University of Pittsburgh School of Medicine, Pittsburgh, PA |

Postdoctoral Training:

| | | | |
|-------------|----------------|-----------------|--|
| 07/03-06/04 | Intern | General Surgery | Brigham and Women's Hospital, Boston, MA |
| 07/04-06/07 | Resident | General Surgery | Brigham and Women's Hospital, Boston, MA |
| 07/07-06/08 | Chief Resident | General Surgery | Brigham and Women's Hospital, Boston, MA |
| 07/08-06/10 | Resident | Plastic Surgery | Harvard Combined Plastic Surgery Program, Boston, MA |
| 07/10-06/11 | Chief Resident | Plastic Surgery | Harvard Combined Plastic Surgery Program, Boston, MA |

| | | | |
|-------------|--------|---|--|
| 07/11-06/12 | Fellow | Craniofacial Surgery <i>Noordhoff Craniofacial Foundation Fellow</i> | Chang Gung Memorial Hospital, Taipei, Taiwan |
| 7/12-10/12 | Fellow | Microsurgery (Mentor: Professor Hung-Chi Chen) | China Medical University Hospital, Taichung City, Taiwan |

Faculty Academic Appointments:

| | | | |
|-------------|---------------------|--------------------------------|---|
| 12/12-07/16 | Assistant Professor | Surgery | University of Florida School of Medicine |
| 07/13-07/16 | Assistant Professor | Oral and Maxillofacial Surgery | University of Florida School of Dentistry |
| 07/16- | Assistant Professor | Surgery | Harvard Medical School |

Appointments at Hospitals/Affiliated Institutions:

| | | | |
|-------------|-------------------|------------------------------------|---|
| 12/12-07/16 | Attending Surgeon | Plastic and Reconstructive Surgery | UF Health Shands Hospital, Gainesville, FL |
| 12/12-07/16 | Attending Surgeon | Plastic and Reconstructive Surgery | Florida Surgical Center, Gainesville, FL |
| 09/16- | Attending Surgeon | Plastic and Reconstructive Surgery | Beth Israel Deaconess Medical Center, Boston, MA |
| 09/16- | Attending Surgeon | Plastic and Reconstructive Surgery | Beth Israel Deaconess Medical Center – Needham, Needham, MA |

Other Professional Positions:

| | | |
|-----------|---------|--|
| 2014-2016 | Advisor | LIFEQUEST (Organ Procurement Organization) |
|-----------|---------|--|

Major Administrative Leadership Positions:

Local

| | | |
|-------------|---|--|
| 12/12-07/16 | Director of Microsurgery, Department of Surgery | University of Florida School of Medicine |
| 12/12-07/16 | Director of Adult Craniofacial Surgery, Department of Surgery | University of Florida School of Medicine |

09/16- Director of Lymphatic Surgery, Beth Israel Deaconess Medical Center
 Department of Surgery

Professional Societies:

| | | |
|-------|--|------------------|
| 2015- | American Society of Plastic Surgeons | Active Member |
| 2015- | American College of Surgeons | Associate Fellow |
| 2016- | Southeastern Society of Plastic and Reconstructive Surgeons | Active Member |
| 2016- | American Society of Reconstructive Microsurgeons 2017 – Member, Young Microsurgeons Committee | Active Member |

Editorial Activities:

Ad hoc Reviewer

| |
|--|
| Plastic and Reconstructive Surgery |
| PRS Global Open |
| Annals of Plastic Surgery |
| Journal of Reconstructive Microsurgery |
| International Microsurgery Journal |

Honors and Prizes:

| | | |
|------|--|---|
| 1999 | Graduated with Distinction in All Subjects | Cornell University |
| 2004 | Excellence in Teaching Award | Harvard Medical School |
| 2006 | Excellence in Teaching Award | Harvard Medical School |
| 2006 | Nominee, Graduating Class Best Teaching Resident Award | Harvard Medical School |
| 2007 | Nominee, Resident Award for Exemplary Teaching | American College of Surgeons |
| 2008 | Notable Teaching in the Surgery Clerkship | Tufts University |
| 2008 | Robert T. Osteen Teaching Award | Brigham and Women's Hospital |
| 2011 | Regan Fellowship | Operation Smile |
| 2011 | AOCMF Fellowship | AO Foundation (Arbeitsgemeinschaft für Osteosynthesefragen) |

| | | |
|------|--|---|
| 2014 | University of Florida Health Physician Recognition Award | University of Florida |
| 2014 | 3rd Place, Glancy Cup Competition “VAC Therapy to the Brain: A Safe Method for Wound Temporization in Composite Scalp and Calvarial Defects” | Southeastern Society of Plastic and Reconstructive Surgeons Annual Meeting, Nassau, Bahamas |
| 2015 | 2nd Place, Best Poster Competition “The Impact of Sporting Events on the Volume of Facial Trauma” | Southeastern Society of Plastic and Reconstructive Surgeons Annual Meeting, Amelia Island, FL |
| 2016 | The Breast Journal Award “Identifying and Surgically Treating Early Stage Lymphedema – A New Innovative Collaboration” | 21 st Annual Multidisciplinary Symposium on Breast Disease, Amelia Island, FL |
| 2017 | Boston Red Sox Medical All-Star Award | 8/25/17, Pregame Ceremony, Jersey Presentation Fenway Park, Boston, MA |
| 2018 | Attendee, Harvard Medical School Leadership Development for Physicians and Scientists | Harvard Medical School |

Report of Funded and Unfunded Projects

Funded Current Projects

| | |
|-----------|---|
| | |
| 2017-2018 | PI, Acupuncture for Breast Cancer Related Lymphedema 2018 Osher Pilot Research Grant Evaluating the efficacy of acupuncture in the treatment of Breast Cancer Related Lymphedema utilizing molecular markers, bioimpedance spectroscopy, and perometry. |
| 2018-2019 | PI, Evaluating Real-Time Changes in Lymphatic Flow Utilizing Optical Imaging 2018 LE&RN/ASRM Combined Pilot Grant Evaluating the utility of optical imaging agents to measure real time changes in lymphatic flow in a swine model of LYMPHA. |
| 2018-2019 | PI, Evaluating Real-Time Changes in Lymphatic Flow Utilizing Optical Imaging 2018 Plastic Surgery Foundation Pilot Research Grant Evaluating the utility of optical imaging agents to measure real time changes in lymphatic flow in a swine model after lymphadenectomy. |

Unfunded Current Projects

| | |
|-------|---|
| | |
| 2016- | Lymphedema Repository PI, Mentor Development of a Lymphedema Repository at BIDMC to allow for evaluation of lymphedema outcomes from cancer procedures and treatments for lymphedema including surgical and non-surgical options. |
| 2016- | Integrative Medicine and Plastic Surgery |

PI, Mentor

Evaluating the incidence of usage and perception of Integrative Medicine within the Plastic Surgery population

Report of Local Teaching and Training

Teaching of Students in Courses:

| | | |
|---------|--|--|
| 01/2014 | “Wound Healing”/3 rd Year Medical Student Surgical Core Clerkship Didactics | University of Florida School of Medicine 1 Hour Lecture |
| 06/2014 | “Wound Healing”/3 rd Year Medical Student Surgical Core Clerkship Didactics | University of Florida School of Medicine 1 Hour Lecture |
| 11/2014 | “Wound Healing”/3 rd Year Medical Student Surgical Core Clerkship Didactics | University of Florida School of Medicine 1 Hour Lecture |

Formal Teaching of Residents, Clinical Fellows and Research Fellows (post-docs):

| | | |
|---------|--|---|
| 08/2013 | “Facial Soft Tissue Trauma”/Oral and Maxillofacial Surgery Conference | University of Florida School of Dentistry 1 Hour Lecture |
| 06/2014 | “Eyelid Reconstruction”/Oral and Maxillofacial Surgery Conference | University of Florida School of Dentistry 1 Hour Lecture |
| 12/2014 | “Microsurgery for the Head and Neck – Flap Anatomy and Their Applications”/Oral and Maxillofacial Surgery Conference | University of Florida School of Dentistry 1 Hour Lecture |
| 12/2015 | “Microsurgery and Its Principles”/UF Division of Plastic Surgery Conference | University of Florida School of Medicine 1 Hour Lecture |
| 01/2017 | “Mandible Fractures”/Harvard Plastic Surgery Cadaver Dissection Course | Harvard Medical School 4 Hour Hands-On Dissection Course |
| 02/2017 | “Extremity Flaps”/BIDMC General Surgery Cadaver Dissection Course | Harvard Medical School 2 Hour Hands-On Dissection Course |
| 05/2017 | “Lymphedema for Cardiologists” Cardiology Fellow Core Conference | Harvard Medical School 1 Hour Lecture |
| 01/2018 | “Mandible Fractures”/Harvard Plastic Surgery Cadaver Dissection Course | Harvard Medical School 4 Hour Hands-On Dissection Course |

Clinical Supervisory and Training Responsibilities:

| | | |
|--|--|--|
| | | |
|--|--|--|

| | | |
|-----------|--|---|
| 2012-2016 | Attending surgeon supervising plastic surgery residents, fellows, and medical students in the ambulatory clinic and operating room | University of Florida 20 hours/week |
| 2016- | Attending surgeon supervising plastic surgery residents, fellows, and medical students in the ambulatory clinic and operating room | Beth Israel Deaconess Medical Center 20 hours/week |

Laboratory and Other Research Supervisory and Training Responsibilities:

| | | |
|-----------|--|----------------------|
| 2013-2016 | Supervision of medical student/research fellows in clinical outcomes research. This includes University of Florida School of Medicine and Dentistry students, UF plastic surgery residents, and fellows. We have bi-weekly meeting where we discuss the direction of our activities, including study design, statistical analysis, and manuscript preparation. | Bi-weekly mentorship |
| 2016- | Supervision of medical student/research fellows in clinical outcomes research. This includes HMS students, Harvard plastic surgery residents, and fellows. We have bi-weekly meeting where we discuss the direction of our activities, including study design, statistical analysis, and manuscript preparation. | Bi-weekly mentorship |

Formally Mentored Trainees and Faculty:

| | |
|-----------|---|
| 2013-2014 | Ivan Samcam, MD/Emergency Medicine Resident, Orlando Health Mentored during medical school at the University of Florida; published two manuscripts. |
| 2013-2014 | Noah Prince, MD/Plastic Surgery Resident, University of Florida Mentored during residency at the University of Florida; published one manuscript and presented once receiving 3 rd place in the Glancy Cup Competition (SESPRS) |
| 2014-2015 | Timothy Lee, BS/Medical Student, University of South Florida Mentored during post-baccalaureate premedical program at the University of Florida; published two manuscripts. |
| 2014-2015 | Nirav Patel, BS/Medical Student, University of Central Florida Mentored during medical school at the University of Central Florida; published 4 manuscripts and one presentation. |
| 2015-2016 | Bradley Nesmith, MD/Private Practice, Gainesville, FL Mentored during plastic surgery residency at the University of Florida; one presentation receiving 2 nd place for best poster (SESPRS) |

Local Invited Presentations:

No presentations below were sponsored by outside entities

- 10/2000 “Multi-Modality Affects Longer Term Survival in Patients with Primary Central Nervous System Lymphoma”
Medical Student Research Symposium
University of Pittsburgh School of Medicine, Pittsburgh, PA
- 11/2007 “Vascular Extremity Trauma: Lessons Learned from War”/ Surgical Grand Rounds
Department of Veterans Affairs: VA Boston Healthcare System, Boston, MA
- 04/2008 “International Surgery” / Surgical Grand Rounds
Brigham and Women’s Hospital, Boston, MA
- 02/2013 “Reconstructive Surgery: What’s New?!” / Surgical Grand Rounds
University of Florida, Gainesville, FL
- 01/2014 “OSA Surgical Indications”/UF Sleep Team Conference
University of Florida, Gainesville, FL
- 01/2014 “Peri-operative Care of the Free Flap Patient: Part 1”/10-5 Clinical Unit Lecture
University of Florida, Gainesville, FL
- 01/2014 “Peri-operative Care of the Free Flap Patient: Part 2”/10-5 Clinical Unit Lecture
University of Florida, Gainesville, FL
- 04/2014 “VAC Therapy to the Brain: A Safe Method for Wound Temporization in Composite Scalp and Calvarial Defects”
University of Florida Department of Surgery, Research Day, Gainesville, FL
- 04/2014 “Preparation of a Total Rhinectomy Defect for Prosthesis: A Novel Approach Utilizing the Inferior Turbinate Flap”
University of Florida Department of Surgery, Research Day, Gainesville, FL
- 05/2014 “Microsurgery: Applications and Management”/SICU Conference
University of Florida, Gainesville, FL
- 07/2014 “VAC Therapy to the Brain: A Safe Method for Wound Temporization in Composite Scalp and Calvarial Defects” / Department of Neurosurgery Grand Rounds
University of Florida, Gainesville, FL
- 10/2014 “Surgical Management of Lymphedema”/NFRMC Cancer Center
Gainesville, FL
- 04/2015 “Prevention of Extremity Lymphedema”/UF Multidisciplinary Breast Conference
Gainesville, FL
- 04/2015 “Integrative Medicine and Plastic Surgery”
University of Florida Department of Surgery, Research Day, Gainesville, FL
- 04/2015 “Lymph Node Transplantation and Quantitative Clearance Lymphoscintigraphy”
University of Florida Department of Surgery, Research Day, Gainesville, FL

- 04/2015 “The Impact of Sporting Events on the Volume of Facial Trauma”
University of Florida Department of Surgery, Research Day, Gainesville, FL
- 06/2015 “Lymphedema: A Surgeon’s Perspective”/UF Department of Surgery Grand Rounds
Gainesville, FL
- 06/2015 “Lymphedema and Lymphatic Surgery: What You Need to Know?!”/UF Department of
Physical Therapy Invited Lecturer
Gainesville, FL
- 11/2015 “Lymphedema: A Surgeon’s Perspective”/UF Department of Obstetrics and Gynecology
Grand Rounds
Gainesville, FL
- 03/2016 “A Lymphedema Surveillance Protocol: Impact on a Lymphatic Surgery Program”
University of Florida Department of Surgery, Research Day, Gainesville, FL
- 08/2016 “Managing Lymphedema at BIDMC”/BIDMC Multidisciplinary Breast Conference
Boston, MA
- 09/2016 “Lymphedema and Lymphatic Surgery: My Journey”/BIDMC Division of Plastic and
Reconstructive Surgery Conference
Boston, MA
- 09/2016 “Managing Lymphedema at BIDMC”/BIDMC Division of Vascular Surgery Conference
Boston, MA
- 11/2016 “Utilization and Perception of Integrative Medicine Amongst Plastic Surgery
Patients”/Integrative Health Network Form, Harvard Medical School
Boston, MA
- 02/2017 “Lymphatic Surgery at BIDMC”/BIDMC Physical Therapy Grand Rounds
Boston, MA
- 06/2017 “Lymphatic Surgery: Peri-operative Management”/BIDMC PACU, East
Boston, MA
- 07/2017 “The Effect of Infection on the Lymphatic System – Clinical and Research Aspects of
Lymphatic Surgery”/BIDMC, Infectious Disease CRES conference, Boston, MA
- 08/2017 “Lymphatic Surgery Patients: Peri-operative Nursing Care”/BIDMC Stoneman 5
Boston, MA
- 10/2017 “Lymphedema – What You Need to Know?!”/Health Care Associates Educational Conference
(Shapiro 6) Boston, MA
- 11/2017 “Management of Lymphedema: A New Strategy for Treatment”/BIDMC Division of Podiatry,
Monthly Lecture Series, Boston, MA
- 1/2018 “Lymphedema: A New Frontier in Prevention and Management”/Seminars in Vascular
Biology (Children’s Hospital)
- 3/2018

“Lymphedema: Advances in Prevention and Management”/11th Annual Physician Education Day (Seaport Hotel, Boston, MA)

Report of Regional, National and International Invited Teaching and Presentations

No presentations below were sponsored by outside entities

Regional

- | | |
|---------|--|
| 06/2014 | *“VAC Therapy to the Brain: A Safe Method for Wound Temporization in Composite Scalp and Calvarial Defects” Southeastern Society of Plastic and Reconstructive Surgeons, Nassau, Bahamas <i>*3rd Place, Glancy Cup Competition</i> |
| 06/2014 | “High Volume Hydrodissection: Assessment of Flap Perfusion Utilizing Laser Doppler” Southeastern Society of Plastic and Reconstructive Surgeons, Nassau, Bahamas |
| 06/2015 | “Integrative Medicine and Plastic Surgery” Southeastern Society of Plastic and Reconstructive Surgeons, Amelia Island, FL |
| 02/2016 | *“Identifying and Surgically Treating Early Stage Lymphedema – A New Innovative Collaboration” 21st Annual Multidisciplinary Symposium on Breast Disease, Amelia Island, FL <i>*The Breast Journal Award</i> |
| 06/2015 | *“The Impact of Sporting Events on the Volume of Facial Trauma” Southeastern Society of Plastic and Reconstructive Surgeons, Amelia Island, FL <i>*2nd Place, Best Poster Competition</i> |
| 06/2016 | “Early Results in Preventing Lymphedema: A Potential Paradigm Shift in Lymphatic Surgery” Southeastern Society of Plastic and Reconstructive Surgeons, Orlando, FL |
| 06/2016 | “When Should Microscopically Positive Margins in Basal Cell Carcinoma Be Re-excised? Always, Sometimes, Never?” Southeastern Society of Plastic and Reconstructive Surgeons, Orlando, FL |
| 10/2016 | “Lymphedema and Lymphatic Surgery: A Journey” Brown University Plastic Surgery Grand Rounds, Providence, RI |
| 10/2016 | “Lymphedema and Lymphatic Surgery: A Journey” University of Massachusetts Divisional Plastic Surgery Conference, Worcester, MA |
| 11/2016 | “Lymphedema and Lymphatic Surgery: A Journey” Yale University Plastic Surgery Grand Rounds, New Haven, CT |
| 11/2016 | “Lymphedema and Lymphatic Surgery: A Surgeon’s Perspective” MetroWest Medical Center Medicine Grand Rounds, Natick, MA |
| 12/2016 | “Lymphedema and Lymphatic Surgery: My Journey” Boston Medical Center, Boston, MA |
| 6/2017 | Early Results in Preventing Lymphedema: A Potential Paradigm Shift in Lymphatic Surgery; New England Society and Plastic and Reconstructive Surgery, Cape Cod, MA |

6/2017 Large Animal Model of Modified Lymphatic Microsurgical Preventative Healing Approach (LYMPHA); New England Society and Plastic and Reconstructive Surgery, Cape Cod, MA

09/2017 "Lymphedema and Lymphatic Surgery: A Journey"
Cambridge Health Alliance Surgical Grand Rounds, Cambridge, MA

National



01/2015 "Lymph Node Transplantation and Quantitative Clearance Lymphoscintigraphy"
American Society of Reconstructive Microsurgery, Nassau, Bahamas

01/2016 "A Lymphedema Surveillance Protocol: Impact on a Lymphatic Surgery Program"
American Society for Reconstructive Microsurgery, Scottsdale, AZ

05/2016 "Fluorescein Isothiocyanate: A Novel Application for Intra-operative Lymphatic Imaging"
Plastic Surgery Research Council, New York City, NY

05/2016 "Fluorescein Isothiocyanate: A Modification for Reverse Lymphatic Mapping in Lymph Node Transplantation"
Plastic Surgery Research Council, New York City, NY

05/2016 "Quantifying Lymph Nodes During Lymph Node Transplantation: The Role of Intra-operative Ultrasound"
Plastic Surgery Research Council, New York City, NY

01/2017 "Dyes and Lymphatic Surgery"
American Society for Reconstructive Microsurgeons, Kona, Hawaii

02/2017 "Early Results in Preventing Lymphedema: A Potential Paradigm Shift for Lymphatic Surgery"
Academic Surgical Congress, Las Vegas, Nevada

10/2017 "Integrative Medicine in Plastic Surgery: A Systematic Review of Our Literature"
Society of Asian Academic Surgeons, Birmingham, Alabama

10/2017 "Referrals of Plastic Surgery Patients to Integrative Medicine Centers: A Review of Resource Utility"
Society of Asian Academic Surgeons, Birmingham, Alabama

1/2018 "The Omental Lymph Node Transfer"
American Society for Reconstructive Microsurgeons, Phoenix, Arizona

International



09/2017 "Craniofacial Neurofibromatosis – Guidelines for Management" 30th World Congress of the International College for Maxillofacial Surgery, Boston, MA

09/2017 "Fluorescein Isothiocyanate: A Novel Application for Intra-operative Lymphatic Imaging"

26th World Congress of Lymphology, Barcelona, Spain

09/2017 “A Novel Animal Model for the Surgical Prevention of Lymphedema: The Power of Molecular Imaging”, 26th World Congress of Lymphology, Barcelona, Spain

09/2017 “Early Results in Preventing Lymphedema: A Potential Paradigm Shift in Lymphatic Surgery”, 26th World Congress of Lymphology, Barcelona, Spain

Report of Clinical Activities and Innovations

Current Licensure and Certification:

| |
|--|
| |
|--|

- 2008 Massachusetts Medical License
- 2008 American Board of Surgery
- 2012 Florida Medical License
- 2013 American Board of Plastic Surgery
- 2014 American Board of Integrative and Holistic Medicine

Practice Activities:

| | | | |
|--|--|--|--|
| | | | |
|--|--|--|--|

| | | | |
|-----------|-----------------|---|---------------|
| 2012-2016 | Surgery | Plastic and Reconstructive Surgery University of Florida | 3.5 days/week |
| 2012-2016 | Ambulatory Care | Plastic and Reconstructive Surgery University of Florida | 1 day/week |
| 2016- | Surgery | Plastic and Reconstructive Surgery Beth Israel Deaconess Medical Center | 3.5 days/week |
| 2016- | Ambulatory Care | Plastic and Reconstructive Surgery Beth Israel Deaconess Medical Center | 1 day/week |

Clinical Innovations:

| | |
|--|--|
| | |
|--|--|

| | |
|---|--|
| Hydrodissection of Microsurgical Perforators | A microsurgical technique I developed as a Harvard plastic surgery resident and have since studied in both animals and humans. Work has been presented nationally and published. Now used routinely in operative dissections at HMS hospitals and nationally. |
| Regional Referral Center for Lymphedema & Lymphatic Surgery at the University of Florida (2014-2016) | As the Director of Microsurgery at the University of Florida, I performed the first lymph node transplantation in the history of the University in March, 2014. I subsequently performed the first lymphovenous bypass at the University in March, 2015. Our center became recognized as a referral center for the treatment of chronic lymphedema and for procedures to prevent |

lymphedema in high risk patients. We were the first academic institution in the United States to provide both services.

Fluorescein Isothiocyanate for Lymphatic Imaging Novel application and formulation for Fluorescein Isothiocyanate in Lymphatic Imaging. Allows for simultaneous intra-operative visualization and dissection of submillimeter vessels allowing lymphatic surgeons to now operate anywhere in the body. Adopted locally at BIDMC and the University of Florida (where I developed the concept) and currently presenting nationally.

Regional Referral Center for Lymphedema & Lymphatic Surgery at BIDMC (2016-) The only referral center of its kind in New England. As the Director of Lymphatic Surgery, I performed the first lymphovenous bypass in the history of the institution in September, 2016.

Report of Education of Patients and Service to the Community

No presentations below were sponsored by outside entities

Activities

| | |
|---------|--|
| 01/2014 | “Surgery for Obstructive Sleep Apnea”/UF Health Network Outreach Program Invited Speaker (The Villages, FL) |
| 10/2014 | “Broadening Horizons of Breast Conservation through Oncoplastic Surgery”/The UF Women’s Advantage Symposium Invited Speaker (Gainesville, FL) |
| 10/2014 | “Breast Reconstruction: Where We Are Today”/Alpha Kappa Delta Phi International Sorority Inc. Invited Speaker (Gainesville, FL) |
| 05/2015 | “Lymphedema – From Transplantation to Bypass”/Gainesville Breast Cancer Support Group Invited Speaker (Gainesville, FL) |
| 05/2015 | “Lymphedema and Lymphatic Surgery: What You Need to Know?!”/American Cancer Society Hope Lodge Invited Speaker (Gainesville, FL) |

Educational Material for Patients and the Lay Community:

Books, monographs, articles and presentations in other media (e.g., video and websites, movies, television and radio) that educate the public about medicine, health or biomedical sciences

| | | |
|------|--|---|
| 2013 | Interviewed by Dr. Anand Kuruvilla on <i>Cancer Talk Radio, FROG Docs with Dr. K</i> | WPLK800 & WIYD 1260 AM, 9 December. |
| 2015 | “Lifting the Weight of Lymphedema: Team Offers | News and Notes Vol 11 No 4 pp10 (UF Health Internal Newsletter) |

Relief for Patients Following
Breast Cancer Surgery”

- | | | |
|------|--|---|
| 2016 | “New Treatments for Lymphedema Available at BIDMC” | CBS News Boston; http://boston.cbslocal.com/2016/10/01/bidmc-breast-care-2016-new-treatments-for-lymphedema-available-at-bidmc/ |
| 2016 | “New Treatments for Lymphedema Available at BIDMC” | Boston Magazine; http://www.bostonmagazine.com/sponsor-content/new-treatments-for-lymphedema-available-at-beth-israel-deaconess-medical-center/ |
| 2017 | “Procedure Preventing Dangerous Complication for Breast Cancer Survivors?” | ABC Evening News Broadcast: http://www.wcvb.com/article/procedure-preventing-dangerous-complication-for-breast-cancer-survivors/10337450 |

Report of Scholarship

Peer-Reviewed Scholarship in print or other media:

Research Investigations

1. **Singhal D**, Witham TF, Germanwala A, Flickinger JC, Schiff D, Kondziolka D. Multi-modality affects longer term survival in patients with primary central nervous system lymphoma. *Can J Neurol Sci.* 2002 May;29(2):147-53.
2. Gruttadauria S, Doria C, Cintonino D, **Singhal D**, Verzaro R, Foglieni CS, Marino IR, Fung JJ. Outcomes in 139 cases of biliary tract reconstructions from a transplant surgery center. *Exp Clin Transplant.* 2003 Dec;1(2):73-8.
3. Koebbe C, **Singhal D**, Sheehan J, Flickinger JC, Horowitz M, Kondziolka D, Lunsford LD. Radiosurgery for dural arteriovenous fistulas. *Surg Neurol.* 2005 Nov;64(5): 392-398.
4. **Singhal D**, Smorodinsky E, Guo, L. Differences in coagulation amongst Asians and Caucasians and the implication for reconstructive microsurgery. *J Reconstr Microsurg.* 2011 Jan;27(1):57-62.
5. **Singhal D**, Pribaz JJ, Pomahac B. The Brigham and Women's Hospital face transplant program: A look back. *Plast Reconstr Surg.* 2012 Jan;129(1): 81e-88e.
6. Fanzio PM, **Singhal D**, Becker C. Combined radical excision and free microsurgical lymph node transfer for treatment of lower extremity lymphedema. *Eur J Plast Surg.* 2012 July;35(7): 565-568.
7. **Singhal D**, Chen YC, Seselgyte R, Chen PKT, Chen YR. Craniofacial neurofibromatosis and tissue expansion: Long term results. *J Plast Reconstr Aesthet Surg.* 2012 July;65(7): 956-959.
8. Hsu SS, **Singhal D**, Xia JJ, Gateno J, Lin CH, Huang CS, Lo LJ, Ko EW, Chen YR. Planning the surgery-first approach in surgical orthodontic treatment using a computer aided surgical simulation planning protocol. *J Taiwan Assoc Orthodon.* 2012 Aug;24(2): 24-37.

9. Chen YA, **Singhal D**, Chen YR, Chen CT. 10 year review of the management of acute traumatic retrobulbar hematomas. *J Plast Reconstr Aesthet Surg*. 2012 Oct;65(10):1325-30.
10. **Singhal D**, Chen YC, Fanzio PM, Lin CH, Chuang DC, Chen YR, Chen PKT. Role of free flaps in the management of craniofacial neurofibromatosis: Soft tissue coverage and attempted facial re-animation. *J Oral Maxillofac Surg*. 2012 Dec;70(12): 2916-22.
11. **Singhal D**, Momoh A, Colakoglu S, Qureshi A, Tobias A, Lee B. Intra-muscular perforator dissection with the hydrodissection technique. *J Reconstr Microsurg*. 2013 Jan; 29(1): 45-9.
12. **Singhal D**, Chen YC, Chen YR, Chen PKT, Tsai YJ. Soft tissue management of orbitotemporal neurofibromatosis. *J Craniofac Surg*. 2013 Jan;24(1): 269-72.
13. Sapountzis S, **Singhal D**, Chen HC. Radical resection and reconstruction with bilateral gluteal fold perforator flaps for vulvar hemangiolympangioma. *Int J Gynaecol Obstet*. 2013 May;121(2):179-80.
14. **Singhal D**, Hsu S, Lin CH, Chen YC, Chen YR. The trapezoid mortised genioplasty for obstructive sleep apnea: A further refinement of the mortised genioplasty. *Laryngoscope*. 2013 Oct;123(10):2578-82.
15. Xie S, **Singhal D**, Chen YR, Chen CT. Functional and radiologic outcomes of open reduction and internal fixation of condylar head and neck fractures using miniplate and microplate systems. *Ann Plast Surg*. 2013 Dec;71(Suppl 1):S61-6.
16. Cuidad P, **Singhal D**, Sapountzis S, Chen HC. The extended fleur-de-lis latissimus dorsi flap: A novel flap and approach for coverage of lower back defects. *J Plast Reconstr Aesthet Surg*. 2013 Dec;66(12):1811-3.
17. Sapountzis S, Cuidad P, Chilgar R, Nicoli F, **Singhal D**, Chen HC. Retrograde flow upper extremity fillet flap for coverage of a large thoracic wall defect. *Am Surg*. 2014 Mar;80(3):312-4.
18. Nystrom LM, Gibbs CP, **Singhal D**, Klodell CT. Giant basal cell carcinoma of the anterior chest wall with bone invasion. *Eur J Cardiothorac Surg*. 2014 May;45(5):945-6.
19. **Singhal D**, Chen YC, Tsai YJ, Yu CC, Chen HC, Chen YR, Chen PKT. Craniofacial neurofibromatosis: Treatment of the midface deformity” *J Craniomaxillofac Surg*. 2014 Jul;42(5):595-600.
20. Raza A, Cuenca AG, Tan S, **Singhal D**. Omental flaps for coverage of sacral or gluteal defects – a useful and potentially under-utilized tool. *Am Surg*. 2014 Jul;80(7):e202-4.
21. **Singhal D**, Fanzio PM, Lee ET, Chang CJ, Lee BT, Cheng MH. High volume hydrodissection – increasing the efficiency and safety of perforator dissection. *Ann Plast Surg*. 2014 Aug;73(2):219-24.
22. Sapountzis S, Cuidad P, Lim SY, Kiranatawat K, Nicoli F, Constantinides J, Wei MY, Sonmez TT, **Singhal D**, Chen HC. Modified Charles procedure and lymph node flap transfer for advanced lower extremity lymphedema. *Microsurgery*. 2014 Sep;34(6):439-47.
23. Sapountzis S, **Singhal D**, Rashid A, Ciudad P, Meo D, Chen HC. Lymph node transfer based on the right transverse cervical artery. *Ann Plast Surg*. 2014 Oct;73(4):398-401.
24. Patel N, **Singhal D**. Activated clotting time monitoring during an osteocutaneous free fibula flap. *Plast Reconstr Surg*. 2015 Feb;135(2):462e-3e.

25. Samcam I, Rivera-Serrano C, Patel N, Mann R, Wong F, Werning JW, **Singhal D**. The inferior turbinate flap: A novel technique for prosthetic preparation of a total rhinectomy defect. *Int J Oral Maxillofac Surg*. 2015 Apr;44(4):424-6.
26. **Singhal D**, Spiguel LRP, Shaw C, Sapountzis S, Mast B, Chen HC, Drane W. Lymph node transplantation and quantitative clearance lymphoscintigraphy. *Plast Reconstr Surg*. 2015 May;135(5):937e-939e.
27. Sapountzis S, **Singhal D**, Ciudad P, Meo D, Chen HC. Lymph node transfer based on the right transverse cervical artery: Reply. *Ann Plast Surg*. 2015 Jun;74(6):744-5.
28. Prince N, Blackburn S, Murad G, Mast B, Sapountzis S, Chaw C, Werning JW, **Singhal D**. VAC therapy to the brain: A safe method for wound temporization in composite scalp and calvarial defects. *Ann Plast Surg*. 2015 Jun;74(Suppl 4):S218-21.
29. Lee T, Patel N, Fanzio PM, Cheng MH, Lee BT, **Singhal D**. High volume hydrodissection for abdominally based free flaps: Preliminary results. *Microsurgery*. 2017 May; 37(4):307-11
30. Fanzio PM, Cheng MH, Samcam I, Lin YT, Gorantla V, Lee BT, **Singhal D**. High-volume hydrodissection: Assessment of deep inferior epigastric perforator flap perfusion using laser doppler. *Ann Plast Surg*. 2015 Dec;75(6):652-6.
31. Ricci JA, Vargas CR, **Singhal D**, Lee BT. Shark attack-related injuries: Epidemiology and implications for plastic surgeons. *J Plast Reconstr Aesthet Surg*. 2016 Jan;69(1):108-14.
32. Tabish A, **Singhal D**, Tan S, Iqbal A. A novel method of minimally invasive rectus abdominis muscle flap harvest: Laparoscopic surgeons take note. *J Minim Access Surg*. 2017 Apr-Jun; 13(2):146-147.
33. Tran BN, Singh M, **Singhal D**, Rudd R, Lee BT. Readability, complexity, and suitability of online resources for mastectomy and lumpectomy. *J Surg Res*. 2017 May 212:214-221
34. Patel N, Pierson J, Lee T, Mast B, Estores I, **Singhal D**. Utilization and Perception of Integrative Medicine Among Plastic Surgery Patients. *Ann Plast Surg*. 2017 May; 78(5):557-561
35. Tran BN, Singh M, Lee BT, Rudd R, **Singhal D**. Readability, complexity, and suitability of online lymphedema resources. *J Surg Res*. 2017 June; 213:251-260
36. Spiguel L, Shaw C, Katz A, Guo L, Chen HC, Lee BT, **Singhal D**. Fluorescein Isothiocyanate: A Novel Application for Lymphatic Surgery. *Ann Plast Surgery*. 2017 June;78(6S Suppl5):S296-S298
37. Tran BN, Fadayomi A, Lin S, **Singhal D**, Lee BT. Cost Analysis of Postmastectomy Reconstruction: A Comparison of Two Staged Implant Reconstruction using Tissue Expander and Acellular Dermal Matrix with Abdominal Based Perforator Free Flaps. *J Surg Oncology*. 2017 Sep;116(4):439-447
38. Ricci J, Epstein S, Momoh A, **Singhal D**, Lin S, Lee BT. Meta-Analysis of Implant-Based Breast Reconstruction and Timing of Adjuvant Radiation Therapy. *J Surg Res*. 2017 Oct;218:108-116
39. Tran BN, Angelo JP, Lee JH, Ruan QZ, Laurence RG, Choi HS, Lee BT, **Singhal D**. A Pilot Animal Model for the Surgical Prevention of Lymphedema: The Power of Optical Imaging. *J Surg Res*. 2018 Jan; 221:285-292
40. Ruan QZ, Chen AD, Cohen JB, **Singhal D**, Lin SJ, Lee BT. Alternative Metrics of Scholarly Output: The Relationship Between Altmetrics, Mendeley Reader Score, Citations, and Downloads in Plastic and Reconstructive Surgery. *Plast Reconstr Surg*. 2018 Mar;141(3):801-809

41. Epstein S, Sparer EH, Tran BN, Ruan QZ, Dennerlein JT, **Singhal D**, Lee BT. Prevalence of Work-Related Musculoskeletal Disorders Among Surgeons and Interventionalists: A Meta-Analysis. *JAMA Surgery*. 2018 Feb 21; 153(2):e174947
42. Epstein S, Tran BN, Capone AC, Ruan QZ, Lee BT, **Singhal D**. Work-Related Musculoskeletal Disorders Among Plastic Surgeons: A Systematic Review. *J Reconstr Microsurg*. 2017 In Press
43. Hahamoff M, Gupta N, Munoz D, Lee BT, Clevenger P, Shaw C, Spiguel L, **Singhal D**. Lymphedema Surveillance for Breast Cancer Patients Reveal the Promise of Surgical Prevention. *J Surg Res*. 2017 In press.
44. Ricci JA, Tran BN, Ruan QZ, Lin SJ, **Singhal D**, Lee BT. Comparing head and facial computed tomographic imaging in identifying operative facial fractures. *Ann Plast Surg*. 2017 In press.
45. Ruan QZ, Cohen JB, Back Y, Chen AD, Doval AF, **Singhal D**, Fukudome EY, Lin SJ, Lee BT. Identifying Sources of Funding that Contribute to Scholastic Activity in Academic Plastic Surgeons. *Ann Plastic Surg* 2017 in press.
46. Epstein S, Tran BN, Capone AC, Ruan QZ, Fukudome EY, Ricci JA, Testa MA, Dennerlein JT, Lee BT, **Singhal D**. The Current States of Surgical Ergonomics Education in U.S. Surgical Training: A Survey Study *Ann Surg*. 2017 In press.
47. Tran BN, Ruan QZ, Cohen JB, Kamali P, Doval A, Tobias AM, **Singhal D**, Lin SJ, Lee BT. Does hormone therapy use increase perioperative complications in abdominal based microsurgical breast reconstruction? *Plast Reconstr Surg* 2017 In press
48. Ricci JA, **Singhal D**, Fukudome EY, Tobias AM, Lin SJ, Lee BT. Topical nitroglycerin for the treatment of intraoperative microsurgical vasospasm. *Microsurg* 2017 in press
49. Ehanire T, **Singhal D**, Mast B, Leyngold M. Safety of Microsurgery Under Loupes Versus Microscope: A Head-to-Head Comparison of 2 surgeons with Similar Experiences. *Ann Plast Surg* 2018 in press
50. Tran BN, Epstein S, **Singhal D**, Lee BT, Tobias AM, Ganor O. Gender affirmation surgery: a synopsis using American College of Surgeons national surgery quality improvement program and national inpatient sample databases. *Ann Plastic Surg* 2017 in press
51. Epstein S, Tran BN, Cohen JB, Lin SJ, **Singhal D**, Lee BT. Racial Disparities in Postmastectomy Breast Reconstruction: National Trends in Utilization from 2005 to 2014. *Cancer* 2018 in press
52. Tran BN, Celestin AR, Lee BT, Critchlow J, Tsai L, Toskich B, **Singhal D**. Quantifying Lymph Nodes During Lymph Node Transplantation: The Role of Intra-operative Ultrasound. *Ann Plastic Surg* 2018 In press
53. Ruan QZ, Chen AD, **Singhal D**, Lee BT, Fukudome EY. Surgical Management of hidradenitis suppurativa: procedural trends and risk factors. *J Surg Res* 2018 In press
54. Tran BN, Chen AD, Kamali P, **Singhal D**, Lee BT, Fukudome EY. National perioperative outcomes of flap coverage for pressure ulcers from 2005-2025 using American College of Surgeons National Surgical Quality Improvement Program (ACS-NSQIP). *Arch Plast Surg* 2018 in press.
55. **Singhal D**, Tran BN, Angelo JP, Lee BT, Lin SJ. Technological Advances in Lymphatic Surgery: Bringing to Light the Invisible. *Plast Reconstr Surg* 2018 In press

Other peer-reviewed scholarship

1. Pomahac B, Nowiknski D, Diaz-Siso J, Bueno E, Talbot S, Sinha I, Westvik T, Vyas R, **Singhal D**. Face transplantation. *Curr Probl Surg*. 2011 May;48(5):293-357.
2. Hall D, Gentile L, Shaw C, **Singhal D**, Spiguel L. Calciphylaxis of the breast: A case report and literature review. *Breast J*. 2016 Sep;22(5):568-72.

Reviews, chapters, monographs and editorials

1. Kondziolka D, **Singhal D**, Niranjan A, Lunsford LD. Stereotactic Radiosurgery for Epilepsy and Movement Disorders. In: Pollock BE (ed), *Contemporary Stereotactic Radiosurgery: Technique and Evaluation*. New York: Futura, 2002: (Ch. 15) pp 327-345.
2. **Singhal D**, Kaiser L. The Posterior Mediastinum. In: Selke FW (ed), *Sabiston & Spencer's Surgery of the Chest*, 7th Ed. Philadelphia: WB Saunders Co., 2004: (Ch. 42) pp 689-703.
3. **Singhal D**, Lee BT. Hydrodissection of Perforators During the DIEP Flap Procedure. In: *QMP Plastic Surgery Pulse News*. Editor: Neligan P. October, 2012;
http://www.plasticsurgerypulsenews.com/12/article_dtl.php?QnCategoryID=113&QnArticleID=243&QnCurPage=1.
4. Tran BN, **Singhal, D**. Clinical Diagnosis of Lymphedema. In Chen HC (ed), *Lymphedema Surgical Approach and Specific Topics*, 2nd Ed. Amsterdam: Elsevier, 2018: (Ch. 3) pp 13-24
5. Brunelle CL, Barrio AV, Shaitelman SF, **Singhal D**, Sayegh HE, Taghian AG. On “Diagnosis of Upper Quadrant Lymphedema Secondary to Cancer: Clinical Practice Guideline from the Oncology Section of the American Physical Therapy Association.” *Phys Ther* 2018 Apr 1; 98(4): 277-281
6. Tran BN, Lee BT, **Singhal D**. Response to “Opinions on the Swine Model for the Surgical Prevention of Lymphedema” *J Surg Res* 2018 In press

Narrative Report

As a plastic and reconstructive surgeon, my area of clinical innovation is in lymphatic reconstruction. Prior to coming to BIDMC, I served as the Director of Microsurgery and Director of Adult Craniofacial Surgery at the University of Florida's flagship academic institution in Gainesville, Florida. There I developed a Lymphatic Surgery program performing the first lymph node transplantation and lymphovenous bypass procedures in the history of the institution. We quickly became a regional referral center for the treatment of lymphedema. Prior to these surgical options, patients with lymphedema were treated by physical therapy alone which is not a cure and often costly and time consuming. To my knowledge, the program I started in Florida was the first and only program in the country offering treatments for both chronic lymphedema and prophylactic procedures for patients at high risk for the development of lymphedema. I am currently the Director of Lymphatic Surgery at BIDMC and will be leading the only referral center for lymphedema in all of New England.

My major teaching contributions as an attending to date have occurred at the University of Florida School of Medicine and University of Florida School of Dentistry where I had a dual appointment. I contributed to the education of plastic surgery and oral and maxillofacial surgery residents. Of note, while a resident at Brigham and Women's Hospital, I received multiple awards for teaching from Harvard Medical School including "the Excellence in Teaching Award" in 2003-2004 and 2005-2006 and the Robert T. Osteen Award (2007-2008) while serving as chief resident.

My major clinical research contribution has come in the field of microsurgery, including lymphatic surgery. As a resident, I developed the concept of hydrodissection for microsurgical perforators. Since that time, I have published four manuscripts on this topic including two animal studies. The technique has been invited for presentation at multiple national meetings and continues to be utilized at HMS hospitals over the past six years and, more recently, other major academic centers nationally (e.g., University of Michigan) and internationally (e.g., Chang Gung Memorial Hospital). For lymphatic surgery, I have developed a novel method of intra-operative lymphatic channel visualization utilizing a formulation of fluorescein. This is an important innovation because prior imaging techniques did not allow the lymphatic surgeon to simultaneously image and dissect vessels. I am currently presenting this work both regionally and nationally. While the lymphatic surgery world continues to focus on the treatment of chronic lymphedema, I am one of a handful of pioneers working on eliminating the disease by performing procedures to re-route the lymphatic system at the time of the cancer procedure.

My goal is to eradicate lymphedema caused by cancer extirpations. With further refinements in surgical technique combined with potential augmentation with cytokines that increase lymphatic vessel growth, I believe we can eliminate one of the largest issues in cancer survivorship. I am at the forefront of this field and plan to continue to lead improvements that will further our patient outcomes.