



M.S (General Surgery) Postgraduate training and How Vascular Surgery complements it? The fundamental changes Effected – Single Institutional experience and the need to generalize it.

MARUTHU THURAI.

Senior Civil Surgeon and Assistant professor vascular surgery .
THANJAVUR MEDICAL COLLEGE .

Abstract: There are 2087 M.S (General Surgery) postgraduate students getting admitted in 207 medical colleges across India of which only 12-15% of Institutions have existing vascular services available in their affiliated hospitals. As a part of training, postgraduate students are posted to different specialties on rotation. Of all the specialties, Vascular surgery postings contributes to bringing in fundamental changes in the training of a M.S(Gen) postgraduate as evidenced by The Department of Vascular surgery at Thanjavur Medical College Hospital since its inception in September 2015. Starting from clinical history to exposure to Endovascular suite, at every level upto the attitudinal scale expected of a surgeon, fundamental changes are bound to be noticed in a student with exposure to Vascular Surgery. With rapid changes occurring in the academic horizon, wherein surgical diseases are coming under the purview of Needle based interventions being performed more and more by non-surgical specialists, M.S (General Surgery) curriculum is in an urgent need for restructuring.

Introduction: India is in the grip of an NCD epidemic with a burdensome increase in the incidence of life-style related diseases and with the dubious distinction of being the global diabetic capital. As a result, the number of patients in need of vascular care are on a perpetual increase against the backdrop of a limited vascular care network. Patients with chronic arterial ischemia, venous problems, diabetic foot syndrome, vascular malformations and emergencies like acute ischemia and vascular trauma constitute more than 20 to 30 % of all admissions in a general surgical unit at any point of time. The centers where vascular services are available are confined to predominantly state capitals and metropolis reflecting a gross maldistribution whereas patients with vascular problems are found to be of general distribution cutting across all social strata attendant with an increasing incidence amongst people from low socioeconomic background and rural livelihood. This offers great scope for training M.S General Surgery post graduate students in Vascular Surgery, but the lack of vascular surgery teaching faculty blunts the opportunity.

The purpose of this article is to showcase the fundamental The potential of vascular surgery in complementing general surgery training needs to be internalized by the teaching faculty in general surgery. changes that can be effected in General Surgery training as observed amongst M.S.(General Surgery) Postgraduate students by a comparative study of students admitted prior to and after the commencement of The Department of Vascular Surgery at Thanjavur Medical College Hospital

KEYWORDS: postgraduate training, vascular services, curriculum.

MATERIALS AND METHODS:

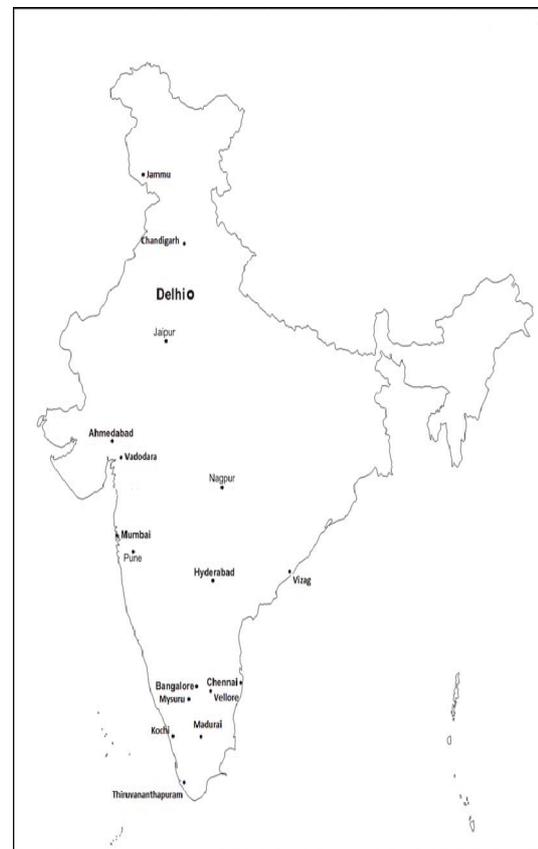
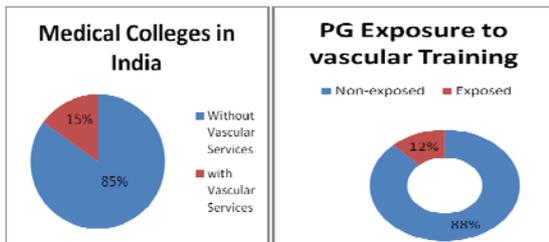
This observational study has been carried out collaboratively by The Department of Vascular surgery and The Department of General Surgery, Thanjavur Medical College Hospital, Thanjavur from September 2015 to February 2017. Datas were obtained from the postgraduates who completed the vascular training in Dept of vascular surgery, Thanjavur Medical College Hospital. Their experience on clinical evaluation and management as a trainee before and after Vascular Surgery training were obtained.

OBSERVATION:

Sl.No	DISEASE	BEFORE	AFTER	HOW?
1	Arterial Ischemia	Branded most patients as TAO	Learnt to distinguish between TAO and ASO	By applying Shionoya criteria based on focussed history elicitation.
		Not used to the prescription of Heparin	Early Heparinisation has become established protocol	By supervised instruction
		Antiplatelets and Statins were not prescribed regularly	Routine prescription	Bed side teaching
		Unfamiliar with CT Angiogram	Becoming familiar with CT Angiogram has facilitated better understanding of the vascular segments	Bed side diagnostic evaluation & treatment planning session
		Most cases seemed end of the road cases and looked hopeless	Never condemn since the concept of revascularization has offered light of hope	Vascular teaching

		Immediate and random amputation	Aiming Limb salvage has become the standard and in the eventuality of amputation, limiting the level of amputation has become the goal.	Assisting vascular surgical procedures
		Referral or death which was undignified and unacceptable	Treat with best efforts and a never give-up attitude	All efforts at treating the condition make it acceptable to the family. Even when treatment fails death becomes dignified and acceptable.
2.	Diabetic Foot Syndrome	Though the Arterial component was known, it was not addressed. Merciless debridement was the practice.	Revascularization first. Amputation later is the current principle. Limb salvages the goal.	Vascular teaching, CT Angiogram and Tibial Angioplasty
3.	Venous insufficiency	Conventional open surgery for varicose veins was the practice with lots of residual disease	Endoluminal Ablation has become the standard. Quality of open surgery has improved	Employing Intra operative Doppler Ultra Sound and Radio Frequency Ablation system
		Foam sclerotherapy not done	Became familiar with chemical ablation.	Assisting the procedures.
		Intraoperatively locating the	No longer difficult.	Intra operative use of ultra sound.
		Spheno popliteal junction was unpredictable.		
4.	Venous Thromboembolism	Diagnosis of DVT remind a nightmare owing to the possibility of pulmonary embolism	No more a nightmare. Early heparinisation is the standard. Treatment of pulmonary embolism made possible. Panicky referral of DVT patients rendered obsolete.	Adopting High index of clinical suspicion of pulmonary embolism with imaging. Proper treatment of DVT including Catheter Directed Thrombolysis (CDT).
5.	Chronic Venous Insufficiency Post Thrombotic Syndrome	Evaluation of venous outflow obstruction was never done.	Duplex imaging of iliac veins and IVC. Magnetic Resonance Venogram facilitated diagnosis of ilio caval obstruction.	Vascular teaching
		SSG was the standard treatment for non healing ulcers which often failed with recurrent ulcer.	Iliac venoplasty with iliac vein stenting resulted in better outcome.	Assisting endo venous procedures.
6.	Vascular Trauma	Immediate referral of the cases	Early heparinization and immediate surgery	Assisting vascular emergency surgeries.
		Amputation	Limb salvage	Follow-up of vascular trauma patients.
		Fasciotomy was done only after the limbs became pulseless	Early fasciotomy has become the practice	Vascular teaching
		Conservative	The technique of	Assisting vascular

		attitude towards fasciotomy	fasciotomy has been rendered adequate and liberal	emergencies.
7.	Stroke prevention surgery	Not known	New revelation	Assisting carotid endarterectomy procedures.
8.	Malformations	Hemangioma was the standard diagnosis	Learnt to distinguish various vascular malformations and the difference between Hemangioma	Vascular clinical teaching
		Vague & ill informed referrals	Became familiar with multimodal treatment for vascular malformations.	Assisting vascular procedures.
9.	A-V access surgery	Referral to Chennai for A-V access	Routine procedure	Assisting A-V access surgeries.
10	Institutional DVT prophylaxis	Not established	Established	Vascular initiative



DISCUSSION:

The current data furnished by MCI quotes only 15 % of medical colleges where vascular services are available run either as an independent department or under the cover of Cardiovascular and Thoracic Surgery departments. This translates into only 12 % of the total number of M.S (General surgery) postgraduates joining the course every year getting any basic exposure to the fundamentals of vascular science. Against the stark reality of very limited number of qualified Vascular Surgeons, it calls for an urgent need to train General Surgeons in Vascular Science if at all the societal need for Vascular care is aimed to be met.

Further the practice of General Surgery is going through a transitional phase from the once big incision' era of open surgery through the recent era of minimal access surgery to the current era of needle based addressal of surgical diseases viz Endovascular Interventions, on its journey towards disease prevention by gene mapping and gene modulation, courtesy the evolution in molecular biology. As a result certain diseases which were once under the domain of General Surgeons have started drifting to other specialties. To quote an example, the incidence of varicose veins is being projected to be around 30 % in the general population in the country¹. We have non-surgical specialists viz cardiologist, radiologist and dermatologists addressing varicose veins by needle based addressal in the form of radiofrequency ablation, whereas M.S (General surgery) postgraduates are found to be unfamiliar with this methodology. This need to be set right and requisite training to General Surgery postgraduates should be ensured in this regard. In such a clinical scenario, exposure to Vascular Science to all M.S (General Surgery) trainees assumes importance beyond questioning.

In Canada, the Royal College of Physicians and Surgeons (RCPSC) sets objectives for specialty training. In the 1996 objectives, the RCPSC required that every general surgery resident attain "sufficient knowledge and judgment to manage lesions of the vascular system"², the RCPSC modified the general surgery training objectives in this regards³. Vascular surgery is traditionally considered a component of general surgery. The American Board of Surgery (ABS) considers vascular surgery to be one of the nine "essential content areas" of general surgery. According to the ABS, a general surgery trainee is expected to have "knowledge and experience related to the diagnosis ... management, including management of complications, in the essential content areas"⁴.

Vascular Surgery best exemplifies the definition "A Surgeon is an operating physician". Though it is a fundamental requirement of any clinical science, history taking with vascular training becomes very appealing and the difference it can make to diagnosis and decision making is dramatic. With Vascular Surgery training history can never be monotonous.

Pulse examination though basic in any discipline, gains focus with Vascular Surgery training, especially in emergencies like acute limb Ischemia, both traumatic and non-trauma related etiologies. Its application in arriving at segmental diagnosis of vascular afflictions in the chronic setting has got a mathematical appeal which is very impressionable to the student's grasp and gains focus. With Vascular Surgery training Pulse examination will cease to be a cursory routine.

Vascular Surgery unlike other surgical specialties does not have a corresponding physician specialty. Hence the onus lies with the Vascular Surgery trainee to don the role of the Vascular Physician. With the responsibility to routinely handle antiplatelets and anti-coagulants, the trainee becomes more quisant with drug pharmacology and its applications while treating surgical diseases, which will be a welcome change in the scientific bent of the surgical mind. With Vascular Surgery training drug practice will become more judicious.

At the skill level, Vascular Surgery has much to contribute in the making of a surgeon.

The exposure of Abdominal aorta, Inferior Vena Cava, Carotids, Subclavian and The Femoral, Popliteal and the tibial vessels are bound to boost the confidence of the surgical trainee in the process of execution of various options of saving a limb besides handling and exposure of vascular instruments. Assisting an A-V access procedure is bound to teach patience, gentleness and sharpness of vision in the process of experiencing the thrill in an A-V fistula. With Vascular Surgery training, skill imparting can never be wanting. It is said that Surgery is all about temperament and stamina. Given the long hours inherent to Vascular procedures and often the multiple procedures needed to attain salvage, the 'never – give up' attitude of Vascular surgeons are bound to positively influence young aspiring minds taking up the discipline of Surgery as a way of life. With Vascular Surgery training, perseverance will never be lacking.

The results of this study raise many questions. Will there be enough trained specialists to deal with the burden of vascular disease? Should the structure of vascular training be changed, because there is much in common with general surgery. Should Indian general surgery programs make more of an effort to include vascular training? Will a program "Teach the Teacher" aimed at General Surgery faculty to train in the basics of Vascular Surgery Bridge the wide gap? The implications of these questions should be the focus of further research.

CONCLUSION:

Darkness shrouds the General Surgery curriculum with regards to Vascular Surgery. 60 -80 % of M.S Post Graduates in India pass out without any basic exposure to Vascular Science⁵. At present, vascular specialists meet only 20% of the societal need in the backdrop of limited availability of vascular surgeons. Further the corporate establishments housing vascular services are beyond the economic reach of the majority of vascular patients resulting in an increased dependence on teaching institutions and government medical colleges for vascular services.

The current scenario calls for an urgent *need to restructure the M.S (General Surgery) curriculum*. Vascular Surgery postings should be made mandatory for all M.S Postgraduate students with exposure to Cath Lab/ Mini Cath Lab environment. Basic skill imparting in vascular procedures should be ensured to tackle vascular emergencies.

REFERENCES:

- 1)Epidemiology of varicose veins- SHIKSHA SHARMA & al, Certain Profession of Working as Risk Factors for Varicose Veins, IOSR Journal of Pharmacy and Biological Sciences, Volume 7, Issue 5 (Sep. – Oct. 2013), PP 56-59 www.iosrjournals.org
- 2)The objectives of training and specialty training requirements in general surgery, The Royal College of Physicians and Surgeons of Canada, Ottawa, Ont, Canada (1996)
- 3) Objectives of training and specialty training requirements in general surgery, The Royal College of Physicians and Surgeons of Canada, Ottawa, Ont, Canada (2002)
- 4) Booklet of information, July 2002–June 2003, American Board of Surgery, Philadelphia, Pa (2002)
- 5)[Journal of Vascular Surgery, Volume 48, Issue 6, Supplement](#), December 2008, Pages 76S–80S.