HISTORY AND DEVELOPMENT OF TREATMENT OF NON-CARDIAC THORACIC INJURIES.

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INTRODUCTION:

This presentation shows how present protocols/rules/state of art of military chest trauma treatment has been built up. The lecture covers the experience gained in the armed conflicts of the near past. A mutual dependence is highlighted between medico-military and civilian trauma care of chest wounds.

IMPORTANCE OF QUESTION: CHEST WOUNDS ARE RESPONSIBLE OF 25-35% OF KILLED IN ACTIONS.

Lethality of Battlefield:

Chest Wounds: Immediate death: 65-70% (KIA).

10-15% of survivors die of complications (DOW).

Scoring „preventable death" of modern combat: 60-65%

haemorrhage of extremities, 30-35% tension ptx/htx, 5-6% upper/central airway obstruction.

MEDICAL EVACUATION, 1 ST W.W.

Treatment of chest injuries before the Korean War:

1. MORTALITY FROM THORACIC INJURYES HAS DIMINISHED CONSIDERABLY IN THE LAST CENTURY. IT WAS FAR ABOVE 50 %. PRIOR TO THE GREAT WAR(1914-18) WAS 25%

2. II WORLD WAR-EMPYEMA WAS DRAINED AS A STANDART PROCEDURE. THE ANESTHESIA BECAMES “SINE QUA NON” OF CHEST SURGERY.

3. MORTALITY OF THORACIC INJURIES DECREASED TO 10%. HAEMOTHORAX REQUIRED EARLY AND REPEATED THORACENTESIS.

4. PEEP ENDOTRACHEAL ANESTHESIA WAS INVENTED.

4. WET LUNG AS PATHOLOGY WAS IDENTIFIED, ROUTINE TOILET BRONCHOSCOPY WAS INTRODUCED. THE PROPORTION OF MAJOR THORACIC OPERATIONS INCREASED WITH VERY GOOD RESULTS.

Korean War (1950–1953)

CHEST WAS INVOLVED IN ABOUT 30-40% OF THE TOTAL KILLED-IN-ACTION.

INCIDENCE OF CHEST WOUNDS WAS 19%. OVERALL THORACIC INJURY MORTALITY HAS FALLEN TO 5%.

DECISION ON A THORACOTOMY WAS MADE EASIER AT THE BASE HOSPITALS.

RAPID EVACUATION WAS THE KEY.

CONCEPT OF MULTI-ORGAN FAILURE AND DISSEMINATED INTRAVASCULAR COAGULOPATHY WERE IDENTIFIED.

EARLY IN THE WAR THORACIC EMPYEMA FOLLOWED 25-30% OF CASES, BUT IT DECREASED TO 9%, AS THE HAEMOTHORAX WAS APPROACHED BY A MORE AGGRESSIVE ATTITUDE. ANTIBIOTICS WERE QUANTUM SATIS.

KOREA MASH UNIT IN KOREA. THE MILITARY BEGAN TO EXPERIMENT WITH THE USE OF HELICOPTERS AND THE MOST VISIBLE USE DURING THE WAR WAS THE MEDICAL HELICOPTER.

Vietnam War (1959–1975)

1.INCIDENCE OF CHEST WOUNDS WAS 7.2%. MORTALITY OF CHEST WOUNDS DECREASED SIGNIFICANTLY, DUE TO A LOGISTIC SYSTEM. (MEDEVAC).

2. EXTENSIVE LUNG CONTUSIONS CAUSED BY HIGH VELOCITY PROJECTILES WERE APPROACHED BY A MORE AGGRESSIVE OPERATIVE ATTITUDE IN THE LATER VIETNAM PERIOD.

3. THE KOREAN LESSON OF THORACOTOMY ABUSE HAD BEEN LEARNT AND TUBE THORACOSTOMY REGAINED ITS ROLE. THORACOTOMIES IN VIETNAM: 14-21% OF ALL PENETRATING CHEST WOUNDS.

4. THE ADULT RESPIRATORY DISTRESS SYNDROME WAS IDENTIFIED.

5. EMPYEMA HAS REMAINED A CHALLENGE.

YOM KIPPUR WAR. MEDICAL ORDERLIES EVACUATING CASUALTIES IN SINAI.

Middle East Wars

1. THE VIETNAM WAR EXPERIENCES WERE APPLIED. HERE, THE INCIDENCE OF CHEST WOUNDS WAS 6% AS A RESULT OF BODY ARMOR.

2. IN THE SIX DAYS WAR(1967) AND IN THE YOM KIPPUR WAR (1973) MORE THAN 90% OF THE CHEST CASES WERE TREATED BY TUBE-THORACOSTOMY ALONE.

3. DURING THE LEBANON WAR (1982) OVERALL GENERAL PREFERENCE WENT FOR LESS PROACTIVE ATTITUDE: INTERCOSTAL DRAINAGE.

4. SHRAPNEL AND HIGH VELOCITY MISSILE WOUNDS PREDOMINATED THE CONFLICTS.

GUNSHOT TRAUMA WITH TENSION PNEUMOTORAX

Iran-Iraq War (1980-88) and 1st Gulf War (1990–91)

1. ACCESSIBLE DATA ARE SCANTY, BUT A 6:1 - 10:1 TUBE THORACOSTOMY VS THORACOTOMY RATIO WAS REPORTED.

2. IN LOCAL HOSPITALS COMMONLY OPEN ACCESS IS PREFERRED IF EXPLOSIVES CAUSED THE INJURY.

3. CHEST SURGERY EXPERIENCES OF FIRST GULF WAR (COALITION FORCES) SUPPORTED A CONSERVATIVE APPROACH.

TENSION PNEUMOTHORAX. DRAINAGE IN TRIAGE ROOM.

Balkan wars (1991–1995):

1. SECONDARY MORTALITY FROM CHEST WOUND WAS ABOUT 2%. THIRD GENERATION ANTIBIOTICS, CT AND CHEST ULTRASONOGRAPHY HAVE CHANGED THE ATTITUDE LEADS TO A MORE CONSERVATIVE TREATMENT.

2. STATISTICS: 78% PENETRATING, 22% NON-PENETRATING, 60% - EXPLOSIVES VS GUNSHOT 37%. CASES OF THORACOTOMY: 23%

RESULTS: 93% CURED, 5% DELAYED TREATMENT, 1.7% DIED.

3. FOR „LUNG ONLY" INJURIES DRAINAGE WAS THE MAIN METHOD.

4. AS EXCEPTION, CROATIAN FORCES PREFERRED TO PERFORM THORACOTOMIES BUT CUMULATIVE EXPERIENCE REDUCED THESE NUMBERS.

5. KEYS: RAPID TRANSPORTATION, CASE CENTRALIZATION.

BLAST TRAUMA, AFGANISTAN

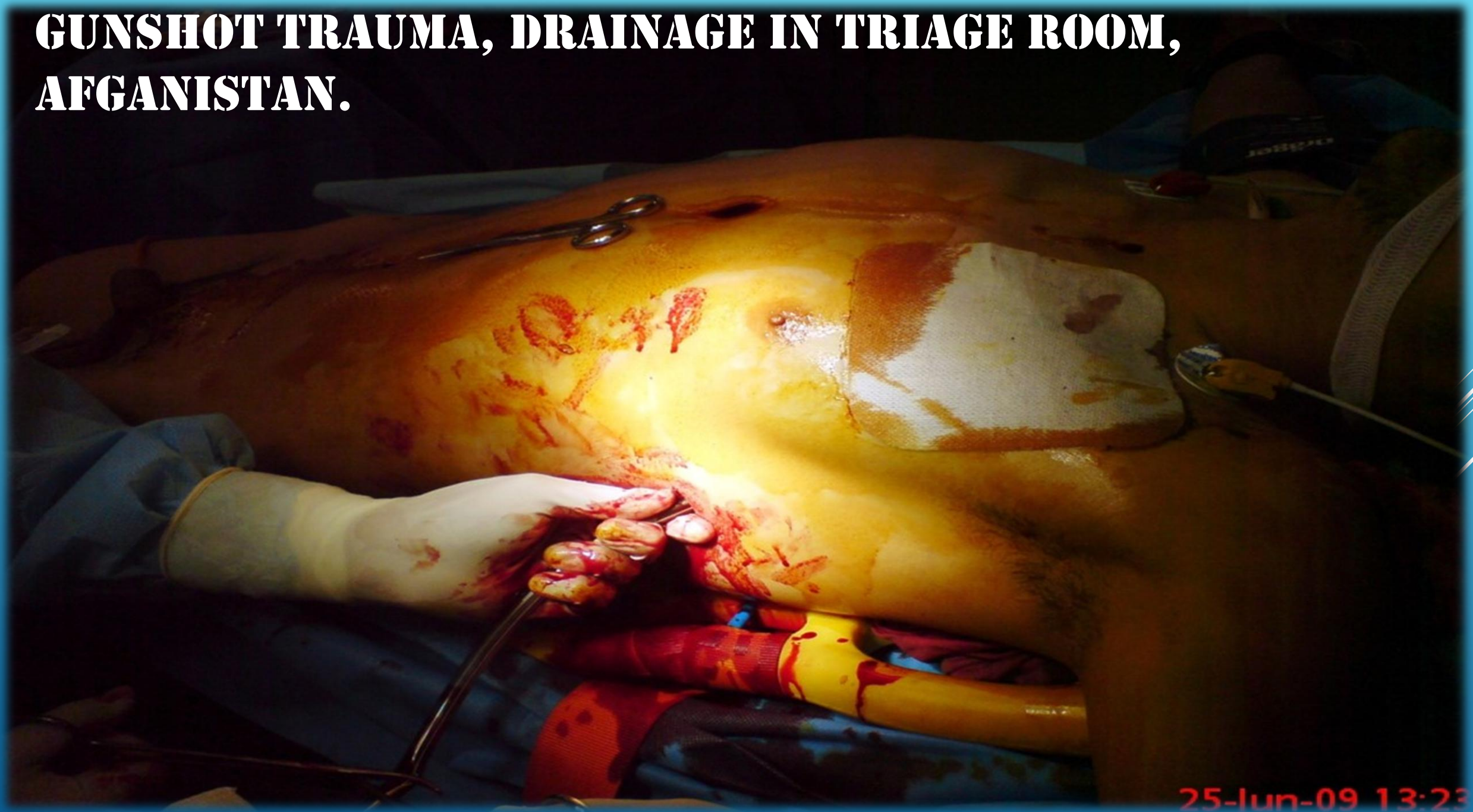
1. Iraq (2nd Gulf War and after) and Afghanistan (2003–10)

1. THE PROPORTION OF THORACIC WOUNDS IS IN A DECREASE FROM VIETNAM. AN EXPLOSIVE MECHANISM ACCOUNTED FOR 65-78% OF INJURIES. FRAGMENTATION WEAPONS DOMINATED GUNSHOT WOUNDS. MORTALITY OF PENETRATING CHEST WOUNDS (6-14%) CAN GO UP TO 55% WITH TRANSDIAPHRAGMATIC INJURIES OR COMBINATION WITH EXTRATHORACIC LESIONS.

2. DAMAGE CONTROL POLICY, DISCUSSED BY S PELLEK'S REVIEW ON NATO EMERGENCY CARE SYSTEM FOCUSES ON BLUNT THORACIC INJURIES. TUBE THORACOSOTOMY WAS: 40-80%.
CHEST INJURIES IN 10-15% REQUIRES DEFINITE OPERATIVE REPAIR.

3. MORBIDITY 25%. MORTALITY IS 7-9% FOR ALL, 6-8 IN BLUNT, AND 1-2% IN PENETRATING INJURIES BUT CAN GO UP 17 - 20% FOR ASSOCIATED ORGAN INJURIES.

GUNSHOT TRAUMA, DRAINAGE IN TRIAGE ROOM, AFGANISTAN.



2.Iraq (2nd Gulf War and after) and Afghanistan (2003–10)

4. ENDOVASCULAR TREATMENT OF TRAUMATIC THORACIC AORTIC INJURIES IS ON THE RISE. CONSERVATIVISM IS SUPPORTED BY SUCCESSFUL USE OF RECOMBINANT ACTIVATED COAGULATION FACTOR VII IN PATIENTS WITH PENETRATING THORACIC INJURIES.

5. IN ROLE 3 HOSPITALS WAS APPLIED FOR FIRST TIME MINIMAL INVASIVE (THORACOSCOPIC) METHODS OF TREATMENT OF THESE INJURIES AS A PROTOCOL.

THE ANESTHETIST IS MOST IMPORTANT !

Training, future:

1. A CIVILIAN SURVEY OF TRAUMA VICTIMS SHOWED THAT AROUND 5% OF POLYTRAUMA PATIENTS CAME UNDER THE CARE OF THORACIC SURGEONS PROVING A CLEAR NEED FOR TRAUMA/ORTHOPEDIC SURGEONS AND GENERALISTS TO HAVE GOOD GROUNDING IN THORACIC PROCEDURES (THORACOSTOMY).

2. THE BELFAST EXPERIENCE WITH MISSILE INJURIES OF THE CHEST REVEALS PARALLELS BETWEEN THORACIC BATTLE INJURIES VERSUS CIVILIAN INJURIES.


ANY QUESTIONS ?

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THANKS FOR ATTENTION ☺
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