International Convention of Forensic Medicine and Science (ICFMS) 2025: Forensic Anthropology, Odontology, and Radiology: Interdisciplinary Approach in Forensic Pathology, co-organised by Malaysian Society of Forensic Medicine & Science, Malaysian Association of Forensic Anthropology, and Department of Forensic Medicine Hospital Pulau Pinang, and held on 2nd to 4th of July 2025, at Bayview Hotel, Georgetown, Penang. Abstracts of plenary talk and paper (oral and poster) presented are as follows:

PLENARY

Plenary 1: Forensic Anthropology: Facing Challenges and The Way Forward

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Forensic anthropology applies the knowledge of physical anthropology to solve medicolegal issues. The forensic anthropologist assists the police in locating, exhuming, and analysing skeletal remains to determine the biological profile, i.e., sex, age at death, ancestry, and stature of the deceased. Presently, forensic anthropologists are also involved in the identification of victims of mass disasters and genocide and are an integral part of any Disaster Victim Identification (DVI) team. Although well established in many developed countries, this discipline is still in its infancy in Malaysia. This presentation will discuss the current practice of forensic anthropology in Malaysia and its place within the general inquiry into death as a provision under the Criminal Procedure Code. This presentation will also cite some well-profiled local cases over the past 10 years where forensic anthropology played a major role in the investigation. The Malaysian DVI team was also involved in the identification of the victims of the MH17 air tragedy in 2014 and the victims in multiple clandestine graves along the Malaysia-Thailand border in 2015. This paper will also identify some of the challenges faced by forensic anthropologists, which have resulted in the slow recognition of this discipline in investigations into death – these include practical, as well as religious and sociocultural, constraints unique to this country. Finally, this paper will propose steps to address these challenges with the hope that forensic anthropology in Malaysia will garner as much interest and be as developed as in other countries.

Plenary 2: An In-Depth Retrospective Descriptive Analysis of Forensic Odontology Cases in Malaysia: Insights from the Ministry of Health Perspective

Hairuladha Abdul Razak
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This retrospective descriptive study examines forensic odontology cases managed by the Ministry of Health (MOH) Malaysia. It reviews multi-year trends in case referrals from agencies such as the Royal Malaysia Police (PDRM), Department of Forensic Medicine, and Malaysian Immigration Department. The data show a consistent rise in referrals, particularly for dental age estimation, identification, and assessment in suspected abuse cases. Key factors contributing to successful identification include the availability of ante-mortem dental records, preservation of dental features, and timely forensic intervention. The study highlights challenges in standardising dental records across sectors and advocates for inter-agency collaboration. In response, the MOH has implemented initiatives such as a centralised database for dental records within the Ministry of Health, collaboration protocols, and public awareness campaigns to improve record-keeping. These efforts aim to strengthen the role of forensic odontology within Malaysia's medico-legal framework and emphasise the need for improved coordination and record management.

Plenary 3: Forensic imaging: about the Toulouse experience (France)

Fabrice Dedouit
Radiologist and Forensic Pathologist, Medico-legal Department, Toulouse University and Hospital, Toulouse, France.

This presentation will explore the various applications of forensic imaging, with a particular focus on post-mortem computed tomography (PMCT) and PMCT angiography. Illustrative examples will be presented in multiple forensic contexts, such as autopsy and forensic anthropology. The presentation will then focus on forensic imaging experience in Toulouse, France. We will present the acquired equipment (including the CT scanner and post-processing equipment) and explain the factors that influenced our choice of CT scanner. We will present our organisation for linking forensic imaging and autopsies, and the involvement of radiographers and medico-legal institute's forensic technicians in performing PMCT. We will present the statistics of forensic imaging activity and the contexts in which PMCT is performed. Considering one year of PMCT activity, 620 PMCTs were performed alongside 1,184 autopsies. The percentages of cases studied through PMCT by manner of death were as follows: natural 40%, accidental 26%, suicides 26%, homicides 3.3%, and unknown 4.7%. The causes of death studied with PMCT are shown as a percentage: natural (40%), motor vehicle accidents (25%), hanging/strangulation (11%), falls (7%), gunshot wounds (6%), burns/fire (4%),

cutting objects (3%), drowning (2%), blunt trauma (1.3%), and toxic deaths (0.7%). We have compiled a list of indications for PMCT, which includes: traumatisms, drowning, hanging, suspicion of third-party involvement, recent or semi-recent post-operative context, or recent medical consultation or emergency room visit, altered bodies, unidentified bodies, charred bodies, children, newborns and skeletal remains.

Plenary 4: Radiological identification possibilities in a forensic context

Fabrice Dedouit
Radiologist and forensic pathologist, Medico-legal department, Toulouse University and Hospital, Toulouse, France.

In a forensic context, identification covers different anthropological aims: identification of lesions and surgery, and comparative and reconstructive identification. Lesion identification is fundamental and includes the identification of trauma (e.g. stab wounds, gunshot wounds, blunt trauma), infections, arthropathies, tumours and metabolic changes. It may also allow anatomical variations to be identified. The concept of taphonomy will also be explained in detail. The identification of surgical materials and the detection of metallic foreign bodies are also essential and are key to radiological comparative identification. Many radiological modalities (radioscopy, plain X-rays and computed tomography) can be compared with post-mortem computed tomography (PMCT) scans. Many elements can be compared between ante- and post-mortem radiological documentation. The odontological radiological comparative identification process must involve a forensic odontologist to ensure quality. Many illustrative examples will be presented to the audience. Reconstructive identification may sometimes be performed using PMCT to help forensic anthropologists or pathologists determine sex, age at death and stature. In such cases, it seems mandatory for the forensic pathologist to involve forensic anthropologists. Examples will be given of contemporary and archaeological mummies studied with PMCT. The presentation will emphasise the importance of multidisciplinary work, involving forensic pathologists, forensic odontologists, forensic anthropologists, radiologists, radiographers, archaeologists, and many other specialists.

Plenary 5: Advances in Forensic Odontology: bridging science and justice

Associate Professor Denice Higgins
BDS, GDipForOdont, PhD, FICD, FPFA, Director Forensic Odontology Unit, Dental School, University of Adelaide, South Australia, Australia.

Forensic odontology is expanding beyond traditional non-digital data and 2-dimensional imaging methods like X-rays and photographs, which, while cost-effective, often obscure critical details such as restorations and trauma patterns, which can hinder accurate comparisons, potentially compromising legal outcomes. The rise of digital techniques, including Big Data, 3D scanning, Computed Tomography (CT) and AI-driven tools, is revolutionising forensic dental analysis. These advanced technologies provide increased data access, higher precision, better spatial accuracy, and the ability to preserve evidence integrity. 3D scanning, increasingly used in clinical dentistry, allows for non-invasive, detailed reconstructions of dental evidence, while Cone Beam CT offers high-resolution imaging of dental and bone structures with reduced radiation. These forms of evidence are thus appearing more often in antemortem evidence. Additionally, 3D printing helps create physical models for clearer presentations and demonstrations, though it may face legal challenges regarding the chain of evidence. The integration of AI and machine learning further enhances accuracy and efficiency in forensic odontology, but requires careful attention to transparency, privacy, and ethical considerations. Big data and dental informatics are also improving the field by enabling faster data processing and more comprehensive forensic profiling through large-scale, anonymised image databases. To fully realise these advancements, interdisciplinary collaboration is crucial. Forensic odontologists must work alongside engineers, radiologists, legal experts, and data scientists to ensure these technologies are used responsibly and meet legal and scientific standards. Training future professionals must emphasise technical expertise, ethical practice, and the importance of collaboration for the integrity of the field.

Plenary 6: Forensic Odontology Identification is not just a post-mortem exercise

Associate Professor Denice Higgins
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Forensic odontology is vital in Disaster Victim Identification (DVI), using dental evidence to confirm or exclude identity. Both post-mortem (PM) and antemortem (AM) data are crucial, with AM data being key to a successful match. AM records, such as radiographs, dental charts, and clinical notes, must be carefully analysed and compared with PM findings. Incomplete or inconsistent AM data, such as missing or outdated records, can complicate identification. Unconventional sources like photographs or dental appliances may also provide useful clues. The forensic odontologist's role is to reconstruct and standardise AM data, carefully cross-referencing information to ensure accuracy. This process demands specialised training and expertise, as the status of the dentition changes over time, including wear, disease, and treatment, which can complicate comparisons. Ultimately, AM data quality directly influences the success of victim identification. PM dental data are collected using standardised methods, including visual exams, radiography, and advanced imaging like CT scans. Every dental feature, including restorations and anomalies, must be meticulously recorded. During the reconciliation phase, PM and AM data are compared. Discrepancies must be explained logically based on biological principles, and if they can't be resolved, identity is excluded. Matching relies on unique features

like restorations, dental and orofacial anatomical features and pathology. While differences between AM and PM records are common, expert interpretation can usually resolve them. Emerging technologies like AI and 3D scanning enhance accuracy, but human oversight remains critical. Forensic odontology demands technical expertise, emotional sensitivity, and peer review to ensure accurate and reliable identification.

Plenary 7: Forensic Odontology -An Australian Perspective

Associate Professor Denice Higgins
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Australia is the sixth-largest country in the world by land area, vast and sparsely populated in some areas. This vast geography and dispersed population present unique forensic challenges, particularly in evidence access, disaster response, and transport. With eight states and territories, each with its own health and legal frameworks, coronial processes, and Police forces (we have nine), forensic odontologists operate spanning health, police, coronial, and academic sectors and often work part-time alongside clinical or teaching roles. Casework includes dental identification, trauma analysis, age estimation, comparative anatomy assessment, and skeletal profiling. Through selected cases, I will illustrate how odontology aids justice and conservation. Examples include the identification of a missing person decades after her disappearance, wildlife forensic investigations involving predator identification from bite marks (e.g., on penguins and endangered marsupials), and shark bite analysis in fatal marine incidents. I will also share my experiences from the 2009 Black Saturday bushfires, a mass fatality event where odontology played a vital role despite extreme cremation, co-mingling of remains, and scene fragility. As Director of Australia's only dedicated forensic odontology unit, I also oversee research and education, linking academic advancement with practical application. This dual academic and clinical role enables a strong evidence-based approach to forensic work, allowing us to integrate research directly into casework and policy development. Forensic odontology in Australia extends beyond dental comparison; ultimately, our work connects science with humanity, helping to identify the lost, inform conservation, and shape resilient forensic systems in an expansive, complex environment.

Plenary 8: Post-mortem Imaging in Malaysia: Our Journey

Mansharan Kaur A/P Chainchel Singh
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Forensic medicine developed after the Second World War in Malaysia, with the earliest documented forensic service at the Kuala Lumpur General Hospital in 1942. Back then X-rays were the only imaging requested. However, due to the importance of forensic medicine in assisting justice within the legal framework, the National Institute of Forensic Medicine (NIFM) was proposed in November 2000 and by 2006, the idea of virtual autopsy was mooted due to the various advantages of imaging modalities like Post mortem Computed Tomography (PMCT). A Toshiba Aquilion 64 Multi Detector Computed Tomography was then installed at the NIFM, Hospital Kuala Lumpur in 2010, and we currently scan around 700-750 cases a year. At the Institute, all cases with a police order for an autopsy undergo a whole body PMCT following a protocol adapted from both the Victorian Institute of Forensic Medicine and the University of Baltimore, while in other government mortuaries, it is per case basis following the same standardised scanning protocol. The PMCT report is then added as an addendum to the autopsy report. The members of the institute not only perform routine imaging but also actively participate in repatriation exercises, research having secured grants, and actively publish. We aspire to put Malaysia on the world map in terms of forensic imaging and have more international and industrial collaborations.

Plenary 9: Forensic Anthropology and Archaeology: Collaborative Approaches to Forensic Recovery and Analysis

Nor Zaimah Mohamad Idris
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Forensic anthropology and archaeology are closely related disciplines that frequently intersect in the recovery and analysis of human skeletal remains, particularly in medico-legal contexts such as human identification in mass disaster and crime scene exhumations. These collaborations extend beyond field operations to include shared methodologies and cross-disciplinary training in academic and professional training. In Malaysia, forensic archaeology is not yet a separate profession or department. Instead, forensic pathologists with training in forensic anthropology provide archaeological expertise during medico-legal exhumations. The exhumations are conducted under Section 97 of the Local Government Act 1976, which mandates either a Magistrate's order or a license from the local authority. A review of exhumation cases in the state of Pahang from 2015 to 2025 shows that non-forensic exhumations, such as grave relocation, outnumber forensic/medico-legal exhumations. Forensic experts may assist with grave relocation when requested, although they are not obligated to do so under the National Policy of Forensic Medicine Services. The Terendak Exhumation Projects - Operation Reunite (2016) and Operation Te Auraki (2018)- serve as landmark cases in Malaysia, highlight how forensic anthropology and archaeology can be successfully combined and set a good example for future cases and showing the value of working across disciplines to support justice and respectful treatment of the dead.

ABSTRACT

OR01 Anthropometric Analysis of Orbital and Nasal Parameters for Sexual Dimorphism in Malaysian Population: A Radiograph Study

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Introduction: Skeletal remains, though considered secondary identifiers, are more durable and persist over time, offering a critical resource for identification in forensic settings, especially when primary identifiers are unavailable. Orbital and nasal parameters exhibit considerable variation, which affects facial shape, and these characteristics vary according to population. Objective: This study aims to determine sexual dimorphism in nasal and orbital parameters within the Malaysian population. Methods: Linear measurement of orbital height (OH), orbital width (OW), nasal height (NH), and nasal width (NW) were taken. The indices for orbital (OI), nasal (NI) and orbital index/nasal index (RONI) were calculated. Using anteroposterior (AP) view of skull radiographs from 390 individuals, we measured key parameters and analysed the data statistically to assess sex differentiation. Results: The accuracy in sex prediction was 61.8% for ROH, 60.3% for LOH and 58.5% for NH. The difference between male and female indexes was statistically significant ($P< 0.05$). The anthropometric study revealed that only OH and NH are configured as predictors of sexual dimorphism. Conclusions: This research contributes to the growing body of work on sexual dimorphism and provides a basis for future studies in Malaysia.

OR02 Determining Juvenile vs. Adult Status Using Impacted Mandibular Third Molar: A CBCT Study

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Introduction: The legal age threshold varies across the world. In Malaysia, it is defined as 18 years under the Age of Majority Act 1971. Age estimation data for the Malaysian population based on mandibular third molars have been established to assess the adult or juvenile status in criminal and civil proceedings. However, impacted mandibular third molars (iMTM) are often excluded or underutilised in such assessments due to limited accessibility and anatomical variation. Objective: This study aimed to develop a dental age estimation model for the Malaysian population by analysing the apical surface area (ASA) of iMTM. Methods: A total of 446 CBCT images of iMTMs from Malaysian Malays and Chinese individuals aged 15 to 25 were analysed. 3D models were reconstructed using Mimics software, and ASA measurements were obtained via 3-matic software. Correlations between ASA and chronological age were assessed across sex and ethnicity. General linear analysis was performed to evaluate the effects of variables, including sex, ethnicity, jaw side, number of roots, impaction level, impaction type, and angulation. Results and Discussion: A strong correlation was found between ASA and chronological age ($r = -0.686$ to 0.801). ASA differed significantly between sexes ($p = 0.001$) but not between ethnic groups ($p = 0.451$). ASA, sex, number of roots, and impaction type were significant age predictors ($R^2 = 0.607$). The model yielded a mean absolute error (MAE) ranging from 0.85 to 4.87 years. This approach is practical, as it requires only one iMTM for age estimation. Conclusion: The developed age estimation model using the ASA of iMTM from CBCT images is a viable and effective method for distinguishing between minors and adults in the Malaysian population.

OR03 Impact of Informal Training and Pairing on Dental Age Estimation Proficiency Among Dental Health Practitioners: A Pilot Study

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Introduction: Dental age estimation (DAE) cases are occasionally referred to dental practitioners from varying educational backgrounds. This can be problematic as DAE requires precision and consistency, which may rely on knowledge, training, and experience. Objectives: To evaluate the impact of training and working in pairs on the accuracy and reliability of DAE. Methods: This was a cross-sectional study conducted by two final-year undergraduate dental students with rudimentary knowledge in forensic odontology as principal investigators. Panoramic radiographs of 94 patients aged 6–15 years attending clinics at the Faculty of Dentistry, Universiti Malaya were retrieved retrospectively. A total of 658 permanent mandibular left teeth were staged according to Demirjian's method by the two examiners (Ex1 and Ex2) in four different phases: three individual staging (without training, with training, and repeated with training), and one paired staging. Training and calibration were supervised by two forensic odontology specialists. Proficiency was defined as staging reliability and accuracy. Reliability was calculated using weighted kappa (κ), while accuracy was assessed by comparing the differences between chronological and estimated ages, expressed as mean absolute error (MAE). Results and Discussion: Both examiners demonstrated improved intra-examiner reliability, with κ=0.82, 0.89 for Ex1, and κ=0.77, 0.85 for Ex2. Inter-examiner reliability also improved across all phases (κ=0.79, 0.80, 0.83, 0.89). Accuracy for Ex1

declined gradually in individual phases, MAE=0.76, 0.83, 0.91, while Ex2 reported MAE of 0.92, 1.22, and 1.17, respectively. In comparison, paired staging yielded an MAE of 1.20. For Ex1, all three individual phases were significantly more accurate than paired staging, compared to only in Phase 1 for Ex2 ($p < 0.05$). Familiarity, individual variability and over-reliance on peer judgement contributed to the study outcomes. Conclusion: Informal training can enhance reliability but is less effective in improving DAE accuracy. Structured and continuous training is essential for overall proficiency.

OR04 Use of Lactate Dehydrogenase Activity and Pulmonary Histopathology for Post-mortem Interval Estimation in Freshwater Drowning

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Introduction: Freshwater drowning presents unique forensic challenges, particularly in estimating the post-mortem interval (PMI). Integrating metabolic markers of hypoxia with histopathological assessment of lung tissue may enhance the accuracy of PMI estimation. Objectives: To evaluate the combined utility of lactate dehydrogenase (LDH) activity and lung tissue histopathological changes as objective, time-dependent indicators for PMI estimation in freshwater drowning. Methods: An experimental study was conducted using 30 male Sprague–Dawley rats, divided into control and four drowning groups (PMI: 30, 60, 90, and 120 minutes). Blood samples were analysed for LDH activity, and lungs were examined histologically for interalveolar septal thickening, oedema, inflammation, and haemorrhage. Statistical analysis included ANOVA, Pearson correlation, and linear regression. Results and Discussion: LDH activity increased significantly over time ($p<0.001$), with levels rising from 220 U/L (baseline) to 482 U/L at 120 minutes post-mortem. Histopathological analysis revealed progressive lung damage: from mild septal thickening at 30 minutes to severe oedema, haemorrhage, and cellular infiltration at 120 minutes. Both markers showed strong time-dependent correlations with PMI (LDH: $R^2 = 0.75$; histopathology score: $R^2 = 0.85$). The integration of LDH and histological findings demonstrated high forensic potential in distinguishing post-mortem intervals with objective criteria. Conclusions: LDH enzyme activity and lung tissue pathology progress predictably with increasing PMI, offering a reliable integrative framework for PMI estimation in freshwater drowning cases. This dual-modality approach enhances forensic accuracy and supports more objective death time determination in aquatic environments.

OR05 Optimising Forensic DNA Extraction from Pulp of Retained Dental Root: A Comparative Analysis of K-File and Peeso Reamer Instruments

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Background: Retained dental roots, often considered challenging in forensic and molecular applications, are often overlooked as viable sources of forensic DNA. Effective extraction techniques are critical to maximise yield and preserve DNA quality. This study aimed to compare the DNA quality obtained from retained dental roots using two endodontic retrieval methods, K-file and Peeso reamer. Methods: Root remnants extracted from 10 patients at the Dental Hospital of Universitas Airlangga were divided into two groups. In the first group, dental pulp and odontoblastic powder were retrieved using a K-file; in the second group, a Peeso reamer was used for the same purpose. DNA extraction was conducted using a standardised protocol, followed by quantification via spectrophotometry. Electrophoresis was performed to assess DNA integrity. Results: The Peeso reamer technique yielded a higher mean DNA concentration (239.40±83.67 µg/ml) compared to the K-file method (119.06±111.11 µg/ml). However, electropherogram analysis revealed no visible DNA bands in the Peeso reamer group, indicating compromised DNA integrity. In contrast, the K-file group showed clear bands, suggesting better preservation of DNA structure. Independent Samples T-Test results showed no statistically significant difference in DNA concentration between the two methods ($p > 0.05$). Conclusion: Although the Peeso reamer method produced a higher DNA concentration, the K-file technique demonstrated superior DNA integrity, making it more suitable for forensic applications where DNA quality is paramount. These findings underscore the importance of selecting appropriate retrieval instruments for optimal forensic DNA recovery from retained dental roots. The authors gratefully acknowledge financial support from the Indonesian Endowment Fund for Education (LPDP).

OR06 Identification of Fragmented Human Remains Through Dental Means: Two Case Reports

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Introduction: Identification of human remains is a fundamental component to crucial forensic legal investigation. Victims of violent crimes, fires, accidents, or prolonged decomposition may be too disfigured for reliable visual identification. In such cases, dental identification provides a reliable and efficient method, particularly in natural and anthropogenic disasters. It is particularly invaluable in mass fatality incidents such as aviation crashes where traditional methods may not be feasible. Dental structures are highly durable and well protected tissues in the human body, capable of withstanding decomposition and high temperatures, often remaining intact long after other tissues have deteriorated. This article outlines the forensic odontology procedures employed in identifying fragmented remains from two separate incidents. Case Description: On 17th August 2023, a private aircraft crashed and caught fire on an expressway at Elmina, Shah Alam, Selangor resulting in ten casualties including two on the ground. Due to the high-impact nature of the crash, most of the bodies were severely disfigured, fragmented and burnt. A Disaster Victim Identification (DVI) operation was activated. Post-mortem odontology examination was conducted on 18th and 19th August 2023 at Forensic Medicine Department, Hospital Tengku Ampuan Rahimah, Klang, Selangor. On 21st August 2024, an accident occurred in Jenjarom, Banting where a 34-year-old Malaysian man was believed to have fallen in a palm kernel processing machine while working and the discovered remains were incomplete with remnants of bones, soft tissues, fragmented maxilla and mandible. A forensic odontology examination for identification was performed on 22nd August 2024 at Hospital Banting, Selangor. Conclusion: In both incidents, despite the incomplete dental structures and fragmentary nature of the remains, positive human identification was accomplished through comprehensive dental records and available dental radiographs. This method proved more time efficient than DNA analysis and ultimately alleviated the emotional strain experienced by next of kin, providing much needed family closure.

OR07 Can Medicalisation of Female Genital Cutting (FGC) Reduce Harm? A Theoretical and Medical Ethics Approach

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Introduction: Female Genital Cutting (FGC) is a spectrum of procedures involving the removal of external female genitalia without medical indication. There have been efforts to eradicate FGC, but continuous and polarised debates on eradicating FGC have brought little resolution on the issue. Instead, efforts that focus on the health and welfare of women in communities where FGC is upheld should be prioritised. One of the proposed solutions is the medicalisation of FGC. Objectives: Despite stirring controversies, medicalisation of FGC is seen as a strategy to minimise subsequent harm. This study will summarise the key findings and the extent of how medicalisation could affect FGC practices. Methods: Theoretical and ethical approach based on literature reviews. Results and Discussion: Medicalisation of FGC could reduce harm, but it could also be perceived as normalising the practice. Among the types of FGC, pricking or rubbing is categorised as type IV and considered as the least severe type of FGC. Medicalisation of only type IV and restricting other types of FGC could potentially reduce harm while also reducing the prevalence of FGC itself. Conclusion: A selective medicalisation is a potential solution on balancing harm reduction and accommodating the cultural values or norms. However, constructive dialogue should still be actively pursued, focusing on the health and wellbeing of female in communities where FGC practice is upheld.

OR08 Maxillofacial traumas of an unidentified body: A Case Report

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Introduction: Forensic Odontology plays a pivotal role in the evaluation of facial trauma surrounding the dental and craniofacial structures to investigate injuries sustained by deceased individuals. Forensic odontologists are able to distinguish the type, severity, and whether the injuries are antemortem, perimortem, or postmortem. The close anatomical relationship between the teeth and facial bones aids in reconstructing the circumstances surrounding the trauma. The resilience of dental tissues and jawbones, even in advanced stages of decomposition renders dental profiling a vital forensic tool in cases involving facial trauma. This case report presents an unknown deceased male found buried in a bush at Subang Hill in February 2023 referred by Forensic Medical Department, Hospital Serdang to Forensic Odontology Unit, Hospital Kuala Lumpur for postmortem profiling and opinion regarding injuries sustained by the deceased at the maxillofacial region. Case: Upon examination, the skeletonised remains presented with partially fractured maxilla and intact detached mandible with severe loose teeth. A total of 20 injuries were noted which appeared to be interconnected between the maxilla and mandible, orbit and zygoma. To assess the estimated age of the deceased through the teeth, dental periapical radiographs were taken, and the deceased was estimated to be around 26 to 30 years old. Discussion/ Conclusion: From a forensic odontology perspective, the durability of dental structures enabled the detailed assessment of trauma to the maxillofacial region and facilitated age estimation, which placed the deceased between 26 to 30 years old which confirms to the age of the missing person. The identification and analysis of 20 distinct injuries, spanning the maxilla, mandible, orbit, and zygoma, allowed us to evaluate the nature of the trauma which is crucial for reconstructing the events surrounding the individual's death. This case underscores the vital and significant role of forensic odontology to maxillofacial trauma analysis.

OR09 Age Variations of the Twelfth Thoracic Vertebra (T12) in the Malaysian Population: A 3D Geometric Morphometric Study

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Introduction: Age estimation from skeletal remains is a crucial component of biological profile in forensic anthropology. T12 is a transitional vertebra with unique characteristics that make it susceptible to degenerative modifications associated with ageing. The 3D geometric morphometric method surpasses the limitations of traditional method, allowing accurate morphological changes in skeletal structures. This study aims to explore age-related variations of T12 using 3D geometric morphometrics using CT scan among Malaysians. Methods: The CT scans of 348 subjects were retrospectively selected and divided into three age categories: 132 young adults (18-39 years), 119 middle-aged adults (40-60 years) and 97 old adults (>60 years old). Fifty landmarks were applied on digitalised CT using the Stratovan Checkpoint software. Geometric morphometric analysis was performed with MorphoJ software and 3D visualisation was performed with IDAV software. Results: The first ten principal components contributed 50% of the variation in T12. MANOVA and Procrustes ANOVA revealed significant age-related shape differences, although no significant differences in centroid size were observed. The highest Pillai trace indicated that there was a strong effect of age groups on the shape of T12. The Mahalanobis and Procrustes distances in CVA revealed significant shape differences between age groups. The classification accuracy for age groups ranged from 56.5% to 68.9%. Visualisation revealed that the young adult group exhibited a larger, more robust vertebral body, outward-angled transverse processes, well-defined costal facets, and quadrangular, horizontally orientated spinous processes. In contrast, the middle adult group showed similar but less pronounced features, whereas old adult group showed no visible transverse projections, poorly defined costal facets, and enlarged spinous processes associated with osteophyte formation. Conclusion: The research demonstrated significant age relationships among Malaysians through visualisation. This study could assist forensic anthropologists with a more accurate age variation of T12 specifically for the Malaysian population.

OR10 Dermestid Beetle with Total Body Score and Accumulated Degree Days (TBS-ADD) Equation as Post-Mortem Interval Estimation Method: A Case Report of a Skeletonised Human Remains in an Indoor Environment in Jakarta, Indonesia

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Introduction: Estimating the postmortem interval (PMI) in advanced decomposition cases, particularly skeletonisation, remains a complex challenge in forensic pathological practice. Traditional soft tissue-based methods often become unreliable, needing alternative approaches such as forensic entomology and decomposition scoring systems, for instance Total Body Score and Accumulated Degree Days (TBS-ADD) equation. Case: In January 2024, a skeletonised human remains of a 67-year-old male were found inside his locked residence in Jakarta, Indonesia. The room where the body was discovered was an enclosed, well-ventilated room, which favoured desiccation, thus resulting in extensive tissue drying. During the postmortem examination, several larvae and adult Dermestid beetles (Dermestes spp.) were found. Anthropological analysis confirmed the decedent's sex, ancestry, and estimated age range. Discussion: Dermestic beetles (Dermestes spp.) are recognised as late-stage colonisers, typically associated with dry and skeletal phases of decomposition. In this case, their presence suggested a PMI between 3 to 6 months. Using the ADD method with a 30°C optimum development temperature for Dermestid beetles, the minimum PMI was 31.58 days. A Total Body Score (TBS) assessment by Megyesi et al. (2005) yielded a score of 30. Two Total Body Score and Accumulated Degree Days (TBS-ADD) equation models were applied. The first model, proposed by Smith et al. (2022), resulted in a PMI estimation of 54.8 days (95% CI: 21.7–138.3 days); and the second model, proposed by Gunawardena et al. (2023), resulted in a PMI estimation of 139.3 days (95% CI: 1.2–16,192.6 days). Both equation models were adjusted for Jakarta's ambient temperature, measured at 29.25°C. The integration of forensic entomological evidence and TBS and ADD equation models yielded consistent results, suggesting a PMI between 1 and 4.5 months. Conclusion: This case highlights the value of combining forensic entomology and decomposition scoring systems to enhance PMI estimation in skeletonised human remains.

OR11 Cognitive Bias in Second Autopsy: A Growing Concern

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Introduction: A second autopsy is often requested to obtain clarification or alternative interpretations of the initial autopsy findings, especially in controversial death cases. This procedure presents significant challenges from forensic, medicolegal, and ethical perspectives, primarily arising from the influences of cognitive bias, a systematic thinking error, which presents a potential risk that can influence the interpretation of the autopsy findings. Objective: The purpose of this study is to identify the underlying reasons for requesting second autopsies and to determine how cognitive bias can influence the final outcomes. Methods: This study uses qualitative case study methodology approach on cases in Indonesia where second autopsies were performed. Result/Discussion: Two second autopsy cases were selected for analysis: (1) A 28-year-old male whose family suspected he had been subjected to torture prior to death; and (2) A 13-year-old male whose family disputed the officially determined manner of death. Second autopsies may be requested when concerns arise regarding potential biases in the initial autopsy, such as authority bias, social conformity bias, confirmation bias, and fear-based bias. These individual biases can collectively contribute to what may be broadly referred to as impartiality bias, reflecting the judicial system distrust or concerns of procedural shortcomings. This can also raise doubts regarding the credibility of the forensic pathologists examining the case. However, the processes of second autopsy itself can also be subject to biases, such as confirmation bias, hindsight bias, overconfidence bias, blind-spot bias, and anchoring bias. Such biases may subconsciously influence forensic pathologists to interpret findings in a way that conforms to external expectations or pressures, rather than maintaining objective findings. Conclusions: Understanding and mitigating these cognitive biases is essential to ensure that second autopsies contribute to the pursuit of justice through objective and scientifically sound forensic practices.

OR12 The Use of Postmortem Fetal MRI (PMFMRI) in Diagnosing Congenital Abnormalities in Cases of Intrauterine Fetal Death

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Introduction: Over 2.6 million fetal deaths are reported every year worldwide. Yet, declining autopsy consent rates have left a large majority of cases with unknown causes of death, including unsuspected congenital malformations—making it difficult to assess the risk of future pregnancies. Existing evidence suggests that Postmortem Fetal Magnetic Resonance Imaging (PFMRI) is very powerful in its detection capabilities, particularly when coupled with minimally invasive autopsies, and may be used as an alternative for the detection of congenital malformations. Objectives: This study aims to compare the use of PFMRI with conventional autopsy in diagnosing congenital abnormalities in cases of intrauterine fetal death. Methods: A literature search was carried out using three databases, namely PubMed, Cochrane Library and Science Direct with the keywords postmortem, stillbirth, foetal death, postmortem imaging autopsy, and congenital abnormality which resulted in two relevant articles which were then critically appraised. Results/Discussion: Both studies analysed involved research on foetuses that died in utero after 16 weeks of age, using MRI as a diagnostic tool and conventional autopsy as the gold standard. All subjects with maternal abnormalities will be excluded. Both studies showed high levels of sensitivity (77% and 70%) and high specificity (100%), as well as unlimited Likelihood Ratio (+) values. However, the Likelihood Ratio (-) results show low values (0.23 and 0.3), indicating that positive findings have a high probability of being true positive, while negative findings require further evaluation because they do not guarantee the absence of findings. Conclusions: The use of PFMRI can be an alternative for diagnosing positive findings on congenital abnormalities in fetal death. However, the application of PFMRI in Indonesia is confronted with numerous limitations, particularly in infrastructure and facilities.

OR13 Chemical Preservation Methods of Bone in Room Temperature as DNA Sample for Personal Identification: A Systematic Review

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Introduction: Personal identification techniques consist of primary and secondary identification methods. DNA analysis, as one of the primary identification techniques, is the main choice for personal identification when the victim's body is not intact, such as in mass disaster victim identification. Fragmented body tissues and limited resources pose specific challenges for conducting DNA analysis in the laboratory. Although the FBI still recommends the use of muscle tissue as a sample for DNA analysis in cases of incomplete remains, victims are often discovered in a skeletonised state, in which muscle tissue is no longer viable for analysis due to advanced decomposition. ISFG and INTERPOL recommend the shipment of samples at room temperature using chemical preservation media. Therefore, an in-depth exploration is needed regarding chemical preservation media for bone tissue at room temperature as DNA sample for personal identification. Methods: A literature search was conducted using the PubMed,

ScienceDirect, and Cochrane Library databases with the keywords “Bone,” “DNA profile,” “Storage,” and “Preservation.” Subsequently, literature selection was performed based on inclusion and exclusion criteria, followed by critical appraisal using the CEBM University of Oxford criteria. The PRISMA model is attached to illustrate the article selection process in this study. Results/Discussion: Five research articles were identified that utilised human bone tissue samples, compared chemical preservation methods at room temperature with physical preservation methods, and proceeded with DNA typing analysis. Conclusions: These articles indicate that chemical preservation can compete with physical preservation methods (drying and freezing at -20°C) for up to one year, and even for bone powder samples, storage in a freezer at -20°C or without preservation at room temperature for up to three years can yield comparable results.

OR14 When Fragility Meets Fatality

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Introduction: Blunt force head injury is common in forensic pathology practice, but it can still be a challenge particularly when the circumstance of the death is vague and suspicious. Even in the presence of pre-existing vulnerable medical condition, the case can be complicated because in the tort law, based on the “thin skull rule” a defendant is liable for the full extent of the harm caused to a plaintiff, even if the injuries are more severe than expected due to the plaintiff’s pre-existing condition. As any medicolegal implications can be influenced by the opinion from pathologist, a comprehensive postmortem examination is essential before concluding the case. Herein, we present a case with a thinned skull sustained fatal blunt force head injury of which the body was discovered in doubtful circumstances. Case: A body of a 50-year-old man who was living alone, was allegedly found naked in his apartment unit. The door of his unit was not locked. However, there was no evidence of burglary. He was witnessed participating in a ‘sepak takraw’ game about 48 hours prior to the discovery. Postmortem examination revealed multiple abrasions over the limbs, foci of scalp contusions and left temporalis muscle haemorrhage. Apart from the thinned skull, there were multiple linear fractures over the left temporal bone, hairline fractures on the basal skull and presence of meningeal haemorrhages. Discussion/ Conclusion: The reenactment demonstrated that the pattern of the head injury could plausibly have occurred during the ‘sepak takraw’ game. Although head injuries associated with ‘sepak takraw’ are rarely reported, the sport’s dynamic and high-impact nature, coupled with a predisposing thinned skull, makes such an injury possible. An inaccurate forensic opinion may result in unnecessary investigations and wrongful accusations. Therefore, an objective and scrutinise forensic evaluation is critical to avoid misinterpretation and to uphold the integrity of the justice system.

OR15 Quantifying Sternal Sexual Dimorphism via CT Imaging for Forensic Sex Determination

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Background: The anatomy of the sternal bone demonstrates sexual dimorphism, making it a potential new reference for forensic identification within the Indonesian population, as the identification of unknown bodies must be conducted scientifically in accordance with legal regulations. Objective: To examine the sexual dimorphism in sternal anatomy using CT-scan imaging for sex determination in the adult Indonesian population. Methods: This cross-sectional study was conducted on patients undergoing thoracic CT-scan examinations at the Radiology Department of Dr. Cipto Mangunkusumo National General Hospital, using a consecutive sampling method and meeting eligibility criteria. Morphometric anatomical variables of the sternum included Manubrium Length (ML), Manubrium Width (MW), Manubrium Index (MI), Sternal Body Length (B), Combined Length (CL), Corpus Sternal Width at the first (CSWS1) and third (CSWS3) Sternebra, Sternal Index (SI), and Sternal Area (SA), all of which were correlated with sex. Data were analysed using IBM SPSS version 20.0 with independent t-tests, logistic regression, and AUROC curve analysis to predict sex. A p-value < 0.05 was considered statistically significant. Results: A total of 95 male and 110 female Indonesian subjects aged between 20–70 years were included. Morphometric measurements revealed that the manubrium tends to be rectangular in shape, while the body of the sternum is ovoid, with the lower part being wider than the upper part. All morphometric parameters of the sternum showed larger dimensions in males compared to females, except for the Sternal Index. All morphometric parameters were significantly associated with sex ($p < 0.05$). The Combined Length (CL) with a cut-off point of 134.135 mm yielded an AUC of 93.9%, SE 1.5%, 95%CI 90.9–96.9%, and an accuracy of 90.9% for sex determination. A combined regression analysis using sternal body length, width of the first sternebra, and sternal index yielded a sex prediction accuracy of 87.3%. Conclusion: The sternum in the Indonesian population exhibits sexual dimorphism and can be used as a reference for forensic sex identification.

P01 Unseen Danger: Fatal Chest Trauma Due to Airbag Deployment in a Motor Vehicle Collision

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Introduction: Airbags are a critical safety feature in modern vehicles, designed to reduce the risk of injury during collisions. Case: Here we discuss a case of a 47-year-old male who tragically passed away at the scene after losing control of the car he was driving and crashing into an electric pole. An autopsy that followed showed fatal injury to the chest evident by a penetrating external injury to the central chest with extensive chest wall haemorrhage, fractures of the manubrium, sternum and upper left ribs, massive

left haemothorax and severing of the pericardium and ascending aorta. The offending material was a canister-like cylindrical metal fragment found in the left pleural cavity in the pool of blood. Conclusion and Discussion: This case report highlights the potential for airbag deployment to cause penetrating injuries, an uncommon but significant phenomenon. While airbag-related injuries typically present as blunt trauma or superficial abrasions, they can occasionally result in penetrating wounds due to the forceful nature of the deployment mechanism. It is crucial for forensic professionals to distinguish between these injuries and gunshot wounds, as both may present similar patterns of injury, such as entry and exit wounds. However, key differences in wound characteristics—such as the absence of gunpowder residue, the nature of the wound edges, and the absence of a projectile—can help forensic examiners differentiate between the two. This distinction is particularly important in forensic investigations and future litigations, as misinterpretation of such injuries could impact the determination of cause and manner of death, or the legitimacy of claims in personal injury cases. As airbag-related injuries become more recognised in the forensic field, understanding their unique presentation will be essential for accurate medico-legal assessments and the resolution of legal disputes in automotive accidents.

P02 A Gut Feeling Ignored: The Tragic Consequence of Adult Hirschsprung Disease

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Introduction: The congenital disorder Hirschsprung Disease (HD) results from the failure of neural crest cell migration which give rise to some intestinal regions lacking ganglion cells. Infants commonly exhibit symptoms of this condition, yet adult cases do exist and frequently go misdiagnosed or overlooked. Early surgical treatment is essential to avoid serious health issues as evidenced by this patient who missed necessary treatment during childhood. Case: This case report presents the sudden death of a 31-year-old man found at home, who had known history of chronic constipation and abdominal distension which is linked to untreated HD diagnosed during infancy. Post-mortem examination of the body showed severe abdominal distension and colonic distension which confirmed intestinal obstruction as the cause of death. The histopathological examination demonstrated a lack of ganglion cells in the rectum which is consistent to HD diagnosis whereas ganglion cells were present within other colon sections. Discussion: This unfortunate death demonstrated the critical need to stress that diagnostic delays and late interventions can cause serious complications such as toxic megacolon and perforation. The case underlines the importance of obtaining comprehensive medical histories which include childhood bowel movement patterns to identify HD in adults. The primary treatment for HD involves surgical techniques which aim to restore normal gut motility, although delaying intervention may lead to increased costs and complexity of the case that could necessitate a total colectomy. Conclusion: In conclusion, chronic constipation in adults, especially with a previous history of HD, warrants further investigation beyond typical laxative or enema treatments. Early diagnosis and intervention are crucial to prevent fatal outcomes, underscoring the need for improved communication and awareness among healthcare providers and patients regarding this condition.

P03 Forensic Insights into An Unusual Injury in a Fatal Road Traffic Collision

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Introduction: Apart from determining the cause of death in fatal road traffic crashes, a forensic postmortem examination is essential to confirm that the death was caused by injuries sustained in the incident, assess the extent of those injuries, and establish injury patterns consistent with the crash. Meticulous documentation and interpretation of these injury patterns are crucial for reconstructing and explaining the mechanism of impact in road traffic accidents. Forensic pathologists must also be able to identify any unusual injuries that do not align with the expected constellation of injuries from a vehicular crash. Furthermore, a thorough death scene investigation, even after the postmortem examination, may provide additional insights into the possible mechanism of injury. Case Report: A postmortem examination was performed on a middle-aged man who allegedly loss control of his motorcycles before colliding with an electrical pole at the roadside. He was pronounced dead at the scene. Aside from typical injuries that is consistent with a vehicular crash, the postmortem examination also showed an unusual injury of the neck. The sharp margin of the wound, almost as if the neck had been cut with a sharp instrument, severing the neck musculatures and left neck vasculatures. A retrospective death scene visit revealed the barbed thin wire strung around the electrical pole with dried blood stain. The samples of the dried blood stain subsequently taken for analysis. Discussion/Conclusion: The death scene investigation managed to reconstruct the cause of the unusual injury. The victim had been struck by a wire during the incident, resulting in a slash-like wound on the neck. Forensic pathologists must remain vigilant for any unusual injuries that could indicate a homicide disguised as a road traffic injury.

P04 Deadly Strike: Role of Postmortem Computed Tomography Scan in Unveiling Vertebral Artery Injury

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Introduction: Vertebral artery injuries (VAI) are a rare but critical cause of subarachnoid haemorrhage (SAH), often linked to

trauma and challenging to diagnose without advanced imaging. Removing the brain and vertebral arteries (VA) before examining the artery in continuity alters the anatomical relationship, potentially masking the injury which can be prevented by prior detection using postmortem computed tomography (PMCT). This case highlights the use of PMCT in detecting VAI in a forensic setting. Case Description: An unidentified male, involved in a drunken altercation, underwent autopsy following sudden death. PMCT revealed diffuse, symmetrical SAH without evidence of skull fracture, prompting targeted examination of the craniocervical vasculature. Autopsy confirmed left facial contusion and bilateral vertebral artery injury as the source of the haemorrhage, with no other significant intracranial pathology. Discussion and Conclusion: The absence of fracture on PMCT highlights the subtle nature of VAI, which may be overlooked without imaging guidance. Incorporating routine PMCT enhances diagnostic accuracy, directs autopsy dissection, and provides critical insights into the biomechanics of lethal vascular injuries, ultimately improving forensic investigation and legal outcomes. The findings of PMCT had guided the pathologist in this case to examine VA prior to brain removal. This decision-making has enabled the pathologist to determine the nature and mechanism of the injury due to the preservation of the vessel continuity and able to correlate the SAH due to VAI. This case demonstrates that PMCT is a vital tool in identifying VAI as a mechanism of fatal SAH, particularly in trauma-related deaths where external findings are minimal.

P05 A Yellow Twist: Unveiling the Role of Chronic Liver Disease in Dengue Encephalitis

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Background: Dengue virus infections are common in tropical regions, typically presenting with fever and haemorrhagic symptoms. However, rare neurological complications such as dengue encephalitis can be fatal. When chronic liver disease and alcohol toxicity coexist with the dengue encephalitis, identifying the root cause of neurological symptoms becomes challenging. Case Summary: We report an autopsy case of a 26-year-old chronic alcoholic man who presented with an episode of incoherent speech prior to death. No other symptom reported. Autopsy revealed marked jaundice, ascites, and hepatosplenomegaly. Other organ, mainly the brain did not show any distinctive macroscopic characteristic. Postmortem toxicology analysis revealed an ethyl alcohol level of 231 mg/100 ml which was below the lethal level (300 mg/100ml) thus excluded as the direct cause of death. Postmortem histopathological examination of the brain surprisingly revealed lymphocytic encephalitis which suggested viral based infection in the brain, whereas the liver showed chronic liver changes such as ballooning degeneration with presence of Mallory Denk bodies which is commonly seen in alcoholic liver disease. The causative agent of viral encephalitis pointed towards dengue when unexpectedly, PCR test detected DENV 1 infection. Interestingly, individuals with chronic liver disease when infected with dengue virus are more vulnerable to have severe form of encephalopathy in view of his/her preexisting impaired ammonia metabolism, altered coagulation, and increase blood brain barrier permeability. Thus, based on the postmortem findings and ancillary investigations, the cause of death was concluded as Dengue Encephalitis in a man with Chronic Liver Disease. Conclusion: This case highlights the intricate interplay between chronic liver disease and dengue encephalitis, highlighting the role of hepatic dysfunction in exacerbating neurological manifestation of dengue infection. Recognising this association is crucial, as it aids in distinguishing primary neurological involvement from secondary metabolic complication.

P06 The Silent Killer Within Flames: Carbon Monoxide and Multiple Deaths in an NGV Explosion

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Introduction: Vehicle fires, especially involving natural gas vehicles (NGVs), pose a significant yet under-recognised threat to public safety. Elderly passengers are particularly at risk due to limited mobility. This case series highlights the forensic findings of a fatal taxi fire to advocate for stronger NGV system regulations, improved vehicle safety standards, and increased public awareness. Case: Three victims—a 71-year-old male taxi driver and an elderly Malay couple aged 84 and 60—died after their NGV-powered taxi crashed into a bridge wall and caught fire. Autopsies showed full-body burns and soot inhalation, indicating the victims were alive briefly after the crash. Carboxyhaemoglobin saturation ranged from 13.5% to 27.7%, confirming smoke inhalation. No alcohol or drugs were found. DNA testing confirmed their identities. The victims were likely unable to escape due to age-related mobility limitations. Conclusion/Discussion: All victims suffered extensive burns and inhaled toxic gases, supporting the conclusion that they survived momentarily post-collision. The elderly passengers' limited mobility likely contributed to their inability to escape, underlining the importance of improved safety protocols in public transport vehicles. Regular NGV system maintenance, better vehicle design, and targeted public education on emergency response and fire safety are crucial in preventing similar tragedies, particularly among vulnerable groups such as the elderly.

P07 Too Young to Escape: Lessons from the Autopsies of Children Lost in Fire

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Introduction: Residential fires continue to pose a major public health threat, particularly affecting children due to their vulnerability. Forensic autopsies are crucial in identifying the cause and manner of death in such tragedies. This case series focuses on forensic findings from a fatal house fire in Malaysia that claimed the lives of multiple children, highlighting the importance of prevention

and preparedness. Case: On 13 February 2025, a house fire in Merlimau, Melaka, resulted in five fatalities, including four children aged 13, 6, 5, and 3. All victims were declared dead on arrival at Hospital Jasin. Postmortems showed severe full-thickness burns, thermal fractures, and classic pugilistic postures. Soot found in the tracheae and carboxyhaemoglobin levels up to 34% confirmed that the victims inhaled toxic fumes while still alive. DNA testing was required for identification. No traces of alcohol or drugs were found. The final cause of death for all victims was determined to be severe burns combined with toxic fume inhalation. Conclusion/Discussion: The autopsy findings confirmed that all victims were alive during the fire, suffering from smoke inhalation and burns. This underscores the vital role of forensic pathology in understanding fire-related deaths. The tragedy also reinforces the urgent need for better fire safety measures in homes—especially those with children—including public education, working smoke alarms, and accessible escape routes. Community-level strategies must focus on infrastructure safety and emergency planning to prevent such devastating outcomes in the future.

P08 Tragic Silence: The Hidden Hazard of The Humble Mattress

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Introduction: Infants are particularly susceptible to unintentional injuries due to their limited motor abilities and dependence on caregivers for safety. The bedroom, commonly perceived as a secure environment, however, can conceal multiple hazards, including the potential for suffocation and asphyxia. This case examines a tragic accident involving an infant, with emphasis on forensic pathology findings and safety recommendations. Case: A 6-month-old male infant was found dead while seated in a walker, having become entrapped beneath a queen-sized mattress in the parents' bedroom. Scene photographs captured the position of both the walker and mattress, supporting the hypothesis of accidental mechanical asphyxia. External examination revealed an abrasion measuring 2 x 1 cm over the nasal bridge, consistent with external compression. Multiple petechial haemorrhages were observed on the face, neck, and within both conjunctivae, along with additional petechiae noted over the frontal and occipital regions of the scalp. No evidence of skull fracture or external trauma was identified. Internal examination showed marked pulmonary congestion with widespread petechial haemorrhages on the lung surfaces, consistent with Tardieu's spots. Histopathological of other organs evaluation demonstrated generalised visceral congestion. The external and internal findings, particularly the nasal abrasion, extensive petechial haemorrhages, and visceral congestion are indicative of a classical asphyxia death. The most probable cause of death is Mechanical Asphyxia secondary to Accidental Compression by the Overlying Mattress. Conclusion: This tragic case serves as a stark reminder of the hidden dangers within a household. Accidental asphyxia is preventable with appropriate safety measures, and heightened awareness is crucial in reducing such incidents. Parents and caregivers must be proactive in eliminating potential hazards, securing heavy objects, and adhering to safe sleep guidelines. By learning from such unfortunate events and implementing evidence-based preventive strategies, we can work towards ensuring that no child's life is cut short by preventable household accidents. This case not only provides valuable forensic insights but also reinforces the urgent need for ongoing education and policy advocacy in child safety.

P09 From Fashion to Fatality: The Deadly Risks of Fake Braces

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Introduction: The use of fake orthodontic braces is an increasing trend, particularly among young adults seeking affordable cosmetic dental solutions. These unauthorised appliances pose significant health risks, including serious infections. Although complications are occasionally reported, fatal outcomes remain extremely rare in Malaysia. This case highlights the forensic implications of such illegal interventions and underscores the need for interdisciplinary collaboration in forensic investigations. Case: A 29-year-old previously healthy woman had been wearing fake orthodontic braces for approximately two months. Several days prior to her death, she developed oral pain, fever, and vomiting but did not seek medical attention. She was later found unresponsive at home. Postmortem examination revealed pronounced swelling over the right side of the face and purulent discharge from the gums and oral cavity. A referral to the oromaxillofacial department confirmed the presence of fake braces still affixed to her upper dentition and provided expert assistance during the internal oral examination. Internally, multiple abscesses were identified in the periodontal region, accompanied by mobility of the upper teeth. Histological analysis demonstrated acute inflammation of the gingival and oral muscle tissues. Blood investigations revealed elevated levels of C-Reactive Protein (CRP), consistent with systemic inflammatory response. Microbiological cultures from blood and pus samples isolated Staphylococcus aureus as the causative pathogen. The cause of death was concluded to be sepsis due to periodontal abscess. Conclusion: This case emphasises the life-threatening consequences of unregulated dental practices and the dangers of delayed medical intervention. The decedent's failure to seek treatment contributed to the rapid progression of a localized infection to fatal sepsis. Collaboration between forensic pathologists and oromaxillofacial specialists was crucial in confirming the source of infection and identifying the presence of fake braces. Such interdisciplinary cooperation should be standard practice in cases involving suspected dental interventions to enhance diagnostic accuracy and medicolegal clarity.

P10 The Wound Beneath the Shield: Death by a Defective Airbag

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Introduction: Airbag is one of the safety devices designed to protect car occupants and reduce the risk of morbidity and mortality in a motor vehicle collision. However, in rare occurrences, this device might be defective and malfunctioning. These malfunctioning devices can cause fatal injuries instead of protecting the car occupant. We report a case of a fatal motor vehicle collision involving a middle-aged male who sustained a penetrating neck injury attributed to a defective airbag. Case Summary: The incident occurred during a frontal collision, where the airbag was deployed but the driver was compromised by a metallic fragment from its internal components. Upon autopsy, a deep penetrating wound was identified on the anterior neck region penetrating the skin, body of the mandible, base of tongue and pharynx with multiple small pieces of bones were found along the pathway of the wound. Internally, the surrounding tissue were contused and a cylindrical metallic fragment measuring 2×2×2 cm were found embedded within the body of the second cervical vertebrae. No other life-threatening injuries or any underlying natural disease that might lead to his demise were observed. Further examination of the metal foreign body revealed that it was a structure from a defective airbag. Conclusion: This case highlights the potential for fatal outcomes resulting not only from the crash impact but also from defective safety mechanisms. It emphasises the importance of comprehensive vehicle safety inspections and post-crash investigations by the authorities, particularly in determining contributory mechanical failures.

P11 Sarcoidosis: The great mimicker, challenging the mimickers

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Introduction: Sarcoidosis is a multisystem inflammatory disease of unknown etiology that is manifested by the presence of non-caseating granulomas in affected organ tissues. It is known as "the great mimicker" due to its nonspecific clinical presentations and potentially mimicking other conditions in autopsy. This case demonstrates the invaluable insights gleaned from autopsy findings and histopathological examination (HPE) to establish sarcoidosis from its other differential diagnoses (DD). Case Report: A 34-year-old Indian woman collapsed at workplace and was brought to hospital. Despite resuscitation, she was pronounced dead. Prior to her demise, she presented with constellation of the symptoms including chest pain, generalised body numbness and vomiting. The autopsy revealed occlusion of the coronary arteries, fibrotic changes on the posterior wall of the left ventricle and whitish spots on the serosal surface of the spleen. All the other organs were grossly unremarkable. However, the HPE of the organs including heart, lungs, liver, spleen and kidneys demonstrated presence of non-caseating granulomas composed of epithelioid histiocytes with variable number of giant cells. Special stains to rule out tuberculosis, fungal and parasitic infections showed negative findings. HPE also revealed no evidence of active infection or malignancy. All the other microbiological ancillary investigations were also unremarkable. Conclusion: Sarcoidosis is a systemic inflammatory disease producing granulomas and presenting mainly in younger age group with female predilection. It is important to always know that sarcoidosis can affect various organs and is a great mimic of other diseases. There are no specific tests or findings that definitively diagnose sarcoidosis, making it difficult to differentiate from other conditions. However, common DD, including tuberculosis, fungal infections, and a range of autoimmune, infectious or malignant conditions, must be systematically excluded. This can be achieved through a thorough autopsy, comprehensive ancillary investigations and most importantly in-depth histopathological evaluation.

P12 Craniofacial Sutures Bone Density and Thickness Measurement for Age Estimation and Sex Determination: A Mini Review

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Introduction: Developmental and structural changes in the thickness of adjacent bones are frequently influenced by sex and age. In forensic identification, these morphological traits can be crucial. Particularly when other biological indicators are absent or degraded. Recent advancements in imaging and morphometric analysis have enabled more detailed study of suture closure patterns and made it possible to estimate bone density and cortical thickness with greater accuracy. Particularly in populations of adolescents and young adults where conventional inadequate markers, these metrics hold potential for improving the precision of demographic profiling. Objectives: This study aims to assess potential of craniofacial suture morphology and bone features as reliable indicators of biological and environmental variability in the face by examining their forensic relevance for age estimation and sex determination. Methods: PubMed (MEDLINE) and Google Scholar were used to provide the data. Inclusion criteria were investigated using the following restricted keywords: "age estimation", "sex determination", "suture closure", "thickness", "bone density", resulting in 10 articles included in the final review. Results and Discussion: The results of several examinations, including CT-Scan and X-ray, showed that the density of sutures is influenced by age. The age range is 20-80 years. They revealed that sutures and whole skull thickness measurements change with age and sex. Bone density increases with age and then declines as the bone

ages. When comparing women and men of the same age, women tend to have denser cortical bone. High-accuracy, reasonably priced methods for sex estimation in forensic anthropology are provided by anatomy-based metric analyses, particularly when combined with multi-structure discriminant functions and sophisticated imaging. Conclusion: This study suggests that skull bone density might be a useful parameter in age estimation and sex determination models, especially for adult females, in combination with other indicators, potentially enhancing overall age estimation accuracy in forensic and anthropological contexts.

P13 Sudden Death from Brain Arteriovenous Malformation Rupture: Natural vs Trauma-Related Cause in a Forensic Case

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Introduction: Sudden deaths involving both trauma and underlying natural disease present a complex challenge for forensic pathologists due to the medico-legal implications. These cases require a thorough investigative approach to determine the cause and manner of death. Case Report: A 44-year-old man was discovered unconscious on a staircase, presenting with a skull fracture and extensive bruising, particularly over bony prominences. Autopsy findings included a severe occipital bone fracture, diffuse subdural and subarachnoid haemorrhages, and frontal lobe contusions. Notably, an intracerebral haemorrhage (ICH) was identified in the left frontal lobe. Additional findings included cirrhotic changes in the liver and renal cortical scarring, confirmed through histological examination. Examination of brain tissue revealed the ICH was associated with blunt force trauma. However, a cluster of abnormal, tortuous vessels including dilated arteries and thick-walled veins was also detected in the region of the haemorrhage, consistent with an arteriovenous malformation (AVM). Discussion: Although uncommon, brain arteriovenous malformations (AVMs), a major category of vascular anomalies, can rupture and cause spontaneous intracerebral haemorrhage, occasionally triggered by trauma. AVM rupture is more frequent among younger individuals. In forensic cases, a ruptured AVM may serve as a mitigating factor in legal contexts. In this case, a substantial hematoma was located in the left frontal lobe, distinct from the area of contusion. Evidence of systemic hypertension and related organ changes were also observed. Based on the autopsy findings, the most likely scenario is that the individual experienced a spontaneous intracerebral haemorrhage due to AVM rupture, which then led to a fall down the stairs.

P14 Fibromuscular Dysplasia of the Coronary Artery in a Young Man

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Introduction: Fibromuscular dysplasia (FMD) of the coronary artery also known as intramural coronary artery dysplasia is an idiopathic, segmental, noninflammatory and nonatherosclerotic disease of the musculature of arterial walls, leading to stenosis of small- and medium-sized arteries. FMD involving the coronary arteries is an uncommon but important condition that can present with myocardial infarction, left ventricular dysfunction and potentially sudden cardiac death. Case Summary: 21 years old young man with no underlying medical illness suddenly collapsed while standing. The deceased was brought in dead to Hospital Sultanah Bahiyah for postmortem examination. Postmortem examination showed he was morbidly obese with heart weight of 720g. No significant occlusion in the coronary arteries however the myocardium of left ventricle appeared pale with myocardial fibrosis at the septal wall. Pale yellow discolouration was apparent at the apex of the heart with concentric hypertrophy of the left ventricle. Histology of the heart showed apart from myocyte hypertrophy, there was fibromuscular dysplasia of coronary arteries within left ventricle and septal wall. Discussion: Cause of death of fibromuscular dysplasia of coronary arteries is only possible with histological examination of the heart. In this case morbid obesity is a comorbidity which also can cause sudden death. However, the overwhelming pathological findings within the coronary arteries are significant enough to cause a disease with lethal potential. Sections of the free wall of left ventricle and interventricular septum showed replacement fibrosis. Mechanism of death was likely a ventricular tachyarrhythmia.

P15 When Nature Deceives: Weaver Ant Bites Masquerading as Strangulation in a Sudden Death Case

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Introduction: In forensic pathology, postmortem insect activity can create artefacts that closely resemble antemortem traumatic injuries. The weaver ant (Oecophylla smaragdina), prevalent in tropical climates, is known for its aggressive biting behaviour. These bites may imitate signs of physical violence, such as strangulation marks, and can lead to diagnostic confusion. This case highlights how ant activity mimicked strangulation marks, presenting a significant challenge during the forensic examination. Case Report: A 46-year-old male was found unconscious near his parked vehicle in a public area. There were no signs of struggle, external ligatures, or suspicious circumstances at the scene. Autopsy revealed multiple reddish-brown, linear and arcuate marks encircling the neck, initially suggestive of ligature strangulation. However, internal examination showed no injury to neck muscles, hyoid bone, or signs of petechial haemorrhage typically associated with strangulation. Numerous live weaver ants were observed

at the scene and on the body. The neck lesions were superficial and limited to the epidermis, with histological analysis revealing no evidence of vital reaction. Further autopsy findings revealed significant coronary artery occlusion and myocardial fibrosis. The final cause of death was attributed to acute myocardial infarction due to coronary atheroma. Discussion: This case underscores the importance of differentiating true traumatic injuries from postmortem artefacts caused by insect activity. Weaver ant bites, particularly when concentrated around the neck, can mimic strangulation marks and mislead forensic interpretation. The absence of internal injuries and histological indicators of vital response was key to identifying the lesions as postmortem in origin. Thorough scene investigation and careful correlation of external findings with internal pathology are crucial to avoid diagnostic errors in cases of sudden death under unclear circumstances.

P16 Fatal Human-Elephant Encounter in the Gerik Forest: Unravelling a Tragic Clash with the Wild

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Introduction: Elephant attacks pose a significant threat to human safety due to the animal's immense size, strength, and unpredictable behaviour. These encounters frequently result in severe trauma or fatalities, with primary mechanisms of injury including trampling, tusk goring, and forceful displacement. Data from the Perak Wildlife Department reported approximately 10 fatalities over the past decade due to elephant encounters, underscoring the urgent need for improved awareness and preventive strategies. Case Report: We present the case of a 65-year-old Orang Asli male residing near the Royal Belum State Park, a region with a significant elephant population. He was discovered unresponsive by a nearby relative who had gone to check on him after hearing the presence of an elephant in the vicinity. Postmortem examination revealed penetrating neck injuries associated with airway compression, disruption of the vagus nerve, damage to major vascular structures and trauma to the upper cervical spine. These injuries resulted in asphyxiation and fatal exsanguination. Discussion and Conclusion: This case highlights the characteristic autopsy findings of a fatal encounter with the Asian elephant (Elephas maximus indicus), the predominant species in the state of Perak. The observed injury patterns are contrasted with those typically associated with the smaller Bornean pygmy elephant (Elephas maximus borneensis), a subspecies endemic to the island of Borneo. The pattern of extensive crush injuries and severe blunt force trauma observed aligns with previously reported cases, reinforcing the characteristic mechanisms of injury associated with the aggression of Elephas maximus. Understanding the defensive behaviour of elephants when startled or threatened is crucial for mitigating the risk of fatal encounters. By presenting and contextualising these postmortem findings within existing knowledge, this case supports efforts to improve forensic recognition, inform public safety strategies, and foster safer human–elephant coexistence.

P17 Sex Estimation Amongst the Malaysian Population Using Post Mortem Computed Tomography Morphometry of Metacarpals and Phalanges: A Pilot Study

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Introduction: Morphometric analysis of hand bones has demonstrated sexual dimorphism across various populations and ethnicities. This study aims to evaluate the potential of metacarpal and phalangeal measurements obtained from postmortem computed tomography (PMCT) scan images to estimate sex amongst the Malaysian population. Methodology: A retrospective cross-sectional study was conducted using PMCT scan images of 80 adult Malaysian individuals among Malay, Chinese and Indian ethnicity, above 21 years old. Standardised 15 measurements were performed on metacarpal including metacarpal length (ML), base width (WB), and head width (WH) and 14 measurements on phalanges comprising the length of proximal (PP), middle (MP), and distal (DP) phalanges. Statistical analyses included independent t-tests, ANOVA, correlation, multivariate regression, and discriminant function analysis. Results and Discussion: Intra- and inter-observer reliability showed acceptable relative technical error of measurement (rTEM), ranging from 0.351–4.164% and 0.803–5.793% respectively. Intraclass correlation coefficients (ICC) exceeded 0.9 for most parameters, except for MP3 and DP5. Significant sexual dimorphism was observed across all 29 measurements, with male dimensions being larger than female. The discriminant function analysis for sex estimation achieved high accuracy. Sex estimation models using selected optimised parameters of metacarpal showed 85.0% of cross-validation accuracy with sex bias value of -15.0% while phalanges showed 72.5% of cross-validation accuracy with sex bias value of 5.0%. These results suggest that metacarpal measurements provide a stronger discriminative value for sex determination than phalanges. No significant morphometric differences were found among ethnic groups. Only metacarpal head width showed a weak but significant positive correlation with age. Conclusion: Metacarpal morphometry offers a viable alternative method for sex estimation in the Malaysian population, particularly in forensic contexts where skull or pelvis are missing or poorly preserved.

P18 Claws of Death: Analysing Patterns of Injuries in Two Tiger Attacks

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Introduction: Conflicts between humans and wildlife has been documented as early as 300 BC, with significant implications for ecosystem health, biodiversity, and human safety. The nature of these encounters varies widely in frequency and severity, and in certain instances, such interactions may have fatal consequences. Case Report: This case series describes two fatal incidents occurring within a 120 km radius between Gerik, Perak, and Jeli, Kelantan. The decedents, both males aged 34 and 54 years, were discovered lifeless approximately 100 metres from their respective residences, with evident mutilation of the bodies. The presence of large feline footprints and reports of tiger roars in the vicinity strongly supported the suspicion of fatal tiger attacks. Autopsy findings in both cases revealed multiple lacerations to the neck and chest regions, along with traumatic amputation of the left lower limb. Detailed internal examinations demonstrated consistent patterns of damage to vital deep neck structures and extensive musculoskeletal injuries, which were concluded to have directly resulted in death in both individuals. Conclusions: Human-wildlife conflict in Malaysia has become an increasingly concerning issue, with a rising trend since 2012. Despite this, attacks by apex predators such as tigers remain rare. This case series highlights the characteristic autopsy findings associated with fatal tiger attacks and integrates a comparative review of the literature to enhance understanding of the forensic features and medicolegal implications of these rare but deadly encounters.

P19 To Teeth or Not to Teeth: A Tale of Deception

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Introduction: This case report presents three human skulls discovered in unusual postmortem conditions at the bank of the Perak River adjacent to the Palace of the Perak Sultanate in Kuala Kangsar in September 2024. The skulls were referred to the Forensic Odontology Unit, Hospital Kuala Lumpur for postmortem profiling. Case Report: Upon examination of the skulls, one skull displayed symbols on the cranium and mandible. Another significant finding included teeth that had been deliberately inserted into the alveolar sockets of a skull to which they did not anatomically belong with a layer of clear resin, possibly an adhesive, present on occlusal surfaces of the teeth. Radiographic imaging further confirmed the position of the teeth were inconsistent with the morphology of the sockets indicating intentional postmortem placement. The case was examined with attention to the unique symbols, dental inconsistencies, and the possibility of manipulation. While the exact context remains unclear, the findings suggest a non-standard treatment of remains possibly related to cultural or ritualistic practices. Discussion/Conclusion: To date, no similar case reports have been documented. Besides being rare, the unique findings in this case highlights several important forensic considerations. From a forensic odontology perspective, mismatched teeth can compromise accurate identification if not thoroughly assessed. In this case, age estimation was conducted as part of postmortem profiling. Without examination by forensically trained experts, alterations and intentional changes to human remains could be overlooked, resulting in inaccurate profiling or misleading identification efforts and potentially jeopardizing investigations. Additionally, the presence of symbolic markings highlights the importance of multidisciplinary approach incorporating forensic odontology and anthropology to ensure a comprehensive analysis in forensic investigations. By documenting this case, we aim to contribute to forensic literature by raising awareness about symbolic or manipulated remains, and the importance of a multidisciplinary approach and detailed analysis when dealing with forensic examinations.

P20 Fatal Streptococcus Pyogenes Skin Infection in a Toddler: A Postmortem Case Study

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Background: Simple skin infection like impetigo, which is common in children, can become life-threatening, as it has the potential to invade deeper tissues and enter the bloodstream, leading to septicaemia. This rapid progression can result in severe illness and remains a significant cause of mortality in young children. Case report: We present the postmortem examination of a 1-year-5-month-old who was found unconscious and brought in dead to the hospital. According to the mother, he had a three-week history of progressive skin lesions, which had been treated during the early phase. A similar skin lesion had initially appeared on his older brother, who was reported to have recovered well. External examination revealed a male toddler with the weight and height that were within normal centile range. There were widespread bullous impetigo involving the scalp, face, ears, neck, and limbs, with some lesions showing signs of healing. There was cervical lymphadenopathy with necrotic pus discharge. No evidence of meningitis or pulmonary consolidation was noted. Histopathological analysis demonstrated widespread infection involving multiple organs, with Gram-positive bacterial colonies identified in the brain, heart, liver, lungs, kidneys, and cervical lymph nodes. Blood and tissue cultures consistently isolated Streptococcus pyogenes. Conclusion: The cause of death was determined to be invasive Streptococcus pyogenes infection. This case highlights the potentially fatal consequences of untreated or inadequately treated Streptococcus pyogenes skin infections in toddlers. It also emphasises the impact of potential neglect or delays in seeking care, which may have played a contributory role in the fatal outcome and consideration in the assessment of the manner of death.

P21 Silent Killer in the Brainstem

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Introduction: Brainstem encephalitis is a rare and often under recognised cause of sudden unexplained death, particularly in young individuals without prior clinical symptoms. Its subtle or absent gross findings at autopsy make it a diagnostic challenge in forensic pathology, potentially leading to misclassification or undetermined causes of death. Case Report: A case of 22-year-old Bangladeshi male who was asymptomatic with no known medical history who was found unresponsive in his hostel. He was brought in dead to Hospital Sultan Ismail, Johor Bahru. External and internal examination showed no evidence of injury or significant gross pathology. However, histological examination of the brainstem, revealed perivascular lymphocytic infiltrates with neuronal loss, which were in keeping with encephalitic changes. No conclusive evidence of intoxication was identified on toxicology testing. Accordingly, brainstem encephalitis was determined to be the cause of death. Conclusion: This case emphasises the importance of meticulous brainstem examination in forensic autopsies, especially in sudden deaths of young, previously healthy individuals. Brainstem encephalitis may remain undetected without histological sampling, leading to incomplete or inaccurate determination of cause of death. Routine histological examination of the brainstem should be considered standard practice to improve diagnostic accuracy.

P22 Multimodal Forensic Reconstruction of a Colt M4 Rifle Headshot using PMCT, Autopsy, and Scene-Ballistics Correlation

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Introduction: High-velocity firearm injuries inflicted by military-grade rifles pose considerable challenges in forensic death investigations. This case was selected to illustrate how the integration of post-mortem computed tomography (PMCT), autopsy, and scene-ballistics analysis can collectively overcome the inherent challenges of reconstructing complex craniofacial firearm injuries. Case Summary: A 27-year-old male military personnel was found deceased with a gunshot wound to the head in a locked weapons depot. Scene findings included a Colt M4 rifle in automatic mode, an emptied magazine, and four spent casings. Four bullet impact marks were noted on a nearby cement wall. The decedent was discovered seated and slumped laterally in a pool of blood. Pre-autopsy PMCT showed perforating gunshot injuries with likely entry point at the submental region, complex craniofacial injuries predominantly affecting the right side, with multiple open defects (exit points) involving both frontal bones and right upper face. The extent of bone and projectile fragmentation, directionality and penetration patterns were also analysed. External examination demonstrated a close-contact submental entry wound with soot deposition. Three cranial exit wounds were identified at the nasal bridge, right orbit and the right frontal vertex, the latter likely representing the combined egress of shots three and four. Additional findings included flash burns on the right forearm and a left periorbital hematoma. Autopsy confirmed extensive craniofacial trauma with dural, pituitary and cerebral injuries associated with subarachnoid haemorrhage. Tongue and hard palate perforations supported a steep upward intraoral trajectory. Combined with scene-ballistics correlation, findings supported a sequence of four shots in rapid automatic succession. Conclusions: The multimodality approach of integrating PMCT, autopsy, and scene-ballistics findings enhances understanding of terminal ballistics and improves accuracy in determining bullet trajectories, forensic investigations, and the overall reconstruction of complex firearm-related deaths, offering insights not readily attainable through conventional methods alone.

P23 Infant Death with Underlying Macrocrania Mimicking Non-Accidental Injury: A Postmortem Case Study

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Introduction: The investigation of paediatric deaths often presents a diagnostic challenge, particularly when findings overlap between natural disease processes and non-accidental injury (NAI). Conditions such as infantile macrocrania may predispose infants to intracranial and skeletal vulnerabilities, where minor trauma can result in subdural haemorrhage and neurological compromise, including seizures and developmental delay, potentially mimicking abuse. Accurate interpretation requires thorough integration of clinical history, imaging, and pathological findings. Case: A 5-month-old male infant was brought to medical attention with macrocrania, a history of seizures, and prior neurosurgical intervention for subdural haemorrhage. He had undergone a right-sided decompressive craniectomy and experienced developmental delay, feeding issues, and frequent tonic seizures. During his final admission, he presented with vomiting, reduced responsiveness, and suspected meningitis. Despite intensive care, he deteriorated and died in the paediatric ICU. Postmortem examination revealed cerebral oedema, cerebral venous sinus thrombosis, and liquefactive brain changes. Histology showed evidence of hypoxic-ischemic encephalopathy and a thin subdural haemorrhage. Healing fractures with callus formation were present in the right humerus and ribs, but without signs of acute trauma. Lung examination revealed congestion and histological features consistent with pneumonia. No patterned bruises or external injuries were observed. Retinal haemorrhage was noted in the left eye. Inborn error of metabolism screening was normal. Conclusion: Although the presence of subdural haemorrhage, retinal haemorrhage, and healing fractures might initially raise suspicion of NAI, these findings were consistent with the child's underlying neurological vulnerability, biomechanical factors related to macrocrania, and prior medical

interventions. Pneumonia was determined to be the terminal cause of death in a neurologically compromised infant. This case highlights the importance of a multidisciplinary and contextual approach in forensic paediatric evaluations, to avoid misinterpretation of findings and ensure accurate medico-legal conclusions.

P24 Haemoperitoneum and Hindsight: The Perils of a Missed Ectopic

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Introduction: Ruptured ectopic pregnancy is a rare but preventable cause of sudden maternal death, often presenting forensic pathologists with diagnostic and medico-legal challenges. Ruptured ectopic pregnancy remains a life-threatening emergency in the first trimester. Despite advancements in diagnostic imaging and early pregnancy surveillance, delayed presentation and atypical symptoms can obscure timely diagnosis. Socioeconomic factors undeniably play significant role in their occurrence. Case: We report a case of 40-year-old Indonesian woman, married, previously had 2 successful normal spontaneous vaginal deliveries. She presented with acute vague abdominal pain and vomiting, culminating in sudden collapse and death at home. Notably, she had not sought any medical treatments for her symptoms nor undergone urine pregnancy testing. Serum β-HCG level was found to be markedly elevated, measured at 6704.25 mIU/mL. At autopsy, the body was overweight (BMI 28 kg/m^2) and exhibited generalised pallor of the skin and mucous membranes. Internal examination revealed a massive haemoperitoneum with approximately 2000mL of intraperitoneal blood. Further examination identified the source of the haemorrhage as a rupture of the right isthmic segment of the fallopian tube. Other major organs showed generalised pallor and did not reveal any notable pathological changes upon examination. Histopathology confirmed chorionic villi within the fallopian tube and decidual change with antemortem blood clot. Histological examination of the remaining tissues selected at postmortem examination confirmed the gross findings and did not demonstrate any further significant pathology. Conclusion: This case underscores the critical need for heightened clinical vigilance in early pregnancy and illustrates the role of forensic pathology in determining the cause of death, identifying missed opportunities for diagnosis, and contributing to public health surveillance. The importance of detection of red flags in early pregnancy should be emphasised to the parents to ensure such blasphemy not be missed.

P25 Bowel Perforation in Leptospirosis: A Rare Phenomenon

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Introduction: Leptospirosis an infection caused by zoonotic Leptospira Sp from spirochete family. Even though it's well known to the medical world, still categorised as an under-reported disease, where only certain cases with severe manifestations or organ failures are reported. One of the rarest complications of leptospirosis is intestinal perforation which was identified in our case. The ultimate aetiology highlighted in the pathophysiology was virulency of the bacteria. Case: A 35-year-old Bangladeshi, found dead at his hostel subsequently brought in dead to hospital. At post mortem externally found slightly distended abdomen, no external injury. Internal examination of abdomen showed inflamed peritoneal wall, pus admixed with ascites and slough. On further examination found a perforation at small intestines. Surrounding mesenteric lymph nodes were swollen. Perforated site was sectioned and found necrosis with slough. Histopathology examination revealed inflammatory cell infiltration in mucosa and submucosal layer. Laboratory result of Leptospira serology showed IgM positive with MAT 1:800 titre. Conclusion: This is one of the rare cases of leptospirosis with small bowel manifestation. Based on a large-scale study of "Leptospirosis in human and animals in Malaysia: A review from 1976 to 2023", there was no reported case of leptospirosis with intestinal perforation. The only case study available on net is the "An unusual cause of bowel perforation- Leptospirosis" which done by N. Raj Kumar et.al. It clearly shows there is a need to create system which is handy and compatible to be used worldwide for proper reporting and data collection of the cases. Emphasis needs to be given to laboratory investigation in postmortem to increase sensitivity in diagnosing leptospirosis.

P26 A Brutal Crime of Passion: A Case Study of Extreme Knife Violence

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Introduction: This case study examines the forensic investigation of a 44-year-old Rohingya male who was brutally stabbed 48 times in a crime fuelled by jealousy, after being accused of an affair with the perpetrator's wife. The case underscores the critical collaboration between forensic pathologists and police from securing the murder weapon (knife) to analysing wound patterns and preserving DNA evidence. Such teamwork ensures accurate crime reconstruction, maintains evidentiary integrity, and strengthens court presentation, ultimately delivering justice for the victim. Case: 44-year-old Rohingya male sustained 48 stab wounds and 8 incised wounds in a brutal knife attack motivated by jealousy. The victim, found unresponsive at the scene, exhibited penetrating injuries to vital organs, including lungs, heart and liver. A detailed postmortem examination was conducted, documenting each wound's length, trajectory (vertical and oblique angles), and tissue damage patterns. Wound mapping confirmed the fatal sequence of exsanguination due to multiple stab wounds to the chest. The perpetrator surrendered, but forensic evidence remained pivotal. Bloodstain pattern analysis reconstructed the attack dynamics, while knife wound morphology matched the suspect's weapon. This

case underscores how systematic wound documentation combined with precise crime scene analysis strengthens prosecutorial evidence. A robust chain of evidence highlights the indispensable role of forensic science in securing justice for victims of violent crimes. Conclusion: This case study demonstrates the crucial role of forensic-police collaboration in solving brutal knife crimes. Through meticulous wound analysis (48 stab wounds with specific trajectories and organ damage) and crime scene reconstruction (bloodstain patterns and weapon matching), investigators established an irrefutable chain of evidence. Despite the perpetrator's confession, systematic forensic documentation proved vital for court proceedings. The case highlights how interdisciplinary teamwork between pathologists and police transforms violent crime scenes into compelling legal evidence, ensuring justice while setting standards for future forensic investigations of similar homicidal violence.

P27 Alleged Fatal Motor Vehicle Accident: Uncovering the Mystery - A Case Report

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Introduction: Forensic pathology plays a great role in medical healthcare, particularly in determining the cause of death in medicolegal cases. Often times cases of alleged motor vehicle accidents (MVAs) are associated with traumatic injuries as the primary cause of death. However, in some circumstances, the cause of death is preceded by a natural event. Therefore, there is a crucial need of performing a thorough medicolegal autopsy in such cases to precisely establish the cause of death. This case report explores a fatal MVA in which the driver succumbed to a natural cause, emphasising the importance of autopsy in distinguishing between traumatic and natural death. Case report: The case involves a 50-year-old male with underlying Diabetes Mellitus who was involved in a minor motor vehicle collision. Despite the lack of significant injuries, the driver was found unresponsive at the scene and was later pronounced dead at Emergency Department. Forensic examination, including a comprehensive autopsy and laboratory investigation, revealed that the death was due to ruptured coronary artery plaque. Conclusion: This case emphasises the critical importance role of forensic pathology in accurately identifying the cause of death in MVAs, especially when natural causes are suspected. It highlights the need for detailed post-mortem investigations to distinguish between deaths caused by traumatic injuries and those resulting from other underlying medical conditions. The findings further provide precision into establishment of the cause of death, manner of death and mechanism of death which is the foundation in legal proceedings besides contributing in the broader context of public health and safety.

P28 A Case Report: Midzonal (Zone 2) Hepatic Necrosis, Microvesicular Steatosis and Councilman Body in Severe Dengue Death with Acute Liver Failure

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Introduction: Severe liver involvement is one of the risk factors identified in patients who die of dengue infection. In general, mild to moderate liver involvement with elevated liver enzymes is common in dengue infection but acute liver failure and hepatic encephalopathy are rare. A wide spectrum of hepatic histological changes has been noted in dengue. This comprised fatty change (micro vesicular), hepatocyte necrosis, hyperplasia and destruction of Kupffer cells, Councilman Bodies and mononuclear cell infiltrates at the portal tract. Hepatocyte injury including necrotic changes commonly involves the midzonal area followed by the centrilobular area. We presented a case of severe dengue death with a typical liver histopathological finding. Case: A 43-year-old female with no known comorbid was brought in death to Emergency Department after complaining of sudden onset of shortness of breath and unconscious at home. Blood investigations revealed elevated serum alanine aminotransferase (ALT) (499 U/L) and aspartate transaminase (AST) (792 U/L). The deceased was sent to mortuary for postmortem examination after police report was lodged by the relative. Prior to that, she went to GP with complaints of vomiting, diarrhoea and reduce effort tolerance for 3 days. No symptoms of fever, cough, runny nose or UTI symptoms at home. Dengue COMBO test was done and result was negative at that time. She was from dengue prone area. Gross examination finding was showing bilateral pleural effusion and peritoneal effusion, no blood or pus was seen. Liver was pale in colour without fibrosis or fatty changes was seen. The spleen was enlarged (360 gm) and congested without no evidence of haemorrhage, fibrosis or puss was seen. No evidence of active bleeding was seen. Other organs were unremarkable. Liver tissue for Dengue PCR was detected for Dengue Virus Type 3. Histopathological examination of the liver section showing extensive midzonal (Zone 2) hepatocytes necrosis, diffuse fatty changes (predominantly micro vesicular steatosis) and mononuclear infiltrated at the portal tract with frequently seen Councilman bodies, compatible with severe dengue infection. Section of the spleen shows marked congestion of the splenic red pulp with reduction of lymphocytes in splenic white pulp. Other organ specimens were unremarkable. Conclusion: In conclusion, this was a case of 43 years 43-year-old female, with no known comorbid was brought in death to Emergency Department. Gross postmortem finding showed plasma leakage to the extravascular space (pleural and peritoneal) with enlarged spleen. No evidence of active bleeding was seen. Histological changes in the liver parenchyma (midzonal necrosis and diffuse fatty changes) are compatible with positive Dengue virus Type 3 from deceased liver tissue sample and cause the liver failure. No other evidence of heart failure, kidney failure or sepsis are seen in tissue sample. The cause of death was severe dengue with plasma leakage and acute liver failure.

P29 Insights from Autopsy Findings in Renal Cell Carcinoma: An Autopsy case study

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Introduction: Renal cell carcinoma (RCC) accounts for over 90% of kidney cancers, originating from the renal epithelium. It predominantly affects older individuals, with a higher incidence among males (ratio 2:1), and tobacco use is a significant risk factor. Case Report: We present the case of a 37-year-old male who was brought in deceased to the mortuary, with a history of left-sided abdominal mass, hematuria, and persistent fatigue. He was found collapsed in his bathroom after episodes of vomiting. A CT scan of the abdomen revealed a mass in the left kidney with multiple lung nodules. The deceased had a history of heavy smoking for over a decade. Results: Autopsy findings showed a pale individual with a palpable mass on the left side of the abdomen. The left kidney appeared enlarged with tortuous vessels surrounding the perinephric fat, and multiple yellowish, solid, and gelatinous lesions were observed. Lung examination revealed well-defined, round masses consistent with "cannonball" metastases. Microscopic analysis of the organs confirmed clear cell carcinoma with rhabdoid features. Conclusions: RCC can present with diverse systemic symptoms unrelated to the kidney. Many patients remain asymptomatic initially, allowing tumours to grow to substantial sizes before diagnosis. Rhabdoid renal cell carcinoma is a rare variant found across different histological subtypes of RCC and typically indicates a poor prognosis.

P30 Fatal Canine Mauling: A Forensic Case Series from Sabah, Malaysia.

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Introduction: Fatal dog attacks, particularly those involving packs, are rare but present significant challenges in forensic investigations. Injury patterns caused by animal predation can mimic interpersonal violence, risking misinterpretation as homicide. Key forensic considerations include the anatomical distribution and morphological features of wounds, and the absence of injury patterns typical of human-inflicted trauma. Careful autopsy analysis is critical to determine the cause and manner of death. This case series illustrates characteristic injury patterns observed in fatal canine maulings in Sabah, Malaysia. Case: Three fatal cases involving stray dog attacks were examined. Case 1 concerns a 65-year-old woman found near a bus terminal with amputation of the right hand, extensive avulsions over the head, trunk, and limbs, pelvic fractures, and lacerations of the right external iliac vessels. Case 2 describes a 2-year-old boy attacked near his home, sustaining multiple puncture wounds, subgaleal hematoma, right carotid artery laceration, thoracic cage injuries, and a right-sided haemothorax. Case 3 involves a 29-year-old woman with schizophrenia, found deceased at a market area. She had extensive lacerations and puncture wounds predominantly affecting the head and extremities. Across all cases, injuries were multiple, severe, and primarily involved exposed regions such as the head, neck, and limbs. Common findings included deep lacerations, puncture wounds, tissue avulsions, major vascular injuries, and skeletal fractures. Importantly, injuries typically seen in homicidal blunt or sharp force trauma were absent. Conclusion: Fatal canine mauling especially in packs, produce distinctive injury patterns charactersed by widespread soft tissue destruction, vascular compromise, and injuries concentrated over exposed areas. Recognising these patterns is essential for accurately determining the cause and manner of death, ensuring correct differentiation from human-inflicted violence.

P31 Cardiac Tamponade: Distinguishing Traumatic And Non-Traumatic Causes – The Role Of Forensic Pathology

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Introduction: Cardiac tamponade is a critical medical condition caused by the accumulation of fluid in the pericardial sac, which leads to increased intrapericardial pressure. This pressure impairs cardiac contractility and reduces cardiac output, making timely diagnosis and rapid intervention crucial for survival. Without prompt treatment, cardiac tamponade often results in sudden death. Cardiac tamponade can arise from either traumatic or non-traumatic causes. Traumatic sources include blunt trauma to the chest, complications from cardiac procedures, and even cardiopulmonary resuscitation. Non-traumatic causes often involve conditions such as post-myocardial infarction, thoracic aortic dissection, and pericarditis. A thorough post-mortem examination is crucial in coming into a precise conclusion, distinguishing between a traumatic and a non-traumatic cause. Case Report: A 62-year-old Malay gentleman was found by his wife, collapsed in his room. Cardiopulmonary resuscitation was started by his wife at home and was continued with Lund University Cardiopulmonary Assist System (LUCAS) in the red zone, emergency department. However, he succumbed to death, and a post-mortem examination was done. Central chest abrasions and intercostal muscles contusions were consistent with resuscitation marks. Internal examination of the thorax revealed massive hemopericardium with left ventricular wall rupture. Conclusion: In forensic pathology, diagnosing cardiac tamponade during autopsy is typically straightforward. However, distinguishing between traumatic and non-traumatic origins presents a greater challenge. Accurate and precise determination relies on meticulous external and internal examinations, along with histological analysis, to identify the underlying cause and address any potential misconceptions or irrelevant allegations.

P32 The Silent Injury: Subdural Hygroma as a Confirmatory Finding in Domestic Violence Cases

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Introduction: Subdural hygroma (SDHy), a collection of cerebrospinal fluid in the subdural space, is often associated with head trauma such as a resolving or transformed subdural hematoma. Given its link to trauma, the presence of SDHy, particularly in the absence of related medical diagnosis should raise clinical suspicion of repeated head trauma, including the possibility of physical abuse. This association becomes especially significant in cases of suspected domestic violence, where victims are unable or unwilling to disclose their experiences. Case Presentation: A 24-year-old woman presented with persistent dizziness, nausea, and vomiting following hiatal hernia repair. Initial management focused on postoperative complications and suspected psychosomatic symptoms. After a psychiatric evaluation, she was diagnosed with major depressive disorder and was given the according medications. Even with appropriate medications, her symptoms persisted. A head CT scan was ordered and revealed a left frontotemporal SDHy. With no recent history of head injury, this finding prompted a forensic and medicolegal evaluation. Further assessment uncovered a long-standing history of physical abuse such as repeated blunt trauma to the head by both of her first and second husband. Despite receiving medicolegal advisement, she refused to report her abuse to legal authorities. Discussion and Conclusion: This case shows the potential role where subdural hygroma (SDHy) in radiological findings can help confirm suspected cases of domestic violence without a clear history of head trauma. The presence of SDHy, though it is not specific to abuse, should raise suspicion and trigger clinical forensic assessment. A multidisciplinary approach, including medical, psychological, and social support is necessary to address the various consequences of domestic violence. Healthcare workers have a responsibility to provide medicolegal recommendations; nevertheless, it is imperative to respect the patient's right to make autonomous decisions in seeking justice and protection.

P33 Epicrisis of Diverse Abnormalities Findings of Postmortem Examination in Sudden Death Case of Unidentified Deceased – A Case Report.

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Introduction: Forensic pathologists often encounter difficulties in identifying the cause of death in sudden death cases with no known medical histories. The diverse abnormalities observed during autopsy can result in various possibilities for the cause of death. While antemortem information is crucial for concluding the cause of death, in its absence, forensic pathologists must comprehensively collect and analyse all postmortem findings using critical analytical skills. Case Presentation: An unidentified male body was found in a parking lot in Jakarta, Indonesia. No information about his family or medical history was available. A postmortem examination determined that he was of Mongoloid descent and estimated to be over 65 years old. Gross and histopathological findings established multiple diagnoses, including acute and chronic myocardial infarction, liver metastasis from prostate adenocarcinoma, pulmonary and lymphadenitis tuberculosis, and chronic interstitial nephritis. These pathological conditions could be independently or interrelated with one another to contribute to his demise. Discussion and Conclusion: In this case, acute myocardial infarction, tuberculosis infection, and prostate adenocarcinoma are all common diseases in older men, which makes it challenging to determine the exact cause of death, particularly in the absence of antemortem information. We conducted a detailed analysis of each diagnosis and arranged to establish a correlation between each and the other to reconstruct a logical conclusion regarding the most probable cause of death. This paper presents an overview of the critical analysis process of producing an epicrisis report based solely on postmortem examination findings.

P34 Buried Evidence: Forensic Approaches to Identifying Human Remains

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According to the Ministry of Women's Empowerment and Child Protection in Indonesia, there were 26,328 cases of violence against women in 2024. From January to March 2025, there were an additional 1,824 reported cases, of which approximately 61% occurred in household settings and 49% involved physical violence. This case report discusses a homicide investigation involving a 21-year-old female, whose body was found at the perpetrator's residence. During the investigation, the perpetrator confessed to committing a similar murder two years earlier, in which he killed his wife and disposed the body in a 1.5-meter-deep septic tank behind his house. Identifying human remains in complex homicide cases presents significant challenges and relies heavily on forensic anthropology. The forensic pathology team performed several examination methods to assist in the identification process, including Dental root examination, Cranial suture analysis, Pelvic bone assessment, and Stature estimation using long bone measurement formulas. For primary identification, a paternity DNA test was conducted using comparison samples from the suspected victim's biological children. The identification process was concluded by the forensic pathologist team after confirming the victim's identity using primary data obtained from investigators.

P36 A Silent Histology in a Loud Report.

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Introduction: Meningococcal septicaemia is a rapid-onset and often deadly condition caused by Neisseria meningitidis. Herein, we describe a case of meningococcal septicaemia which highlights the classic clinical and pathological features of this disease while also underscoring the postmortem histopathological limitations. Case Report: We present to you a case of a 10-year-old Indonesian boy, unvaccinated, with no known medical illness who presented with a one-day history of fever, accompanied by a rapidly spreading generalised purpuric rash that initially appeared on the lower limbs then progressing to the trunk and face. He was found unresponsive by the family members later that evening. External examination showed generalised non-blanchable purpuric rash involving the face, neck, torso, and bilateral upper limbs and lower limbs with petechial haemorrhages noted over the conjunctivae and gum. Internal examination showed clear and translucent meninges, with evidence of global cerebral oedema of the brain weighing 1475 grams. The cut section appeared unremarkable. There were also bilateral adrenal haemorrhages noted. The mucosal surfaces of the small and large bowels showed focal petechial haemorrhages. Both blood and cerebrospinal fluid culture and sensitivity isolated Neisseria meningitidis. Histopathological examination showed oedematous brain parenchyma with no evidence of active inflammatory cells infiltration seen. Gram stain sent were also negative. Discussion: The presence of Neisseria meningitidis was confirmed by microbiological analysis. Interestingly, the histopathological examination did not yield any bacterial colonies or demonstrate significant inflammatory infiltration in the tissue samples. A possible explanation could be the rapid and localised nature of the infection, previous antibiotic administration, inadequate tissue sample size or clearance of bacteria during the tissue processing. This case emphasises even with a negative histopathological examination, it does not exclude severe sepsis, especially with cases of rapid deterioration and death. The correlation between clinical presentation, microbiological analysis and postmortem findings are important for a comprehensive conclusion.

P37 Hidden Injury: Bridging Vein Rupture in Child Abuse Case Report.

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Background: Head trauma in children is a serious medical condition that can lead to fatal complications such as subdural haemorrhage (SDH). One of the primary mechanisms of subdural haemorrhage (SDH) is the rupture of bridging veins, which are blood vessels connecting the brain's surface to the dura mater and dural venous sinuses. In children, subdural haemorrhage (SDH) can occur due to accidents such as falls or impacts. According to estimates from the National Centre on Shaken Baby Syndrome, approximately 1,200 to 1,400 children in the United States sustain fatal or nonfatal abusive head trauma annually. In Indonesia, an estimated 4,890 children were subjected to physical violence in the year 2024. Case Presentation: Postmortem examination of a 20-month-old infant, revealed findings consistent with abusive head trauma (AHT), including subdural haemorrhage (SDH) due to bridging vein rupture. The victim had been repeatedly abused over two weeks by the mother's boyfriend, but the perpetrator claimed the injuries were accidental stairway fall. External examination of the body revealed the blunt-force trauma bruises on the head, ligatures abrasions on both wrists suggesting attempted restraint, and cigarette burn marks on the genital area. Internal examination uncovered extensive subdural bleeding and widespread bruising of the brain and brain stem. Discussion and Conclusion: Bridging vein rupture is considered pathognomonic for subdural haemorrhage (SDH), especially in cases involving traumatic brain injury (TBI) or abusive head trauma (AHT). The anatomical location of subdural haemorrhage serves as a crucial forensic indicator for determining the mechanism and cause of death in this case. The fragility of child cranial anatomy predisposes to subdural haemorrhages even with minor trauma. Identifying head injuries in such cases requires a multidisciplinary approach to identify between accidental and intentional trauma. In the absence of comprehensive multidisciplinary evaluation, occult cases of child maltreatment risk remaining undiagnosed, thereby perpetuating offender impunity and predisposing vulnerable populations to recurrent victimisation through persistent exposure to unabated abusive environments.

P38 Broken Bones and Broken Assumptions: The Forensic Radiology Dilemma

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Introduction: Osteogenesis imperfecta (OI) is a genetic disorder characterised by defective collagen synthesis, leading to increased bone fragility and recurrent fractures. In a forensic perspective, distinguishing fractures due to OI and other bone diseases from those due to non-accidental trauma is critical. Misinterpretation can result in wrongful accusations or missed diagnoses with serious legal and ethical implications. Thus, radiologic evaluation plays a pivotal role in this complex diagnostic process. Case: We present the case of a 5-year-old child who was brought in dead to the hospital. Further history obtained from the parents revealed that she had impaired ambulation since early childhood; however, no medical consultation or treatment had been sought. Notably, there was history of a recent death of a sibling who presented with the similar clinical presentation. Skeletal survey revealed generalised osteopenia with multiple fractures of varying stages of healing. Autopsy and further investigations including histopathological and

odontology examinations were strongly suggestive of a diagnosis of OI. Discussion: This poster critically evaluates the forensic radiologic approach to differentiating OI from non-accidental injury seen in child abuse, emphasising the necessity for a structured and evidence-based assessment. Radiologic hallmarks of OI such as diffuse osteopenia, multiple Wormian bones, anterolateral bowing of long bones, and transverse fractures with minimal trauma are contrasted with injury patterns more indicative of abuse, including classic metaphyseal lesions, rib fractures in the posterior arc, and complex skull fractures. A comprehensive assessment requiring careful correlation of imaging findings with clinical history, autopsy findings, ancillary investigations including odontology examination, and when necessary, genetic analysis is important. Conclusion: Differentiating OI from non-accidental injury demands a multidisciplinary and methodical approach. Accurate and thorough radio-imaging interpretation is essential in ensuring an accurate diagnosis and prevention of justice misconduct.

P39 From the Cradle to The Grave

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Introduction: Neonatal deaths without accompanying clinical or personal documentation present significant challenges in forensic investigations. Establishing age, identity, and the circumstances surrounding death becomes crucial for medico-legal purposes. Forensic odontology offers valuable insights through dental profiling and age estimation, particularly when conventional identification methods are unavailable. Case: Two cases involving unidentified neonates were referred to the Forensic Odontology Unit, Hospital Kuala Lumpur, from the Forensic Medicine Departments of Hospital Raja Permaisuri Bainun, Ipoh, and Hospital Kuala Lumpur. The first case involved the exhumation of bony fragments from a neonate who allegedly died shortly after birth and was subsequently buried. The second case concerned a neonate reportedly thrown immediately after delivery from the 38th floor of a building, with the body recovered on the 9th floor. In both cases, comprehensive dental examinations were conducted, including postmortem dental profiling, assessment of dental development, and radiographic analysis to estimate age. Both cases revealed developing tooth buds at the early stages of odontogenesis, visible on radiographic examination. Subtle mineralisation at the incisal and cuspal regions was also observed, offering valuable evidence for the estimation of developmental age. Conclusion/Discussion: These cases highlight the vital role of forensic odontology and the importance of a multidisciplinary approach in neonatal death investigations. Dental age estimation offers a reliable assessment of developmental maturity and complements autopsy findings, especially when documentation is incomplete. Forensic odontology can significantly strengthen investigations where traditional identification and age estimation methods are not feasible.

P40 The New Kid on the Block? An autopsy case report

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Introduction: Drug-related deaths remain one of the most challenging cases encountered by forensic pathologists. Illicit substances may cause death, contribute to it or be incidentally present. In 2024, the World Health Organization reported that over 3 million deaths per year were attributed to substance use, with the majority linked to alcohol consumption. New psychoactive substances, in particular, can be fatal but are often difficult to identify. Being the new kid on the block, globally and locally, they are formulated to evade existing legal controls. We present a case that demonstrates the role and consequences of such drugs in a custodial death. Case: A 40-year-old Malaysian male became unconscious upon arrival at the local police station following an arrest. He was brought to the emergency department where he was declared dead. He was allegedly displaying psychotic behaviour and causing a disturbance at a mosque during an ongoing event, which led to intervention and restraint by the authorities. A set of vaping device and liquid-filled containers were found in his car. A postmortem examination showed facial and conjunctival congestion, and blunt injuries on various parts of the body, with no associated fatal injuries internally. Toxicology analysis of the blood only detected lidocaine whilst that of the stomach detected 5F-ADB. Analyses of the containers found, showed the presence of nicotine and synthetic cannabinoids. Together with other ancillary investigations, it was concluded that death was due to substance intoxication in a man subjected to restraint. Discussion: Synthetic cannabinoids are a group of new psychoactive substances, that are not newly invented but have only recently entered the market. Therefore, knowledge of these drugs, particularly their lethality, remains limited. The case above illustrates the complexities that are characteristic in postmortem toxicology, and how they, in turn, affect the interpretation of postmortem findings. Other important issues shall be discussed.

P41 From Blockage to Flood: A Case Series of Airway Obstruction in a Forensic Pathology Centre in Klang Valley

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Introduction: Choking and massive aspiration are not uncommon causes of sudden unexpected death, presenting unique diagnostic challenges due to their indistinct presentation. Choking happens when a foreign material blocks the internal airways, usually between the pharynx and the bifurcation of the trachea, causing oxygen deprivation and potentially death. Aspiration on the other hand, refers to accidental inhalation of substance (e.g. vomit) into the lungs, which can cause severe respiratory distress. Choking

can lead to aspiration if the obstructing material is inhaled into the lungs after partial dislodgement. Whilst aspiration can cause acute death by massive aspiration, it can also lead to unexpected death related to its sequelae of bronchopneumonia. Given the dynamic nature of the disease process, using appropriate terminology in the cause of death is essential to illustrate the findings clearly. Case: We present a series of three cases related to airway obstruction in a forensic pathology centre in Klang Valley. Case 1: A case of sudden collapse while eating involving a 44-year-old who has no co-morbidities. Case 2: A 56-year-old who had dysphagia following cerebrovascular accident, was allegedly found dead about an hour after he was fed with bread. Case 3: An 8-month-old baby with underlying neonatal encephalopathy and developmental delay was allegedly found unresponsive in about a couple of hours post-feeding. Whilst bolus of food material lodged within the larynx was demonstrated in the first two cases, the autopsy and histopathological examinations of the third case revealed the presence of extensive semi-solid food material along the airways until distal bronchioles and alveoli. Discussion/conclusion: This case series highlights the differences in fatalities related to airway obstruction and the importance for meticulously identifying the risk factors, understanding the circumstances and detailed autopsy examination prior to giving suitable term for the cause of death, thereby enhancing forensic diagnostic precision in airway obstruction-related fatalities.

P42 Haemopericardium Due to Ruptured Dissecting Aorta: A Forensic Case Report

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Introduction: Sudden death among young and middle-aged adult, typically the ages of 20 to 59, have become increasingly common. Aortic dissection, although less common, can be notoriously silent but is catastrophic vascular disorder at the same time. When the dissection involves the ascending aorta, the risk of rupture into pericardial cavity is high, frequently resulting in hemopericardium, cardiac tamponade and sudden death. Case report: We present to you a case of 40-years-old, Indonesian, male, with no known medical illness, found unconscious inside his room; no active complaint prior to that. He was brought in dead to Hospital Umum Sarawak. Autopsy revealed there were no external mark of injury seen. The internal examination of the chest showed there was aortic dissection De Bakey type 1 (dissection involving ascending and descending aorta) with ruptured site over the ascending aorta within the pericardial space with presence of massive hemopericardium. The cut section of the aorta showed double lumen appearance with moderate to severe sclerotic changes. Histology revealed density of smooth muscle cells in tunica media and intralamella mucoid extracellular matrix accumulation seen. Conclusion: Aortic dissection particularly involving the ascending aorta, is rapidly fatal. This case report underscored the crucial role of forensic autopsy in unveiling lethal vascular pathology that may remain clinically silent.

P43 Understanding Cranial Blunt Force and Gunshot Trauma in Skeleton Remains: Insights from Two Cases

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Introduction: Understanding the differences between blunt force trauma and gunshot wounds in skulls without soft tissue is difficult. Forensic anthropologists need to rely on signs left on the bones because each type of injury causes specific changes in the skeletal structure. Objective: This study examines two cases of head injuries in skeletonised remains. It aims to identify how blunt force trauma and gunshot wounds affect skull bones by analysing fracture patterns and other indicators linked to these injuries. Method: We conducted a thorough analysis of two cases of skull injuries in skeletonised remains. The examination focused on visible characteristics such as fracture patterns, bevelling (sloping edges), and how the fractures spread through the bone. We also looked at how the edges of the fractures appeared and the general shape and quality of the bone, which are crucial for determining the type of injury. These observations were made without the use of radiological tools like X-rays or scans. Results and Discussion: Case 1: The injury was identified as blunt force trauma. This was evident from the presence of a depressed and shattered area in the skull with sharp fracture edges. The fracture lines extended into the side portion of the skull, showing a pattern typical of blunt force, along with visible changes in the bone that happen when it is compressed. Case 2: we found evidence of a gunshot wound. The characteristics included round holes where the bullet entered and exited, bevelling on the inside and outside edges, and fracture lines spreading out from these points. These features are consistent with established characteristics of gunshot injuries in skulls. Notably, no metal fragments were found in the remains, indicating that the bullet had passed through without lodging in the skull. Conclusion: The study demonstrates that, even without the use of radiological imaging, careful examination of the skeletal features can effectively distinguish between blunt force trauma and gunshot wounds in skeletonised skulls. This highlights the critical role of skeletal analysis in forensic investigations, particularly in cases involving advanced decomposition where soft tissues are no longer present. Additionally, the findings suggest the importance of incorporating other investigative methods, such as advanced imaging techniques and experimental trauma studies, to further enhance the understanding and differentiation of these types of injuries.

P44 Resolving Commingled Skeletal Remains in Forensic Investigations.

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This case report highlights methods for analysing commingled skeletal remains in forensic context. Working on mixed assemblages of skeletal remains is quite uncommon and presents significant challenges in forensic anthropology referral cases due to overlapping and incomplete skeletal elements. The scale and complexity of the specimens shall dictate the working methodology. We had received a case of commingled bones as a result of unsupervised disinterment of clandestine graves comprising of at least two adult individuals. To address this, we employed a combination of morphoscopic and morphometric methods to separate, classify and re-associate the bones to the individual deceased. In the absence of DNA analysis, both methods employed achieved more than 75 % accuracy rate in sorting individual skeletal elements. Although the methods used are efficient and cost-effective, DNA analysis is the ultimate test for confirmatory matches.

P45 Fatal Electrocution in Varied Environmental Contexts: A Forensic Case Series

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Introduction: Death by electrocution is uncommon in most situations yet is typically seen in occupational or hazardous environments. Establishing this cause of death requires forensic correlation between scene investigations, autopsy findings and histopathological findings while ruling out natural or traumatic causes. Case report: We present a case series of three electrocution-related deaths: Case 1: A 45-year-old shipyard worker was found collapsed during rainy conditions while working with electrical equipment. The autopsy showed multiple superficial burn wounds on his chest and back, with histological evidence of current marks. Toxicology showed positive methamphetamine. Case 2: A 58-year-old man was found unresponsive in a flooded farm field. Postmortem examination showed extensive electrical burns across his trunk and limbs. Though alcohol was detected in the blood, no pathology suggesting another cause of death was detected. Case 3: A 51-year-old welder collapsed on a lorry engine. Postmortem examination revealed contact burns on his left hand and chest, with significant underlying cardiac disease including severe coronary atherosclerosis, myocardial fibrosis, and aortic dissection. Discussion/Conclusion: These cases demonstrate different electrocution death manifestations that result from environmental conditions (rain and flood) and occupational risks (welding and electrical handling), as well as underlying health conditions. Differentiating primary electrocution from coincidental natural death is vital. A comprehensive forensic evaluation with histopathology and toxicology testing is essential for proper diagnosis and medicolegal certification.

P46 Fat Chance: Unmasking CPT1A Deficiency in Sudden Infant Death

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Abstract: Carnitine Palmitoyltransferase 1A (CPT1A) deficiency is a rare autosomal recessive metabolic disorder of fatty acid oxidation, characterised by impaired transport of long-chain fatty acids into mitochondria. This energy metabolism disorder compromises body's ability to produce ketones and glucose during periods of fasting, underfeeding, or concurrent illness. As a result, affected individuals, particularly infants are at risk of hypoketotic hypoglycaemia leading to neurological disorders such as seizures, coma, or sudden unexpected death. First described in 1981, CPT1A deficiency remains exceptionally rare, with fewer than 50 cases documented worldwide. Autopsy findings are often subtle, with fatty liver being a non-specific indicator, and histological examinations may be unrevealing. As such, deaths may be misclassified under broader categories such as Sudden Unexpected Death in Infancy (SUDI) or other natural causes, potentially overlooking an inherited metabolic condition. Case Report: An 8-month-old female infant was found unresponsive in her cradle at the babysitter's residence. She had been developing appropriately for age with no prior health concerns. Two days prior to the incident, she had a mild, intermittent productive cough but remained afebrile. On the day of the event, she was discovered unresponsive. Postmortem examination revealed fatty liver, confirmed histologically as microvesicular steatosis of the hepatocytes. Additional histological findings revealed a mild respiratory tract infection. Biochemical genetic testing however revealed levels of specific amino acids and acylcarnitines, with a profile suggestive CPT1A deficiency. Conclusion: CPT1A deficiency is a rare but critical cause of sudden unexpected death. Increasing awareness of CPT1A deficiency and its forensic implications highlights the importance of incorporating routine metabolic screening into standard autopsy protocols, especially in cases of unexplained infant or child death. Such an approach differentiates metabolic causes from other natural deaths, further supporting accurate cause-of-death, and identifying at-risk family members for genetic counselling and intervention.

P47 A Vein Remembered: Death by Internal Jugular Catheter Tampering – Case Report

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Introduction: An internal jugular vein (IJV) catheter is a commonly used central venous catheter for the administration of

medications, fluids, parenteral nutrition, haemodialysis, or for monitoring central venous pressure. While generally considered safe, rare but significant cases have been reported in which patients intentionally tampered with these catheters as a method of self-harm or suicide. Such tampering may involve deliberate dislodgement or cutting of the catheter, potentially resulting in fatal complications such as massive blood loss (exsanguination) or air embolism. Here we report a fatal catheter tampering case. Case Report: A 69-year-old man with a recent diagnosis of chronic kidney disease (CKD) had an indwelling IJV catheter placed for haemodialysis. He lived alone and reportedly faced unresolved familial conflicts. The man was later found deceased at a secluded hilltop location. Investigations revealed he had intentionally severed his IJV catheter using scissors. Before dying, he made a video call to his nephew, during which he admitted to the act. The nephew alerted authorities, who found the man's body surrounded with blood. Post-mortem examination revealed pallor of internal organs apart from bilateral atrophic kidneys. Discussion: The discovery of blood-stained scissors and cut catheter ends strongly suggests deliberate tampering. Two likely mechanisms of death include: i) Hypovolemia due to Exsanguination, ii) Air embolism through the open catheter. Hypovolemia is supported by blood pooling at the scene and pale organs. In such cases, imaging may help confirm findings or rule out air embolism. If hypovolemia is absent, air embolism becomes the more probable cause, requiring post-mortem imaging such as CXR, PMCT, to diagnose or detection of air in the right heart chambers during autopsy.

P48 Modification of embalming for preservation of human cadaver for medical education in Indonesia

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Introduction: Embalming procedures for the purposes of medical anatomy education are highly needed. Modification efforts to create a good cadaver appearance with intact blood vessels and organs are starting to be widely carried out. In addition to the right formula, the care process during the corpse refrigerator also requires good techniques so that the desired results can be maximised. Methods: This study is experimental on cadavers preserved with modified preservative fluid consisting of 10% formalin, 70% alcohol, distilled water, caustic soda, glycerin, powdered egg yolk. Results: The administration of modified preservative fluid to the corpse aims to preserve the corpse and maintain tissue conditions as similar as possible to a normal human body. Maximum preservation results can be obtained if carried out together with good storage and skin care techniques. Discussion: Cadaver preservation is a serious concern in the medical world. Prospective doctors need learning media that are very similar to an anatomical atlas. In this reported study, corpse preservation was carried out for 2 to 3 months. No marbling was found and the corpse did not smell bad. Bathing the corpse should use bar soap to remove germs on the skin surface. Vaseline is also needed to maintain the moisture content of the corpse's skin. A stable corpse refrigerator temperature will also greatly affect the final results of the cadaver. Conclusion: Cadaver preservation requires an integrated technique from the beginning of the bathing process, preservation with liquids and storage in the corpse refrigerator.

P49 Digital Innovation in the Management of Postmortem Specimens and Records Using Microsoft Excel

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Introduction: Postmortem specimens and records are essential medico-legal components requiring accurate and traceable management. In hospitals lacking sophisticated digital systems, traditional manual recording methods often lead to documentation errors, misplaced specimens, and difficulty in tracking long-term storage or disposal status. Objectives: To develop and implement a cost-effective, Excel-based digital system for the structured recording, tracking, and disposal of postmortem specimens and records within a general hospital forensic unit. Methods: A Microsoft Excel-based database system was designed to log specimen type, case reference, collection date, storage location, and disposal date. Colour-coded alerts and filters were used to flag specimens due for review or disposal. The system was protected with limited user access and was regularly backed up in secure hospital servers. Results and Discussion: The digital database allowed for clear visibility of storage status across all specimen types, including tissue, toxicology samples, FFPE blocks, and slides. Errors due to illegible handwriting, misfiled records, or unrecorded disposals were significantly reduced. Additionally, the system facilitated easier tracking, data retrieval for audits, faster response to inquiries, and improved compliance with internal documentation standards. The flexibility and accessibility of Microsoft Excel made it ideal for adaptation in resource-limited settings. Conclusions: A structured, Excel-based database system provides a practical, low-cost digital solution for improving the integrity and accountability of postmortem specimen and record management. This innovation is particularly valuable in settings without access to proprietary forensic database systems.

P50 When One Isn't Enough: A Fatal Case of Dual Ruptured Aortic Dissection in a Malaysian Teenager

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Introduction: Aortic dissection is exceedingly rare in the paediatric and adolescent population, with limited documented cases in Malaysia and a reported global prevalence of only 0.37% in those under 21. In this age group, genetic factors are the predominant cause, contrasting with the aetiology in adults. While Stanford type A dissection is the most common, the occurrence of multiple rupture sites is exceptionally unusual. Case: A 15-year-old boy with underlying congenital heart disease (diagnosed at infancy but

defaulted follow-ups) presented with a two-day history of breathlessness and lethargy, before succumbing to death. There were no other symptoms and no significant family history. Autopsy showed an overweight young male with soft dysmorphism. The dissection extended from the ascending to the descending thoracic aorta, featuring two distinct rupture sites (1cm from aortic root and at T5 vertebra level) associated with hemopericardium and right haemothorax. Additional findings included a mildly dilated aortic root, pulmonary atheroma, patent ductus arteriosus, significant right ventricular hypertrophy, and normal heart valves. Histopathology demonstrated fragmentation of the aortic intima and media, patchy loss of smooth muscle nuclei in the media, cardiomyocyte hypertrophy, and pulmonary arterial wall thickening. Special stains (Van Gieson and Alcian Blue) confirmed elastic fibre fragmentation and intralamellar mucopolysaccharide accumulation in the media, respectively. Discussion and Conclusion: The patient's young age, subtle dysmorphism, and pre-existing congenital heart disease strongly suggest a genetic predisposition to this aortic dissection. The presence of dual rupture sites also raised the question of their aetiology, either spontaneous or secondary to cardiopulmonary resuscitation. It further underscores the increased mortality associated with such presentations compared to single rupture, emphasising the critical need for timely diagnosis and proper intervention. This unique case also highlights the severe complications arising from seemingly stable congenital conditions and stresses the importance of clinical vigilance and awareness to prevent fatalities.

P51 Deadly Lifts: A Forensic Perspective on Crane-Related Fatalities.

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Introduction: Crane-related occupational fatalities involving heavy equipment remain a significant concern in the construction industry. Between 2019 and 2024, at least four deaths were reported in major crane-related incidents. While the mechanisms of injury vary, these incidents often result in high-impact trauma leading to immediate fatal outcomes. Case series: We present two crane-related fatalities. The first case involved an adult foreign male who was fatally struck by a dislodged wear plate from the hook block while dismantling a tower crane. Despite being equipped with personal protective equipment (PPE), he sustained catastrophic blunt force trauma. Postmortem examination confirmed comminuted skull fractures, intracranial haemorrhages, and brain laceration. The second case involved an adult foreign male operating a piling crane. While lifting two concrete piles simultaneously, one became unstable and fell onto the crane structure. As he attempted to escape, the deceased was fatally struck. Postmortem findings included extensive crush injuries to the torso and lower limbs, consistent with high-impact compressive force. Discussion/Conclusions: These cases illustrate distinct fatal injury mechanisms associated with crane operations, linking trauma patterns to specific crane components. This highlights the importance of correlating autopsy findings with crane anatomy and operational dynamics. Comprehensive autopsy remains critical for documenting injuries and determining the mechanism of death. In both cases, scene visits were conducted, aiding in reconstructing the events and understanding the crane structures involved, thereby enhancing trauma interpretation. Although postmortem CT (PMCT) imaging was not performed, it would have enhanced visualization of internal injuries and supported anatomical correlation. Forensic medicine plays a key role in determining cause of death, guiding prevention strategies, and supporting regulatory enforcement. Collaboration with the Department of Occupational Safety and Health (DOSH) is vital to strengthen workplace safety initiatives and reduce preventable fatalities.

P52 Fatal Rockfall in a Limestone Tourism Area of Ipoh, Perak: A Case Report

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Introduction: Ipoh, located in Perak, is widely recognised for its stunning limestone formations, attracting thousands of ecotourists annually. These natural structures, while visually stunning, present a range of geohazards, particularly rockfalls. Rockfall incidents, especially in karst and mountainous regions, present significant public safety risks. While most studies focus on geological and engineering aspects, forensic investigations are critical in establishing the cause and manner of death, particularly in accidental fatalities due to natural hazards. Case: A local tourist was fatally injured after being struck by a falling limestone rock at the rock sanctuary in Ipoh. The incident occurred while the victim was accompanying a few friends from Vietnam. A large limestone fragment (15 kg) detached from an overhanging section of the cliff, falling from approximately 7.5 meters above ground level. The rock struck the victim directly on the top of the head, resulting in immediate unconsciousness followed by cessation of vital signs. The victim was pronounced dead at the scene. The postmortem findings were consistent with crush injury to the head. Conclusion/ Discussion: Fatal injuries from falling rocks are typically caused by high-velocity blunt force trauma, often to the head, neck, or upper torso. These injuries resemble those seen in traffic accidents or falls from significant height. Fatal rockfall incidents, while often considered unpredictable, are increasingly preventable with proper geotechnical monitoring and forensic awareness. Forensic death investigation in this case serves not only to determine cause and manner of death but also to inform broader public safety measures in high-risk ecotourism areas. To prevent future tragedies, ecotourism in geologically sensitive areas like Ipoh must be balanced with robust safety standards.