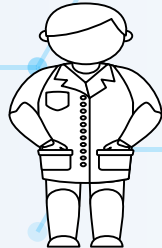


My WAR MISSIONS

(Africa & Middle East)

Experiences, Emergency Management & Lessons



Dr. Vinaykumar Ashtunkar

MBBS, DA, MD (Anaesthesiology)

**EVERYTHING HAPPENS FOR
A REASON !!!**



**LORD SHREE
KRISHNA**

Sub-Headings

➤ Experiences & Key Challenges

- * Pre-Mission
- * Intra-Mission
- * Post-Mission

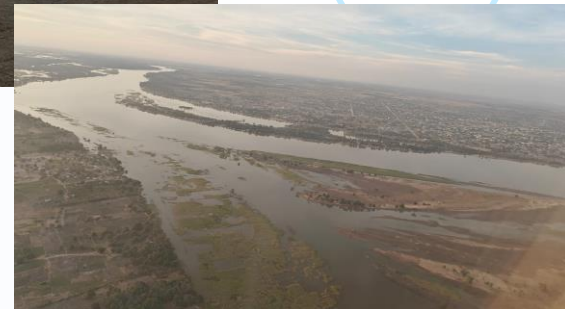
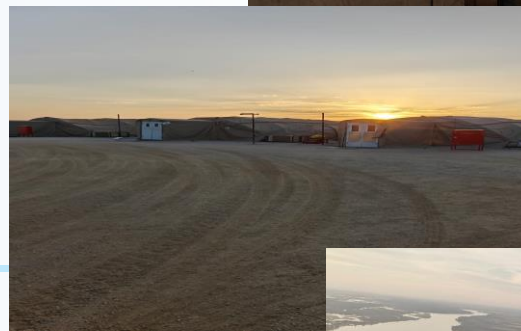
➤ Emergency Management

- * Real-world cases

➤ Lessons learnt

- * Thru' Various Missions
- * At Personal Level

➤ Scope & Innovations



A Glance : Mission Statistics



Period

Year 2016 – 2025 (10 Year of Journey)

War Missions

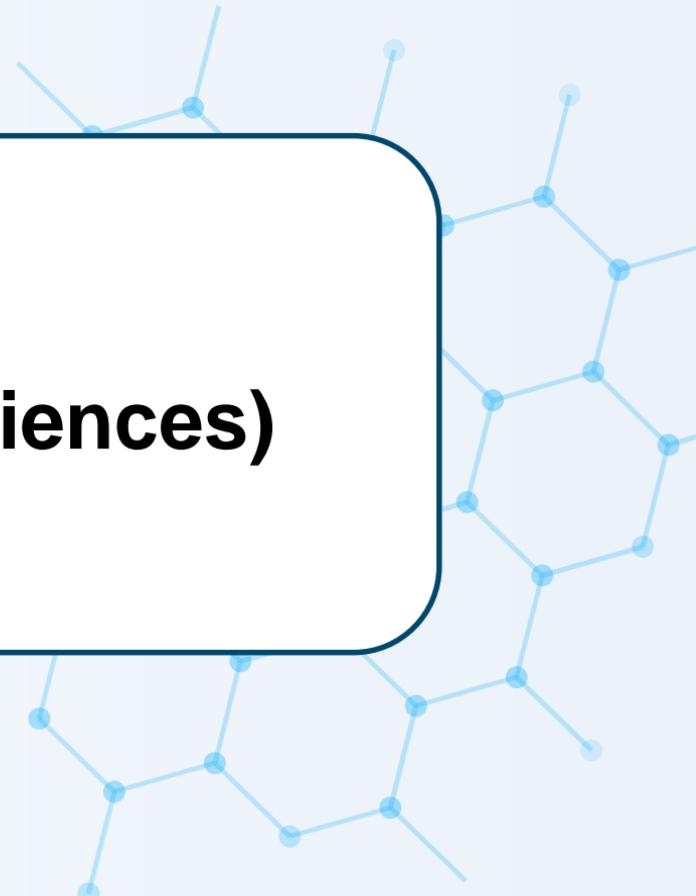
Total War Mission 29

Countries Involved

5 Countries

Days Spent

**Total days spent in War Missions -
805**



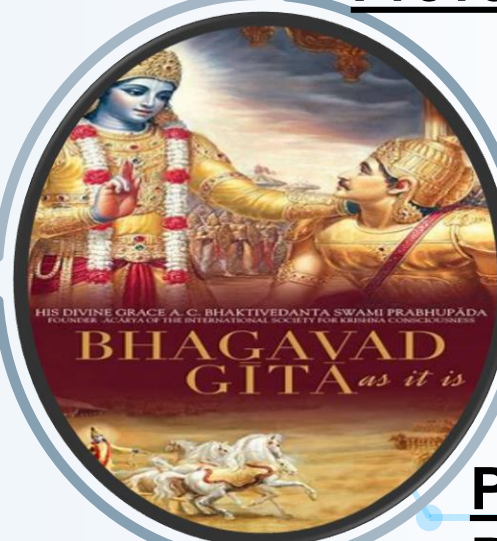
Pre-Mission
(Challenges & Experiences)

Challenges & Experiences

DNA Sampling

Packing of Essentials

- Personal - Extreme Climatic Conditions, Personal Hygiene Items, Travel light
- Other: Blood products/medications



Vaccinations & Preventive Medications

- Endemic diseases,
- Meals may be unhygienic
- Insect bites or parasitic infestation)

Psychological Preparation

- Self
- Family

Transportation

*pix source internet

Challenges & Risks



- Uncertainty
- Local Journey-
Stone Pelting / looting
- Risk of Attack :
Drones, Explosives,
Landmines
- Additional Military
Cover





Intra-Mission
(Challenges & Experiences)

Qualities of the Medical Staff

•Dedication

•Perseverance

•Adventurous

•Fit- Physically & Mentally

Conscious -Self & Surrounding

•Common sense

•Confident & quick

Skilled

Hostile Tactical Conditions

Pitch-Dark Conditions in the Middle of Night

Bunker to the Field Hospital with all body gears on

Multiple casualties

ETI, Resuscitative Measures, Chest Tubes & Emergency Surgeries etc...

Challenges

- ✓ Heavy rains → flooding → diseases
- ✓ Erratic power supply-
Equipment
Communication

**Natural
Disasters**

Physical

- ✓ Luggage
- ✓ Labour

Role

Safety

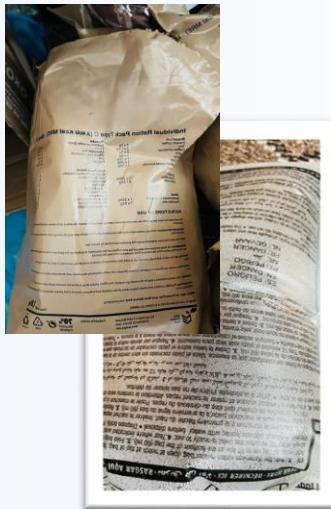
- ✓ Attack by local mob/enemy in the medical camp /neighborhood via explosives or bullets ~ 24hrs
- ✓ Looting

**Self Protection
& Evacuation**

**Portable
Ventilators**

Logistical

- ✓ Blood
- ✓ Drug
- ✓ Spare Parts
- ✓ Refilling of O2
- ✓ Raw meals
- ✓ Marzooma



FIELD HOSPITAL

*pix source internet

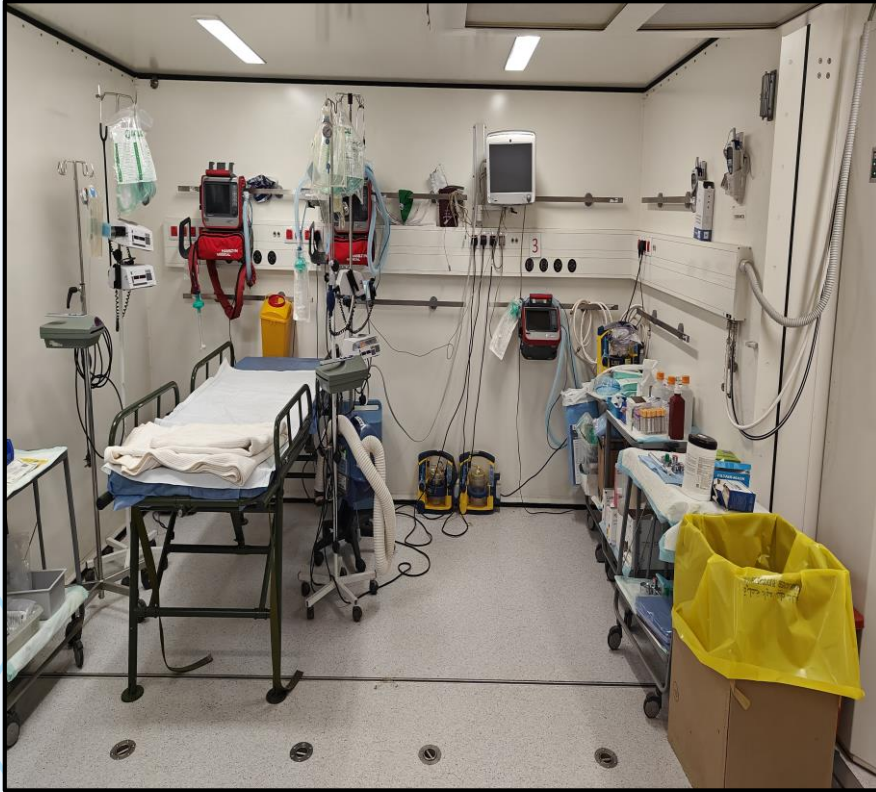


Operation Theatre In Field Hospital



- **Space**
- **#**
- **OT Time**
- **Infection Control**
- **Oxygen & Air cylinders**
 - **Switching**
 - **Storage**
 - **Explosion hazard**
 - **Refilling**
 - **Generator**
 - **Concentrator**

ICU in the Field Hospital



Triage

- ❖ “Do The Best For The Most” with minimal resources available & ‘Not everything for everyone’!
- ❖ Ethical Dilemmas in triage (Salvageable vs Non-salvageable) mentally traumatic & physically draining
- ❖ Dynamic Equilibrium between Needs & Resources available
- ❖ Need to conserve my resources & allocate wisely- blood, equipment, medications, manpower, even space (OT)
- ❖ No place for CPR (Rank of Officer doesn't matter)



Triage Categories

Category

I

Serious Wounds – **Resuscitation And Immediate Surgery - 'Sorting'**

Category

II

Second Priority wounds – **Can Wait For Surgery**

Category

III

Superficial Wounds – **Ambulatory Management**
(Delay in Evacuation > 12 hrs → More Category 1 pts)

Category

IV

Severe Wounds – Supportive Treatment (Surgery if category 1 pts are done)

(Needs A **Continuous Reassessment** As Patients May Change Triage Category: May Deteriorate Or Improve)

C-ABCDE or ABCDE

CONTROL

Elevation

•Compressive bandage → Pressure dressing

•Locally-active hemostatic powder & sponge

Combat Application Tourniquet (C-A-T)

- * May endanger limb but save life
- * Difficult to apply
- * Write time limit
- * Max inflation 2 hrs (unless amputation+++)
- * Inspect limb q15min for bleeding or swelling

VENOUS TOURNIQUET

May Result When Arterial Inflow Is Possible, But Venous Drainage Is Obstructed

Occurs If

Tourniquet pressure is < systolic blood pressure or Tourniquet applied loosens.

(A venous tourniquet may result in **increased bleeding**)

"C" = Catastrophic bleeding
(More deaths from C than A & B)



Case#1: Mangled Extremities & traumatic amputations ^{*pix}

[source internet](#)



- Proximal amputations
- Long bone #
- Muscle Injuries
- Case presentation & challenges

Hypotensive Resuscitation

Palpable Radial Pulse : Sys 80-90mmHg

Otherwise

A

- **Dilution of clotting factors**

B

- Dislodging of existing clots when the blood pressure goes up (“**Popping the Clot**”)

C

- **Lowering of blood viscosity** that causes a decrease in resistance to flow around an incomplete clot & increased bleeding

Except in:

- **Head Trauma**
- **Very Young**
- **Very Old**

Golden Hour & 1-2-4 Hours Principle

Golden Hour 1-2-4/6 Principle

⇒ 1hr: Resuscitation

⇒ 2hrs: Damage Control Surgery

⇒ 4hrs: Primary Craniotomy, if needed

⇒ 6hrs: Other Primary Surgery

Moto of Damage Control surgery (Does not follow Resuscitation, it is the part of Resuscitation)

• Save life & limb

• Sacrifice limb to save life

• Prevent infection

• (Decontamination + Early Antibiotics)

Heroic Surgery Will Never Replace Good Surgery.

Blood Utility & Transfusion

Judicious Use (Restricted to salvageable pts)

Never To Restore A Normal Haemoglobin Level

Medications (tranexamic acid)

'O' Positive

Universal blood donor 'O' Negative – when blood group is not known & maximum of 4 units could be transfused & pt's original blood group be transfused when available

Whole blood vs PRBC

Blood should **not** be given **During Resuscitation till bleeding is controlled.**

Hb < 6 g/dl & unstable, blood is administered.

Hb < 6g/dl & stable, blood transfusion held

Lethal Triad: A Vicious Cycle

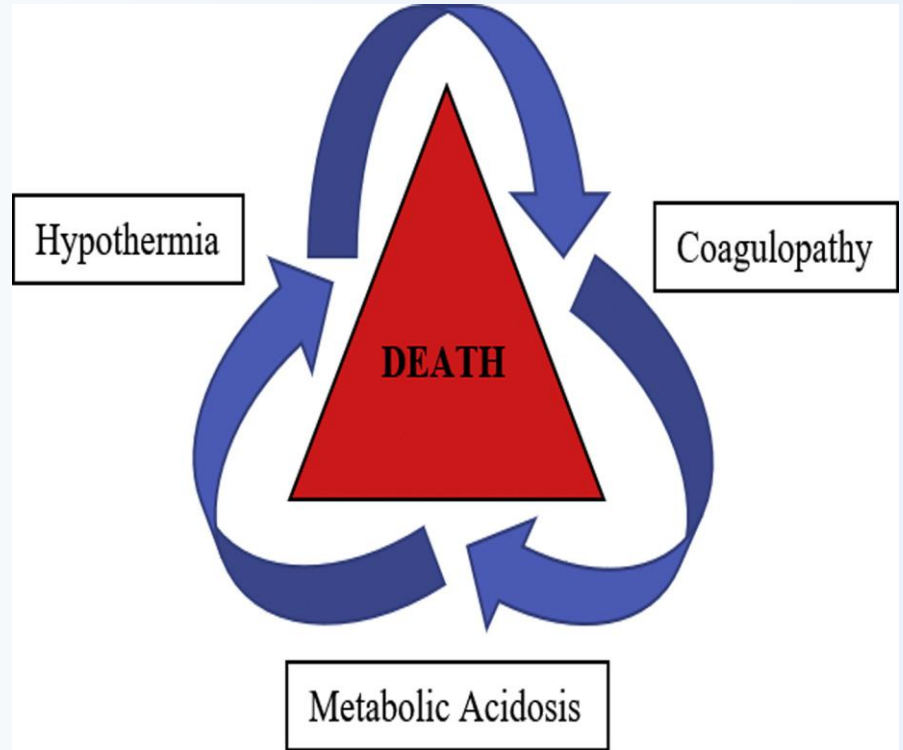
1. Hypothermia < 35°C

- Warmed gases
- HME
- Warm i.v fluids
- External rewarming
- Warm water lavage

2. Coagulopathy – Severe blood loss, dilutional, massive blood transfusion without coagulation factors

- Fresh whole blood transfusion
- FFP +/- cryoprecipitate

3. Acidosis



Classification of Hypothermia

Distinguish bet Stage I & Stage II

Stage I

- $< 36^{\circ}\text{C} \rightarrow$ Hypothermia
- (Wounded pt + stuporous $< 36^{\circ}\text{C} =$ die)

Stage II

- $34^{\circ}\text{C} \rightarrow$ Critical
- (Only Damage Control surgery)

Stage III

- $< 32^{\circ}\text{C}$, a crucial cut-off (No pt survives despite good surgery)

(Re-Warming to at least 33°C before Pronouncing Death)

General medical classification		Trauma classification	
Mild	$35^{\circ} - 32^{\circ}\text{C}$	I	$36^{\circ} - 35^{\circ}\text{C}$
		II	$34^{\circ} - 32^{\circ}\text{C}$
Moderate	$32^{\circ} - 28^{\circ}\text{C}$	III	$32^{\circ} - 28^{\circ}\text{C}$
Severe	$28^{\circ} - 20^{\circ}\text{C}$	IV	$< 28^{\circ}\text{C}$
Profound	$< 20^{\circ}\text{C}$		

Anaesthesia & Analgesia In War Surgery

- **Gases are in low supply**
- **High pt load**
- **Logistic issues of refilling of gases**
- **Non-availability of O2 cylinders** due to tactical hostile environment
- **Inability to use O2 concentrators** due to loss of electricity supply.
- **Supraglottic airways** when intubation not feasible

**Balancing pain control
V/s rationing anesthetic drugs**

Anesthesiologist:

- **GA** – Low flow anesthesia, reusing circuits by changing filters each case
- **Nerve/plexus blocks** – USG or Surface marking guided
- **IVRA/SAB**

Surgeon:

- Surface Anesthesia
- LA / Infiltration
- Dissociative anesthesia using Ketamine

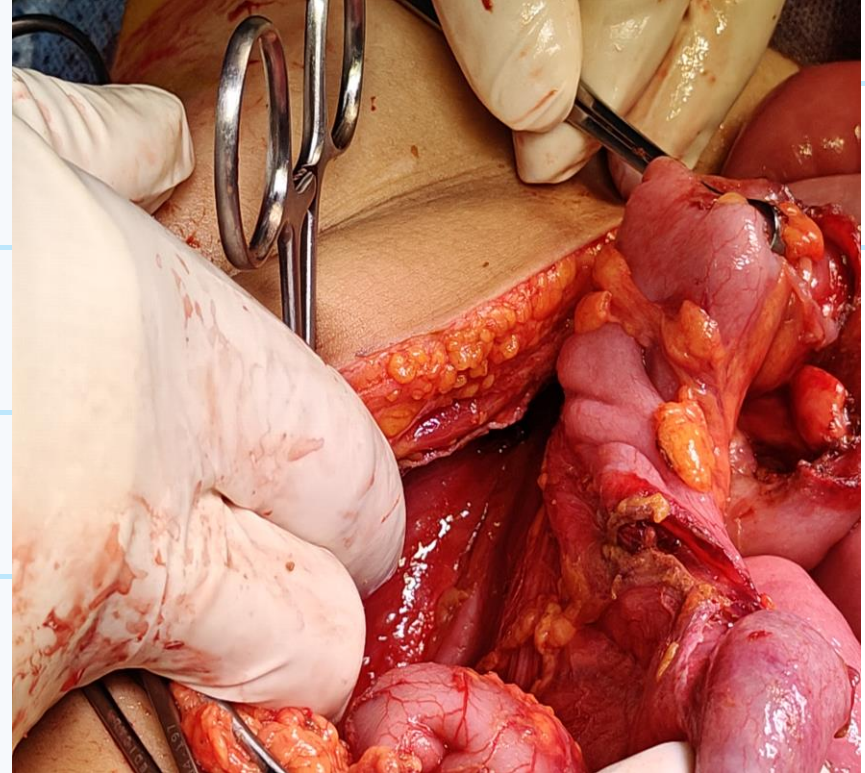
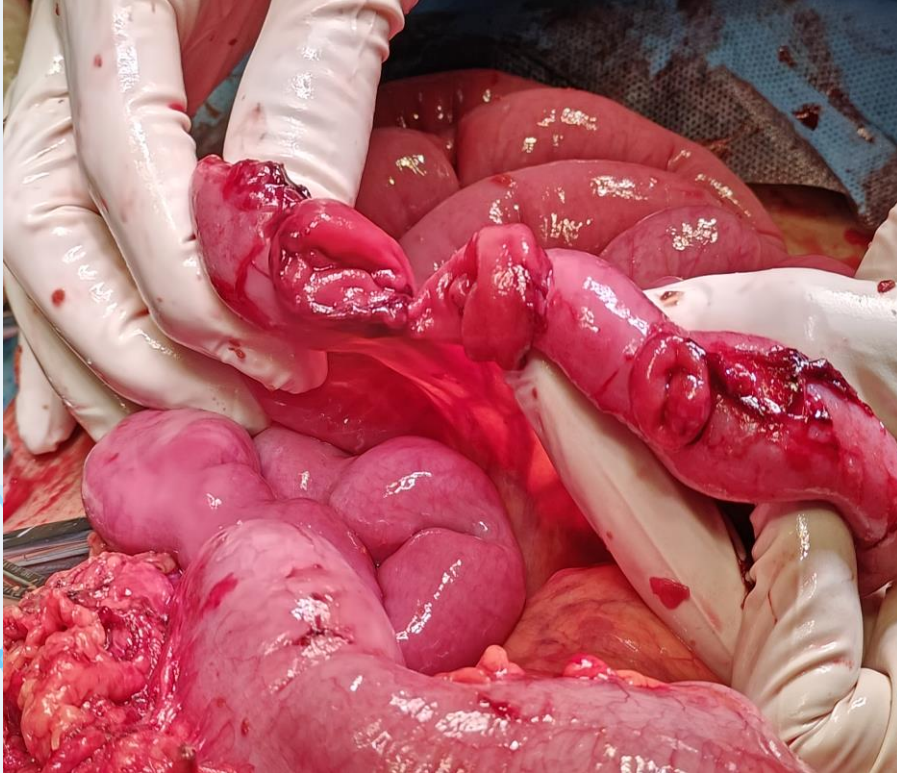
Pediatric Cases: Non-availability Of Smaller ETT

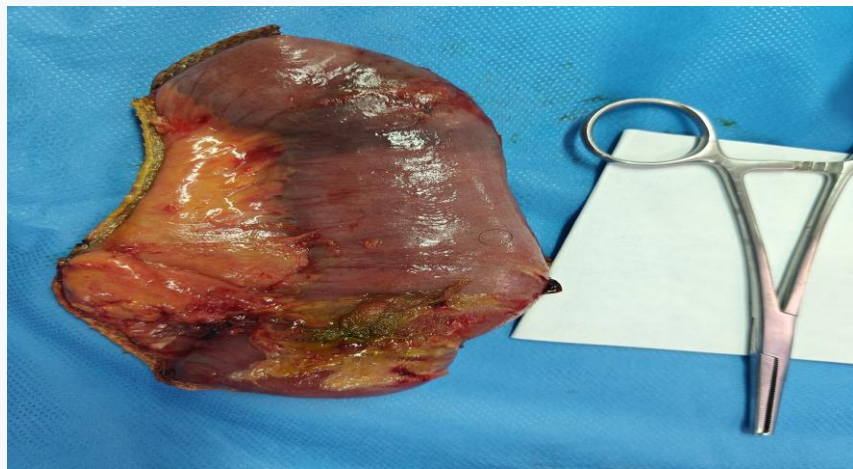
Jugaad:

- Cutting cuffed part of ETT would reduce the size a bit or make it uncuffed; length?
- Suction catheter being used as an emergency re-purposed ETT device, inserted using smaller stillet



Case#2: Visceral Injuries





Case#4



Case#5 (Shrapnel injuries)

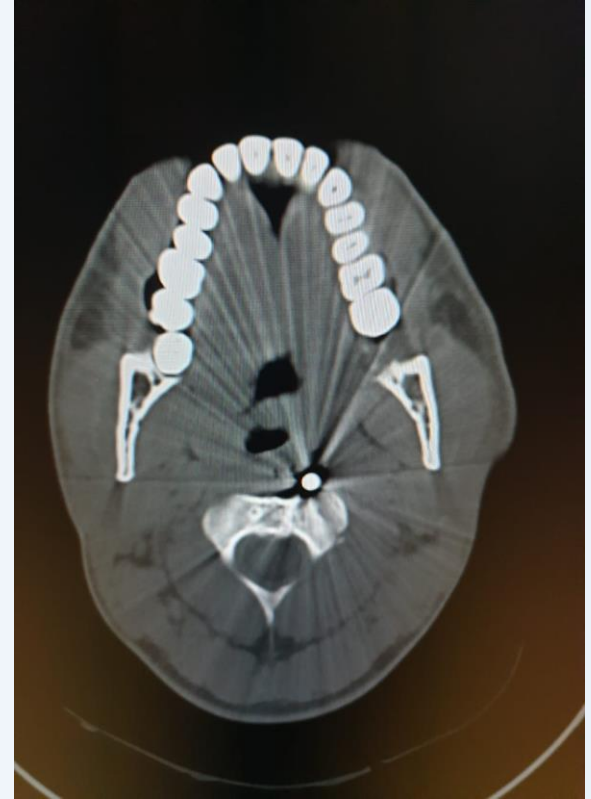
*pix source internet



Evacuation of Injured – A Risk To Take

- **Earlier Evacuation >> Better Chances Of Survival**
- **Every Transfer, Shift Or Movement >> Adds To The Trauma**
- **Logistically, Evacuation Routes: Difficult & Dangerous In The Tactical Environment > > Further Delays**

Case#6: Evacuation Challenges



Case#7: Logistical Delay in Evacuation

Case Study

- 25 yrs old soldier in the remotest location
- Blast injury abdomen
- Chinook delay due to bad weather
- BP dropped to 60mmHg
- Emergency laparotomy decision
- CPR
- Overnight ventilation
- Evacuated next day

..... A month later...

- ***Being A Lone Anesthesiologist In A Remote Area***
- ***Taking The Right Decision At Right Time***
- ***In Conjunction With The Surgeon...May Save A Soul !!***

Psychological Impact On Medical Staff In Combat Zones

Role of in House Psychiatrist

Physically Tired, Mentally Fatigued,
Sick & Frightened - Performance

Own Staff/Colleague – Injured

Sounds Of Bullet Shots, Explosions,
Surveillance Drone Or Jet Aircraft

Treating All Kinds Of Patients/ Local
Jail

No effective communication with
family

Issues Back Home

Seen Much Of Morbidity & Mortality

- Toll On Health
- Chronic Medications Shortage / Sudden
Health Issues

Attachment Towards Pts

Last Phone Calls / Will / Insurance

Counselling +/-Medications

Shrimadbhagavadgeeta Verses 2.20/2.48

न जायते म्रियते वा कदाचि
नायं भूत्वा भविता वा न भूयः ।
अजो नित्यः शाश्वतोऽयं पुराणो
न हन्यते हन्यमाने शरीरे ॥ 2.20॥

The soul is never born nor dies, nor does it ever cease to exist after it has existed. The soul has no beginning or end, is everlasting, immortal, and timeless. When the body is destroyed, it is not destroyed.



योगस्थः कुरु कर्माणि सङ्गं त्यक्त्वा धनञ्जय ।
सिद्ध्यसिद्ध्योः समो भूत्वा समत्वं योग उच्यते ॥
48॥

BG 2.48: Be steadfast in the performance of your duty, O Arjun, abandoning attachment to success and failure. Such equanimity is called Yog.



Post-Mission **(To Summarize)**



Lessons Learnt (thru' various Missions)

• Mission= Team Work(ing) In Limited Resources = Dedication & Skills >>> Privileges

• Blood- O2 & Medications iff Needed

• Prefer Regional Or Neuraxial Blocks Whenever Possible

• Triaging Saves More Lives - At Times Risky Decisions May Save Lives

• More Skilled Manpower, More Category I Pts Can Be Treated

• Make Available Cardio Stable Induction Agents, Inotropes, Syringe Pumps

• Heroic Surgery Has No Place But Resuscitative & Damage Control Surgeries Have !!

Scope for improvement 1:



Ventilator



Glidoscope



C-Mac Tempus

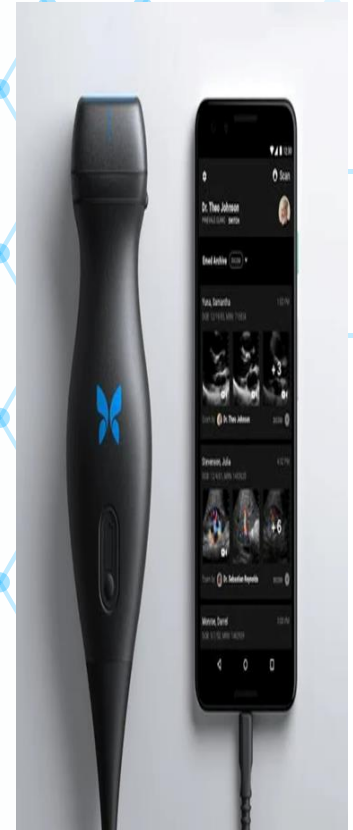
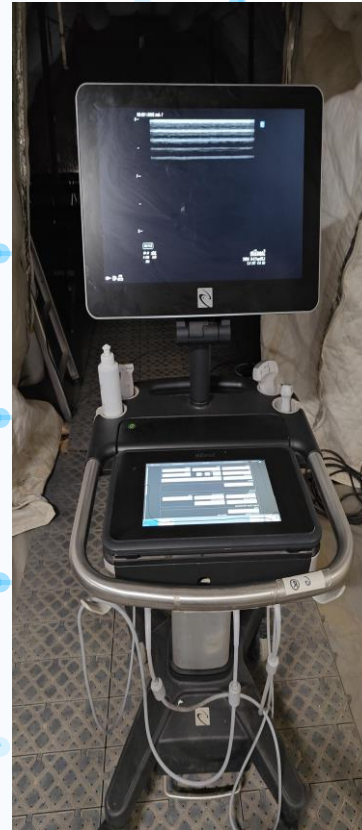
Scope for improvement 2 :

- **POC USG (Portable)**

- **Nerve Or Plexus Blocks Or Neuraxial Blocks** (Saves Gases)

- **Assessment:** Vol Of Gastric Contents, Pneumothorax

- **E-FAST** (Extended Focused Assessment With Sonography In Trauma) - Organ Damage, Fluid Collection



Scope for improvement 3 :

AI

Portable Battlefield Anesthesia Machines - Low Flow & Low O2 Consumption

Enhanced Training Programs Military, Civilian Anesthesiologists & Technicians

Telemedicine

Knowledge Sharing & Research – International Collaboration

Vitals Monitoring With Alerts

Analyzing Pt Data & Help Suggest The Best Anesthesia Plan

AI-powered Robots Can Assist In Delivering Anesthesia With High Precision

Prediction Of Potential Complications Allowing Proactive Measures

Lessons Learnt (Personal level)

Morale (Self & Others) Must Be Kept High:

Trusting **HIM** | Meditation

• **War** – Any Benefit To Anybody ?

• **Minimalistic Living**

• **Definition Of Happiness?**

• **Grateful** to the **Lord**

Carry Home.....

•**Less luggage**

•Nothing but
“Memories”

•**“Blessings”!**

Experiences

•***“Hope” that this
world would again
become a better place
to live...***

