Combat Casualty Care

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Introduction

The medical services of Armed Forces are responsible for the care of the sick and wounded in war and peace. Though more soldiers have died from disease than combat injuries, the main role of the medical services remains rapid evacuation of the wounded during battle to field hospitals for life and limb saving surgery. In the last century impressive strides have been made in combat surgery. This symposium of MJAFI on combat casualty care highlights important injuries and the recent advances.

Battle Casualty Care

Advances in pre-hospital care, damage control surgery and resuscitation, understanding of trauma physiology and rapid medical evacuation to Field hospitals close by, within the Golden period has shown better outcomes, as has been demonstrated in Korea and Vietnam [1]. The Indian Armed forces especially the Army has also kept pace with improvements of the erstwhile Medical battalions, Field Ambulances and now Field Hospitals. The care of the battle wounded from the Indo-Pak wars, Indo-China conflict, the Kargil conflict and the ongoing counter insurgency operations in Jammu and Kashmir and Northeast have been a continuous saga to care for the brave soldiers and the medical services have not been found wanting.

Wartime lessons contributed to the civilian environment with establishment of trauma centres and standardized protocols [2]. Combat casualty care takes place across a continuum spectrum of standardized care from the point of wounding to mobile or fixed field or border static hospitals with varying capabilities till a higher level of care in the rear [3].

A battle casualty is defined as a subject who is killed or wounded as a result of hostile action. Killed in action is defined as a battle casualty (BC) who died before arrival at a field medical treatment facility. Died of

wounds is defined as a battle casualty who died as a result of wounds at some point after arrival at the medical facility. Casualty fatality rate is defined as the sum of killed in action and died of wounds divided by total battle casualty rate. The care on the modern battlefield has evolved considerably since the Vietnam era; the conflict in Iraq by the United States Forces has seen the lowest killed in action rate of any protracted conflict [4]. Improvement in body armour for ground troops is generally cited as the chief reason for this observation with early damage control surgery and rapid evacuation.

Shell dressing and first field dressing have been a part of our Army prehospital or level 1 care since inception. In the last decade various Armies have tried a large number of haemostatic agents. These include Quickclot, Chitosan etc but the reports have been conflicting. Acute haemorrhage is the leading cause of death in the battlefield, the need for the use of tourniquets has once again been thrown open. Military medical doctrine from the US Army has mandated the issue of thousands of tourniquets to its combatants. This has proved to be life and limb saving despite the risk of ischaemic and neurological complications. This may be because the Western armies are well tuned at evacuation even at night by helicopters or fixed wing aircrafts. In India with inhospitable terrain and no night-flying facilities the role of the tourniquet still remains controversial. However, there may be a need for it to be applied by medical personnel or regimental medical officers especially during mountainous evacuation to prevent exsanguinations. The American Army has now a good body “interceptor armour” and the provision of an Israeli dressing which is a combination of a bandage, tourniquet and a dressing has proved very popular and effective.

Field Hospital Care

Field hospitals or border static hospitals are the first surgical facility for life and limb salvage. Evacuation

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from the forward defended locality (FDL) to these field hospitals is the task of the medicals by ambulance, air, mules or stretcher-bearers. The field hospitals are manned by a single surgical team with a holding capacity of 45 patients with a capability of 10-12 operations in 24 hours. There is no provision of intensive care unit (ICU) beds. This is in stark contrast to the US forces where the Forward Surgical teams (FST) can operate for 72 hours with a 20-person team of General and Orthopaedic surgeons, 2 Nurse anesthetists, critical care nurse etc. The post-op ICU can keep 8 patients for 6 hours as evacuation keeps taking place. The Corps level Combat support Hospital (CSH), a medical re-engineering initiative is the current modular hospital of 84,164 or 248 bed authorization. The 84 bed modular CSH has 24 ICU beds, 2 operation tables and can do 36 operation hours/day. The staff is 56 Officers and 112 enlisted men; this is in stark contrast to the 16 man FSC of our Field hospital. It may be prudent to have a modular type of a field surgical set-up with augmentation of medical personnel, equipment and capabilities depending on the anticipated or expected casualty. In the future conventional war will be fought under the nuclear shadow especially with missile based nukes inflicting maximum casualty. Adequate training and allotment of resources for these and chemical/biological warfare would be appropriate. Blood transfusion has come in a big way especially in damage control resuscitation and surgery. This provision of safe blood and blood products from rear will require logistics of transport, storage and compatibility testing. Live donors would require testing for human immunodeficiency virus (HIV), hepatitis C virus (HCV) and hepatitis B virus (HBV). The availability of portable multislice CT scan in Field setting, and stapling devices, endovascular techniques are all

new innovations for combat surgery in the future.

Data Collection and Training

Collection of combat casualty data is well standardized in the Army. The hospital and the Unit have standard forms to dispatch the data to the Records and higher formations. Setting up a Data registry will allow data analysis and actionable research in the future. It will also help in planning and provisioning of resources, manpower and in formulating future policies. A battlefield electronic medical card and telemedicine would be the future development for use in the battlefield.

A pre-induction training capsule in war surgery for the surgeons similar to the one conducted by the Royal Army Medical College London, is recommended. It would bring at par the philosophy and combat care for various type of injuries [5,6]. This would also entail the practical use of the Surgical Skills Lab to give hands on training on various techniques.

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