

ABSTRACTS

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# National Trauma Conference 2024 - Sri Lanka Abstracts

Colombo, Sri Lanka. 28<sup>th</sup> - 30<sup>th</sup> November 2024

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## Oral presentations

### Abstracts from the National Trauma Conference- Sri Lanka 2024

Gayan Ekanayake<sup>1</sup>, Joel Arudchelvam<sup>1</sup>, Kirthi Abayajeewa<sup>1</sup>, Indika Jagoda<sup>1</sup>  
1. National Trauma Secretariat Sri Lanka

Correspondence: [ajagoda@yahoo.com](mailto:ajagoda@yahoo.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):1

The second National Trauma Conference of Sri Lanka (NTC-SL) take place from 28th-30th November 2024 at Colombo, Sri Lanka. NTC-SL is a pioneering initiative orchestrated by The Trauma Secretariat (TS) of Sri Lanka supported by the World Health Organization Country Office for Sri Lanka. As an esteemed platform dedicated to advancing knowledge and expertise in trauma care, this event stands as a testament to The Trauma Secretariat's unwavering commitment to fostering innovation, collaboration, and excellence in the field. This event serves as a nexus for professionals dedicated to trauma care, drawing clinicians, researchers, policy makers and partners & representatives from across the Globe. Scientific abstracts serve as a foundation for sharing knowledge to achieve best possible care in our field. The abstract committee is proud to present the best abstracts in this Supplement of Sri Lanka Journal of Trauma. They provide a rich tapestry of insights. As an event that happens every year, we look forward to welcoming an even greater number of participants and abstracts at the next conference in Colombo, 2025.

01

### Paradigm shift in war surgery: from a scalpel to high life - and limb-saving techniques

Viktor Reva<sup>1</sup>

1. Kirov Military Medical Academy, Saint Petersburg, Russian Federation

Correspondence: [vreva@mail.ru](mailto:vreva@mail.ru)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):01

**Background:** Combat injuries represent a significant challenge for appropriate treatment at forward surgical facilities. Some endovascular techniques (REBOA, ECMO) and their combination with an addition of artificial hypothermia (emergency profound hypothermia (EPH)) have a potential role in combat casualty care.

The aim is to analyse clinical experience of ECMO in combat environments and experimental experience of implementing EPH.

**Methods.** During deployment, ECMO was utilized 9 times: 5 times for treatment of traumatic cardiac arrest (TCA), 4 times for extracorporeal limb perfusion. ECMO circuit included a portable perfusion machine (Transbio-tech, Russia), an oxygenator, lines and cannulas. For TCA, femoral vessels were cannulated, and the REBOA catheter was inserted to initiate selective aortic arch perfusion (SAAP).

EPH was investigated in experiments on five monkeys. The same circuit was created with addition of a heater-cooler device to reduce brain temperature to 10°C. The EPH was initiated one minute after hemorrhage-induced cardiac arrest. When targeted temperature is achieved, ECMO was stopped for 60 minutes. Laparotomy and splenectomy were performed followed by slow rewarming.

**Results:** Four out of 5 patients with TCA achieved a return of spontaneous circulation (ROSC), one survived. That patient underwent SAAP, surgery, then discharged and returned to active duty. Among casualties with their limbs perfused, all survived, and no amputation was performed.

After EPH experiments, all animals achieved ROSC, but only two animals were extubated and returned into vivarium, where they died due to coagulopathy, multiorgan failure and brain swelling 19 and 44 hours later.

**Conclusions:** Extracorporeal perfusion techniques are effective in both life- and limb-savings in combat environments. This is the first ever experience of using endovascular perfusion techniques in combat vascular injuries. EPH also has potential, but additional requires additional investigation.

**Conflict of interest.** The study is supported by a grant of Russian Scientific Foundation RSF №23-25-00310

02

### The experience of rapid response car in the pre-hospital setting in Tokyo

Rei Kitahara<sup>1</sup>, Koji Morishitar<sup>1</sup>

1. Institute of Science Tokyo Hospital

Correspondence: [rei.kitahara.20dmat20@gmail.com](mailto:rei.kitahara.20dmat20@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):02

**Background:** The pre-hospital emergency care system is provided using helicopters and vehicles in various areas in Japan. In Tokyo, the capital of Japan, nine medical institutions utilize rapid response cars (RRC) to support pre-hospital emergency care. RRCs respond to dispatch requests from



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the Tokyo Fire Department via a keyword-based system. RRC responds to cases such as trauma, cardiac arrest, and acute coronary syndrome. Our RRC operates with a team of two physicians, two paramedics, and one nurse. The annual number of dispatches is approximately 600. Our purpose is to reveal the role of RRC in the trauma system in Tokyo.

**Methods:** Data of Trauma cases using the RRC from 2020 to 2024 was assessed and analyzed.

**Results:** There were 166 trauma cases (15% of all cases). 36% of cases of the RRCs arrived at the scene before the ambulance arrived, allowing the team to begin medical treatment immediately. The average distance from our hospital to the scene is 2.6 km. The average of ISS was 18.6. ISS $\geq$ 16 was 41.6%, and ISS $<$ 16 was 58.4%. In the severe trauma cases, the time from emergency notification to hospital arrival was reduced by about 5 minutes compared to cases handled by ambulance crews alone.

**Discussion:** The RRC is essential for pre-hospital trauma care in Tokyo. However, it is currently difficult to provide coverage to all areas of Tokyo, and appropriate usage of RRC would be necessary in Tokyo. Conclusion: While Japan employs various ways of pre-hospital emergency care, Tokyo actively utilizes RRCs. Further improvements will be sought, exploring how RRCs can continue to contribute to improving survival rates in Tokyo.

03

### Can circulating microparticles detect the dynamics of traumatic injury?

Awale Rupali Bhalchandra<sup>1</sup>, Mohit Rai<sup>2</sup>, Mallikarjun Gunjiganvi<sup>3</sup>, Siddharth Rai<sup>4</sup>, Suruchi<sup>5</sup>, Vikas Agarwal<sup>6</sup>

1. Associate Professor, Laboratory Medicine-ATC, Sanjay Gandhi Postgraduate Institute of Medical Sciences, India
2. Scientist, Clinical Immunology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, India
3. Associate Professor, General surgery, All India Institute of Medical Sciences, Mangalgi, India
4. Associate Professor, PMR, Sanjay Gandhi Postgraduate Institute of Medical Sciences, India
5. Anaesthesia, Sanjay Gandhi Postgraduate Institute of Medical Sciences, India
6. Professor, Clinical Immunology, Sanjay Gandhi Postgraduate Institute of Medical Sciences, India

**Correspondence:** [drawalerupali@gmail.com](mailto:drawalerupali@gmail.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):O3

**Introduction:** Traumatic injury triggers a cascade of exaggerated immune and coagulation response which plays a pivotal role in determining the outcome. Circulating microparticles have been found to regulate the various biological processes. The study assesses the concentration and cell of origin for microparticles in context of clinical presentation and conventional coagulation assay.

**Material and methods:** A prospective cross-sectional study comprising of 50 trauma patients [25 in non-severe injury group(NSI) with Injury severity score (ISS)  $<$  16 and 25 in severe injury group(SI) with ISS score of  $>$ 16] was conducted. Blood samples were collected at admission, 24 hrs and 72 hrs of hospitalisation and compared to those with 50 healthy individuals. ELISA was used to determine the levels of Interleukin-6 (IL-6) & 10(IL-10). Flow cytometry was used to determine the concentration and cell of origin for microparticles. Endothelial derived microparticles(EMP; CD31, CD146) and platelet derived microparticles(PMP; CD 62, CD 41) were assessed. Electro-mechanical Clot detection method was used to determine prothrombin time, activated partial thromboplastin time and fibrinogen levels. Light scatter method was used to measure platelet count. The result was correlated with clinical data

**Result:** Fifty traumatic injury patients (82% males; 40.5 years mean age) and 50 healthy individuals (52% males, 33.6 mean age) were assessed. Immediately following injury IL-6 levels increased; EMP decreased ( $p=0.001$ ) and PMP increased ( $p<0.001$ ) as compared to healthy individuals. Further on, the increase in EMP level was more in NSI as compared to SI ( $p<0.001$ ). The changes in were not reflected in any conventional coagulation assay.

**Conclusion:** The study demonstrates that the levels of proinflammatory cytokine (IL-6) increases immediately following traumatic injury while the level of EMP decrease and MP increases. The levels of EMP had an inverse relation to severity of injury. The conventional coagulation assay could not detect the dynamic changes in the circulating microparticle levels.

04

### Reconstruction of Paediatric segmental Upper Limb Bony Defects by Free Fibula Flap for: A Case Series

Suvashis Dash<sup>1</sup>, Raja Tiwari<sup>1</sup>, Amit Gupta<sup>1</sup>, Sushma Sagar<sup>1</sup>

1. AIIMS, New Delhi, India

**Correspondence:** [suvashis.dash@gmail.com](mailto:suvashis.dash@gmail.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):O4

**Background:** Paediatric segmental bone loss in the upper limb presents a reconstructive challenge due to complex growth and healing. Free fibula flaps offer a viable solution, though limited outcome data exist. This case series evaluates the efficacy of free fibula flap reconstruction in paediatric patients with humeral, radial, and ulnar bone loss.

**Method:** Five paediatric patients with segmental bone loss (humerus, radius, ulna) and defects ranging from 4 to 7 cm underwent free fibula flap reconstructions. Preoperative evaluations and postoperative imaging assessed flap survival, integration, and functional outcomes over 12 months.

**Results:** All flaps survived successfully. Follow-up imaging showed full fibula integration into native bone. Limb functionality improved significantly, restoring structural stability. No major complications occurred, and no revision surgeries were needed.

**Conclusion:** Free fibula flap reconstruction is a reliable, effective option for paediatric upper limb segmental bone loss. This series demonstrates favourable outcomes for defects from 4 to 7 cm, supporting its use. Larger studies are warranted for further validation.

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05

### "Characterization of Klebsiella isolates from Trauma Patients: Implications for Infection Control and Treatment"

Rojaleen Das<sup>1</sup>, Nizam Ahmed<sup>2</sup>, Bharat Das<sup>2</sup>, Kamran Farooque<sup>3</sup> and Purva Mathur<sup>2</sup>

1. Department of Laboratory Medicine, All India Institute of Medical Sciences, New Delhi, India
2. Department of Laboratory Medicine, Jai Prakash Narayan Apex Trauma Centre, All India Institute of Medical Sciences, New Delhi, India
3. Department of Orthopaedics, Jai Prakash Narayan Apex Trauma Centre, All India Institute of Medical Sciences, New Delhi, India

**Correspondence:** [drojaleendas@aiims.edu](mailto:drojaleendas@aiims.edu)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):O5

**Background:** The trauma patients are vulnerable to infections due to the extensive use of invasive medical devices, prolonged hospital stays, and compromised immunity. *Klebsiella pneumoniae*, is common pathogen in trauma patients. They are known for antibiotic resistance, especially extended-spectrum beta-lactamase (ESBL) and carbapenem-resistant *Klebsiella pneumoniae* (CRKP). These resistant strains pose significant challenges for treatment and infection control. The present study objectives were to find the prevalence and antimicrobial resistance (AMR) pattern of *Klebsiella* isolates from different infection site of trauma patients.

**Methodology:** The present retrospective analytical study was conducted at an Apex Trauma Centre characterising *Klebsiella* isolated from trauma patients over a period, from January 2023 to Aug 2024. The AMR pattern of *Klebsiella* isolates were retrieved from records and analysed. The resistance pattern were analysed for ESBL, CRKP and Colistin.

**Results:** A total of 435 (n=435) *Klebsiella* spp were isolated during the study period. It had been isolated commonly from Catheter associated urinary tract infection in 15.6% cases (68/435) followed by ventilator associated pneumonia and sepsis cases in 13.1% and 11.7% (57/435; 51/435) respectively. Analysing the AMR pattern, it was found ESBL and CRKP were 89.2% and 70.8% isolates respectively (388/435 and 308/435). Whereas colistin resistance was seen in 28.7% cases (125/435). These multidrug resistance bugs guaranteed stringent infection prevention control practices (IPC) like patient isolation,

hand hygiene and use of bundle approach.

**Conclusion:** The study underscores the importance of continuous surveillance of antibiotic resistance patterns and for rigorous and continuous IPC. These high resistance rates observed emphasize the necessity for antibiotic stewardship and the development of personalised treatment options.

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**06**

**Prevalence and pattern of infection in a level I trauma Centre in Northern India**

Amit kumar Singh<sup>1</sup>, Sangram Singh Patel<sup>2</sup>, Ganpat Prasad<sup>3</sup>, Kuldeep Vishwakarma<sup>4</sup>, Prabhakar kumar Mishra<sup>5</sup>, Cinmoy Sahu<sup>6</sup>

1. Associate Professor, Department of trauma Surgery, SGPGIMS, Lucknow, India
2. Associate Professor, Department of Microbiology, SGPGIMS, Lucknow, India
3. Associate Professor, Department of Anesthesiology, SGPGIMS, Lucknow, India
4. Associate Professor, Department of Oral & Maxillofacial Surgery, SGPGIMS, Lucknow, India
5. Additional Professor, Department of Biostat, SGPGIMS, Lucknow, India
6. Additional Professor, Department of Microbiology, SGPGIMS, Lucknow, India

**Correspondence :** [amitps2011@gmail.com](mailto:amitps2011@gmail.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):O6

**Background:** Trauma-related injuries are the leading cause of death worldwide, with sepsis being a major cause of these deaths following traumatic injuries and infections, accounting for almost 10% of these deaths. Injury-related causes of death account for 10% of infectious diseases, with a mortality rate of 54% after 48 hours and 76% after 7 days of admission. In the trauma centre, patients surviving trauma have to be strictly monitored to diagnose infections. We designed this study to identify the prevalence and pattern of infection in our level 1 trauma centre.

**Material and Methods:** A prospective observational study of 2 years' duration with the objective of determining the prevalence of infection and risk factors for these infections, as well as identifying the predominant infecting organism.

**Results:** A total of 136 critically ill trauma patients admitted to the trauma ICU were observed. The prevalence of infection was 52.1%. The most common types of infection were ventilator-associated pneumonia (49.2%), bloodstream infection (23.5%), and surgical site infection (15.7%). Pseudomonas was the most common organism isolated (30.9%), followed by Acinetobacter in 22.5% of patients.

**Conclusion:** Infections following trauma are a serious concern. Implementing targeted infection control measures and antimicrobial stewardship programs can help reduce the burden.

**07**

**Injuries to the Thorax Caused by Bull Gore: A Case Series Satya Prakash Meena**

Satya Prakash Meena<sup>1</sup>

1. Additional Professor, Department of General Surgery, All India Institute of Medical Sciences (AIIMS), Jodhpur, Rajasthan, India.

**Correspondence :** [drsatyaprakash04@gmail.com](mailto:drsatyaprakash04@gmail.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):O7

**Background:** Thoracic bull horn injuries are uncommon but potentially life-threatening injuries that can occur when a person is gored by a bull. Bull gore injury to the chest can cause significant damage to the chest wall, lungs, heart, and major blood vessels. The aim of this review is to consolidate the findings, morbidity, treatment challenges, and injury patterns associated with thoracic bull gore injuries.

**Case series:** A retrospective observational case series has been conducted

at a single tertiary health center, focusing on thoracic injuries caused by bull attacks between July 2022 and July 2024. Twelve of the 30 bull gore patients presented with significant chest trauma; 11 were males and 1 female with ages ranging from 16 to 76 years old. One person died due to grade 4 shock following an open thorax wound. A total of nine patients sustained direct injuries, while two sustained indirect injuries. Eight of them had multiple fractures, while three had only single point rib fractures. A majority of cases (n = 9) presented with lung contusions, whereas two cases had lacerated lungs. Intercostal Drainage tubes were inserted in all patients. A video-assisted thoracic surgery (VATS) and reconstruction of the chest wall were performed in two cases. Two thoracotomies followed by lobectomies were performed for a disruption in the right anterior segment of the bronchus and a severely damaged left lung. Two patients underwent chest wall reconstruction in the form of rib fixation.

**Conclusion:** Injuries caused by bull gores are complex due to the presence of dual mechanisms of trauma (penetrating and blunt trauma mechanisms). The study emphasizes the importance of thorough evaluation and comprehensive management for affected individuals.

**08**

**Diaphragmatic injuries following torso trauma Abstract of a case series report**

Vijayakumar Vishaghan<sup>1</sup>, Sajith Ranathunga<sup>1</sup>

1. Accident service, National Hospital Sri Lanka

**Correspondence :** [vvishaghan@gmail.com](mailto:vvishaghan@gmail.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):O8

**Introduction:** Diaphragm is the transition zone between thorax and abdomen, vulnerable to injury after torso trauma. We discussed a few cases with different presentations, diagnostic approaches and management.

**Case presentation:** 26-year-old male met an RTA got blunt trauma to torso. CT revealed that left diaphragmatic rupture with herniation of the stomach. Performed emergency Laparotomy and diaphragmatic repair done. 35-year-old male patient presented with stab to left upper quadrant. Images were negative for diaphragmatic injury. Found left hemi diaphragm penetration in diagnostic laparoscopy and repair done by laparoscopically. 24-year-old male patient presented with blunt torso trauma following RTA. CT revealed a left diaphragmatic rupture. We performed laparoscopy and found it to have pre-existing diaphragmatic hernia, and we repaired laparoscopically.

**Discussion:** Diaphragmatic injuries have occurred following blunt and penetrating traumas to the chest and abdomen. Incidental findings of preexisting diaphragmatic hernia were also reported following damage control surgeries in trauma units. Penetrating diaphragmatic injuries are radiologically not clear most of the time and they can be present as missed diaphragmatic hernia. The incidence of traumatic diaphragmatic injury is estimated between 0.8 to 8% and left side diaphragm affects more than right because of protective effect of the liver in right side and there is a weakest point at lumbo-costal trigone at left. It can be diagnosed by CT scan. A study shows diagnosis of diaphragmatic injuries preoperatively in 33.3%, intra operatively in 60%, and during autopsy in 6.7%. Management can be minimally invasive to laparotomy; the latter will allow the management of collateral injuries.

**Conclusion:** Diaphragmatic injuries are common in blunt and penetrating torso trauma and can be an incidental finding. Clinically it can be silent, and CT is the diagnostic test and perhaps detect on diagnostic laparoscopy. Laparotomy is the choice of treatment as it permits to treat adjacent injuries.

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### Evaluation of post-operative analgesic efficacy of Supraclavicular, Infraclavicular and Axillary approaches of Ultrasound-Guided Brachial Plexus Block for Forearm Surgeries: A Retrospective Data Analysis

Ganpat Prasad<sup>1</sup>, Rafat Shamim<sup>1</sup>, Vansh Priya<sup>1</sup>, Prateek Singh Bais<sup>1</sup>, Suruchi<sup>1</sup>

1. Associate Professor, Department of Anesthesiology, SGPGIMS, Lucknow, India

**Correspondence:** Ganpat Prasad ([dr.prasadganpat@gmail.com](mailto:dr.prasadganpat@gmail.com))

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**Background:** Brachial plexus blocks (BPs) are effective for forearm surgery analgesia. This study compares postoperative analgesic efficacy of supraclavicular, infraclavicular, and axillary approaches.

**Methods:** Retrospective analysis of 360 patients undergoing forearm surgeries (fracture distal end of humerus, elbow, fracture both bone forearm, and wrist surgery) receiving ultrasound-guided (in-plane technique) BPs with 0.5% bupivacaine with adjuvant via supraclavicular (n=120), infraclavicular (n=120), or axillary (n=120) approaches.

**Primary Outcome:** Postoperative pain intensity (NRS) at 2, 4, 8, 12, 16, and 24 hours.

#### Secondary Outcomes:

- Number of rescue analgesia administrations
- Adverse effects (PONV, hypotension, bradycardia)
- Patient satisfaction score (VAS)
- Hospital stay duration- Functional recovery time

#### Results:

- 1- Demographics and surgical characteristics were similar across groups (p > 0.05, Chi-square test).
- 2- NRS scores (mean ± SD): Supraclavicular: 2.4 ± 1.1 (2 hours), 1.8 ± 0.9 (4 hours), ... Infraclavicular: 2.8 ± 1.3 (2 hours), 2.2 ± 1.1 (4 hours), ... Axillary: 3.2 ± 1.4 (2 hours), 2.6 ± 1.2 (4 hours), ...
- 3- Rescue analgesia requirements: Supraclavicular: 18 patients (15%)  
Infraclavicular: 26 patients (21.7%)  
Axillary: 36 patients (30%)
- 4- Inj. Paracetamol 1 gm iv was administered as part of multimodal analgesia.
- 5- No adverse events (PONV, hypotension, bradycardia) were reported.
- 6- Patient satisfaction score (VAS):  
Supraclavicular: 8.5 ± 1.2  
Infraclavicular: 8.1 ± 1.3 Axillary: 7.8 ± 1.4
- 7- Median hospital stay duration: 3-5 days. 8- Functional recovery: 18-24 hours.

**Conclusion:** Supraclavicular BPB provided superior early postoperative analgesia, while infraclavicular BPB offered better late postoperative analgesia, with axillary BPB requiring more rescue analgesia.

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### Comparison of Laparoscopic versus Percutaneous Endoscopic Gastrostomy for long term assisted enteral feed in Trauma patients - A Randomized Pilot Study

Narendra Choudhary<sup>1</sup>, Dinesh Bagaria<sup>1</sup>, Abhinav Kumar<sup>1</sup>, Amit Gupta<sup>1</sup>

1. Division of trauma surgery, JPN Apex Trauma Center, AllMS, New Delhi-110029

**Correspondence:** [narendra3483@gmail.com](mailto:narendra3483@gmail.com)

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**Introduction:** Providing enteral feed in poly trauma patient is of utmost importance but often overlooked. Many of these patients unable to accept oral feed for a considerable length of time owing to severe head injury or maxillofacial injury.

Percutaneous Endoscopic Gastrostomy (PEG) is the accepted standard care for providing long term assisted enteral feeding<sup>1,2</sup>. However PEG is associated with complications including surgical site infection, tube site abscess, peritonitis, intestinal injury<sup>3-7</sup>. Laparoscopic gastrostomy (LG) tube provides an alternative to PEG placement with lesser complications among pediatric patients. However its role among adult trauma victims is still unclear. A pilot randomized trial has been designed to address the concerns and bridge the gap in existing scientific literature.

**Materials and methods:** Adult trauma Patients with severe head injury

or Maxillo-facial injury, requiring long term assisted enteral feeding were randomized into two cohorts either PEG group or LG group. Patients with history of abdominal surgery or on antibiotic therapy were excluded. Patients in both the group were observed for appearance of signs for surgical site infection, Tube site abscess, peritonitis, intestinal injury, peritubal leakage, tube dislodgement and blockage for next 5 days post procedure & followed up for 01 month. Direct cost involved in each cohort was calculated considering the cost of required consumables and post procedure investigations in case of appearance of complication.

**Results:** 30 patients with mean age of 38±14.52 years were recruited with 15 patients in each cohort. The mean duration of procedure was 27.13±7.68 and 78.6 ±11.72 minutes for placement of PEG and LG respectively. Gastrostomy site external bleed was observed in 01 patient subjected for PEG placement. Commencement of assisted enteral feed was achieved on day 1 in 8 (53%) patients and on day 2 in 5(33%) patients after PEG placement whereas in 03(20%) patients & 09(60%) patient after LG placement. 01(6.67) and 07(47%) patient developed gastrostomy site infection following LG & PEG placement respectively. Feeding tube related complication like peritubal leakage and dislodgement was noted in 05 and 04 patient following PEG placement whereas among 01 and 02 patient after LG placement respectively. The direct cost involved was 9286.13±2686.67 INR and 23921.27±2668.852 INR for PEG and LG procedure respectively. Conclusion: Laparoscopic gastrostomy placement is although a costlier intervention with longer operative time but it is associated with lesser infection and tube related complication as compared to PEG. LG can be considered a viable and safe alternative to PEG for long term assisted enteral feeding in trauma patients.

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11

### Determination of bodyweight for management of Traumatic brain Injury patients using machine learning approach

Deepak Agrawal<sup>1</sup>

1. Department of Neurosurgery, JPN Trauma Centre, All India Institute of Medical Sciences, New Delhi, India

**Correspondence:** [drdeepak@gmail.com](mailto:drdeepak@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O11

**Aim:** The aim of this study is to find a quick, safe and accurate method for approximating the body weight of emergency patients using a semi supervised machine learning (ML) approach to create a mobile application App for management of acute ischemic stroke.

**Introduction:** Stroke is a major cause of mortality and morbidity, and thrombolysis has served as a catalyst for major changes in the management of acute ischemic stroke. Thrombolysis for acute ischemic stroke (AIS) is a key intervention that can reduce disability from stroke, majorly influenced by patient's body weight. Accurately assessing a patient's body weight in AS is a major clinical challenge. Materials and Methods: For this study a dataset of total 100 male and female subjects, aged 20-58 years, resembling general population samples were taken. The subject's body height, waist circumference and hip circumference were determined in the standing position. A stadiometer was used for determining body height, while waist circumference (umbilical level) and hip circumference (trochanter level) were established with a tape measure. Using MATLAB software (MathWorks, USA) the 100-volunteer healthy population dataset was processed, and ML was applied to generate relation between various weight determining factors. Results and Discussion: The Classification KNN, a nearest-neighbor classification model in MATLAB software altered both the distance metric and the number of nearest neighbors, stored training data, computed substituting predictions. Based on the model a graphical user interface (GUI) was created for calculating weight for stroke patients. The GUI was further improvised to use it as a mobile application app for instantaneously determining patient body weight.

**Conclusion:** Through this study we were able to demonstrate a simple and

effective method to estimate body weight of unconscious stroke patients which is useful in clinic.

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### The Pattern of Road Traffic Accident related Admissions at a Tertiary Care Hospital in Sri Lanka

Vinodha Kumar Balachander<sup>1</sup>

1. Accident service, National Hospital Sri Lanka

**Correspondence:** [vinova86@gmail.com](mailto:vinova86@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O12

**Introduction:** Road traffic accident (RTA) is the leading cause of death among young population worldwide. The pattern and the severity of the injury depends on the victim, type of vehicle, safety precautions and infrastructure of roads. Disability causes severe impact upon patients, families, society as well as the country. WHO targets to reduce the RTA related deaths and injuries by half at the end of 2030.

**Methodology:** This is a descriptive cross sectional study, conducted at a tertiary care center in Sri Lanka for a period of one month in August 2024. Data was collected from bed head tickets, ward admission books and from patients. The data was collected to get the socioeconomic details, type of vehicles used, status of the victim, injury pattern and time of injury. Severity of the injury was assessed by Injury Severity Score (ISS).

**Results:** The total number of admissions were 2078. Among them, 256 (12.3%) were RTA related. This was included with 201 males (78.5%) and 55 females (21.4%). 72.7% of them were between the age of 20- 60 years and senior citizens were 12.9%. Majority of the victims were bike riders (54.1%) followed by pedestrians and passengers. Motor bike was the commonest vehicle associated with RTAs (61.38%) followed by three wheelers. ISS was more than 15 in only 15% of all RTAs, even though the disability was significantly high. Most of the injuries were involved with extremities (54.8%) and head (25.5%). 63% of all RTAs were happened at day time. Pattern of RTAs were statistically associated with gender ( $P < 0.01$ ), age, victim, vehicle and time of the incident.

**Conclusion:** This study offers significant information regarding RTAs. Policy makers need to take concern when imposing rules, safety measures, infrastructure developments. Further study is needed to assess the safety measures, cause for the incident, purpose and level of disability.

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### Multifaceted Challenges in Iatrogenic Vascular Trauma

A Case Series from the Department of Trauma Surgery, AIIMS Patna

Dr. Anurag Kumar<sup>1</sup>

1. Associate professor in the Trauma Department at AIIMS Patna, Bihar.

**Correspondence:** [anurages@aaimspatna.org](mailto:anurages@aaimspatna.org)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O13

**Abstract:** This case series highlights unique challenges encountered in the management of vascular trauma within the trauma surgery department at AIIMS Patna. Three cases involving arterial injuries with varying etiologies were successfully treated through a combination of prompt surgical intervention and meticulous postoperative care.

\*Case 1: Iatrogenic femoral artery injury during fracture management \*

A 22-year-old male presented with a history of right lower limb injury from a fodder cutting machine. Initial management at a private hospital involved femur and tibia fracture fixation, but intraoperatively, torrential hemorrhage led to femoral pedicle ligation. Referred to AIIMS Patna, the patient underwent thrombectomy, distal fasciotomy, and limb salvage. Successful perfusion restoration resulted in discharge on postoperative day 15.

\*Case 2: Iatrogenic Femoral Artery Injury during Varicose Vein Surgery\*

A 30-year-old male experienced iatrogenic femoral artery injury during varicose vein surgery, leading to absent pulses in the left limb. Urgent intervention at AIIMS Patna involved femoral artery thrombectomy and end-to-end anastomosis. Gradual improvement in limb perfusion in the postoperative period resulted in discharge by day 10.

\*Case 3: Iatrogenic femoral artery injury after fasciotomy for Compartment syndrome\*

A 32-year-old male presented with compartment syndrome secondary to a heavy gate fall, complicated by femoral pedicle transection during fasciotomy at a private hospital. AIIMS Patna intervention included thrombectomy and end-to-end anastomosis, leading to improved limb perfusion by postoperative day 1 and discharge on day 15.

**Discussion & Conclusion:** These cases underscore the diverse scenarios and successful outcomes achieved through the collaborative efforts of the trauma surgery team at AIIMS Patna. The series emphasizes the importance of timely recognition, thorough surgical management, and vigilant postoperative care in achieving positive outcomes in vascular trauma cases.

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### "Husband - perpetrated Assaults:

### A Retrospective Analysis of Domestic Violence Trauma Cases at Accident Service, National Hospital of Sri Lanka

M.P.L.C Karunarathna<sup>1</sup>

1. National Hospital Sri Lanka

**Correspondence:** [lakshanikarunarathna337@gmail.com](mailto:lakshanikarunarathna337@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O14

**Background:** Husband assault is considered to be one of the important forms of domestic violence in Sri Lanka, having far-reaching implications for public health and trauma care. This case report deals with a study conducted at the National Hospital of Sri Lanka (NHSL), Accident Service, Ward 73 in June 2024, about the prevalence of husband-related assaults and the trauma management provided to the victims. The rise in the incidence of intimate partner violence calls for a review of the burden on facilities providing healthcare services and the adequacy of medical responses to the cases that present themselves.

**Method:** A retrospective analysis was made of all trauma-related admissions to the NHSL Accident Service over one month. There were 1,004 admissions, of which 94 cases (9.4%) were identified as being assaults perpetrated by husbands. More stress was laid on analyzing the demographic features of the victims besides the nature and extent of the injuries. The emergency care provided was also reviewed. Information was abstracted from patient records in Ward 73, where a sizeable proportion of such victims were treated.

**Results:** In the 94 cases of husband-assault, 85% of the victims were females whose average age was 45 years. Types of most common injuries: head trauma- 40%, fractures of the extremity-32%, and soft tissue injury-28%. Interestingly, 15% of the cases needed surgical intervention and 60% of the patients needed to be admitted for further observation and rehabilitation. The study also brought out the psychological impact on the victims where many reported emotional trauma and fear of returning to their domestic environment. This care was constituted by trauma assessment, stabilization, and referral to psychological counseling for longterm support.

**Conclusion:** The findings indicate that trauma units such as NHSL's Accident Service play a crucial role in addressing both the physical and psychological needs of battered women. The high incidence of assaults by husbands calls for more efficient prevention strategies for domestic violence, along with an integrated approach from health care. Additional training on immediate and long-term management is needed for health professionals to reduce the burden created by domestic violence in healthcare.

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### Machine learning algorithms for predicting the outcomes following traumatic brain injury: Systematic review

Danushka N<sup>1</sup>, Punsara N<sup>1</sup>, Jayasinghe R<sup>1</sup>, Madalagama C<sup>1</sup>, Attanayake D<sup>1</sup>

1. National Hospital Of Sri Lanka

**Correspondence:** [danupiti@gmail.com](mailto:danupiti@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O15

**Introduction:** Traumatic brain injury (TBI) carries significant morbidity and mortality. Several machine learning (ML) models are created to predict outcomes accurately. This study aims to identify the effectiveness of ML models to predict the clinical outcomes of TBI.

**Methods:** A systematic review was conducted of the articles published from 2019 to 2024, including the prospective and retrospective studies. The case studies review articles were excluded. Patient clinical details, clinical outcome, and ML predictive variables were obtained.

**Results:** The review contained 14 articles and 33990 patients. Aged 30-50, and males were commonly involved. Age, gender, systolic blood pressure, initial GCS, and CT findings were the most commonly used predictor variables. ML algorithms such as artificial neural networks, extreme gradient boost, random forest, support vector machine and naive Bayes were widely used. The sensitivity of 70-93%, specificity of 78-99% and area under the curve of 76-96% were achieved on the abovementioned methods.

**Conclusion:** The ML models provide high sensitivity and specificity in predicting the outcomes of TBI. Hence, the use of ML models would improve the accuracy of decision-making and enhance patient outcomes.

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## FACTORS ASSOCIATED WITH ROAD TRAFFIC ACCIDENTS IN PEOPLE WHO ARE ADMITTED TO THE ACCIDENT SERVICE IN NATIONAL HOSPITAL SRI LANKA

Karunaratna M.P.L.C<sup>1</sup>, Madhushani A.L.A.D<sup>1</sup>, Herath H.M.P.R<sup>1</sup>, Lasanthi N.A.A.T<sup>1</sup>, Dimali H.M.N<sup>1</sup>, Jayamaha A.R<sup>1</sup>.

1.KAATSU International University, Sri Lanka

**Correspondence:** [lakshnikarunaratna337@gmail.com](mailto:lakshnikarunaratna337@gmail.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):O16

**ABSTRACT:** Road traffic accidents represents significant causes of morbidity and mortality in both developed and developing countries. Road traffic accident are a major but neglected global public health problem. Approximately 1.35million people die in road crashes each year. On average 3700 people lose their lives every day on the road. An additional 20-50 million suffer non- fatal injuries often resulting in long term disabilities. Assessment of the risk factors associated with road traffic accidents is vital to prevent road traffic accidents. Objective: To assess the risk factors associated with road traffic accidents in people who are admitted to the accident service in National Hospital Sri Lanka. Methodology: Descriptive cross- sectional study was conducted among sample of randomly selected 267 victims of road traffic accidents using interviewer administered questionnaire following the pre-test.

**Results:** Majority of the victims were males (85.4%), belong to 13- 30 age group (48.9%). Common vehicle types used by the victims were motorbikes (44.6%), three-wheelers (34.8%), and vans (10.1%). Most of the victims were drivers (76.9%) and they reported that the speed of the vehicle when the time of accident were of 61kmph- 80kmph (33.3%) and 81kmph- 100kmph (33.4%). More than half of the accidents occurred in mild traffic conditions (57.7%) and dark light condition (52.1%). Most of the victims obeyed to the road traffic rules and regulations such as wearing helmets (94%), seat belt use (93.6%), avoid phone use while driving (85.8%), not driving under the influence of alcohol (85%).

**Conclusions:** Risk factors for road traffic accidents were high speed, driving motorbikes, three-wheelers and poor environment conditions such as dark light conditions.

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## Characteristics of elderly female patients admitted to accident service in the National Hospital of Sri Lanka. Colombo.

Welegedara SP<sup>1</sup>

1.National Hospital Sri Lanka

**Correspondence:** [360kwsuji@gmail.com](mailto:360kwsuji@gmail.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):O17

**Background:** Sri Lanka is facing a rapid demographic change with the proportion of older people more than 60 years of age is exponentially increasing [1]. The proportion of older females has outnumbered the males, and this is expected to further rise. Although the number of older people admitted to accident service with trauma is on the rise, there are limited studies done on geriatric trauma.

**Method:** We conducted this descriptive cross-sectional study in the Na-

tional Hospital of Sri Lanka and data was collected from the female accident service admission ward registry. Data was collected in the month of July. Data was analyzed using SPSS 20.

**Results:** The total number of patients admitted during this period was 974 and, out of this 414(42.5%) were more than 60 years of age. A total number of 222(53.6%) were having fractures, 112 were head injury and 80 were other injuries respectively. The predominant mechanism of injury in patients with a fracture was falls, accounting for 94.2%(N=209) of patients. The second commonest mechanism of injury was road traffic accidents accounting only for 4%. The predominant type of fracture was neck of femur fracture accounting for 40% of all fractures. Radius and ulnar fractures accounted for 16.6% of all fractures which was the second commonest type of fracture. 13% of patients had humerus fractures, 9% had spinal wedge fractures. 42% of patients with fractures were discharged from the accident service after treatment and 55% were transferred to orthopedic ward for further management.

**Conclusion:** A large proportion of elderly females admitted to accident service sustained fractures, neck of femur fracture being the commonest type. By far the commonest type of mechanism of injury were falls (94.2%). This highlights the importance of establishing specialized geriatric trauma care service and falls prevention programs

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## A RESTROSPECTIVE ANALYSIS OF INJURY PATTERNS AMONG MOTORCYCLISTS PRESENTED FOR CLINICAL FORENSIC EXAMINATION TO EIGHT MEDICO-LEGAL UNITS IN SRI LANKA

Kasun Bandara Ekanayake<sup>1</sup>, Pabasara Wijayarathne<sup>2</sup>, Vishadha Perera<sup>3</sup>, Chathurika Premaratne<sup>4</sup>, Mahesh Lowe<sup>5</sup>, Subuddhika Illukkumbura<sup>6</sup>, Hirusha Eranda<sup>7</sup>, Chathurange Govinnage<sup>8</sup>, Lasantha Gamage<sup>9</sup>, Dulanga Balal-la<sup>10</sup>, Tharmarasa Renushanth<sup>10</sup>

1. Department of Forensic Medicine, Faculty of Medicine, University of Peradeniya,
2. Department of Forensic Medicine, Faculty of Medicine, University of Kelaniya,
3. Teaching Hospital, Karapitiya,
4. Teaching Hospital, Ratnapura,
5. Department of Forensic Medicine, Faculty of Medical Sciences, University of Sri Jayewardenepura,
6. National Hospital, Kandy,
7. Teaching Hospital, Kurunegala,
8. Colombo South Teaching Hospital, Kalubowila,
9. Department of Forensic Medicine, Faculty of Medicine, University of Colombo,
10. Institute of Forensic Medicine and Toxicology, Colombo

**Correspondence:** [kasun1992eka@gmail.com](mailto:kasun1992eka@gmail.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):O18

**Introduction:** Injuries to motorcyclists are among the commonest presentations of trauma for clinical forensic examination following road traffic accidents. Objectives: The aim of this study was to analyze the injuries sustained by motorcyclists presented for clinical forensic examination. Methods: Data was retrospectively collected using medico-legal examination forms of motorcyclists presented for clinical forensic examination in eight medico-legal units in five provinces of Sri Lanka, from August 2023 to August 2024.

**Results:** Among the 488 subjects analyzed, 83.2% were males, while the mean age of the sample was 35 years. Motorcycle riders comprised 75.2% of the sample and 21.9% were pillion riders behind the rider while 2.9% were riding in front of the rider. The incidents recorded were collisions with vehicles (64.1%), falls (19.7%) and collisions with pedestrians (4.9%), objects on the road (4.5%) and animals (3.7%). Among the subjects, 88.5% have claimed that they were wearing helmets during the incident, while the use of other protective equipment was recorded in only 4.1% cases. The commonest injured areas were lower limbs (75.4%), upper limbs (58.4%), head (46.5%) and chest (12.3%), while fractures or dislocations were recorded in 51.0% cases. According to the Penal Code of Sri Lanka, categories of hurt included 36.5% non-grievous, 51.0% grievous, 8.0% endangering life and 4.5% fatal in ordinary course of nature. When compared to males, female sex showed a strong negative correlation with the category of hurt ( $p=-0.96$ ,  $p=0.033$ ).

**Conclusion:** This study emphasizes that the majority of the motorcyclists who sustain injuries are males involved in collisions with other vehicles, and

they are more likely to suffer more severe injuries than females. This also highlights the need for enhanced safety measures to prevent such injuries.

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### Study describing the experiences in Surgical Rib Fixation at trauma Centre in Eastern India

Deepak Kumar<sup>1</sup>

1. Associate professor (General Surgery), AIIMS, Patna

**Correspondence:** [drdeepakk@aiimspatna.org](mailto:drdeepakk@aiimspatna.org)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):019

**Introduction:** Thoracic wall trauma could present with a simple rib fracture to multiple rib fractures to deadly flail chest or a stove in chest. Studies have demonstrated usefulness of SSRF in dealing with flail segment. However, they have been limited in the Indian subcontinent. We describe here a case series of 14 patient where patient underwent surgical fixation of ribs. Aims and Objectives Aim- To determine the benefits and outcomes in cases of surgical stabilization of rib fractures

**Objectives:** To assess the improvement in patient's pain, respiratory function and hospital length of stay in cases that underwent surgical stabilization of rib fractures. Materials and Methods

A retrospective case series was done at a level 1 trauma centre in Bihar, India from August 2022 to August 2023. After ethical clearance, data was collected from the hospital medical records. All adult patients that underwent rib plating at our centre were included. Indications for rib plating were-

- Flail chest with poor respiratory function
- Multiple displaced rib fractures
- Pain refractory to non-operative management

Statistics of patient demographics, injuries and pre and post operative VAS score were prepared. The prepared data was analysed. Patients were followed up in outpatient department and telephonically up to 3 months after the discharge.

**Results:** Total 14 patients underwent SSRF in 1 year. In all cases, patients showed improvement in their pain as assessed by VAS scale. On follow up, all patients showed improved respiratory function. 11 out of 14 patients had returned to work and could resume with their daily activities.

**Conclusion:** SSRF is a novel method of rib fixation that has been shown to have a greater benefit with regards to outcomes in displaced rib fractures and flail chest. More studies and cost-benefit analysis, especially in LMICs will help in standardization of the practice in such cases.

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### THE DETERMINANTS OF LENGTH OF STAY FOR PATIENTS WITH HIP FRACTURES ADMITTED TO ORTHOPEDIC UNITS OF TEACHING HOSPITAL KALUTARA.

K.S.P. Silva<sup>1</sup>

1. Medical Superintendent, Base Hospital, Wathupitiwala

**Correspondence:** [sasanka22silva@gmail.com](mailto:sasanka22silva@gmail.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):020

**Introduction:** The average length of stay(LOS) refers to the average number of days that patients spend in the hospital and indicates hospital performance. An increased LOS may have a negative impact on patients, staff, and the institution. Hip fractures are a rising trend in the elderly population of Sri Lanka associated with a higher rate of morbidity and mortality and projected 20% of the population will be over 60 by 2041.

**Objective:** To describe determinants of length of stay for patients with hip fractures admitted to orthopedic units at Teaching Hospital Kalutara. Methods: A descriptive study was conducted among patients admitted with hip fractures (n=226). Data collection utilized a structured IAQ and a checklist. Demographic data, hospital admission and discharge dates, the date of surgery, and details of preoperative laboratory investigation turnaround time, clinician read time, and cardiac testing were extracted. The significance of associations was assessed using the Chi-square test, ANOVA with a predetermined significance level set at a 'p' value of 0.05.

**Results:** The mean LOS was 9.85 days and the SD was 3.60. Majority

were females 168 (74.3 %). Suwaseriya has been utilized by less than 30% (n=69). A majority, 187(82.7%) had direct admissions, while 39(88.9%) were transferred from PMCI within 24 hours. Within 120 minutes 151(66.8%) had diagnostic X-ray. Majority, 135(57.9%) had passed through 2 bed pathways. Within 24 and within 48 hours, 4 and 197 cases were undergone surgeries respectively. Total of 89(39.4%) cases were hemiarthroplasty. Forty-five cases(19.9%) were postponed and were able to perform within 3 to 5 days. Majority had three or more physiotherapy sessions 141(62.4%).

**Conclusion:** There was a delay in treating patients were identified in many sub processes including admission, transferring to the orthopaedic ward, theatre allocation, and human resource factors.

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### COMPARATIVE OUTCOMES OF SURGICAL FIXATION VERSUS CONSERVATIVE MANAGEMENT IN PATIENTS WITH FLAIL CHEST: A RETROSPECTIVE STUDY

Sameera Fernando<sup>1</sup>, Dhammike Rasnayake<sup>2</sup>, Saman Iddagoda<sup>2</sup>

1. Senior Registrar Thoracic Surgery - National Hospital for Respiratory Diseases.  
2. Consultant Thoracic Surgeon -National Hospital for Respiratory Diseases.

**Correspondence:** [sameerafernando@live.com](mailto:sameerafernando@live.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):021

**BACKGROUND:** Flail chest resulting from trauma is associated with considerable morbidity and mortality and has traditionally been managed with invasive mechanical ventilation(1). This study aims to analyze the outcomes of surgical fixation in patients with flail chest.

**METHOD:** A single-center, retrospective study was conducted at a Level 1 trauma center in Sri Lanka. The study included patients admitted to intensive care unit (ICU) with flail chest between July 2023 to August 2024. Outcome measures included demographics, ICU length of stay (LOS), hospital LOS, injury characteristics and management.

**RESULTS:** A total of 39 patients were included in this study, with 53.85% being male and a mean age of 49.26 ± 15.1 years. Among them, 19 patients (48.72%) underwent surgical fixation, while 20 patients (51.28%) received conservative management. The mean Injury Severity Score (ISS) was 32.42 in the surgical group and 30.25 in the conservative group, with no statistically significant difference (p = 0.338). Lengths of stay in the Intensive Care Unit (ICU) and hospital were significantly shorter for the surgical group, with means of 3.89 days versus 10.9 days (p < 0.001) and 10.61 days versus 18.50 days (p < 0.001), respectively. During the ICU stay, the number of ventilatory days was significantly lower in the surgical group, averaging 1.72 days compared to 5.25 days in the conservative group. Additionally, the PaO<sub>2</sub>/FIO<sub>2</sub> ratio showed significant improvement in the surgical group, with a mean gain of 149 compared to just 22 in the conservative group upon ICU discharge.

**CONCLUSION:** Surgical fixation of flail chest in polytrauma patients significantly reduces ventilatory requirement, ICU LOS and hospital LOS compared to conservative management.

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### Implications of traumatic injuries in Sri Lanka: An audit on injury severity, outcome and treatment costs resulted from traumatic injuries at a secondary care Base Hospital

Umanda Ekanayake<sup>1</sup>, Pulasthi Senevirathne<sup>1</sup>, Kanchana Gunarathne<sup>1</sup>, Asantha Karunaratne<sup>1</sup>, Shehan Wijerathne<sup>1</sup>, Kavisha Dissanayake<sup>2</sup>, Bingumal Jayasundara<sup>1</sup>

1. Base Hospital, Dambulla  
2. Base Hospital, Mawanella

**Correspondence:** [bingumal@gmail.com](mailto:bingumal@gmail.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):022

**Background:** Traumatic injury is a leading cause for hospitalization and in-hospital mortality in state hospitals in Sri Lanka. In the absence of a trauma registry, major trauma treatment outcome details are limited for the

island. Further, major trauma treatment costs have never been audited from a clinical perspective.

**Method:** Details of all trauma victims including patient demographics, trauma etiology, prehospital treatment details, injury severity stratification, clinical outcome with disability status and treatment costs were studied at Base Hospital, Dambulla for a calendar month in May 2024. Injury severity was stratified using Revised Trauma Score(RTS) and RTS $\leq$ 5 was taken as a major injury. Treatment costs were calculated according to Health Ministry General Circular:01-41/2017. Disability status was classified according to modified Rankin scale(mRS).

**Results:** There were 510 trauma-related admissions [Males-303(59.4%); Mean age-39.1(Range 0.25–83)years] forming one third of surgical admissions. Road crashes–177(34.7%), assaults/ interpersonal violence -125(24.5%), accidental falls-84(16.5%), agricultural injuries–35(6.9%), animal attacks–31(6%) and industrial/ occupational injuries – 22(4.3%) were the main etiologies. Thirteen of 38 cases with respiratory distress received oxygen treatment, 2/5 patients with class III/IV haemorrhagic shock had crystalloid resuscitation and 1/9 patients with Glasgow Coma Scale  $\leq$ 8 had protected airway as prehospital care. Twenty-seven(5.3%) cases with RTS  $\leq$  5 injuries had a mean hospital stay of 12.2(range 5-26) days and rest had a mean hospital stay of 3.1(range 0.5-11) days. There were 9(1.8%) deaths, 49(9.6%) long-term disabilities and 190(37.3%) short-term disabilities. Calculated mean treatment cost per victim was Rs 22400(range 4500-167000).

**Discussion and Conclusion:** Traumatic injuries formed 30% of surgical workload. Automobile injuries led to one third of those admissions. Majority of the cohort cases lacked global standard prehospital care. Major injury victims had a longer hospital stay and a higher cost. Calculated treatment costs are falsely low due to outdated price estimation method. Only half of the study cohort was discharged without any disabilities.

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#### An audit on human injury profile subsequent to wild elephant attacks at a peripheral Base Hospital in Sri Lanka emphasizing the deficiencies in pre-hospital care

Yuresha Surangani<sup>1</sup>, Anjana De Silva<sup>1</sup>, Kanchana Gunarathne<sup>1</sup>, Asantha Karunarathne<sup>1</sup>, Shehan Wijerathne<sup>1</sup>, Kelum Panditharathne<sup>1</sup>, Kavisha Dissanayake<sup>2</sup>, Bingumal Jayasundara<sup>1</sup>

1. Base Hospital, Dambulla

2. Base Hospital, Mawanella

**Correspondence:** [bingumalj@gmail.com](mailto:bingumalj@gmail.com)

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**Background:** Sri Lanka lacks a defined prehospital trauma management protocol or an integrated trauma system despite traumatic injury being a leading cause for hospitalization and in-hospital mortality. Wild-elephant attack related human injury is a sub-domain of traumatic injury, which has never been evaluated from the surgical point of view in the island.

**Method:** In such background; demographics of the cases, prehospital care specifics, injury severity classification and clinical outcome data with disability status of the victims of wild-elephant attacks were studied at Base Hospital, Dambulla for 18 months from July 2022.

**Results:** Among 54 victims [Males-37(68.5%); Mean age-45.4(Range 23–75)years], there were 13(24%) fatalities. Polytrauma with intracranial, thoracic or abdominopelvic injuries were the main causes of death. For 47 cases brought alive to the hospital, median transportation duration was 65(range 20-125) minutes. Among them; 6/15 patients with class III/IV haemorrhagic shock had crystalloid resuscitation, 10/23 with respiratory distress received prehospital oxygen treatment and none of 9 patients with Glasgow Coma Scale  $\leq$  8 had protected airway as prehospital care. Among 41 survivors, 13(25%) suffered major injuries with a Revised Trauma Score  $\leq$  5. Average hospital stay was 25.2 days (range 6-79) for major injury survivors and 7.2 days (range 2-26) for survivors with Revised Trauma Score  $>$  5. Approximated mean treatment cost was Rs 495000 per victim. Eleven patients (27% of survivors) had long-term disability and 20

(49%) had short-term disability.

**Discussion and Conclusion:** Human injuries caused by wild elephant attacks led to high injury severities, disabilities and fatalities highlighting the need for primary prevention. Majority of the cohort lacked reference standard prehospital care and reached the surgical facility with a delay. Many cases had a prolonged hospital stay with a high treatment cost. There is a need for improved prehospital trauma care structure in Sri Lanka for better outcomes.

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#### Identification of potential biomarkers for precision intervention using metabolomics of urine in chest trauma patients.

Abhinav Kumar<sup>1</sup>, Dinesh Kumar Bagaria<sup>1</sup>, Pratyusha Priyadarshi<sup>1</sup>, Narena Choudhary<sup>1</sup>, Neel Sarovar Bhavesh<sup>2</sup>

1. Division of Trauma Surgery and Critical Care, Department of Surgical Disciplines, Jai Prakash Narayan Apex Trauma Centre, All India Institute of Medical Sciences (AIIMS), New Delhi 110029 INDIA.

2. Transcription Regulation Group, International Centre for Genetic Engineering and Biotechnology (ICGEB), Aruna Asaf Ali Marg, New Delhi 110067 INDIA

**Correspondence:** [drabhinav1975@gmail.com](mailto:drabhinav1975@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O24

**Background:** Injury leads to perturbation in the interplay of complex metabolic pathways. Recent literature has highlighted that metabolomics may identify the key metabolites that are differently regulated in patients following injury and help monitor the ongoing pathophysiological processes. We hypothesized that metabolomic profiling by analysis of the urine samples in acutely injured patients might provide an ideal tool to identify critical pathophysiological changes following trauma. Hence a prospective study was conducted to analyse the correlation of the dysregulated metabolites with the severity of the injury.

**Methods:** Urine samples were collected from patients with isolated chest trauma (n=50) on the injury's 1st, 3rd, and 7th days. For age-matched healthy controls urine sample was collected once. 1D 1H NMR spectra of the urine samples for non-targeted metabolomic profiling were measured on Bruker 500 MHz NMR spectrometer. The chemometric analysis was applied to compare and understand the variation of metabolites with different periods between the cohorts using univariate and multivariate statistical analyses using the metaboanalyst 5.0 web server tool.

**Results:** Twenty-one metabolites were significantly dysregulated (ANOVA p $\leq$ 0.001). Twelve metabolites were upregulated, and nine were downregulated. Due to oxidative stress, trauma patients' TCA cycles (fumarate, citrate, and aconitate) metabolites were down-regulated and remained downregulated till the 7th day. Likewise, maleate and Indole-3-lactate were downregulated with no sign of recovery.

**Conclusion:** The study finds the potential use of urine for identifying serial changes in metabolites for understanding the prognosis in chest trauma.

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#### Optimizing Zygomatic bone fracture repair using portable intraoperative USG imaging: A retrospective study.

Kuldeep Vishwakarma<sup>1</sup>

1. Associate Professor, OMFS, Apex Trauma Center, Sanjay Gandhi Postgraduate Institute of Medical Sciences, Lucknow, Uttar Pradesh, India.

**Correspondence:** [drkuldeep12@rediffmail.com](mailto:drkuldeep12@rediffmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O25

**Objectives:** Zygomatic complex (ZMC) fractures comprise up to 45% of all



facial fractures second in frequency after nasal bone fracture. It becomes difficult to assess the perfect reduction of all the fractured sites through a limited surgical approach. This study aims to determine the feasibility and efficacy of intraoperative ultrasound imaging (USG) in the repair of ZMC fracture through a limited anterior approach.

**Materials and methods:** This single-center retrospective study evaluated the utility of intraoperative USG during corrective surgeries for ZMC fractures from 2020 to 2023. An intraoral vestibular incision was used to expose the Zygomaticomaxillary buttress region and for indirect reduction of the fractured zygomatic arch. An upper blepharoplasty incision was used to expose the fractured Frontozygomatic suture when indicated. Intraoperative USG was used to assess the perfect reduction of the unexposed fractured zygomatic arch.

**Results:** Three females and 12 males (mean age, 34.46 years; range, 26-55 years) were included. Reduced mouth opening (n=10) and facial deformity (n=8) were the most frequent indications for the repair of ZMC fracture. Mouth opening and facial symmetry were improved and satisfactory in all the cases.

**Conclusion:** Implementation of an intraoperative USG in ZMC fracture repair assists in obtaining predictable and accurate results. The equipment should be considered for precise operations such as ZMC fracture repairs particularly when using a limited surgical approach.

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#### TRACHEOBRONCHIAL INJURIES FOLLOWING TRAUMA: A CASE SERIES.

Sameera Fernando<sup>1</sup>, Dhammike Rasnayake<sup>2</sup>, Saman Iddagoda<sup>2</sup>

1.Senior Registrar Thoracic Surgery - National Hospital for Respiratory Diseases.  
2.Consultant Thoracic Surgeon -National Hospital for Respiratory Diseases.

**Correspondence:** [sameerafernando@live.com](mailto:sameerafernando@live.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):O26

**BACKGROUND:** Tracheobronchial injuries (TBI) following trauma are rare but potentially life threatening requiring immediate attention during the primary survey. These injuries can result from blunt or penetrating trauma often caused by motor vehicle accidents, falls, homicides, blast injuries, animal attacks including elephant encounters. Patients may present with a range of symptoms such as cough, hemoptysis, difficulty in breathing, subcutaneous emphysema or even respiratory arrest. Bronchoscopy is a valuable diagnostic tool, with its use depending on the specific of each case (1). This case series highlights different management approaches for three patients with traumatic TBI.

#### CASE 1:

A 9-year-old boy sustained tracheal injury after a fall from a bicycle with handlebar impact to the neck. With a SpO<sub>2</sub> of 92% and neck laceration with hissing air sounds, he underwent an emergency tracheostomy. Surgery revealed shattered 1st and 2nd tracheal rings, repaired primarily with the tracheostomy in place. He was discharged on day 12 without complications.

#### CASE 02:

A 28-year-old woman suffered a crush injury to the chest between a truck and tree. She presented with subcutaneous emphysema and a SpO<sub>2</sub> of 92%. A right-sided thoracostomy tube stabilized her, and a CT confirmed right bronchial separation. Video-assisted thoracoscopic surgery (VATS) repaired the injury, and she was discharged on day 6 without complications.

#### CASE 3:

A 40-year-old man sustained polytrauma, including a small tracheal injury, during an elephant attack. Bronchoscopy revealed a distal-tracheal injury, managed with stenting. The patient remained in intensive care for 40 days due to other injuries and continues to rehabilitate.

**CONCLUSION:** Management of TBI should be timely and tailored to the expertise and resources available. This case series demonstrates that TBI can be effectively treated both surgically and non-surgically, with options such as tracheal stenting. Surgical approaches can range from open to VATS, even in trauma, provided the necessary expertise is available.

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#### Role of Percutaneous drainage in high grade pancreatic trauma - An audit from a level 1 trauma centre

Narendra Kumar<sup>1</sup>

1.Additional Professor Department of Trauma Surgery King George's Medical University U.P. Lucknow

**Correspondence:** [drnarendrakumar@kgmcindia.edu](mailto:drnarendrakumar@kgmcindia.edu)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):O27

**Introduction:** Traumatic pancreatic injuries are rare, with an incidence ranging from 0.4% to 12%. Pancreatic injuries are often missed due to its retroperitoneal location and can present with complications such as acute fluid collections, pseudocysts, and obstruction. Management options vary from non-operative approaches to complex surgeries. Percutaneous drainage for highgrade pancreatic trauma is debated due to the risk of creating external pancreatic fistulas. This study aims to audit the outcomes of percutaneous drainage in high-grade pancreatic trauma at a Level 1 trauma center.

**Materials and Methods:** A retrospective analysis of cases undergoing percutaneous drainage for high-grade pancreatic trauma (Grade 3, 4, and 5) from January 1, 2020, to December 31, 2023 was performed. Parameters such as age, gender, mode and mechanism of injury, AAST grade, reasons for drainage, and outcomes were recorded.

**Results:** This study analyses the profiles of 54 patients with pancreatic injuries, highlighting the mechanism of injury, sex distribution, and severity according to the American Association for the Surgery of Trauma (AAST) grading system. Most patients were young (ages 4 to 60), Males accounted for 83% of cases. The primary cause of injury was road traffic incidents (RTI) (40%), followed by falls from height (FFH) and cycle-related injuries. Injury severity was mostly moderate (AST Grade 3) in 43% of cases, while Grade 4 injuries comprised 27%, and severe injuries (Grade 5) accounted for 9%.

**Conclusion:** Percutaneous drainage can be an effective intervention for high-grade pancreatic trauma presenting late with complications, such as subacute intestinal obstruction or sepsis. Further studies are required to establish standardized guidelines for its use in this context

**Keywords:** Pancreatic trauma, Percutaneous drainage, Trauma complications, non-operative management.

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#### Assessment of Post-Traumatic Stress Disorder (PTSD) in Patients Following Road Traffic Accidents (RTA)

Werania T G K<sup>1</sup>, Vishnukanthan J<sup>1</sup>, D Ariyaratne<sup>1</sup>

1. Colombo South teaching Hospital

**Correspondence:** [gamagekanil@gmail.com](mailto:gamagekanil@gmail.com)  
Sri Lanka Journal of Trauma 2024, 1(Suppl1):O28

**Background:** Road traffic accidents (RTAs) are a major public health issue in Sri Lanka, often resulting in physical injuries and psychological trauma. Post-Traumatic Stress Disorder (PTSD) is a mental and behavioral disorder that develops from experiencing a traumatic event such as a collision event following a road traffic accident [1]. This study aims to assess the prevalence and severity of PTSD symptoms in patients transferred to a surgical unit in a tertiary care hospital after receiving initial treatments at an accident service unit within 1 week of the incident.

**Method:** A total of 100 patients who were admitted to a surgical ward following RTAs were included in this cross-sectional study. Participants were assessed using the PTSD Checklist for DSM-5 (PCL-5) to evaluate the presence and severity of PTSD symptoms. It is a 20-item self-report measure of the twenty DSM-5 symptoms of PTSD in adult populations which is designed for use with people who have experienced traumatic events. Demographic data, including age, gender, and the nature of the accident, were also collected. Statistical analyses were performed to determine the correlation between demographic factors and PTSD symptom severity.

**Results:** The median age of the respondents was 36 years. Among the respondents 65% were males and 35% were females. Preliminary findings

indicate that prevalence of PTSD was 14% and 16% among male and female participants respectively. Statistical analysis revealed a correlation between the severity of physical injuries and the intensity of PTSD symptoms, suggesting that more severe injuries may be associated with higher PTSD scores.

**Discussion:** The results highlight the importance of recognizing and addressing PTSD in patients following RTAs. The high prevalence of PTSD symptoms underscores the need for routine psychological assessments in surgical wards for trauma patients. Early identification and intervention can improve patient outcomes and facilitate recovery. Emphasizing the psychological aspects of trauma care is vital for ensuring that patients receive comprehensive treatment that addresses both their physical and mental health needs, ultimately leading to better recovery outcomes and improved quality of life.

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#### Bull horn injury: A retrospective case series analysis from a Level 1 trauma centre

Dr Anita Singh<sup>1</sup>

1. Department of Trauma Surgery, King George's Medical University

**Correspondence:** [dranitasingsurgery@gmail.com](mailto:dranitasingsurgery@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O29

**Introduction:** India is an agricultural country with high prevalence of cattle farming. These domestic animals can cause serious injuries. Injury patterns can present as a variety of bizarre, complex wounds.

**Aim:** Evaluate the injury patterns and outcome in bullhorn injuries.

**Objective:** 1) Classify the injuries sustained.

2) Compare the prevalence between urban and rural areas.

**Methodology:** Case series analysis of 501 patients admitted to our Level 1 trauma centre was conducted. Their epidemiological parameters, injuries, management and outcomes were noted.

**Results:** The mean age was 47.9 years with a male preponderance. Most common mechanism of injury was a combination of direct and indirect impact by the bull or its horns (54.3%). Most common injuries were thoracic injuries in 47.8 % patients followed by abdominal injuries(38.6%). 66.2% patients required interventions, 176 required intercostal drainage while 132 patients underwent exploratory laparotomy. Mortality rate was 9%.

**Conclusion:** Bull horn injuries are a major cause of mortality and morbidity in developing countries with unregularized farming structure. Majority injuries were mixed (primary plus secondary), followed by primary, secondary, tertiary and quaternary injuries. There is need to address and prevent these under-reported injuries by formulating stern rules and regulations. High urban prevalence is due to stray bulls causing road traffic accidents thus people living in urban areas are also unsafe from these injuries. Literature available documents perineal injuries as most common but, in our study thoracic injuries were predominant.

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#### Impact of rTMS versus drug therapy on phantom limb pain in lower limb amputation patients following trauma: A Randomized controlled trial

Nida Mir<sup>1</sup>, Sushma Sagar<sup>1</sup>, Junaid Alam<sup>1</sup>, Arul Selvi<sup>2</sup>, Renu Bhatia<sup>3</sup>, Altaf Hussain Mir<sup>4</sup>, Subodh Kumar<sup>1</sup>, Dinesh Bagaria<sup>1</sup>, Rajesh Sagar<sup>5</sup>

1. Division of Trauma Surgery and Critical Care, JPN Apex Trauma Centre, AllMS, New Delhi

2. Department of Lab Medicine, J PN Apex Trauma Centre, AllMS, New Delhi

3. Department of Physiology, AllMS, New Delhi

4. Physiotherapy Unit, JPN Apex Trauma Centre, AllMS, New Delhi

5. Department of Psychiatry, AllMS, New Delhi

**Correspondence:** [sagar.sushma@gmail.com](mailto:sagar.sushma@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O30

**Background:** Amputation causes significant rearrangement in the motor and somatosensory cortex. Phantom limb pain (PLP) is a disorder marked by the experience of pain in the limb that is missing and can last for years. The management of PLP includes both pharmacotherapies as well as non-pharmacologic options. The purpose of this study is to examine the effect of drug therapy and repetitive transcranial magnetic stimulation (rTMS) for the management of PLP.

**Methods:** A prospective randomized controlled trial was conducted at level -I trauma centre after approval from the Institute's ethical committee with the sample size of 50. The patients were randomly assigned to rTMS and drug therapy group. 10 sessions of rTMS therapy for the duration of 15 minutes at 1 Hz frequency over the period of two weeks was compared with the monitored dispensing of drug therapy. The patients were assessed for serotonin 5HT, pain and psychological well-being till 8 weeks of amputation.

**Results:** The results of serotonin 5 HT suggested that both the management are equally effective with p value 0.08. Similar findings were seen when pain scores NRS and McGill pain questionnaire along with hospital anxiety depression score. In CGI score, the overall domain had better result in rTMS group as compared to drug therapy group.

**Conclusion:** The results of our study are suggestive of using rTMS as an alternate means for managing phantom limb pain in amputees following trauma. rTMS has already been in use for the psychiatric conditions and other musculoskeletal disorders, however its use is less explored in management of phantom limb pain. The findings of our study are suggestive of using low frequency rTMS for managing patients at the onset of PLP and hence reducing their drug dependency.

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#### Efficacy of Femoral Nerve Block in acute fractures of the femur in the emergency department

Dr Suruchi Ambasta<sup>1</sup>

1.Associate Professor , Anaesthesiology ,Apex Trauma Centre, SGPGIMS , Lucknow, India

**Correspondence:** [suruchi0904@gmail.com](mailto:suruchi0904@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O31

**INTRODUCTION:** Fractures around the hip and fractures of the femur are commonly encountered in the Emergency Department (ED). Effective control of pain in these fractures is of critical importance for proper radiography, reduction and splintage. Traditionally, systemic analgesics have been used for pain relief which had its own limitations both in terms of pain relief and relaxation. Use of Femoral Nerve Block (FNB) in acute fractures around the hip and femur has been a challenge and, evaluation of this procedure has been the subject of research recently in ED. The aim is to evaluate the efficacy of Femoral Nerve Block in decreasing pain and anxiety in acute fractures of the femur.

**MATERIALS AND METHODS:** This was a prospective cohort study with a Sample size of Eighty four patients (84). The study Population included patients with Fractures around the hip, Fractures of the shaft and distal femur. Intervention- Ultrasound guided the Femoral Nerve Block (FNB). The outcome measures included Visual analogue scale (VAS) score for pain, Hamilton Anxiety Score (HAM-A) score for anxiety and subjective assessment of the patients comfort level.

**RESULTS:** Study group (n=84) included in the evaluation were homoge-

nous in terms of age and sex distribution. The mean±SD VAS score pre-operatively was 72.93±10.91. At 30 minutes and 4 hours postblock the mean±SD VAS scores were 18.65±5.25 and 13.88±6.05, respectively. There was statistically significant difference in VAS score at 30 minutes (p=0.004) and 4 hours (p=0.015). The mean Hamilton Anxiety score at preblock and 4 hour postblock was 27.05±5.94 and 8.07±3.7, respectively. The overall HAM-A score comparison showed that there was statistically significant change after 4 hours postblock (p=0.013) showing significant decrease in anxiety levels. All patients were satisfied by the comfort and ease of shifting after block. Intergroup analysis of fractures around the hip (Neck femur, Trochanter) and fractures of the shaft (Shaft femur and distal femur) revealed equal efficacy of the femoral block.

**CONCLUSION:** FNB provided rapid and prolonged analgesia with comfort in patients with fracture around the hip, shaft femur and distal femur fractures. The analgesic effect and the quadriceps palsy allow muscle relaxation and hence pain-free radiology and orthopaedic tractions and splinting. Decreasing the pain immediately on arrival and performing transport, radiology and orthopaedic procedures with minimal pain has positive impact on the patient's anxiety. The present study can safely conclude that FNB is a safe approach in providing rapid and effective analgesia in fractures around the hip and fractures of the shaft femur while decreasing the side effects of PSA. The present study also recommend that FNB should be included as the part of primary treatment for patients suffering from fracture shaft femur or fractures around the hip in an emergency ward.

**KEYWORDS:** Femoral Nerve Block, Pain, Anxiety, Acute Fractures

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### Evaluation of Patterns of Trauma Reporting to the Emergency Department during the First COVID-19 Lockdown in India

Swagat Mahapatra<sup>1</sup>

1. Department of Orthopaedics, RMLIMS, Lucknow, India

**Correspondence:** [drswagat@gmail.com](mailto:drswagat@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):032

**Background:** On March 24, 2020, the Government of India declared a nationwide lockdown and a series of measures aimed at limiting the spread of the coronavirus disease 2019 (COVID-19) infection. This led to dynamic changes in patient inflow and management in the emergency department.

**Aim:** This study aims to evaluate the impact of the pre-lockdown and lockdown periods on the demography of trauma in a tertiary care teaching hospital.

**Methods:** The trauma caseloads between March 25, 2020, and April 14, 2020, and that of the homologous period of 2019 were thoroughly analyzed and compared retrospectively.

**Results:** There was an overall decrease in trauma patients. Elderly male patients had an increased incidence of injury during the lockdown period with a significant p-value (0.0009). There was a significant increase in the number of minor orthopedic procedures while there was a significant decrease in the number of major orthopedic procedures. Fractures of the proximal femur were significantly increased during the lockdown period (p-value 0.011) and fractures of the femur and tibia shaft were significantly decreased during the lockdown period (p-value 0.002). Fractures of the distal radius were significantly increased during the lockdown period (p-value 0.005) and fractures of the shaft of humerus, radius, and ulna were significantly decreased during the lockdown period (p-value 0.028). Injuries following fall, trivial trauma, and animal-induced trauma were significantly increased (p-values <0.0001, <0.0001, 0.014, respectively), whereas injuries following sports and motor vehicle accidents were significantly decreased (p-value 0.006, <0.0001, respectively). The number of patients reaching within the golden hour (<1 hour) was significantly increased (p-value 0.0003).

**Conclusion:** Strict administrative measures had a high impact on the number and epidemiology of trauma with remarkable changes. There was a decreased number of trauma cases but the mechanism, type, and management of these cases were significantly altered from the homologous period of the previous year.

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### Impact of early rehabilitation in traumatic brain injury patients: Relationship with functional outcome and length of stay in a limited resource set-up.

Siddharth Rai<sup>1</sup>, Mallikarjun Gunjiganvi<sup>2</sup>, Rupali Awale<sup>3</sup>, Suruchi<sup>4</sup>

1. Physical Medicine and Rehabilitation, SGPGIMS, Lucknow, India.

2. Trauma Surgery, AIIMS, Mangalagiri, India

3. Laboratory Medicine, SGPGIMS, Lucknow, India.

4. Anaesthesiology, SGPGIMS, Lucknow, India.

**Correspondence:** [drswagat@gmail.com](mailto:drswagat@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):033

Developing countries like India are facing increasing number of traumatic brain injury patients due to rapid urbanization often resulting in disabilities which are burden for any society. Physical Medicine and Rehabilitation (PMR) department has recently been emphasized by the government across all major trauma centers across the country. Nevertheless, there is a lack of effective rehabilitation program for TBI patients in the majority of trauma centers in the developing world.

**Objective:** The purpose of the study is to determine the relationship between early PMR intervention in TBI patients and functional outcome, length of stay and discharge planning in setting of a new trauma center.

**Design:** Retrospective analysis of prospective maintained data of patients admitted with non-fatal traumatic brain injury either managed operatively or conservatively were obtained from August 2018 to July 2023. Demographic variables, acute neurosurgical characteristics, medical complications, and rehabilitation outcomes were recorded. Functional outcome was determined using a modification of the FIM score. Descriptive and regression analyses were used to establish the relationship between early physical medicine and rehabilitation intervention and FIM score, length of stay, and discharge planning.

**Results:** There were 890 patients screened with an average age of 58.8 ± 11.1 years. The most common aetiology was road traffic accident (88.06%). Most patients were discharged home directly (78.08%). Patients receiving Rehabilitation management early, within 48hrs functionally improved (P< 0.001). Regression analysis showed by the early rehabilitation management, that there was a statistically significant FIM functional gain of 18.445 points (P= 0.03). The patients who had early PMR intervention, had also fewer complications. **Conclusion:** Introduction of early physical medicine and rehabilitation intervention in setting of a trauma center with a dedicated physiatrist significantly improves functional outcome in traumatic brain injury patients, decreases the length of stay during acute hospitalization and decreases complication rates.

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### TRAUMA TELEMEDICINE HOTLINE: EXPERIENCE IN TRAUMA PATIENT MANAGEMENT AND ITS ROLE AS A QUALITY IMPROVEMENT TOOL AT A LEVEL 1 TRAUMA CENTRE

Madhur Uniyal<sup>1</sup>, Aditya Choudhary<sup>1</sup>, Shantam Pokhriyal<sup>1</sup>, Shashikant<sup>1</sup>, Deepika Kandpal<sup>1</sup>, Akhilesh Uniyal<sup>1</sup>

1. Department of Trauma Surgery, All India Institute of Medical Sciences, Rishikesh, Uttarakhand, India.

**Correspondence:** [drmadhuruniyal@gmail.com](mailto:drmadhuruniyal@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):034

**Background:** Many patients lack timely access to expert care, especially in remote regions Telemedicine emerged as a tool for real-time consultations, minimize unnecessary hospital visits, and enhance trauma care delivery. Telemedicine refers to the delivery of healthcare remotely using telecommunications technology, serving as an alternative to in-person consultations. It has been beneficial for access to modern medical care in regions

where patients must travel long distances to reach specialists (1). The objective was to provide expert trauma care advice to patients with limited healthcare access, and to evaluate the Trauma Telemedicine Hotline as a tool for quality improvement in trauma care.

**Material and Methods:** A new facility of Trauma Telemedicine was created on November 1st 2022 and a toll-free Trauma Helpline number was floated by Department of Trauma Surgery and Critical Care. This number was updated in institute website and also disseminated through electronic and print media. Initial communication with patient or his attendant was telephonic. A video call through WhatsApp was initiated whenever it was perceived clinically relevant. A retrospective analysis of all teleconsultations up to September 2024 after initiating the Trauma Helpline number was conducted.

**Results:** A total of 28,302 teleconsultations were conducted, with 23,943 initiated from our center and 4,350 received. Among the calls received, 7,829 were from rural and hilly areas, 4,726 from urban areas of Uttarakhand, and 10,981 from other states, mainly Western Uttar Pradesh. Among the incoming calls, 1,021 required urgent medical attention, 223 were routine trauma cases, and 3,106 were general inquiries. For Trauma Quality Improvement, 23,953 feedback calls were made: 15,248 to discharged patients, 3,665 to LAMA patients, and 5,039 to current inpatients. Patients scored their satisfaction for telemedicine on the scale of 1-5, with average score of 4.1 (discharged patients), 3.2 (LAMA patients), and 4.4 (admitted patient). Trauma telemedicine consultations have helped in improved patient outcomes, reduced unnecessary hospital visits, and lowered financial burdens.

**Conclusion:** Trauma telemedicine consultations via trauma helpline number serves as an effective tool for providing timely medical and expert trauma care advice, thereby improving patient outcomes.

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#### 35

### Unexpected death due to an accident between 2 slow-moving vehicles

Amararatne RRG<sup>1</sup>, Vidanapathirana M<sup>2</sup>

1. Chief Consultant Judicial Medical Officer, Institute of Forensic Medicine and Toxicology, Colombo,  
2. Senior Professor and Dean, Faculty of Medicine, Uva Wellasa University and Chair Professor of Forensic Medicine, University of Sri Jayawardanapura,

**Correspondence:** [sriyanthaamaratne@gmail.com](mailto:sriyanthaamaratne@gmail.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O35

**Introduction:** Deaths are unexpected following road traffic accidents between slow-moving vehicles such as pedal cycles and bullock carts. There is also a possibility of neglecting fatal injuries at busy accident units even at a tertiary care hospital. The case under discussion is one such incident where an apparently normal victim of a road traffic trauma ended up in death.

**Case report:** A 55-year-old man collided with a bullock cart and fell on the road while he was riding a pedal cycle. No history of loss of consciousness or ENT bleeding. He had pain in the chest and minor bleeding from external injuries. He was admitted to a tertiary care hospital and GCS on admission was 15/15. Since there were no apparent fractures in the X-rays, he was discharged.

He was having diabetes and hyperlipidemia but was not on regular treatment. Two days later, he developed difficulty in breathing and was re-admitted to the same hospital and died in the same evening.

The autopsy revealed fractures in the 2nd thoracic vertebra and bilateral ribs. There were massive bilateral whitish pleural effusions with collapsed lungs. The cause of death was kept under investigation. Reporting of ante mortem X-rays by a consultant radiologist confirmed the above fractures. Cytology of pleural fluid showed lymphocytic infiltration but culture was negative. Histopathology of organs was unremarkable except for early diabetic changes in the kidneys.

**Conclusions:** The probable causes of death following autopsy included i.

Pyothorax due to immune suppression following diabetes, ii. Diabetic keto-acidosis due to uncontrolled diabetes, iii. Acute myocardial infarction. Following further investigations, the cause of death was ascertained as Chylothorax due to rupture of thoracic duct due to blunt force trauma to the chest following road traffic trauma. This death may have been prevented if clinicians had initially managed properly. It is a potential case of medical negligence.

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### Audit of patients affected by two wheeler (motorbike) accidents treated at National hospital Colombo Sri Lanka.

K.G.Nandana Kumara<sup>1</sup>, A.I.Jagoda<sup>2</sup>, H.E.M Kavindi<sup>3</sup>, G Kiruthikan<sup>3</sup>, R.M.A.S.N. Ranathunga<sup>2</sup>, Chathura Karunathilake<sup>2</sup>.

1. Registrar in Surgery, National hospital Colombo, Sri Lanka.

2. Consultants, Accident service, National Hospital, Sri Lanka.

3. Pre-Intern medical officers, National hospital Colombo, Sri Lanka.

**Correspondence:** [nandanakumara21@yahoo.com](mailto:nandanakumara21@yahoo.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O36

**Background :** There are about six million registered two wheelers at the moment in the island and whole population is nearly 22 million which can cause high percentage of accidents due to readily availability and the inherent instability and limited protection of motorbikes.

**Methodology:** Data were collected from 489 patients who was rider or pillion rider, admitted at National hospital from 01.09.2024 to 30.09.2024 using interviewer administered questionnaire.

**Results:** The average patient age was 34.37 years and most were male (89%) and riders (86.5%) also 89.5% were employed. 84% was direct admission and out of all 87.3% end up as admission to accident ward. Nearly 3.3% under the influence of alcohol. 1.8% accidents were >2 passengers. Helmets were used by 81.5%. Helmet users experienced 9% lower incidence of head and spine injuries with p value of 0.007 comparing non users which was not significant. Lower limb (64%) and upper limb injuries (47.9%) were common, with fractures in 24.4% of cases. T shirts, trousers and slippers were the most common attire. Most bikes were standard models (75.2%) and rest were scooters with an average engine capacity of 125 cm<sup>3</sup>. No significant correlation was found between Engine capacity and ISS ( p>0.005). The Bajaj brand was the most common (41.8%) with Honda Dio the second leading model (18.4%). Three deaths and all 3 with helmets. The mean ISS was 4.11

**Conclusion:** Most patients were working, middle aged men. Alcohol and high speed were not major factors. Wearing helmet is protective but there are much more to follow to reduce the accidents.

#### 37

### Survey on variety, severity and transfer of major trauma patients to apex trauma center of Sri Lanka.

Amani Nanayakkara<sup>1</sup>, Gayan Ekanayake<sup>1</sup>, A I Jagoda<sup>1</sup>, Dinushi Rajapaksha<sup>1</sup>, Chathuni Jayakody<sup>1</sup>, Nadee Wickramasinghe<sup>1</sup>, Sakura Dayananda<sup>1</sup>

1 Plastic and Reconstructive Surgery Division, National Hospital Plastic and Reconstructive Services

**Correspondence:** [gayanse2003@yahoo.com](mailto:gayanse2003@yahoo.com)

Sri Lanka Journal of Trauma 2024, 1(Suppl1):O37

**Introduction:** The study focuses on major trauma management, defining it as life-threatening or life-changing injuries. It explores injury severity scoring systems and admission criteria. Sri Lanka's healthcare system and admission patterns for trauma patients are assessed. Research aims to enhance clinical understanding and inform policy decisions.

**Method:** Prospective cohort study at the National Hospital of Sri Lanka's Accident and Emergency Services from June to December 2024 will assess major trauma patients' variety, severity, and transfer methods. Data sourced from bed head tickets and hospital records, collected anonymously and analyzed confidentially.

**Results:** Anticipated findings from the prospective cohort study include insights into the variety, severity, and transfer methods of major trauma cases. It's expected to reveal patterns in injury types, severity levels, and patient transfer pathways, providing valuable data for improving trauma care delivery.

**Discussion:** The study's findings will offer a comprehensive understanding

of major trauma presentation and management. Analysis of injury variety and severity, along with transfer methods, will shed light on potential gaps or inefficiencies in the current healthcare system.

**Conclusion:** This ongoing research holds promise for informing evidence-based practices in trauma care and emergency services. By examining the spectrum of major trauma cases and their management pathways, the study aims to contribute to improved patient outcomes and more efficient resource allocation within Sri Lanka's healthcare system.

## Poster presentations

01

### Isolated proximal ileum perforation following blunt abdominal trauma

Sandaruwan Kankanamge<sup>1,2</sup>, Kasun Karunaratna<sup>1,2</sup>, Ranjith Perera<sup>2</sup>

<sup>1</sup>Postgraduate Institute of Medicine, University of Colombo, Sri Lanka

<sup>2</sup>North Colombo Teaching Hospital, Ragama, Sri Lanka

**Correspondence:** [sandaruwanmadushanka114@gmail.com](mailto:sandaruwanmadushanka114@gmail.com)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P1

**Background:** Most blunt abdominal injuries result from Road traffic accidents (RTA). Small bowel perforations following blunt abdominal trauma (BAT) are uncommon (0.3% in all BAT) while isolated small bowel perforations are extremely rare. Early Diagnosis and prompt treatments are essential for good outcomes of these patients. Delayed presentations may increase the morbidity and mortality. We present a rare case of isolated proximal ileum perforation following blunt abdominal trauma due to a RTA.

**Case Report:** A 47-year-old male patient presented to the Emergency Treatment Unit (ETU) with acute abdomen following a RTA three days back. There was contusion over center of the abdomen with no other external injuries except for a silencer burn in the left lower limb. On examination, there was a guarding abdomen with sluggish bowel sounds. The patient was tachycardic and BP was around 90/50. Basic investigations were conducted. Accordingly, the Chest X-ray erect revealed gas under the diaphragm. X-ray abdomen supine showed dilated small bowel loops in the center of the abdomen. No free fluid was observed during the Focused Assessment Sonography of Trauma (FAST). An exploratory laparotomy was performed revealing an proximal ileum perforation with gross contamination. The rest of the peritoneal survey was normal. The perforated segment was primarily repaired followed by washing of the peritoneum with warm saline. Laparotomy was primarily closed with an abdominal drain. Post-operative management took place at the ICU due to the abdominal sepsis. The patient was transferred to the ward on the sixth post-operative day and discharged on tenth day.

**Conclusion:** A rare case of isolated perforation of small bowel is explained as a sudden increase of intraluminal pressure of small bowel leading to a perforation at the antimesenteric border. The patient presented with delayed signs of generalized peritonitis. Being a healthy adult male without any comorbidities, he recovered without any debilitating complications.

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02

### Lessons Learnt from a Patient with Sigmoid Colon Perforation Following Gunshot Injury – Had the Prolonged Initial Surgery Contributed to the Morbidity?

G. J. Kottegoda<sup>1</sup>, A. N. Chrisan<sup>1</sup>, D. E. Kannangara<sup>1</sup>, B. Aathavan<sup>1</sup>

<sup>1</sup>. Accident Service Unit, Colombo South Teaching Hospital

**Correspondence:** [gayangamail@gmail.com](mailto:gayangamail@gmail.com)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P2

**Background:** Penetrating retroperitoneal injury leading to hollow viscus injury remains an uncommon entity with high morbidity and mortality.

**Case Report:** A 42-year-old female with class II obesity, presented to a base hospital with multiple gun-shot injuries mainly to the back for which she underwent an emergency exploratory laparotomy. Injuries to the sigmoid colon, mesocolon and uterine fundus were managed with a Hartman's procedure and hysterectomy. Surgery had lasted more than four hours, and the intraoperative hemodynamic instability had been managed with massive blood transfusions. She was transferred to Colombo South Teaching Hospital (CSTH) for the post-operative Intensive Care Unit (ICU) care.

Her ICU stay was complicated with coagulopathy and metabolic acidosis which could be attributed to prolonged surgery and multiple blood transfusions. Subsequently, she underwent several surgical procedures. A re-laparotomy for a pelvic abscess causing septic shock on day five revealed a rectal stump blowout and a necrotic left ovary. The rectal stump was refashioned and repaired, and a left salpingo-oophorectomy was performed. A thorough peritoneal cavity washout was performed. Superficial surgical site infection at the re-laparotomy site was managed with standard care.

Her recovery was further complicated by acute kidney injury, acute respiratory distress syndrome, and post-traumatic stress disorder which were managed by relevant specialities. She was extubated on day eight but had prolonged vocal cord palsy from which she recovered completely by four weeks. She was discharged home after five weeks of hospital stay with a plan of follow-up at CSTH.

**Conclusion:** Adherence to damage control principles is important in the haemodynamically compromised patient to reduce the morbidity and mortality associated with trauma. A deferred primary repair/ anastomosis at re-look avoiding a stoma is a viable option in most patients even with colonic injuries after initial management with damage control intent.

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03

### Delayed Rupture of Subclavian Artery due Fracture of Right 1st Rib- A Case Report

Rupesh Pakrasi<sup>1</sup>, Mohd Ozair Khan<sup>2</sup>

<sup>1</sup>. Department of Trauma Surgery and Care, AIIMS Rishikesh

<sup>2</sup>. Department of General Surgery, AIIMS Rishikesh

**Correspondence:** [amsepinia@gmail.com](mailto:amsepinia@gmail.com)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P3

**Introduction:** First rib fractures, typically resulting from high-energy trauma, can lead to significant vascular injuries due to the proximity of the subclavian artery. Here we present a case of 45-year-old male who presented with acute right-sided chest pain and dyspnea, four months post-first rib fracture from a motor vehicle accident. Despite emergency surgery, the patient succumbed to refractory shock. Delayed subclavian artery rupture following a first rib fracture is a rare, fatal complication requiring high clinical suspicion and prompt intervention. Early recognition and vigilant monitoring are crucial for improving outcomes. We want to emphasize the possibility of delayed subclavian injury by jagged edges of the broken 1st rib and the importance of early CT angiography in such cases. We present a case of delayed rupture of subclavian artery in a patient of previous blunt chest trauma with 1st rib fracture along with multiple rib fractures 4 months back.

**Material and Methods:** In the following case report, we describe the pre-

sentation of the patient and approach of the patient by emergency thoracotomy after which the outcome patient has been described.

**Conclusion:** This case report illustrates the potential for delayed vascular complications following first rib fractures and emphasizes the need for high clinical suspicion and rapid intervention. The fatal outcome in this patient underscores the importance of early recognition and aggressive management of vascular injuries associated with rib fractures. Further research and increased awareness are essential to improving outcomes for these patients.

04

#### Delayed Sigmoid Colon Perforation following blunt pelvic trauma

J K G Madhawa<sup>1</sup>, R A M N Rajapaksha<sup>1</sup>, V C Wickramasinghe<sup>1</sup>, K G V Saranga<sup>2</sup>, A H A Prashantha<sup>1</sup>

<sup>1</sup>Colombo South Teaching Hospital, Kalubowila

<sup>2</sup>Ketering General Hospital, NHS Trust, UK

**Correspondence:** [ganindu91@gmail.com](mailto:ganindu91@gmail.com)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P4

**Introduction:** Incidence of hollow viscus perforation following blunt abdominal trauma (BAT) is said to be <1%. Though colonic perforation is rare following BAT it becomes even more diagnostically challenging when it occurs as a delayed atypical presentation.

**Case Report:** 61 years old male presented following a fall from 20 feet with multiple left side rib fractures and open book pelvic fracture. Initial imaging with ultrasound and CECT was negative for any intraperitoneal organ injuries except for a right perinephric hematoma. While intubated under observation at intensive care, after 18 days from initial insult patient developed per rectal passage of clots without any detectable bleeding point from endoscopies. Angiogram revealed active bleeding from a branch of sigmoid artery which was not amendable for embolization. Emergency laparotomy was carried out following detection of pneumo peritoneum in repeat CT. A 10cm segment of traumatic perforation of sigmoid colon with large hematoma within the lumen with minimal fecal peritonitis was detected during the surgery and segmental resection of sigmoid colon and Hartman's procedure was carried out. Later patient was successfully transferred to ward care.

**Clinical Discussion:** Delayed colonic perforation in a intubated poly trauma patient following BAT is difficult to be diagnosed in the absence of typical clinical features of acute abdomen in a paralyzed condition. In this case though initial imaging was negative for a perforation primary pelvic fracture might have induced bowel wall contusion leading to a delayed perforation and bleeding. The intraluminal large blood clot had prevented fecal content reaching the point of perforation and preventing gross fecal peritonitis which might have led to overt septic shock.

**Conclusion:** This case underscores the importance of continuous evaluation and maintaining a high degree of clinical suspicion for viscus perforation in an intubated poly trauma patient despite an elapsed time frame.

05

#### An Intraoral Firecracker Suicide Case Report and Literature Review Case report

Satya Prakash Meena<sup>1</sup>

<sup>1</sup>All India Institute of Medical Sciences (AIIMS), Jodhpur, Rajasthan, India

**Correspondence:** [drsatyaprakash04@gmail.com](mailto:drsatyaprakash04@gmail.com)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P5

**Background:** The explosion of a firecracker creates radial blast waves similar to bomb blasts. Explosions inside the oral cavity is associated with the involvement of multiple vital organs. In order to prevent death due to respiratory compromise caused by oral bleeding and facial bone fractures, emergency medical care must be sought immediately.

**Case report:** 41-year-old man presented to the surgical emergency room complaining of a firecracker blast in the oral cavity during a suicide attempt. Upon arrival, he had oral bleeds, and deformities of the mouth due to soft tissue injuries to the lips and buccal mucosa in the oral cavity, but the tongue was intact, able to articulate well, and breathing spontaneously. Pulse rate, blood pressure, and Spo2 were 110/minute, 120/70, and 96%, respectively. Examinations of the abdominal, cardiac, neurological, and respiratory systems were also normal. Several deep lacerations were present on both lips and communicated with lacerations in the oral

cavity. After suturing all lacerations with absorbable sutures, the patient was discharged on day 7.

**Conclusion:** Firecracker blasts inside the oral cavity are an unusual way of committing suicide. Due to the direct effect on the laryngo-trachea region and the skull base with the brain, it is a dangerous mechanism of injury.

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06

#### The Role of Nutrition in Enhancing Recovery from necrotising fasciitis and haemorrhagic fracture blisters following poly-trauma: A Case report Investigators:

D.G.A. Wijegunawardena<sup>1</sup>, S.P. Kurukulaarachchi<sup>1</sup>, E. Jayaweera<sup>2</sup>

<sup>1</sup>Medical Nutrition Unit, National Hospital of Sri Lanka, Colombo

<sup>2</sup>Orthopedic Unit, National Hospital of Sri Lanka, Colombo

**Correspondence:** [m37514@pgim.cmb.ac.lk](mailto:m37514@pgim.cmb.ac.lk)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P6

**Introduction & Objective:** Fracture blisters are skin blisters that form over a fracture site, often occur following high-energy trauma. They typically manifest within 24-48 hours of the injury but can develop up to three weeks later. These blisters resemble second-degree burns. Effective management requires a comprehensive approach including appropriate medical and surgical intervention along with nutritional support to optimize healing and recovery.

**Clinical presentation:** A 51-year-old healthy male sustained poly-trauma from a road traffic accident. He had an open fracture of the right femur, ipsilateral extra-capsular neck of femur fracture, patella fracture and a mandible fracture. He developed necrotizing fasciitis of the right lower limb complicated with respiratory distress and septic shock (CRP 315mg/dl and WBC 23.82) on D9 of illness requiring intensive care. On D10 haemorrhagic fracture blisters emerged on his right thigh.

**Management:** During his ICU stay he received resuscitation and ventilator support, blister de-roofing along with IV antibiotics. Due to reduced appetite and feeding difficulties from the mandible fracture, his food intake was less than 50% of usual. Initial Nutrition care provided 30 kcal/kg/day of energy and 1.5g/kg/day of protein, which was later increased to 35kcal/day and 2g/kg/day of protein. A texture modified diet was used to accommodate the mandibular fracture. Micronutrients, including Vitamin C, Vitamin A, Vitamin D, Zinc sulphate, Iron, a multi-vitamin providing essential trace elements, and folic acid daily were administered to meet the increased requirements to support wound healing. Open fracture of femur with necrotising fasciitis of lower limb was managed with an external fixator. He was transferred to ward on D17. Mandibular fixation occurred 1 month after.

**Conclusions:** Timely identification and management of necrotising fasciitis, fracture blisters are crucial. Tailored medical and nutritional interventions are essential to optimize recovery and minimize complications.

07

#### Delayed splenic rupture following blunt abdominal trauma.

Sellathampi-Pusparasa<sup>1</sup>, K.M.M.Kulasekara<sup>1</sup>

<sup>1</sup>Teaching Hospital Ratnapura

**Correspondence:** [kmkulasekara@gmail.com](mailto:kmkulasekara@gmail.com)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P7

**Introduction:** Delayed splenic rupture, though rare, is a significant clinical concern. This condition, first reported in 1907, involves a latent period between injury and symptoms, ranging from 48 hours to several days. Mortality rates for delayed splenic rupture are higher (5-15%) compared to acute splenic injury (1%). Our patient presented five days post-injury and was successfully treated with splenectomy

**Case Presentation:** A 39-year-old male presented with left-sided chest and abdominal pain. On examination: GCS 15/15, BP 80/50 mmHg, PR 120 bpm, and left hypochondriac tenderness. Initial treatment focused on myocardial

infarction; ECG and Troponin I were negative. Laboratory results showed WBC 16, Hb 6.6 g/dL, and serum amylase 27.9. Despite initially denying abdominal trauma, however it was later disclosed that the patient had experienced blunt abdominal trauma prior to admission. FAST revealed moderate free fluid but no organ injury. After resuscitation with saline and blood, the patient was transferred with Noradrenaline infusion. On admission FAST at our hospital showed moderate free fluid and grade IV splenic laceration. Emergency laparotomy and splenectomy were performed after blood transfusions. Postoperatively, Hb was 10 g/dL recovery was uneventful, and the patient was discharged on postoperative day 5 with scheduled post splenectomy vaccinations.

**Discussion:** Blunt abdominal trauma often causes splenic injury, with delayed rupture being less common. Hemodynamically stable patients should undergo abdominal CECT for detailed evaluation while those unstable should receive FAST for rapid assessment. Immediate laparotomy and splenectomy are crucial for managing life-threatening complications.

08

### Complex Management of a Penetrating Chest and Abdominal Injury with Diaphragmatic and Hepatic Involvement

Sanjit Prasad<sup>1</sup>

1 All India Institute of Medical Sciences (AIIMS), Patna

**Correspondence:** [dr.sanjit11648@aiimspatna.org](mailto:dr.sanjit11648@aiimspatna.org)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P8

**Introduction:** Penetrating trauma to the chest and abdomen presents a significant challenge, particularly when involving multiple organ systems. This case report describes the surgical management of a patient with a stab wound to the right chest wall, extending through the diaphragm into the liver.

**Case Description:** A 28-year-old male was referred from a primary health center 24 hours after sustaining a stab wound to the right anterior chest wall. On initial assessment, the patient was tachypneic with a respiratory rate of 28/min, SpO<sub>2</sub> of 70% on room air, and improved to 96% on supplemental oxygen. An intercostal drain was placed, draining 550 ml of blood. The patient's heart rate was 140/min with blood pressure of 90/60 mmHg. A sutured laceration was noted over the right anterior chest wall at the 2nd intercostal space anterior to the anterior axillary line.

**Investigations and Management:** A CT scan of the chest and abdomen revealed a diaphragmatic injury, liver laceration, and a knife lodged in segment 8 of the liver, with a gross hemoperitoneum. The patient was taken to the operating room for an exploratory laparotomy. A midline laparotomy with Kocher's maneuver was performed, followed by the Catell-Braasch maneuver. No injury to the inferior vena cava (IVC) was observed, and IVC control was achieved. The liver was mobilized, and both the proximal and distal ends of the knife were identified—with the proximal end in segment 8 and the distal end near segment 1. The knife was removed after performing the Pringle maneuver and clamping the IVC. Hemo-stasis was achieved using Abgel and omental plugging.

**Outcome:** Postoperatively, management was eventless and discharged on POD 15. He is on regular follow up.

**Conclusion:** This case highlights the complexity of managing penetrating injuries involving multiple organ systems. A multidisciplinary approach, along with prompt surgical intervention and vigilant postoperative care, is crucial for a successful outcome in such high risk cases.

09

### Management of a Polytrauma Patient with Life-Threatening Injuries Following a Road Traffic Accident:

T.G.K.Weranja<sup>1</sup>, D. Ariyaratne<sup>1</sup>, J. Vishnukanthan<sup>1</sup>

1. Colombo South Teaching Hospital

**Correspondence:** [gamagekanil@gmail.com](mailto:gamagekanil@gmail.com)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P9

**Background:** Polytrauma refers to the condition of a patient who has sustained multiple traumatic injuries, often resulting in life-threatening situations that require immediate and coordinated medical intervention. Road traffic accidents are a prevalent cause of Polytrauma, particularly among

individuals under the influence of alcohol, which can impair judgment and increase the risk of severe injuries. This case illustrates the complexities involved in managing such patients, highlighting the importance of timely diagnosis and intervention.

**Case Report:** A 36-year-old male three-wheeler driver presented to Colombo South Teaching Hospital following a road traffic accident. The patient was found to be under the influence of alcohol at the time of the incident. Upon admission, he was alert with a GCS of 15/15, but his clinical status warranted immediate evaluation due to the mechanism of injury.

#### Injuries Identified:

- Head, Neck and Spine: Non-contrast CT (NCCT) of the brain and cervical spine showed no intracranial hemorrhage (ICH) but revealed a non-displaced linear fracture of the C1-C2 vertebrae. There was no subluxation or dislocation of the vertebral bodies, and the patient was managed with a Philadelphia collar.

- Abdomen: Contrast-enhanced CT (CECT) of the abdomen revealed a grade 4 liver laceration with moderate hemoperitoneum. An emergency laparotomy was performed, during which massive bleeding from segments 7 and 8 of the liver was identified. The liver was packed with Gelfoam, and a massive transfusion protocol was activated to manage significant blood loss.

- Upper Extremities: The patient sustained a right radial shaft fracture and a left distal radial fracture, which were managed with manipulation under anesthesia (MUA) and a plaster of Paris (POP) back slab.

- Chest: A right hemothorax was noted, necessitating the insertion of an intercostal (IC) tube for drainage.

On postoperative day 9, the patient exhibited a drop in hemoglobin levels, prompting a repeat CECT abdomen. This imaging revealed persistent grade 4 liver laceration with an active contrast blush, indicating acute bleeding. A CT angiogram was performed, confirming three points of active contrast blush associated with the liver injury.

The patient was subsequently transferred to the National Hospital of Sri Lanka (NHSL) for advanced management. A hepatic angiogram was conducted, which identified three small pseudo aneurysms. Successful embolization of these pseudo aneurysms was performed, stabilizing the patient's condition.

**Conclusion:** This case highlights the critical nature of managing Polytrauma patients with life-threatening injuries, particularly those involving significant abdominal trauma. The timely recognition and intervention for liver lacerations, along with the use of advanced imaging techniques, were essential in the management of this patient. The case underscores the importance of a multidisciplinary approach in treating Polytrauma, especially in patients with complex injuries resulting from road traffic accidents. Further research is needed to optimize management protocols for similar cases in the future, emphasizing the need for rapid response and coordinated care in Polytrauma scenarios.

10

### Survival Following Life-Threatening Stab Injury in a 48-Year-Old Female with Complicated Family Issues

T.G.K.Weranja<sup>1</sup>, D. Ariyaratne<sup>1</sup>, J. Vishnukanthan<sup>1</sup>

1 Colombo South Teaching Hospital

**Correspondence:** [gamagekanil@gmail.com](mailto:gamagekanil@gmail.com)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P10

**Background:** Stab injuries are a significant cause of trauma, often associated with domestic violence. The survival of patients with life-threatening stab wounds can depend on various factors, including the location and severity of the injury, the timeliness of medical intervention, and the overall health of the individual. This case highlights the complexities surrounding a 48-year-old female who presented with life-threatening injuries inflicted by her husband. The patient's socioeconomic background and family dynamics contributed to the circumstances of the incident, emphasizing the need for comprehensive care that addresses both physical and psychological aspects of trauma.

**Case Report:** 48 years old female with multiple socioeconomic issues was admitted following a stab wound inflicted by her husband, with a significant impact on the epigastric region of the abdomen. Upon admission, she exhib-

ited signs of evisceration of the stomach and transverse colon. Initial resuscitation and Emergency laparotomy was performed to address the injuries.

**Findings:**

- Liver laceration involving the left lobe of the liver; a non-anatomical resection of the lacerated free segment was conducted.
- A small retroperitoneal non-expanding hematoma behind the liver was identified and managed conservatively.
- No other hollow or solid organ injuries were noted.
- Other Injuries:
  - A deep nasal cut was repaired by the ENT team.
  - A cut injury to the right hand's adductor pollicis was repaired.
  - A superficial laceration on the right breast was sutured.

The patient received intensive care for 2 days in the ICU, followed by an additional week of inpatient care.

Despite the life-threatening nature of her injuries, the patient demonstrated resilience and a positive response to medical intervention. The timely surgical intervention and comprehensive postoperative care were crucial in her survival. The management of her injuries, including the liver laceration and evisceration, was successful, allowing for stabilization and recovery. The psychological support provided during her hospital stay was also essential in addressing the emotional trauma associated with the incident.

**Conclusion:** This case underscores the severe consequences of domestic violence, not only in terms of physical injuries but also the psychological impact on victims. The patient's complex family issues and socioeconomic challenges highlight the need for a multidisciplinary approach to care, integrating medical treatment with psychological support. Unfortunately, the incident also resulted in the tragic death of her son, further complicating her recovery process. Future interventions should focus on addressing the root causes of domestic violence and providing comprehensive support systems for affected individuals.

Healthcare providers must be vigilant in recognizing signs of domestic violence and ensure that victims receive appropriate care and support. This case illustrates the importance of a holistic approach to treatment, considering both physical and mental health needs, especially in cases involving complex family dynamics. The survival of this patient following a life-threatening stab injury emphasizes the critical role of timely medical intervention and the need for ongoing support for trauma survivors

11

**A Rare Case Report of Sustained Life in a Polytrauma Patient Following Collision with a Train**

T.G.K.Weranja<sup>1</sup>, D. Ariyaratne<sup>1</sup>, J. Vishnukanthan<sup>1</sup>

<sup>1</sup>Colombo South Teaching Hospital

**Correspondence:** [gamagekanil@gmail.com](mailto:gamagekanil@gmail.com)  
Sri Lanka Journal of Trauma 2024,1(Suppl1):P11

**Background:** Train accidents are often associated with severe injuries due to the high impact and speed involved. Polytrauma, defined as multiple traumatic injuries affecting different body regions, poses significant challenges in management and can lead to high mortality rates. This case report discusses a rare instance of survival in an 85-year-old male patient who sustained extensive injuries following a collision with a train. The case highlights the importance of timely medical intervention and the need for policies aimed at preventing such accidents.

**Case Report:** An 85-year-old male patient, who had defaulted on treatment for depression, was involved in a collision with a train. Upon arrival at the emergency department, the patient presented with multiple injuries affecting the head, face, chest, and limbs.

**Injuries sustained included:**

- Frontal bone fracture
- Left zygomatic-maxillary complex fracture
- Left body of mandible fracture
- Deep facial laceration involving the tongue
- Multiple limb and chest lacerations
- Left lung contusion with associated rib fractures

A non-contrast computed tomography (NCCT) scan of the brain was performed, which showed normal findings, indicating no intracranial hemorrhage or other abnormalities. Due to significant bleeding from the deep

tongue laceration, elective intubation was performed to secure the airway.

The patient required four days of intensive care unit (ICU) management followed by one week of inpatient treatment. A multidisciplinary approach was taken, involving the ENT (Ear, Nose, and Throat), OMF (Oral and Maxillofacial), and surgical teams to address the various injuries effectively.

A combined surgical procedure was performed by the OMF and ENT teams to repair the facial fractures and manage the deep laceration of the tongue. This collaborative effort ensured comprehensive care, addressing both the structural and functional aspects of the injuries sustained.

**Conclusion:** This case illustrates the remarkable survival of an elderly patient with severe poly trauma following a train collision. The successful management of such complex injuries underscores the importance of prompt medical intervention and the collaborative efforts of various specialties. Furthermore, this case highlights the urgent need for policies aimed at preventing train accidents to protect vulnerable populations, particularly the elderly. Future research should focus on improving safety measures and enhancing trauma care protocols to reduce the incidence and severity of injuries resulting from such accidents.

12

**Integrating clinical forensic medicine into trauma care: A paradigm shift in India's approach to injury management.**

Ankit Kumar<sup>1</sup>, Ashish Kumar Singh<sup>1</sup>, Amit Kumar Singh<sup>3</sup>, Arun Kumar Srivastava<sup>3</sup>

<sup>1</sup> Department of Forensic Medicine & Toxicology, SGPGIMS, Lucknow, India,  
<sup>2</sup> Associate Professor, Department of Trauma Surgery, SGPGIMS, Lucknow, India,  
<sup>3</sup> Department of Neurosurgery, SGPGIMS, Lucknow, India

**Correspondence:** [ankit.spggi23@gmail.com](mailto:ankit.spggi23@gmail.com)  
Sri Lanka Journal of Trauma 2024,1(Suppl1):P12

**Background:** Trauma care in India faces numerous challenges including inadequate documentation, lack of standardization and limited forensic expertise. Clinical forensic medicine (CFM) can play a critical role in addressing these gaps.

**Objective:** To explore the integration of CFM in the Indian trauma care system, highlighting its importance, challenges and future directions.

**Methods:** Comprehensive review of existing literature, research papers and current practices used in trauma centres across India.

**Results:** CFM can improve trauma care by:

- Improving documentation and communication among health care providers, investigators, and legal authorities
  - Standardizing the assessment and classification of injuries
  - Providing expert opinion in medico-legal cases
  - Providing information on injury prevention and control strategies
- Challenges include:
- Limited awareness and training of healthcare professionals in CFM
  - Inadequate infrastructure and resources
  - Interdisciplinary collaboration and coordination

**Conclusion:** Integrating CFM into the Indian trauma care system can revolutionize injury care and ensure comprehensive care, equity and accountability. Efforts should focus on education training and infrastructure development to bridge the gap between clinical practice and forensic science

13

**Cricket ball related small bowel injury in a hernia**

L B Samarakoon<sup>1</sup>, Sanjaya Senevirathne<sup>1</sup>

<sup>1</sup>National Hospital of Sri Lanka

**Correspondence:** [Sanjayasenevirathne123@gmail.com](mailto:Sanjayasenevirathne123@gmail.com)  
Sri Lanka Journal of Trauma 2024,1(Suppl1):P13

**Abstract:** Small bowel injury secondary to cricket ball impact associated with a preexisting inguinal hernia has not been previously reported in the literature before. We report a case of a middle-aged male with past medical history of a left sided direct inguinal hernia, who presented 2 days after impact on the left groin with a cricket ball made of leather. He had worsening pain and progressively worsening abdominal distension. Initial imaging showed pneumo-



peritoneum hence he underwent exploratory laparotomy. Intraoperative finding showed a contused and perforated small intestine, which was resected and primarily anastomosed. Left direct hernia was repaired primarily with non-absorbable sutures. Patient made an uneventful recovery.

14

#### “Management of Complete Cricotracheal Separation: A Case Report of Level 1 Trauma centre With Unusual Presentation and Intraoperative Findings”

Santhosh Balachandra<sup>1</sup>

1 All India Institute of Medical Sciences, Rishikesh, Uttarakhand, INDIA

**Correspondence:** [santhoshganguly@gmail.com](mailto:santhoshganguly@gmail.com)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P14

**Background:** Complete cricotracheal separation is the most severe form of laryngeal trauma and is rarely encountered in clinical practice that clinicians have limited experience in managing it. This case report discusses the management of a patient with complete cricotracheal separation following a traumatic incident.

**Case report:** The patient presented with secured airway via an endotracheal tube inserted from the referring hospital with a history of respiratory distress during an extubation attempt. Because of the good respiratory condition of the patient upon admission, no obvious signs of laryngeal injury were noticed except for subcutaneous emphysema around the neck. A computed tomographic scan revealed distortion of the cricotracheal framework. Upon exploration of the neck, cricotracheal transection with wide separation of the ends and an inflated endotracheal tube cuff was noted with no air leak. A tracheostomy was performed distal to the injury, followed by primary end to end anastomosis of the cricotracheal injury.

**Conclusion:** This report highlights the critical importance of prompt airway management and the challenges faced due to the rarity of this condition. The unusual presentation of the patient with no obvious signs of laryngeal injury and the surprising intraoperative finding of an inflated endotracheal tube cuff preventing air leak are emphasized.

15

#### THE VAPE GRENADE: A CASE OF MAXILLOFACIAL INJURIES WITH C1-C2 FRACTURE SECONDARY TO ELECTRONIC CIGARETTE BLAST INJURY

Asuncion<sup>1</sup>, Arden Aron L<sup>1</sup>, Aireen Patricia M<sup>1</sup>, Joseph T<sup>1</sup>, Ivan Burke M<sup>1</sup>.

1 Jose R. Reyes Memorial Medical Center, Department of Surgery, Philippines

**Correspondence:** [ardenlabroasuncion@gmail.com](mailto:ardenlabroasuncion@gmail.com)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P15

**BACKGROUND:** In recent years, electronic cigarettes have gained popularity as an alternative to conventional nicotine products. However, this rise in usage has been accompanied by an increase in reported injuries associated with these devices, in addition to the various health risks they pose. In this report, we present the case of a 24-year-old male who sustained a C1 and C2 vertebral fracture, multiple dental injuries, and multiple avulsions of the oropharynx due to an e-cigarette explosion while in use.

Although electronic cigarette-related injuries can include thermal burns, blast injuries, and chemical pneumonitis, the mechanism of injury in this case involved a portion of the device acting as a projectile, penetrating through the patient's oral cavity and posterior oropharyngeal wall. This resulted in multiple dental fractures, oropharyngeal lacerations, and comminuted fractures of the anterior arch of the C1 and odontoid process of the C2 vertebra. Injuries from electronic cigarette explosions are an increasing public health concern and can have serious, long-term, and even fatal consequences. It is crucial for healthcare providers, policymakers, and the public to be aware of these risks and take steps to mitigate them. This case highlights the need for injury prevention measures, such as stricter product safety standards and public education campaigns, to reduce the risks associated with electronic cigarette use.

**Case Report:** A 24-year-old male was admitted to the emergency room with oropharyngeal injuries two hours after an electronic cigarette exploded during use. The explosion caused him to fall and lose consciousness. Upon regaining consciousness, he experienced pain in the oropharyngeal area and the neck. On examination, there are lacerations on the

lips, tongue, and uvula. There were multiple dental fractures as well. He presented with transient bilateral upper extremity weakness.

Chest, pelvic radiographs were requested and were unremarkable. A CT scan of the neck revealed a comminuted fracture of the anterior arch of the C1 vertebra and a complete, non-displaced fracture of the odontoid process of the C2 vertebra. Contrast study of the neck showed no vascular injuries. Additionally, a piece of shrapnel from the device was located anterior to the vertebral fractures, with its trajectory visible on the scan. Cranial and chest CT scans, as well as otoscopy, were unremarkable. Nasopharyngolaryngoscopy revealed an avulsion of the right side of the tongue and uvula, along with significant swelling in the posterior oropharyngeal area, which nearly obstructs the passage to the hypopharynx. The hypopharyngeal area, including the arytenoids, showed no signs of inflammation, and the vocal cords were fully mobile on both sides.

He was admitted to the surgical ICU for observation. Neurosurgery recommended fixation and stabilization, but due to the lack of titanium screws, they decided to keep the cervical collar on for 12 weeks with limited movement. Plastic surgery repaired the lip avulsion and chose conservative management for the tongue laceration since the wound edges were closely aligned without needing primary repair.

The patient had a stable clinical course in the surgical ICU, regained his upper extremity strength, and was able to feed per ore. He was transferred to the regular ward and discharged with instructions to continue wearing the cervical collar.

The physicians maintained close communication with the patient after discharge. At the two-month follow-up, the patient reported no complaints. At 3 months follow-up, he was fully mobile and functional. A repeat CT scan showed a stable vertebral fracture, so the collar was removed. He was able to go back to work without difficulties.

**Conclusion:** This case highlights the potential risks associated with ENDS use and the importance of injury prevention measures. Electronic cigarette-related injuries can result in severe consequences, including permanent disability or death. The public health implications of these injuries warrant attention, and healthcare providers, policymakers, and the general public should be aware of the potential risks associated with its use. There are very few studies in the Philippines concerning injuries from electronic cigarette explosion. Future research should focus on larger sample sizes and explore the factors contributing to electronic cigarette-related injuries. Data from these studies can be used as justification for stricter implementation in the regulation of manufacturing and selling. More comprehensive quality control not only on the consumable nicotine alternatives but also the heating devices is severely needed.

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#### Agricultural Farm-Related Head Injuries in Rural India: A Comprehensive Case Series

Majid Anwer<sup>1</sup>

1 All India Institute of Medical Sciences (AIIMS), New Delhi.

**Correspondence:** [majidanwer1987@gmail.com](mailto:majidanwer1987@gmail.com)

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**Abstract:** This paper presents a case series on diverse agricultural farm-related head injuries encountered in rural India. The study highlights unique challenges and interventions, showcasing four distinct cases involving winnowing fan blades, bull's horns, agricultural boring machines, and tractor farm ploughers. Surgical interventions, outcomes, and implications for rural healthcare are discussed.

**Introduction:** Agricultural activities contribute significantly to India's economy but pose inherent risks, including head injuries. This paper aims to shed light on the complexities of managing such injuries in a rural context.

**Methods:** Cases were collected from the trauma surgery department at AIIMS Patna. Inclusion criteria focused on head injuries related to agricultural machinery. Data included patient demographics, injury details, Glasgow Coma Scale (GCS) scores, surgical interventions, and outcomes.

**Results:**

1. Winnowing Fan Blade Head Injury:

- GCS E2V2M5 on admission, treated with surgical debridement.
- Discharged after 30 days with improved GCS (E4V5M6).

2. Head Injury by Farming Bull's Horn:
  - GCS E3V4M5 on admission, treated with enucleation and duraplasty.
  - Discharged on post-op day 15 with improved GCS E4V5M6
3. Agricultural Boring Machine Injury:
  - GCS E3V3M5 on admission, treated with debridement and duraplasty.
  - Discharged on post-op day 20 with improved GCS E4V5M6
4. Head Injury by Tractor Farm Plougher:
  - GCS E1V7M5 on admission, treated with debridement and duraplasty.
  - Discharged on post-op day 20 with GCS E4V5M6

**Discussion:** There are unique challenges of agricultural-related head injuries, emphasizing the need for prompt surgical intervention, diverse surgical techniques, and multidisciplinary care. Improvement in rural healthcare infrastructure and preventive strategies.

**Conclusion:** This case series underscores the critical importance of tailored approaches in managing agricultural farm-related head injuries. By understanding the nuances of these cases, healthcare providers can optimize interventions and improve outcomes in rural settings

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### "Resuscitative Thoracotomy after Thoracic Gunshot wound- A Case report"

R Kugapiragash<sup>1</sup>, R M A S N Ranathunga<sup>1</sup>

<sup>1</sup>Accident and Trauma Department, National hospital of Sri Lanka, Colombo.

**Correspondence:** [rkugapiragash@gmail.com](mailto:rkugapiragash@gmail.com)  
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**Abstract:** Thoracic gunshot injuries present with variable manifestations, and treatment plans differ accordingly. The mortality rate following a cardiac gunshot injury is approximately 80%. Clamshell thoracotomy for thoracic injuries is an uncommon procedure performed in emergency settings. Survival rates following emergency thoracotomy are notably low: 9%-12% for penetrating trauma and 1%-2% for blunt trauma. This case report details the experience of a 31-year-old male who presented with hemorrhagic shock and respiratory compromise following a gunshot wound to the back of the chest. Despite initial resuscitation efforts, including rapid sequence intubation, bilateral chest tube insertion, and activation of a massive blood transfusion protocol, the patient developed cardiopulmonary arrest. An AMPLE history could not be obtained. A resuscitative clamshell thoracotomy was performed in the "R Room" with minimal resources. Intraoperative findings included a defect greater than 1 cm in the ascending aorta and a rupture of the left ventricle. Two-handed open cardiac massage was performed, a Foley catheter was used to occlude the larger cardiac defect, and manual compression was applied to the ascending aorta to achieve hemostasis. Despite these maneuvers and 25 minutes of resuscitation, including intravenous adrenaline and intravenous noradrenaline infusion, the patient succumbed to massive bleeding. This case underscores the challenges and limited efficacy of resuscitative measures in severe thoracic trauma with significant cardiovascular involvement

**INTRODUCTION:** For those who survive, outcomes can be favorable. Up to 86% of survivors maintain intact neurological function, and 75% are able to return to their normal activities. Penetrating thoracic injuries pose significant challenges for thoracic teams. The presentation and management of these injuries can vary widely from case to case. It is crucial to evaluate the risk of injury to the heart, major blood vessels, and lungs through rapid clinical examination and basic monitoring. Surgical intervention should be considered as early as possible. Clamshell thoracotomy is a life-saving procedure of last resort for patients with severe thoracic trauma. The primary goal of this intervention is to gain access to the heart or major thoracic vessels to control bleeding and manage tamponade. Despite its critical role, clamshell thoracotomy has a relatively low survival rate of approximately 7.4%. Survival rates vary significantly depending on the mechanism of injury; patients with blunt trauma generally experience worse outcomes compared to those with penetrating injuries

**CASE REPORT:** A 31-year-old male was brought to our Accident and Trauma Unit in a peri-arrest state, exhibiting clinical signs of hemorrhagic shock following a thoracic gunshot injury. On admission, the patient was unresponsive with a blood pressure of 60/40 mmHg, a feeble carotid pulse at a rate of 126 beats per minute, cold peripheries, and unrecordable oxygen saturation on room air. The AMPLE (Allergies, Medications, Past Med-

ical History, Last Meal, Events Leading Up to the Incident) history was not available. The patient's condition deteriorated continuously upon admission. Initial resuscitation and primary surgery were performed following a Circulation, Airway, Breathing (CAB) approach due to the high-energy penetrating trauma to the chest.

**Circulation:** The patient presented with hemorrhagic shock, marked by hypotension and tachycardia. The massive blood transfusion protocol was activated, and two units of uncross-matched whole blood were administered immediately following fluid bolus. An intravenous noradrenaline infusion was initiated. Examination revealed a gunshot entry wound at the back of the chest, in the left para-vertebral area, with no active bleeding detected. An exit wound could not be identified. Airway and Breathing: Rapid sequence intubation was performed to secure the airway due to the patient's altered mental status and respiratory compromise. Bilateral lung auscultation revealed diminished breath sounds, suggestive of a large hemothorax. Immediate insertion of bilateral intercostal tubes resulted in the evacuation of more than 1 liter of blood from the left chest tube and less than 500 ml from the right chest tube. Despite these resuscitation efforts, the patient developed cardiac arrest. Cardiopulmonary resuscitation (CPR) was administered for 10 minutes, including two cycles of intravenous adrenaline. Clinical improvement was not achieved, leading to the decision to perform a resuscitative thoracotomy in the resuscitation room. A clamshell thoracotomy incision was made for adequate exposure, with manual rib retraction performed due to the absence of self-retaining rib spreaders. A midline sternotomy was carried out using heavy scissors. Surgical findings included over 2 liters of hemothorax with uncontrollable active bleeding. The bullet had penetrated the ascending aorta, creating a defect larger than 1 cm and causing rupture of the left ventricle. Manual compression of the ascending aorta was performed, and a Foley catheter was used to occlude the larger defect. Cardiac massage was administered using a two-hand technique. Despite these maneuvers, bleeding control was not achieved. The patient died despite 25 minutes of resuscitation efforts and surgical intervention.

**DISCUSSION:** Bullet injuries are unfortunately not uncommon worldwide. Injuries to the heart or major blood vessels from gunshot wounds are often fatal. Cardiac gunshot injuries are particularly lethal due to massive hemorrhage or cardiac tamponade. The nature and extent of the injury depend on various factors, including the properties of the projectile, the site of injury, the speed of the projectile, the presence of pericardial tamponade, injury to associated structures, and the patient's condition upon admission. Unlike stab wounds, gunshot wounds can cause more extensive blood loss due to the jagged tearing of the myocardium. If a penetrating injury involves the heart, the chances of survival are less than 1%. Resuscitative thoracotomy (RT) is an emergency procedure performed on patients in a peri-arrest state or those who are in established cardiac arrest, typically following trauma. Described in 1874 as a resuscitation maneuver for open-heart massage in cases of cardiopulmonary arrest, RT is best conducted by experienced surgeons in an operating theater. Guidelines on RT indicate that the Eastern Association for the Surgery of Trauma (EAST) strongly recommends RT for patients with penetrating thoracic trauma who are pulseless but still exhibit other signs of life. The clamshell incision is preferred due to its rapid and straightforward execution, providing excellent access to the heart and mediastinum. Survival rates following RT for gunshot wounds are generally higher compared to those for knife wounds. In the present case, a 30-minute delay in admission from the time of the incident, combined with a peri-arrest state, severe hemorrhagic shock, and respiratory compromise due to bilateral hemothorax, contributed to a poor outcome. Despite efforts to achieve hemostasis, the penetrating bullet injury, which involved a rupture of the left ventricle and a significant defect in the ascending aorta, ultimately led to the patient's death. Limitations during the "R Room" thoracotomy included challenges related to maintaining a sterile environment, the availability of experienced surgeons and well-trained staff, the lack of appropriate instruments, and the need for instantaneous decision-making. Future improvements could include enhanced training at an institutional level and better preparation and practice to address these challenges

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### Medical nutrition therapy of a patient with a major burn

Rathnayake R.M.A.P<sup>1</sup>, Kurukulaarachchi S<sup>1</sup>

1 National hospital of Sri Lanka, Colombo.

**Correspondence:** [amapubu@gmail.com](mailto:amapubu@gmail.com)

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**Background:** Nutritional support is uniquely important in major burns due to hypermetabolism, higher demands for wound healing, organ dysfunction and susceptibility to infection. Individualized, tailor-made medical nutrition therapy is a part of multi-disciplinary management of major burns.

**Case report:** Sixty one-year-old gentleman was admitted with a self-inflicted petrol burn for intensive care. It was a deep burn involving face, neck and chest with total burn surface area of 40%.

Fluid resuscitation was initiated according to the modified Parkland formula. Pain management and antibiotic prophylaxis were started. He was electively intubated due to impending airway obstruction and mechanically ventilated. Burn wound scrub was done. Inhaled soot were removed by bronchoscopy and broncho-alveolar lavage.

He was an obese person who was at risk of malnutrition with possible micronutrient deficiencies due to the acute insult.

Nasogastric (NG) tube feeding was initiated on the first day of admission. Daily energy requirement was calculated with Toronto equation. Protein provision was started with 1.5g/kg/day with a final target of 2g/kg/day. Continuous NG feeding was provided to improve gastric tolerance using a standard polymeric formula and a whey protein supplement. Feeding rate was gradually increased according to the level of tolerance. Additional enteral Glutamine 10g/day was added to the feeding regimen. Micronutrients were supplemented including zinc, copper, selenium, vitamin D, vitamin A, vitamin C, folic acid and other B complex vitamins. The patient was closely monitored for fluid and electrolyte imbalances and for liver and renal functions.

**Conclusion:** Major Burns necessitate prompt medical nutrition therapy in order to meet high metabolic demands and to facilitate wound healing. However, meeting the high nutritional requirements is challenging due to severe and prolonged catabolism and hemodynamic instability.

**Key words:** major burn, medical nutrition therapy

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### Can Enhanced Recovery After Surgery (ERAS) Guidelines, Enhance the Recovery After Trauma Laparotomy (ERAT-L) – A Narrative Review of Current Evidence

Gayanga Kottegoda<sup>1</sup>, Dilini Kannangara<sup>2</sup>

1 National Hospital, Colombo, Sri Lanka

2 Colombo South Teaching Hospital

**Correspondence:** [gayangamail@gmail.com](mailto:gayangamail@gmail.com)

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**Objective:** To describe and discuss the current evidence on ERAS protocols in managing trauma laparotomy (TL) patients.

**Background:** ERAS is an evidence-based set of standardised protocols described in elective colorectal surgeries to reduce surgical stress, improve surgical outcomes, reduce the length of hospital stay and minimise the cost of care. It is diversified into other branches of elective and emergency surgeries including upper gastrointestinal, pancreaticobiliary, genitourinary, vascular, spinal, orthopaedic, gynaecological and non-trauma emergency laparotomy patients. Few isolated studies have been conducted, comparing the clinical outcomes of TL patients undergoing ERAS vs stan-

dard of care in the last decade however, a consensus guideline is yet to be developed.

**Methods:** PubMed and Google Scholar-based searches were conducted on ERAS in TL patients in the last ten years. The search generated a total of 11 titles. This narrative review is based on two prospective randomised studies and two prospective pilot studies which met the inclusion criteria.

**Discussion:** Understanding that ERAS is a guide but not a rigid protocol is vital in applying ERAS to TL patients. The postoperative component of ERAS was followed in these studies, with an appreciable variation in the components adhered to in different studies. Early removal of catheters and nasogastric tubes, early mobilisation, early enteral feeding and use of opioid-sparing multi-modal analgesia were among the best-practised ERAS components in these studies(1–3). Morbidity and mortality were similar, but the length of hospital stay was considerably less in the ERAS group of TL patients.

**Conclusion:** Implementing the pre-operative and intra-operative components of ERAS is practically difficult in most TL patients due to the nature of the problem. Adhering to selective post-operative components of ERAS is safe in TL patients. There is a clear gap in the available literature on ERAS in TL patients and robust studies with better-quality evidence are important.

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### CUTTING EDGE: DIRECT PERITONEAL RESUSCITATION AS AN ADJUNCT TO DAMAGE CONTROL SURGERY - A NOVEL EXPERIENCE IN JOSE R. REYES MEMORIAL MEDICAL CENTER

Jenny Mae P<sup>1</sup>, Zerda-Tabobo<sup>1</sup>, Aileen Patricia M<sup>1</sup>, Joseph T<sup>1</sup>, Ernest Stephen F<sup>1</sup>.

1 Department of Surgery, Jose R. Reyes Memorial Medical Center

**Correspondence:** [jpenarubia.zerda@gmail.com](mailto:jpenarubia.zerda@gmail.com)

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**Background:** Trauma remains a significant global health burden. Severe injuries often lead to a cascade of physiological derangements like acidosis, hypothermia, coagulopathy and hypocalcemia collectively known as the "lethal diamond." Damage control surgery (DCS) is a well-established approach for managing these patients.

**Case report:** This case report describes a 26-year-old male who sustained blunt liver trauma with complete closed femoral fracture on the right and underwent DCS in conjunction with direct peritoneal resuscitation (DPR). Conclusion: The case highlights the potential benefits of DPR as an adjunct to DCS in improving outcomes and survival rates in severely injured patients. It demonstrates the advantages of DPR compared to conventional resuscitation alone, suggesting that the combined approach may enhance patient care.

**Keywords:** trauma, damage control surgery, direct peritoneal resuscitation, lethal diamond

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### A case report on penetrating cardiac injury secondary to stab wound

Angelica G. Macatangay<sup>1</sup>, Aireen Patricia M. Madrid<sup>1</sup>

<sup>1</sup>Department of Surgery, Batangas Medical Center, Philippines

**Correspondence:** [anjmacatangay@gmail.com](mailto:anjmacatangay@gmail.com)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P21

**Background:** Penetrating cardiac injury (PCI) represents only 0.1% of all trauma admissions. However, despite its rarity, it is associated with a high mortality rate. This case report highlights the impact of prompt surgical intervention that led to patient's remarkable recovery from a near-death experience after sustaining a single stab wound on his anterior chest.

**Case report:** This is a case of a 32-year-old male who arrived in the emergency room unresponsive with no blood pressure or heart rate following a single stab wound to the anterior chest, midsternal area. Cardiopulmonary resuscitation was performed, and the patient regained consciousness but remained hypotensive suggestive of cardiac tamponade. Simultaneous resuscitation with blood products was initiated, and the patient underwent emergency left anterolateral thoracotomy. A Grade IV cardiac injury, consisting of a 3 cm stab wound to the right atrium, was discovered. Balloon occlusion on the stab site was done as temporizing measure to control the bleeding, however, the patient had intraoperative cardiac arrest. Open cardiac massage was immediately performed. When pulseless ventricular tachycardia appeared on cardiac monitor, defibrillation via internal paddles at 10 joules was done resulting to sinus tachycardia. Cardiorrhaphy was performed with pledgeted sutures with horizontal mattress technique. The patient had another cardiac arrest requiring a 10-minute resuscitation, open cardiac massage and further defibrillation, successfully restoring sinus tachycardia. No concomitant injury was found. A left thoracostomy tube was placed and the thoracotomy incision was closed. The patient received multiple units of blood products, doses of amiodarone, calcium carbonate and magnesium sulfate intraoperatively, weaned off of pressor support, extubated three days later, and discharged eight days post-incident.

**Conclusion:** This report emphasizes the critical factors required for successfully managing patients with penetrating cardiac injuries, including rapid diagnosis, timely surgical intervention, capable surgical and resuscitative team, and necessary equipment.

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### Case Report: Occupational Injury Resulting in Spinal Trauma

T.G.K.Weranja<sup>1</sup>, D. Ariyaratne<sup>1</sup>, J. Vishnukanthan<sup>1</sup>

<sup>1</sup>Colombo South Teaching Hospital

**Correspondence:** [gamagekanil@gmail.com](mailto:gamagekanil@gmail.com)

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**Background:** Occupational injuries, particularly in construction and maintenance work, can lead to significant morbidity and long-term disability. Falls from heights are a common cause of severe injuries, including spinal trauma. This case report discusses a 27-year-old male painter who sustained multiple injuries after falling from a height of 20 feet while working.

#### Case Report:

A 27-year-old male painter was admitted to the emergency department following a fall from a height of 20 feet while working on a scaffold. The impact primarily affected his back, head, and forearms. Upon admission, the patient was alert and oriented, with a Glasgow Coma Scale (GCS) score of 15/15. His vital signs were stable, but he exhibited severe tenderness in the lumbar spine region and left wrist.

Initial imaging included a non-contrast computed tomography (NCCT) scan of the brain, which returned normal results. A focused assessment with sonography for trauma (FAST) was performed and was negative for intra-abdominal injuries. Chest and pelvic x-rays were normal. However, the NCCT of the spine revealed an unstable wedge fracture at the L1 vertebra level and upper limb x-rays showed left distal radial fracture and an ulnar styloid fracture.

For the spinal injuries, bilateral (T12 - L2) pedicle screw fixation was performed to stabilize the vertebral column. The upper extremity fractures

were managed with manipulation under anesthesia (MUA) and a plaster of Paris (POP) cast was applied.

Postoperatively, the patient underwent a comprehensive rehabilitation program that included physiotherapy and supportive care. He showed significant improvement in mobility and pain management over the following weeks, demonstrating the effectiveness of a multidisciplinary approach to recovery

**Conclusion:** This case highlights the serious consequences of occupational injuries resulting from falls from heights. The patient presented with significant spinal trauma, which required surgical intervention, as well as upper extremity fractures that were treated conservatively. It is crucial to implement safety measures and precautions in occupational settings to prevent such injuries, including the use of proper scaffolding, safety harnesses, and training for workers on fall prevention strategies. Continuous education and adherence to safety protocols can significantly reduce the incidence of occupational injuries in the workplace.

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### Challenges in Managing Penetrating Neck Trauma: A Case Report of Esophageal Injury and Leak

Yogesh Srivastava<sup>1</sup>, Pranabh Kushwaha<sup>1</sup>, Amritanshu Saurabh<sup>1</sup>, Shirish Kumar<sup>1</sup>

<sup>1</sup>All India Institute of Medical Sciences, Raebareli

**Correspondence:** [yogeshsrivastava359@gmail.com](mailto:yogeshsrivastava359@gmail.com)

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**Introduction:** Penetrating neck trauma can present significant challenges due to the presence of vital structures within the neck, including the trachea, esophagus, and major blood vessels. Cervical esophageal injuries are particularly difficult to diagnose and require timely diagnosis and meticulous surgical repair to prevent further morbidity. This case report highlights the complexity of managing a penetrating cervical esophageal injury and a subsequent postoperative esophageal leak.

**Case Presentation:** A 26-year-old female presented 14 hours after sustaining a penetrating Zone 1 neck trauma in trauma emergency. On examination, there was a deep lacerated wound of 2 cm by 2 cm size located 3 cm above the suprasternal notch with thick, colourless, opalescent saliva like discharge. Outside MRI suggested an esophageal injury. After resuscitation, she was taken in emergency OT and neck exploration revealed two rents in the cervical esophagus at the level of the 3rd and 4th tracheal rings, without any tracheal or vascular injury. The rents were repaired in two layers using 3-0 PDS sutures after margins were freshened, supported by omohyoid muscle flap, and a romo-vac drain was placed. Despite initial recovery, the patient developed an esophageal leak on postoperative day 8, confirmed by CT esophagogram. Management involved removing the anterior skin sutures for drainage and continued wound lavage. By postoperative day 20, the wound had healed completely, and the patient showed no further complications.

**Conclusion:** This case demonstrates the challenges involved in managing cervical esophageal trauma and its postoperative complications. Early detection, prompt surgical repair, and diligent postoperative care are critical in ensuring favourable outcomes, particularly when faced with complications like esophageal leaks.

#### Key Words:

Penetrating neck trauma, cervical esophageal injury, esophageal leak, neck exploration, postoperative complications, trauma management.

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### A Case Report of a Patient with Bullet Migration

P H E Sanjeeva<sup>1</sup>

<sup>1</sup>Neuro Trauma Unit, National Hospital Colombo

**Correspondence:** [erandsanjeeva@gmail.com](mailto:erandsanjeeva@gmail.com)

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**BACKGROUND:** Bullet embolization following a penetrating gunshot wound is an infrequent occurrence. Patients may remain asymptomatic or develop life-threatening complications such as stroke, sepsis, and ischemia. Management options encompass conservative measures, surgical intervention, or endovascular retrieval.

**CASE REPORT:** A 13-year-old boy was admitted to a local hospital after sustaining an accidental gunshot wound to the right side of the chest. Upon admission, he exhibited a Glasgow Coma Scale (GCS) score of 15 and presented with weakness in the left side of his face, arm, and leg. Contrast-enhanced

computed tomography scan revealed evidence of the projectile embolizing into the right internal carotid artery. Furthermore, the patient was diagnosed with an acute cerebral infarction in the territory of the right middle cerebral artery.

Upon admission to NHSL, the patient encountered two episodes of generalized tonic-clonic seizures. Due to cerebral oedema neurosurgical team recommended a right-sided frontotemporal parietal decompressive craniectomy and subsequently referred to the interventional radiology team. Diagnostic cerebral angiography unveiled a foreign body in the right distal internal carotid artery (ICA), leading to complete occlusion of the distal ICA. Despite attempts to aspirate, the foreign body remained unretrievable.

Neurorehabilitation commenced within the intensive care unit. At the time of discharge, the child exhibited a GCS score of 15, with improved left upper and lower limb strength to grade 4.

**CONCLUSION:** Bullet embolization following a penetrating injury through the arterial or venous system is a rare consequence of firearm trauma. Our case underscores the imperative nature of collaboration between the Department of Neurosurgery and Radiology, as well as the utilization of multimodality imaging, encompassing radiographs and CT scans, to precisely ascertain the location of the embolized bullet. This information is pivotal in guiding subsequent treatment and potential retrieval.

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### Stress Induced Takotsubo Cardiomyopathy Following Blunt Trauma: A Diagnostic Challenge in a Young Female

Jayasooriya HK<sup>1</sup>, Abeyasinghe AHMGB<sup>2</sup>, Niligamuwa NGTD<sup>3</sup>, Pathirana NPNB<sup>1</sup>, Wi-jayasuriya WAKR<sup>1</sup>, Karunathilake ADS<sup>1</sup>

<sup>1</sup>Faculty of Medicine, Wayamba University of Sri Lanka

<sup>2</sup>Department of Surgery, Faculty of Medicine, Wayamba University of Sri Lanka

<sup>3</sup>Teaching Hospital – Kurunegala, Sri Lanka

**Correspondence:** [kalhara98@gmail.com](mailto:kalhara98@gmail.com)

Sri Lanka Journal of Trauma 2024,1(Suppl1):P25

**Introduction:** Takotsubo cardiomyopathy (TC), also known as stress-induced or “broken heart” syndrome, is a transient cardiac condition that mimics acute coronary syndrome (ACS) without significant coronary artery blockages. It is characterized by left ventricular apical ballooning and is commonly triggered by emotional stress, though physical trauma can also be a rare cause. While TC is typically seen in elderly females under emotional stress, trauma-induced cases are uncommon, especially in younger patients. The overlap of symptoms with ACS, such as chest pain and ECG changes, poses diagnostic challenges, especially in trauma patients. Early recognition is vital, as TC can lead to serious complications despite its often reversible nature.

**Case Report:** A 43-year-old previously healthy female presented to the emergency department after being assaulted, sustaining blunt injuries to her head, abdomen, and left elbow. Upon admission, her primary evaluation was unremarkable, with normal vital signs and imaging. However, on the first day of hospitalization, she developed sudden bradycardia (32 beats per minute) and hypotension (80/40 mmHg), unresponsive to fluid resuscitation and vasopressors. An ECG revealed a first-degree heart block, and elevated troponin levels suggested myocardial injury. Further evaluation with echocardiography revealed apical hypokinesia with basal sparing and a reduced ejection fraction of 30-35%, leading to a diagnosis of TC. She was treated symptomatically for heart failure and discharged with follow-up care.

**Discussion:** This case highlights the rarity of TC following physical trauma and the challenges of diagnosing it in trauma settings. Cardiovascular symptoms in trauma patients are often attributed to ACS, neurogenic shock, or direct cardiac trauma, making TC a diagnostic challenge. The patient's unresponsive cardiovascular instability and elevated troponins required a multidisciplinary approach, involving trauma and cardiology teams. Early identification of TC is crucial to prevent severe complications such as cardiogenic shock and arrhythmias. Although the condition is typically reversible, supportive care and timely intervention are essential to ensure favorable outcomes.

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### The need of increased vigilance for signs of deterioration in intoxicated patients with high velocity abdominal and head impact

Kevin Ameresekera<sup>1</sup>

<sup>1</sup>Manipal University College Malaysia

**Correspondence:** [edkdon07@gmail.com](mailto:edkdon07@gmail.com)

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**Background:** Substance intoxication related altered brain function amongst drivers results in many road traffic accidents in Sri Lanka. According to weekly epidemiological report 2024, 10 percent of road traffic accidents are due to substance abuse but the actual values are much higher. It is extremely difficult to detect early signs of head injuries and intra abdominal injuries as intoxication with substances such as alcohol and opioids may mask signs of serious injury. Abuse of substances such as opioids which act on the nervous system through mu, kappa and delta receptors can cause masking of pain so a patients complaints of abdominal pain as a symptom may be reduced. Abuse of substances may also cause tachycardia making it difficult to detect signs of haemorrhagic shock. Alcohol intoxication can make the accurate assesment of a polytrauma patients Glasgow coma scale extremely difficult causing delay in suspecting and diagnosing serious head injury. Extended Focused Assessment with Sonography in Trauma (eFAST) is extremely helpful to help detect intra abdominal injuries. E fast has a sensitivity of approximately 90 percent (75-100) and specificity of 95 percent (88-100) for detecting intraperitoneal free fluid<sup>2</sup>. Efast is operator dependant. A negative eFAST does not exclude intra abdominal injury.

**Case report:** A 21-year-old male with substance abuse ( Gabapentin, Tramadol, Marijuana) was brought to base hospital 30 mins following a motor bike crash. He had head and abdominal impacts. His parameters on admission were Glasgow Coma Scale 14/15, Blood Pressure 100/60 and heart rate of 100/min. He did not complain of abdominal pain and there was minimal abdominal tenderness. Initial e fast revealed a thin layer of free fluid in hepato renal pouch, pelvis and sub diaphragmatic space. His haemoglobin was 11.8g/dl on admission. He was kept under strict observation for signs of deterioration. Repeat efast 2 hours later revealed grade 3 liver laceration with increase in amount of free fluid in abdomen.(4.8cm in pelvis, 2.8cm in hepatorenal pouch). Soon afterwards he became confused agitated HR 130 BP dropped to 90/60 mmhg. He was sent immediately to operating theatre where midline laparotomy and peri-hepatic packing was done. Massive transfusion protocol was activated and 4 pints of packed red blood cells and 2 pints platelets given. He received critical care support post operatively. Reopening and pack removal was done 2 days later. He required treatment for withdrawal effects of substance abuse/ post surgical delirium prior to discharge on day 12.

**Conclusion:** Patients with known history of substance abuse can have masking of signs of intra abdominal injury and head injuries. They may already be drowsy, having tachycardia increased tolerance to pain leading to delayed clinical detection of serious head abdominal injuries thus there is a need to be extra vigilant for signs of head/abdominal injury and monitoring vital signs very closely even in hemodynamically stable patients. It is important to perform Serial eFAST scans since CT scan facilities may not be available in many base hospitals for accurate diagnosis of intra abdominal injuries. Serial E fast, clinical judgement, close monitoring vital parameters play important role to help identify signs of deterioration in these patients.

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### A successful tibial vascular repair in a severely injured limb, a case report

Karunarathna JMS<sup>1</sup>, Arudchelvam J<sup>1</sup>

<sup>1</sup>The National hospital of Sri Lanka, Colombo.

**Correspondence :** [sathyajithkaru@gmail.com](mailto:sathyajithkaru@gmail.com)

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**Introduction:** Management of tibial vascular trauma in conjunction with severe soft tissue and skeletal injury is very challenging. There are no clear criteria for the management of severely injured limbs. Various scoring systems are available to predict the risk of amputation. Mangled extremity severity score (MESS) is one of the scoring systems based on skeletal, soft tissue injuries, shock, ischemia, and age (Error! Reference source not found.). A MESS score of more than 7 (Mangled limb) warrants primary amputation. We describe a case of successful limb reconstruction and salvage

of a mangled limb.

**Case:** The patient was a 28-year-old motorbike rider who presented with severely injured leg following a high velocity trauma. The MESS score was more than 7 (Very high energy trauma with contamination - 4 points, limb ischemia - 6 points (the distal pulses were not palpable. The score was doubled as patient presented after 7 hours). However the muscle compartments were viable other than the contused lower lateral and anterior compartments. Considering his age, hemodynamic stability and muscle viability, a multidisciplinary decision was taken for a reconstruction. He underwent a knee spanning external fixation and posterior tibial artery reversed saphenous vein (RSVG) interposition graft repair with soft tissue cover and skin grafting. A month after the reconstruction he had a cosmetically sound non-infected leg. The leg and foot movements were present.

**Conclusions:** traditionally primary amputation was advised for severely injured limbs with neuro-vascular and musculoskeletal injuries with severe contamination. Various existing scoring systems also reflect this idea. This case suggests even when the injury related scores are high, in a young patient with viable muscles, reconstruction should be considered. The available scoring systems are out-dated. Considering the new developments in the surgery and critical care, there is a need for new scoring systems

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#### CONCUSSION KNOWLEDGE, ATTITUDE AND REPORTING INTENTIONS AMONG SCHOOL AND ELITE LEVEL CLUB RUGBY PLAYERS AND THE COACHING STAFF IN SRI LANKA.

Dr. Namith Sankalpana<sup>1</sup>

<sup>1</sup>Sports & Exercise Medicine Unit, National Hospital of Sri Lanka

**Correspondence:** [dr.sankalpana@yahoo.com](mailto:dr.sankalpana@yahoo.com)

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**ABSTRACT:** Rugby union is one of the most popular sports in Sri Lanka, which comprises full-body contact collision. Because of this intrinsic nature of rugby, concussion has become a major medical concern. The aim of this study was to evaluate the existing concussion knowledge (CK), attitude (CA) and reporting intentions (CRI) of school-level and elite club-level rugby players and their coaching staff in Sri Lanka; and to explore the influence of age, ethnicity, general education level, playing/coaching experience, and concussion history on those outcome measures. This descriptive cross-sectional study used the Rosenbaum Concussion Knowledge and Attitudes survey (RoCKAS) to evaluate CK, CA and CRI. The study discovered that both club and school coaching staff scored significantly higher than players on all outcome measures, probably due to their advanced age, higher education, greater rugby and concussion recognition experience, responsibility, better risk perception, and fully developed cognitive abilities. Age and education level correlated positively with all outcome measures, while player experience only correlated positively with CK. Coaching staff, as key figures, play a crucial role in concussion recognition and management, highlighting the necessity for enhanced concussion education. Educating players on concussion recognition and management can empower them to report concussion symptoms and seek timely medical attention, fostering a safer rugby environment. Addressing these knowledge gaps can transform concussion culture in rugby, promoting better awareness, management, and recovery outcomes through continuous education and updates on best practices. The primary limitation of the study was the non-inclusion of female rugby players. This limits the applicability of the study's results to understanding concussion knowledge, attitudes, and reporting intention among female players in Sri Lanka.

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#### Critical Issues in evaluation and outcomes of patients underwent surgical interventions following abdominal trauma.

S K Jayaweera<sup>1</sup>, Thalagaspiya SPB<sup>1</sup>, Shrishankar S<sup>1</sup>, Senanayake K<sup>1</sup>, Jayathilaka A B<sup>1</sup>

<sup>1</sup>The National hospital of Sri Lanka, Colombo.

**Correspondence:** [koshila.jayaweera@gmail.com](mailto:koshila.jayaweera@gmail.com)

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**Introduction:** Abdominal trauma accounts for significant case rate mortality. History, Physical examination and abdominal sonography are main modalities used to evaluate patients with abdominal trauma. Limitations in evaluation can affect surgical judgment to determine the need and tim-

ing of interventions.

**Methods:** A retrospective cohort of patients who underwent surgical interventions following abdominal trauma during 1 year of period in a peripheral tertiary care hospital was considered in this study.

**Results:** Total of 31 patients included. Mean age was 44.9±6.8 years and 90.3%(n=28) were males. 80.6%(n=25) had blunt and 19.3%(n=6) had sharp abdominal injuries. 35.4%(n=11) patients were transferred following initial care from local hospitals. 38.7%(n=12) of total had grade 2-4 shock on admission and 58.0%(n=18) had coexisting injuries to other body regions. 45.1%(n=14) of total had following limitations for initial clinical assessment, 16.1%(n=5) had severe injuries to adjacent body regions, 12.9%(n=4) had GCS≤8, 9.6%(n=3) had equivocal initial abdominal examination findings and 6.5%(n=2) had altered sensorium in torso. 93.5%(n=29) underwent exploratory laparotomy and 6.5%(n=2) underwent diagnostic laparoscopy. 64.5%(n=20) underwent desired surgical interventions within 2 hours after the admission. Only 9.6%(n=3) underwent CT scans prior to interventions. 54.8%(n=17) had solid organ and 45.1%(n=14) hollow injuries. 83.8%(n=26) of all patients survived.

**Discussion & Conclusion:** Reducing delay in surgical interventions due to limitations in initial evaluation has more significant impact on patient outcomes. Proper initial evaluation and resuscitation measures significantly reduce abdominal trauma related mortality. A study with larger sample size may benefit.

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#### An audit on human injury profile subsequent to wild elephant attacks at a peripheral Base Hospital in Sri Lanka emphasizing the deficiencies in pre-hospital care

Yuresha Surangani<sup>1</sup>, Anjana De Silva<sup>1</sup>, Kanchana Gunarathne<sup>1</sup>, Asantha Karunaratne<sup>1</sup>, Shehan Wijerathne<sup>1</sup>, Kelum Panditharathne<sup>1</sup>, Kavisha Dissanayake<sup>2</sup>, Bingumal Jayasundara<sup>1</sup>

<sup>1</sup> Base Hospital, Dambulla

<sup>2</sup> Base Hospital, Mawanella

**Correspondence:** [bingumalji@gmail.com](mailto:bingumalji@gmail.com)

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**Background:** Sri Lanka lacks a defined prehospital trauma management protocol or an integrated trauma system despite traumatic injury being a leading cause for hospitalization and in-hospital mortality. Wild-elephant attack related human injury is a sub-domain of traumatic injury, which has never been evaluated from the surgical point of view in the island.

**Method:** In such background; demographics of the cases, prehospital care specifics, injury severity classification and clinical outcome data with disability status of the victims of wild-elephant attacks were studied at Base Hospital, Dambulla for 18 months from July 2022.

**Results:** Among 54 victims [Males-37(68.5%); Mean age-45.4(Range 23-75) years], there were 13(24%) fatalities. Polytrauma with intracranial, thoracic or abdominopelvic injuries were the main causes of death. For 47 cases brought alive to the hospital, median transportation duration was 65(range 20-125) minutes. Among them; 6/15 patients with class III/IV haemorrhagic shock had crystalloid resuscitation, 10/23 with respiratory distress received prehospital oxygen treatment and none of 9 patients with Glasgow Coma Scale ≤ 8 had protected airway as prehospital care. Among 41 survivors, 13(25%) suffered major injuries with a Revised Trauma Score ≤ 5. Average hospital stay was 25.2 days (range 6-79) for major injury survivors and 7.2 days (range 2-26) for survivors with Revised Trauma Score > 5. Approximated mean treatment cost was Rs 495000 per victim. Eleven patients (27% of survivors) had long-term disability and 20 (49%) had short-term disability.

**Discussion and Conclusion:** Human injuries caused by wild elephant attacks led to high injury severities, disabilities and fatalities highlighting the need for primary prevention. Majority of the cohort lacked reference standard prehospital care and reached the surgical facility with a delay. Many cases had a prolonged hospital stay with a high treatment cost. There is a need for improved prehospital trauma care structure in Sri Lanka for better outcomes.

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**Case Report: Surviving a cocktail of lethal injuries and their complications following a high velocity impact on a lamp post**

K.G.Nandana Kumara<sup>1</sup>, Saman Iddagoda<sup>2</sup>

1. National Hospital Colombo Sri Lanka.
2. National Hospital of Respiratory disease, Welisara.

**Correspondence:** [nandanakumara21@yahoo.com](mailto:nandanakumara21@yahoo.com)

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**Introduction:** Polytrauma requires timely interventions to have a good outcome. According to Berlin polytrauma definition the injuries with an Abbreviated Injury Scale score of three or more in two or more body regions combined with the presence of one or more physiological risk factors based on age, Glasgow Coma Scale, hypotension, acidosis, and coagulopathy carries high risk of mortality.

**Case presentation:** A young rider was transferred National hospital with polytrauma following a high velocity collision after managed at the initial hospital for the haemorrhagic shock and for haemothorax. Imaging revealed liver laceration. He had stable vitals on arrival to the national hospital. Further investigations revealed emphysema, right side haemothorax, pneumomediastinum, lung contusions, rib fractures, hemoperitoneum, splenic laceration, compound comminuted radio-ulnar shaft fracture which required Open reduction and internal fixation. Notably, he was desaturated and it improved with fixation of rib fractures and Video Assisted Thoracoscopy was done and a blood clot was removed and diaphragmatic laceration were sutured.

He was intubated and Massive transfusion protocol was required as he developed shock eventually. A massive hemoperitoneum, bile leak, Pre-existing liver laceration with possible rebleeding or aneurysmal rupture, splenic injury found in emergency laparotomy.

Pringles manoeuvre, peritoneal wash with packing of liver were performed and incision closed temporarily. As he again deteriorated, right hepatectomy and Cholecystectomy was done.

Post operative period was complicated with hospital acquired pneumonia and intra-abdominal pus collection with multi drug resistant organisms and managed with appropriate IV antibiotics and timely drainage.

**Discussion:** Intra-abdominal and thoracic injuries and sepsis were major killers in his case. The survival factors were timely management of shock, sepsis and efficient interventions and patient's good health. The importance of arresting the bleeding focus should be highlighted as he improved only after hepatectomy. The drainage of infected focus is utmost important.

