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.

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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(General) 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:

<table>
<thead>
<tr>
<th>S.No</th>
<th>DISEASE</th>
<th>BEFORE</th>
<th>AFTER</th>
<th>HOW?</th>
</tr>
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<tbody>
<tr>
<td>1</td>
<td>Arterial Ischemia</td>
<td>Broaden must patients as TAO</td>
<td>Learn to distinguish between TAO and AOD</td>
<td>By applying diagnosis orientated based on focussed history elicitation.</td>
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<td></td>
<td></td>
<td>Nurtured to the prescription of dopants</td>
<td>Early specialization has become established protocol</td>
<td>By supervised instruction.</td>
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<td></td>
<td></td>
<td>Antihypertensives and Statins were not prescribed</td>
<td>Regular prescription</td>
<td>Bed side teaching.</td>
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<td></td>
<td></td>
<td>Unfamiliar with CT Angiogram</td>
<td>Becoming familiar with CT angiogram has facilitated better understanding of the vascular segments</td>
<td>Bed side diagnostic evaluation &amp; treatment planning session.</td>
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<td></td>
<td></td>
<td>Muscles goosed end of the road cases and dashed hopes</td>
<td>Never conducive since the concept of revascularisation has offered light of hope</td>
<td>Vascular Teaching</td>
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<table>
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<tr>
<th>Issue</th>
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<tr>
<td><strong>Immediate and random amputations</strong></td>
<td>Ankle Limb salvage has become the standard and in the eventuality of amputation, limiting the level of amputation has become the goal.</td>
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<tr>
<td><strong>Referral on death which was undignified and unacceptable</strong></td>
<td>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.</td>
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**Diabetic Foot Syndrome**
- Though the arterial component was known, it was not addressed. Nerveless debridement was the practice.
- Revascularization first. Amputation later is the current principle. Limb salvage is the goal.
- Vascular access, CT Angiogram and Triple Angioplasty.

**Venous Insufficiency**
- Conventional open surgery for varicose veins was the practice with lots of residual disease.
- Endovenous ablation has become the standard. Quality of open surgery has improved.
- Employing Intra operative Doppler ultrasound and Radio Frequency Ablation system.

**Venous Thromboembolism**
- Diagnosis of DVT remains a nightmare owing to the possibility of pulmonary embolism.
- No more a nightmare. Early heparinisation is the standard. Treatment of pulmonary embolism made possible. Panic attack 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).

**Chronic Venous Insufficiency Post Thrombotic Syndrome**
- Evaluation of venous outflow obstruction was never done.
- Duplex imaging of lower limb veins and IVC Magnetic resonance venography identified cause of venous obstruction.
- Operate the standard treatment for non healing ulcers which often fail with recurrent ulcer.

**Vascular Trauma**
- Immediate referral of the cases.
- Early heparinization and immediate surgery.
- Limb salvage and follow up of vascular trauma patients.

**Medical Colleges in India**
- PG Exposure to vascular Training
  - Non-exposed: 45%
  - Exposed: 55%

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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 specialties. To quote an example, the incidence of varicose veins is being projected to be around 30% in the general population in the country. 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”; the RCPSC modified the general surgery training objectives in this regards. 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”.

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 antplatelets and anti-coagulants, the trainee becomes more quiant 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.

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