

Personal Information

Full Name: Nirvik Pal, M.D.

Title: Assistant Professor in Anesthesiology

Business Name: Virginia Commonwealth University

Email: Nirvik.Pal@vcuhealth.org

Languages Spoken: English, Hindi, Bengali

Professional Summary

Primary Departmental Specialization Area/Field

Cardiothoracic

Areas of Expertise and Interest

Cardiothoracic Anesthesiology

Perioperative transesophageal echocardiography

Transesophageal echocardiographer for MitraClip procedures (percutaneous mitral valve repair)

Education

Post Graduate

2011-2015

University in St Louis, MO

Residency in Anesthesiology, Washington

2008, 2017 (recertification)

Diplomate in Advanced Perioperative Transesophageal Echocardiography (PTeExam of NBE)

9/2007- 8/2008

**Clinical Fellowship (Cardiac Anesthesiology),
London Health Sciences Hospital,
University of Western Ontario,
London, Ontario,
Canada**

11/2000-11/2003

Degree: MD (Anesthesiology)

Supervisor: Dr Kiran Malhotra, FFARCS

(3 year postgraduation residency in Anesthesiology)
LLR Hospital, GSVM Medical College, Kanpur, UP,

India

Three-years training program with clinical rotations in various subspecialties of Anesthesiology.

Compulsory research/ thesis presentation.

11/1998-11/1999
Jhansi, UP, India

Compulsory Rotatory Internship, MLB Medical College,

Completed clinical rotations in medicine, surgery, O&G, public health

2/1994-10/1998
UP, India
2011 - 10/1998

MBBS (Medical School), MLB Medical College, Jhansi,

2011-2015 Residency in Anesthesiology, Washington University in St Louis.
Missouri, USA

2007-2008 Fellowship in Cardiothoracic Anesthesiology, London Health Sciences
University, London, Ontario, Canada

2004-2007 Senior Residency in Cardiac Anesthesiology, All India Institute of
Medical Sciences, New Delhi, India

2000-2003 Residency in Anesthesiology (MD), LLR Medical College, Kanpur, India

1994-1999 Bachelor of Medicine & Bachelor of Surgery (MBBS), MLB Medical
College, Jhansi, India

2011 - 1999

Certification & Licensure

Licensure

Virginia

Certification

PTE (perioperative transesophageal echocardiography)

MD (Anesthesiology)

Fellowship (Cardiothoracic Anesthesiology)

MBBS (Bachelor of Medicine & Bachelor of Surgery)

Hospital Appointments

2015- present Assistant Professor in Anesthesiology, Virginia Commonwealth
University (active)

2008-2011 Clinical Instructor in Anesthesiology, Washington University in St
Louis (inactive)

2015 - Present

Academic Appointment History

2015- present Assistant Professor in Anesthesiology, Virginia Commonwealth
University (active)

2008-2011 Clinical Instructor in Anesthesiology, Washington University in St
Louis (inactive)
2015 - Present

Employment History

2015- present Assistant Professor in Anesthesiology, Virginia Commonwealth
University (active)
2008-2011 Clinical Instructor in Anesthesiology, Washington University in St
Louis (inactive)
2015 - Present

Special Awards & Honors

1. Teacher of the Year 2010-2011: Division of Cardiothoracic
Anesthesiology, Washington University in St Louis.
2. FAER Resident Scholar, Washington University in St
Louis, ASA Annual Meeting 2013, San Fransisco, USA
3. Peter Krucylak Award for Best Resident in Cardiothoracic
Anesthesiology 2015, Washington University in St Louis
4. Teacher of the Year 2015 (CA2 Class): Dept of
Anesthesiology, Virginia Commonwealth University,
Richmond, VA
5. "Top Doc" Award, Richmond, 2018: Cardiothoracic
Anesthesiology
2010

Society Memberships

Society of Cardiovascular Anesthesiologists
American Society of Anesthesiology
American Society of Echocardiography
American Heart Association
Indian Society of Anesthesiologists
Indian Society of Cardiac Anesthesiologists

Member Research Committee SCA 2019: Society of
Cardiovascular Anesthesiologists
04/2019 - 04/2021

Scholarly Activities

Expert Services

Research Grant review for Society of Cardiac Anesthesiology (SCA) Research

Committee, Oct 2019

Peer reviewer for journal *Seminars in Cardio vascular Anesthesiology (SCVA)*
Database Manager (Thoracic) for Society of Abdominal Transplant Association (SATA),
Oct 2019

10/2019 - 10/2019

Grants and Contracts: Pending

Co-investigator: *"Intraoperative and postoperative dexmedetomidine and delirium, severity of postoperative pain and outcomes after cardiac surgery"*

In collaboration with Dr Miklos Kertai (PI) from Vanderbilt University, TN. Pending budget approval from Vanderbilt. Planned retrospective observational study in cardiac surgery patients using STS database.

Advising and Mentoring

Dr Eva Smith; Dr Matthew Barker (VCU, Cardiothoracic Fellows 2015-2016) (both in private practice)

Dr Aaron Lim; Dr Norbert Rios (VCU, Cardiothoracic Fellows 2016-2017) (both in academic practice)

Dr Lily Chang; Dr Jason McGrady (VCU, Cardiothoracic Fellows 2017-2018) (one in semi academic practice, other in private practice)

Dr Sammual Gay; Dr Charles Gil Boland (VCU, Cardiothoracic Fellows 2018-2019) current Fellows (one in private practice and one in academic practice)

2015 - 2019

Presentations

Invited

Internal/VCU

Annual Lectures (repetitive):

Fellow`s teaching: didactic lectures – TEE examination; Congenital Heart Diseases

Resident teaching: CA1&2 lectures – Cardiopulmonary bypass & CA 3 – PBLDs

Medical Student: Co-course master for CT Anesthesia rotation

Resident Clinical Conference

Bi-monthly TEE reviews (Fellows and residents) annually

Once every two months Fellows Journal Club conference.

National

Abstract/Poster Presentations

1. Nirvik Pal, John Stansfield, Nitai Mukhopadhyay, Mark Nelson. Improving trend in survival post-heart transplantation in patients with left ventricular assist device: a temporal analysis of United Network of Organ Sharing registry. (ORAL PRESENTATION)

Society of Cardiovascular Anesthesiologists, Chicago, IL May 20th.

2. Nirvik Pal, L Kang, P Shah. Sudden Cardiac Death due to arrhythmia is the most frequent cause of death in End Stage Renal Disease (ESRD) undergoing kidney transplantation. International Anesthesia Research Society (IARS), Annual Meeting 2018, Chicago, IL

3. Nirvik Pal, L Kang, P Shah. Recent hemodialysis prior to kidney transplantation is not associated with improved mortality. International Anesthesia Research Society (IARS), Annual Meeting 2018, Chicago, IL

4. Nirvik Pal, Eric Worrall, Lily Chang, V Kasirajan. Adult anomalous pulmonary venous return: A transesophageal echocardiography perspective. Society of Cardiothoracic Anesthesiologists (SCA), Annual Meeting, Phoenix, Arizona, May 2018.

5. Nirvik Pal, D Meier, P Nicolato, C Kim. Effusive Constrictive Pericarditis: Anesthetic Challenge. Annual Meeting, International Anesthesia Research Society (IARS), Washington DC, 2017

6. Nirvik Pal, K Breslin, P Nicolato, Massive Anterior Mediastinal Mass: Anesthetic Challenge. Annual Meeting, International Anesthesia Research Society (IARS), San Francisco, CA 2016.

7. Nirvik Pal, M Kertai, A Lakshminarsimhachar, M Avidan. Lung Allocation Score and Perioperative Outcomes. Annual Meeting American Society of Anesthesiologists (ASA), 2010, San Diego, CA

8. Nirvik Pal, S Chauhan, U Kiran, AK Bisoi, Y Chauhan, P Venugopal: The Integrated Extracorporeal Membrane Oxygenation (ECMO) & Cardiopulmonary Bypass Circuit. Annual Meeting of American Society of Anesthesiologists (ASA), October 2007, San Francisco, CA

9. Nirvik Pal, Sandeep Chauhan: Pediatric External Jugular Vein Catheterization: An Alternative. Annual Meeting of American Society of Anesthesiologists (ASA), October, 2006, IL

10. Nirvik Pal, SN Das, Usha Kiran: Carotid Artery Pseudoaneurysm in a Child: Anesthetic Implications & Management. 100th Annual Meeting of American Society of Anesthesiologists, October 22-26, 2005, Atlanta, GA

11. Minati Choudhury, Nirvik Pal, Usha Kiran : Open Heart Surgery for Tetralogy of Fallot's in a child with ITP. 39th Annual Conference, Indian Society of Anaesthesiologists (Delhi Chapter), April 9-10, 2005, New Delhi

12. Nirvik Pal, SN Das, Usha Kiran: Carotid Artery Pseudoaneurysm in a Child: Anesthetic Implications & Management. 26th UP State Chapter, Indian Society of Anaesthesiologists, UPCON ISA- 2004, 9-10 October, Kanpur

13. Nirvik Pal , Kiran Malhotra, Chitra, HD Pandey: Effect of Morphine on Post-operative Respiratory Functions: Comparison between Systemic and Epidural routes. 24th Annual Conference of UP Chapter, Indian Society of Anaesthesiologists, ISA October, 2002, Varanasi 10/2002

Teaching Experience

Didactic and Clinical

Annual Lectures:

Fellow`s teaching: didactic lectures – TEE examination; Congenital Heart Diseases
Resident teaching: CA1&2 lectures – Cardiopulmonary bypass & CA 3 – PBLDs
Medical Student: Co-course master for CT Anesthesia rotation
Resident Clinical Conference

Service Activities

Clinical Service

Outpatient Activities

Recognized by patients and peers for "Top Doc 2018" in Cardiothoracic Anesthesiology in Richmond, VA
Distinction: Especial training for MitraClip procedures (TEE) which is the novel upcoming percutaneous repair therapy for mitral valve regurgitation 2018

Service to the Profession

Society of Cardiothoracic Anesthesiologists: Research Committee Member since 2019 2019

Publications

Papers Published in Peer Reviewed Journals

1. Publications

1. Nirvik Pal, John Butterworth, Mark Nelson. Volatile Anesthetics versus Total Intravenous Anesthesia for Cardiac Surgery (Correspondence). *N Engl J Med April 2019 (in Press)*

2. Nirvik Pal, Miklos Kertai. Bag-Mask Ventilation during Tracheal Intubation of Critically Ill Adults (Correspondence) *N Engl J Med April 2019 (in Press)*

3. Nirvik Pal, Samuel Gay, Charles Gil Boland. Sex-related differences in patients undergoing Thoracic Aortic Surgery: Evidence from the Canadian Thoracic Aortic

4. Nirvik Pal. Letter by Pal regarding article "Clinical Outcome of Degenerative Mitral Regurgitation: Critical Importance of Echocardiographic Quantitative Assessment in Routine Practice" *Circulation*. 2019 Mar 12;139(11):1463-1464

5. Mark Nelson, John Butterworth, Nirvik Pal: Restrictive versus Liberal Transfusion in Cardiac Surgery (Correspondence) *N Engl J Med*. 2018 Dec 27;379(26):2576. doi: 10.1056/NEJMc1814414.

6. Nirvik Pal, Miklos Kertai, Nathaniel Weintzel. Repair, replace or watchful waiting: a contemporary management of mitral valve disease and its related conditions. *Seminars in Cardiothoracic and Vascular Anesthesiology*. In Press. Accepted Nov 2018. (Invited Editorial)

7. Nirvik Pal. Postoperative Delirium: Amplifying the Confusion. *JAMA Surg*. 2019 Jan 16. doi:10.1001/jamasurg.2018.5244.

8. Nirvik Pal, Butterworth JB. Anesthesia duration does not exist in surgical vacuum. *JAMA Facial and Plastic Surgery* 2018 Aug 30. Doi:10.1001/jamafacial.2018.1129

9. Nirvik Pal, Butterworth JB. Anesthesia Care Handovers and Risk of Adverse Outcomes. *JAMA*. 2018 Jun 5;319(21):2237.doi: 10.1001/jama.2018.4450

10. Shah PR; Reynolds PS; Pal Nirvik; Spiess B et al. Hydroxycobalamine for the treatment of cardiac surgery associated vasoplegia: a case series. *Can J Anesth* (2017). <https://doi.org/10.1007/s12630-017-1029-3>

11. Nirvik Pal, Butterworth J. Troponin is for diagnosis, not screening! *Anesthesia Analgesia*; March;124(3):1007.doi10.1213/ANE.0000000000001818

12. Avidan MS, Jacobsohn E, Glick D, Burnside BA, Zhang L, Villafranca A, Karl L, Kamal S, Torres B, O'Connor M, Evers AS, Gradwohl S, Lin N, Palanca BJ, Mashour GA; BAG-RECALL Research Group: [Prevention of intraoperative awareness in a high-risk surgical population](#). *N Engl J Med*. 2011 Aug 18;365(7):591-600. doi: 10.1056/NEJMoa1100403.

13. MD Kertai, BJA Palanca, Nirvik Pal. Bispectral index monitoring, duration of bispectral index below 45, patient risk factors, and intermediate-term mortality after non-cardiac surgery in the B-Unaware Trial. *Anesthesiology* 2011(114);545-556

14. Miklos D. Kertai, M.D., Ph.D., Nirvik Pal, M.D., Ben J. A. Palanca, M.D., Ph.D., Sylvia A. Searleman, B.S., Lini Zhang, M.D., Beth A. Burnside, B.A., Kevin J. Finkel, M.D., Michael S. Avidan, M.B., B.Ch. on behalf of the B-Unaware Study Group : Association of perioperative risk factors and cumulative duration of low bispectral index with intermediate-term mortality

following cardiac surgery. *Anesthesiology* 2010 May;112(5):1116-1127

15. Nirvik Pal, M Kertai, A Lakshimarsimhachar, M Avidan. Pharmacology and Clinical Applications for Human Recombinant Antithrombin. (Review Article) *Expert Opinion in Biological Therapy* 2010 Jul;10(7):1155-68

16. Melby SJ, Larue SJ, Lasala JM, Lakshminarasimhachar A, Nirvik Pal, Trulock EP, Kreisel D, Pasque MK, Puri V, Patterson GA, Krupnick AS. Anatomic distortion of the right coronary artery as a complication of lung Transplantation. *Ann Thorac Surg.* 2010 Jun;89(6):2000-1.

17. Nirvik Pal , Rishi Mehra : Unusual Right Atrium Indentation: PoststernumClosure. *J Cardiothorac Vasc Anesth.* 2009 Oct;23(5):751-2. Epub 2008 Oct 22. (10.1053/j.jvca.2008.08.012)

18. Minati Choudhury, Nirvik Pal, Usha Kiran: Open Heart Surgery for CyanoticHeart Disease in A Child with Immune Thrombocytopenic Purpura: A CaseReport. *Indian Journal of Anaesthesia* 2007; 51(6):541-545

19. Nirvik Pal, Minati Choudhury, Usha Kiran, Chaitali Sen, Khalid Zuber Acute Hemorrhagic Shock: Direct Right Atrial Transfusion. *The Internet J of Anesthesiology* 2007, Vol 13 (1)

20. Nirvik Pal, Sambhu N Das, Usha Kiran, Anil Bhan: Anesthetic implications and management of carotid artery pseudoaneurysm in a child. *The Internet J of Anesthesiology* 2007, Vol 12 (1)

21. Nirvik Pal, Neeti Makhija, Usha Kiran, Swatilika Pal: Post-tracheostomy subcutaneous emphysema: A management plan. *Pediatric Anesthesia* 2007 Mar, 17 (3): 298-300

22. Nirvik Pal , Kiran Malhotra, Chitra, HD Pandey: Effect of Morphine on Post-operative Respiratory Functions: Comparison between Systemic and Epidural routes. *Indian Journal of Anaesth.* 2004, 48 (3) : 204-207

23. Hemant Bhagat, Kiran Malhotra, Chitra Tyagi, Navneeta Gangwar, Nirvik Pal: Evaluation of Pre-operative Rectal Diclofenac for Perioperative Analgesia in ENT surgery. *Indian Journal of Anaesth.* 2003, 47 (6) : 463-466

2. Nirvik Pal, Eric Worrall, John Butterworth: "Cerebral autoregulation targeted mean arterial pressure: Precision medicine or panacea?" (Correspondence) *JAMA Surg* (accepted, June 2019)

Editorials, Reviews, Commentaries, Proceedings, Invited Published Papers in Peer Reviewed Journals

1. Nirvik Pal, Miklos Kertai, Nathaniel Weintzel. Repair, replace or watchful waiting: a contemporary management of mitral valve disease and its related conditions. *Seminars*

Books, Book Chapters and Monographs

1. Authored Book Chapters:

1. Pulmonary Atresia: Essence of Anesthesia Practice: Roizen & Fleischer (3rd Ed)
2. Pulmonary Hypertension; Tricuspid Atresia; Pulmonary Atresia: 5-Minute Consult in Anesthesia: Nina Singh-Radcliff: (1st Ed)
3. Temporary Intracardiac Pacing: Manual of ICU Procedures : Mohan Gurjar (1st Edition)
4. Cardiovascular Drugs: Hensley's Practical Approach to Cardiothoracic Anesthesia (4th Edition) 2018: GP Gravlee
5. Extracorporeal Membrane Oxygenation: Ventilation, Fluid, Electrolyte and Blood Gases: Mohan Gurjar (1st Ed)

Personal Statement

Dear Reviewer,

I am a native of India. Completed my degree in Medicine (MBBS) from MLB Medical College, Jhansi, India in 1999 and then post-graduation in Anesthesiology (MD) from LLR Medical College, Kanpur, India in 2003. It is during my Residency training I discovered my passion for Cardiothoracic Anesthesia. That is when I decided to further train in the same field. I was lucky to get an opportunity to do a three-year 'Senior Residency' (2004-2007), equivalent to Fellowship in USA, in exclusively cardiac anesthesia at All India Institute of Medical Sciences (AIIMS), New Delhi, India which is the apex institute in India for such cases. I got extremely facile with congenital heart surgery anesthesia during the three years, given the number of cases of births with congenital malformations in developing countries.

My lust to become a complete expert never quenched. I had a feeling that I still did not have enough exposure to adult cardiac surgery anesthesia for heart failure management like left ventricular assist devices, heart transplantations etc. which was the new upcoming thing during the time. I got accepted to a year of Clinical Fellowship in Adult Cardiac Anesthesiology at LHSC, University of Western Ontario, London, Canada (2007-2008) which gave me plenty exposure to advanced heart failure surgical anesthesia along with routine cases. Looking back, now that I had trained myself near complete in every aspect of cardiac surgical anesthesia, I started to feel the void for thoracic surgery anesthesia and advanced thoracic cases like lung transplantation.

Once again in life, as luck would have it, given my background, I was able to get an international-faculty appointment as Clinical instructor at Washington University in St Louis in Cardiothoracic Anesthesiology Division (2008-2011). WashU is one of the very high-volume centers for lung transplantation and all other varieties of complex lung surgeries like tracheal resection etc. This was really a stepping stone in my career development. My then mentor Dr Michael Avidan also encouraged me and directed me

to research. Got involved with some best quality research and trials which eventually culminated into publications in Anesthesiology and New England Journal of Medicine. Now, here I was with my passion for clinical research but at the verge of conclusion of my limited licensure as international faculty. In order to pursue my career, I repeated my residency in Anesthesiology (2011-2015) and got boarded by ABA.

In 2014, I had the opportunity to personally meet Dr John Butterworth at VCU, my current mentor and chairman. The vast potential and his desire and commitment to advance the department academically attracted me to VCU which I joined in 2015. Till date I feel I have been productive on each leg on the three-legged-stool; service to patients, service to trainees and advancing the science of medicine, our primary goal and sole reason for existence. Highlights of my achievements at VCU since 2015 have been recognition by Residents being awarded the Best Teaching Award, recognition by patients and people I serve as "Top Doc 2018" award and multiple publications in highest impact journals in medicine like NEJM, JAMA and Circulation. At VCU, I have also excelled in advancing my clinical skills by learning and getting formally approved as physician echocardiographer (TEE) for MitraClip procedures. These are the most advanced therapies for percutaneous mitral valve repair performed completely under perioperative TEE guidance. Often the sickest and high risk patient population are chosen for these procedures. I am grateful and humble that I am in a position to help these sick patients, often coming to our institute and thus contributing to the community.

Thank you for considering my application.

Sincerely,
Nirvik Pal, MBBS, MD

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