
ABSTRACTS

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Surgical outcome for traumatic brain contusions: A review of 52 cases. Amir Aziz, Khalid Mehmood, Tariq Salah Ud Din. Neurosurgical Unit II, Lahore General Hospital, Lahore.

Objective: Is to determine the efficacy of surgical evacuation of Brain Contusions over wide range of GCS. **Methodology:** Traumatic brain injury (TBI) affects up to 2% population per year and contributes major cause of death and disability among young patients. Brain contusions are common sequelae of TBI occurring 10% of all brain injuries and 20 -35% of severe TBI. We retrospectively analyzed and compared the results of surgery for brain contusions over wide range of GCS (4-12) during last three years (Jan. 2008- Dec. 2010) in patients with midline shift of 5 mm or more. **Results:** Our study showed significantly good results of evacuating contusions as compared to those who were treated conservatively. **Conclusion:** Surgical evacuation of traumatic brain contusions over wide range of GCS results in lowering intracranial pressure, reduces the progressive neurological deterioration and mortality and is also cost effective. The aggressiveness and the rapidity with which surgical care provided will determine the outcome. Our results and recommendations will help neurotrauma centres in Pakistan, to determine management criteria and improve overall survival.

Violation of public laws and severe head injury. Hayat Mohammad Khan, Mumtaz Ali, Ramzan Hussain, Muhammad Usman, Muhammad Siddique and Khalid Khanzada. Department of Neurosurgery, PGMI Lady Reading Hospital, Peshawar, Pakistan.

Objective: To assess the association of severe head injuries with the violation of public laws. **Materials and Methods:** Between July 2010 to December 2010 data were collected prospectively at intensive care unit Department of Neurosurgery, Lady Reading Hospital, Peshawar. A total of 38 patients with motorcycle accident were admitted during this period. The study population consisted of all males with age range from 10 to 50 years with 8 patients (21%) below 18 years. None of the patient used helmet. Twenty-nine patients (76%) got severe head injury. Out of thirty eight, 17 patients (45%) improved and discharged from hospital in satisfactory condition while 21 patients (55%) expired in the hospital. Fifty percent of the patients got less than ten days hospital stay while remaining fifty percent were admitted for more than ten days. Twenty-four patients (63%) were from main urban areas of Khyber, Pakhtoonkhwa while only 27% from remote

areas of the province. **Conclusions:** Most people with motorcycle accident associated severe head injury are not following the laws of traffic. They ride without using protective helmet and mostly below age. It results in loss of precious lives. Implementation of already existing traffic laws can prevent most of these injuries.

Frequency of severe head injury in patients with depressed skull fracture. Mohammad Ishaq, Mumtaz Ali, Muhammad Usman, Naeem-ul-Haq, Muhammad Siddique and Mohsin Ali. Department of Neurosurgery, PGMI, Lady Reading Hospital, Peshawar

Objective: To determine the frequency of severe head injury in patients with Depressed skull Fracture. **Material:** This prospective study was conducted from January 2010 to December, 2010 in Department of Neurosurgery PGMI Lady Reading Hospital, Peshawar. A total of 32 patients presented with Depressed Skull Fractures were included and assessed for the severity of head injury. Patients with associated thoracic and abdominal injuries (poly trauma) and intoxication of drugs (alcohol) were excluded. All the data was collected on Performa and analyzed using the SPSS version 10. **Results:** There were 21 (65.62%) male and 11 (34.38%) female patients with age ranged from 1 year to 50 years. Out of 32 patients 8 patients (25.0%) had severe head injury, 31.2% presented with moderate head injury while 43.8% presented with mild head injury. The causes of depressed skull fracture were fall from heights in 18 (56.3%), road traffic accidents 11 (34.4%) and physical violence in 3 (9.4%). DSF was found in frontal bone in 6 cases (18.8%), in parietal bone in 13 cases (40.6%), in Frontoparietal bones in 5 cases (15.6%), in temporal bone in 5 cases (15.6%) and in occipital bone in 3 cases (9.4%). **Conclusion:** Depressed Skull Fracture is a common Neurosurgical emergency. The common causes include fall from heights and Road Traffic Accidents. Fortunately the frequency of severe head injury in patients with Depressed Skull Fracture is low (25%).

Patterns of gunshot injuries and outcome: Experience at a tertiary care neuro-spinal unit. Kishore Kumar, Muhammad Sohail Umerani, Farhan Khan, Salman Sharif. Department of Neurosurgery. Liaquat National Hospital and Medical College, Karachi, Pakistan.

Background: Gunshot wounds to the head and spine are generally associated with poor outcome. They are common in our country. Cranio-cerebral gunshot wounds are the most devastating injuries. They are a

major problem from economic perspective as well. Our objective was to evaluate different patterns of gunshot injuries at cranio-spinal region and their outcome. Methods: We present a prospective data of 12 patients from Nov 2010 till Feb 2011, admitted through A&E, at our centre. Seven had cranial and 5 had spinal injuries. Pattern of injury (clinical as well as radiological), GCS on admission, age and time interval from event to presentation in A&E were major factors in predicting outcome. Result: Out of 7 patients with cranial injury, 2 (28.5%) patients underwent surgical wound debridement while 4 (57.1%) required craniotomy in addition to wound debridement. Three (42.8%) patients consequently underwent anterior skull base defect repair. Two (40%) patients with spinal injury required decompressive laminectomy with removal of foreign body. Conclusion: Appropriate intensive care management along with combination of early surgical management and proper neuro rehabilitation improve GOS and significantly reduce overall hospital stay.

Bomb blast head injuries: A two years experience of 154 patients. Mumtaz Ali, Zahid Khan. Department of Neurosurgery, PGMI, Lady Reading Hospital, Peshawar, Pakistan.

Objective: To analyze variables of patients with bomb blast head injuries in a tertiary care civilian hospital of Khyber Pukhtoonkhwa. Material and methods: Study Design: Observational study. Duration: January, 2009 to December 2010 (2 years). We included all the patients with bomb blast head injuries who were hospitalized, irrespective of their age and gender, and excluded those patients who died before hospitalization. Results: In a total of 2052 bomb blast victims admitted in LRH, 154 patients had head trauma. Ninety nine (64.3%) patients were male with the age range from 2 months to 70 years. Common age affected was 2nd (24%) and 3rd (29%) decades of life. Around 14% of the patients had severe head injuries. Frontal 31.17% (48) and temporal lobes (24.67%) of the brain were commonly affected. Mortality rate in our study was 11.7%. The common complications in our patients were neurodeficit (52), wound infection (13.6%), CSF leak (9.1%), epilepsy (9 cases) and post traumatic hydrocephalus (5 patients). Conclusion: We conclude from this study that significant number of patients exposed to explosion have head injuries. Young men, with frontal or temporal regions, were affected commonly. Mortality rate is 11.7% in those head injured patients who reach to hospital. The common complications in those who

survive are neurodeficit and wound infections.

Presenting blood pressure in Traumatic Brain Injury: A Bimodal Distribution of Death. Syed Nabeel Zafar, Frederick H Millham, Yuchiao Chang, Karim Fikry, Hassan B Alam, David R King, George C Velmahos, Marc A de Moya. Harvard School of Public Health, Boston, MA, USA, Department of Surgery, Newton-Wellsley Hospital, USA, General Medicine Division, Massachusetts General Hospital, Boston, MA, USA, Moya, Division of Trauma, Emergency Surgery and Surgical Critical Care (TESSCC), MGH, Boston MA, USA.

Background: Recent research explores the relationship between vital signs upon ED arrival and early outcomes. This work has not included Traumatic Brain Injury (TBI). We aimed to evaluate the relationship of systolic blood pressure at presentation (EDSBP) to outcome. Methods: Using the National Trauma Data Bank (v7) we analyzed patients ≥ 16 years of age with isolated moderate-severe blunt traumatic brain injury. TBI was defined by ICD-9 diagnosis codes and AIS scores. We determined mortality rates while controlling for age, gender, race, payment type and injury severity using logistic regression. Survival analysis was performed to determine 3 day survival rates. Scores and rates were plotted against EDSBP. Results: A total of 7,238 patients were included in the analysis. Plots of adverse outcomes vs. EDSBP demonstrated bimodal distributions. The mortality curve had one inflection point at EDSBP 120mmHg, indicating higher mortality when blood pressures were lower than this threshold. Another inflection began at EDSBP 140mmHg. The mortality rate was 21% when EDSBP was <120 mmHg, 9% when it was between 120 and 140 mmHg and 19% when EDSBP was ≥ 140 mmHg. Multivariate analysis demonstrated that patients presenting with an EDSBP of <120 mmHg and EDSBP ≥ 140 mmHg were 2.7 (95%CI = 2.13, 3.48) and 1.6 (95%CI = 1.32, 1.96) times more likely to die respectively, than those that presented with a EDSBP of 120-140 mmHg. Conclusions: Mortality in moderate to severe TBI has a bimodal distribution. Like hypotension, hypertension at hospital admission appears to be associated with increased mortality in traumatic brain injury, even after controlling for other factors.

Intensive insulin therapy in brain injury: A meta-analysis. Syed Nabeel Zafar, Aftab Iqbal, Mauricio F. Farez, Suyog Kamatkar and Marc A. de Moya. Department of Surgery, Aga Khan University, Karachi, Pakistan; Medical Services Manager, Naya Jeevan,

Karachi, Pakistan; Institute for Neurological Research
Dr Raúl Carrea, Buenos Aires, Argentina; Massachusetts Board of Registration in Medicine, Boston MA, USA and Division of Trauma, Emergency Surgery and Surgical Critical Care (TESSCC), Massachusetts General Hospital, Boston MA, USA.

Objective: To perform a systematic review and meta-analysis of literature to estimate the effect of IIT in patients with brain injury. **Methods:** We searched MEDLINE, EMBASE, Cochrane Central Register of Controlled Trials (CENTRAL) and citations of key articles and selected All randomized controlled trials (RCTs) comparing the effect of IIT to CIT among adult patients with acute brain injury (traumatic brain injury, stroke, subarachnoid hemorrhage and encephalitis). **Results:** Of the 2807 studies we identified 9 randomized controlled trials (RCTs) with a total of 1160 patients for analysis. IIT did not prove to decrease the risk of hospital or late mortality (RR= 1.04, 95% CI = 0.75, 1.43 and RR=1.07, 95%CI= 0.91,1.27 respectively). No significant heterogeneity was found (I²= 0.0%). IIT also did not have a protective effect on LTNO (RR = 1.10, 95 % CI = 0.96,1.27). IIT however did decrease the rate of infections (RR=0.76, 95% CI = 0.58, 0.98), heterogeneity was present (I²=64%) which was eliminated upon sensitivity analysis bringing the RR to 0.66 (95% CI=0.55, 0.80, I²=0%). IIT increased rate of hypoglycemic episodes (RR=1.72, 95%CI=1.20,2.46) however there was intractable heterogeneity present (I²=89%), this did not resolve upon sensitivity analysis. We found no evidence of publication bias by Egger's test (p =0.50). **Conclusion:** IIT has no mortality or long term neurological outcome benefit in patients with brain injury but is beneficial at decreasing infection rates.

Summertime power outages and injuries due to fall: A likely association in a resource challenged country. M Shahzad Shamim, Uzma Khan, Junaid Razzak and Rashid Jooma. Aga Khan University Hospital, Karachi.

Introduction: Our observation led hypothesis was that during these unexpected power breakdowns, a relatively large proportion of patients fall from heights while the family spent the night at rooftops. This study was carried out to validate the hypothesis and find out if there exists an association between increased falls and power breakdowns. **Materials and methods:** The study was carried out at the Jinnah Postgraduate Medical Centre, Karachi. Data for all types of injuries such as falls, road traffic injuries, assault and others

were collected prospectively on a simple proforma, from the emergency department. The year 2006 was chosen for analysis as it had the worst power breakdowns. Injuries were classified into injuries occurring in the summer and winter months. Data entry was performed on Microsoft Excel software and analysis was performed using SPSS. Results are presented as mean \pm standard deviation for quantitative variables and number (percentage) for qualitative variables. Differences in proportions were assessed by using the Chi-square test. Independent sample t-test was used to assess the difference of means for continuous variables. All p-values were two sided and considered statistically significant if < 0.05 . **Results:** The total number of injuries in our study duration was 2599. Mean age of the patients was 21 + 18 years. Total number of all types of injuries (falls, road traffic injuries, assaults, etc) in the two seasons was comparable (1266 for summer and 1333 for winter). When different types of injuries were separately analyzed, injuries due to fall were found to be significantly more in summer (n=574) compared to winter (n=470) (OR= 1.5; 95% CI = 1.3, 1.8). On further analysis of patients, pediatric patients were found at a higher risk for falls compared to older patients (p 0.001). The frequency of falls in the year 2006 was then compared with the same months of two preceding years and we found that falls were significantly more in the year 2006 as compared to either the year 2005 (OR= 1.59; 95% CI = 1.37, 1.83) or 2004 (OR= 1.22; 95% CI = 1.05, 1.42). **Conclusion:** We have shown a potential association between summertime power outages and frequency of fall related injuries, especially in pediatric patients.

Initial results of Pakistan's first road traffic injury surveillance project. M Shahzad Shamim, Junaid Razzak, Rashid Jooma, Uzma Khan. Aga Khan University Hospital, Karachi, Pakistan.

Objectives: To report the findings of first three years of road traffic injuries (RTI) surveillance at Karachi and to compare it with previously published RTI related data from Pakistan and other low and middle income countries. **Methods:** Data was collected through RTI surveillance program at Karachi (RTIRP) from the five biggest emergency departments of the city which receive almost all the major emergencies of the city for the period September 2006 till September 2009. **Results:** A total of 99,272 victims were enlisted by the RTIRP during the study period. Annual incidence of RTI is calculated to be 184.3 per 100,000 populations and mortality is 5.7 per 100,000 populations. Eighty nine

Eighty nine percent victims are male and 73 % are between 15-44 years of age. Commonest road user to be affected is riders of two wheelers (45%). Only 7% of affected motorcyclists were found to be wearing helmets at the time of the accident. Trends of injuries remained uniform over the years. Most frequent injuries were external wounds, followed by orthopedic injuries. Conclusion: On the basis of our surveillance system, we have presented the largest RTI related data from a metropolitan city of Pakistan to date.

Decompressive craniectomy for traumatic brain injury in pediatric patients: Initial results and predictors of mortality. Saad Akhtar Khan, S Ather Enam, M Shahzad Shamim. Aga Khan University Hospital, Karachi.

Objective: To predict factors affecting mortality after decompressive craniectomy in pediatric population with traumatic brain injury. Methodology: A retrospective review of charts was done of pediatric patients who underwent decompressive craniectomy at Aga Khan University Hospital from January 2000 to January 2010. Records were reviewed regarding demographics, presenting GCS, severity of head injury, intubation at presentation, extent of systemic injuries, medical management before decompression, delay in presentation, delay to decompression, flaps raised, intraoperative time, intra-operative blood loss, and postoperative complications. Functional outcome was assessed using Glasgow coma outcome score. Neuroimaging of patients were reviewed to evaluate the extent of intracranial injury. Data was analyzed in SPSS version 17 and univariate Chi square was used for analysis of categorical data. P value of <0.05 was taken as significant. Results: Nineteen decompressive craniectomies were performed during the study periods. The mean age at presentation was 6.74 ± 4.6 years Majority were males (79%) with mean presenting GCS of 6.1 ± 2.3 . History of fall (58%) was the most common mechanism of injury equally followed by gunshots and road traffic accident. Mean delay in presentation was 118.2 ± 54 minutes. Cerebral edema (72%), fractures (64%) and subdural hematoma (31%) were the most common pathologies on neuroimaging respectively. 13 (68%) children were intubated at presentation and 3 (16%) required tracheostomy later. Mean delay to OR was 3.54 hours and 89% had unilateral flaps raised. Mean intraoperative time was 240.5 ± 104 minutes with a mean intraoperative blood loss of 325.4 ml. Mean post operative ventilation was 6.05 days and all patients ventilated for more than 6 days required tracheotomy. Most common non infec-

infectious complication was postoperative hydrocephalous (n=2) requiring further intervention. 7 patients (37%) died postoperatively while functional outcome assessed using the Glasgow coma outcome score good recovery (37%) to moderate disability (26%) on mean follow up of 4.76 months. Conclusion: Above mentioned factors were assessed to predict mortality. Low presenting GCS, delay in presentation (>180 minutes) late decompression (>4 hours), presence of fractures and intraoperative blood loss (>300 ml) were factors influencing mortality post decompression in traumatic brain injury in pediatric population. It is possible to use these predictive factors to assess what degree of success is to be expected in pediatric patients who undergo decompression.

Emergency room predictors of tracheostomy in patients with isolated traumatic brain injury requiring emergent cranial decompression. Muhammad Shahzad Shamim, Mohsin Qadeer, Ghulam Murtaza, Syed Ather Enam, Najiha Farooqui. Section of Neurosurgery, Department of Surgery, Aga Khan University Hospital, Karachi, Pakistan

Background: Severe traumatic brain injury patients frequently require a tracheostomy for prolonged mechanical ventilation and/or pulmonary toilet. It is now proven that the earlier the procedure is done, the more beneficial it is to the patient. The present study was carried out to find out if the requirement of tracheostomy can be predicted on arrival of patient in the emergency room. The prediction can potentially aid in combining the procedure with cranial decompression. Objective: To find out the emergency room predictors of tracheostomy in patients with isolated traumatic brain injury requiring emergent cranial decompression. Materials and methods: Retrospective case control study of all patients who underwent surgery for isolated traumatic brain injury and required more than four days of mechanical ventilation. Multivariate logistic regression was applied for predictive indicators. P value < 0.05 was considered significant. Results: In patients with isolated severe traumatic brain injury; 31-50 years age group, presence of pre-existing medical co-morbid conditions, delay in emergency room arrival exceeding 1.5 hours, abnormal pupillary response on arrival and pre-operative neurological worsening during hospital stay are independent predictors of tracheostomy. Conclusion: Requirement of tracheostomy can be predicted in severe traumatic brain injury patients on arrival in emergency room. Larger prospective studies are further recommended to validate our findings.

Karam Chand Technique for drainage of chronic subdural haematomas. Karam Chand, Sharma, Department of Neurosurgery, VMMC and Safdarjang Hospital, New Delhi, India.

Objective: Evaluation of minimal invasive surgery for chronic subdural haematoma. **Materials and Method:** The conventional treatment of chronic subdural haematoma is drainage by one or more burr holes in the skull. The burr holes leave ugly bone defects. Twist drill drainage may need repeated tappings. To overcome this author has used a technique which involves making an oblique drill hole in the skull at an acute angle posteriorly, on the side of subdural haematoma. After positioning the patient in supine position, cleaning and draping is done. A small scalp incision cutting all scalp layers, is given after infiltration of local anaesthesia and wound is retracted by using a silk suture across the wound and pulling out a loop of this thread through the wound. The drill hole is about 5 mm in diameter, just enough to admit 10 or 12 no Foley's catheter. The dura is cut by the drill tip only. Author uses high speed drill since it is difficult to make an oblique drill hole manually. No diathermy or suction is needed and procedure is done in the operation theatre under all aseptic conditions. The catheter is placed in the subdural cavity through the drill hole. No air is allowed to go in. This is achieved by pressing the thumb over drill hole as soon as subdural blood starts coming out. Because drill hole is oblique, catheter goes into subdural cavity only. The catheter is preloaded with saline to prevent any air column obstructing the drainage of subdural haematoma and is passed without any stellate. The soft nature of Foley's catheter prevents any brain injury. Once the catheter is in subdural cavity the balloon is inflated with 2cc saline or air and is pulled back so that only the tip of catheter stays in subdural cavity and balloon sits tightly against the drill hole and prevents any bleeding from dura and also does not allow any outside blood to go in. After ensuring outflow of liquid subdural blood catheter is connected to sterile bag which is kept just below level of head. Wound is tightly closed around catheter. Slow drainage of subdural blood continues over a period of time without any suction or irrigation. Patient is made to lie in supine position for 2 to 3 days. 48 to 72 hours later depending upon repeat NCCT head finding (showing significant decrease in size of subdural haematoma) catheter is removed. Procedure is done under local anaesthesia. 44 adult patients, 8 of whom had bilateral subdural haematomas, have been operated with this technique and it has given excellent results in all 44 patients. The main advantage of this

technique is that surgeons having minimal experience should also be able to drain subdural collections. During their training neurologists also get exposed to neurosurgery and everyone can learn to make a tangential drill hole. Since most of patients of chronic subdural haematomas are diagnosed by neurologists and no of neurosurgeons is inadequate in many countries, this can benefit many patients. This method does not require special set ups and uses Foley's catheter and steile bags which are available everywhere. Only small scar is left and no visible calvarial defect is produced. All patients underwent postoperative CT scans which were repeated till near or total near resolution occurred. **Results:** No morbidity or mortality occurred in these 44 patients. Drill hole at other site had to be done in 1 case only because of inadequate drainage. Complete or near complete CT scan verified resolution occurred in all the cases. Typically patients were discharged on 3rd day after verifying the significant reduction of subdural haematoma. **Conclusions:** The procedure promises to be an excellent one and has the potential to gain widespread acceptance.

Endovascular treatment of traumatic carotid cavernous fistula. Rana Shoaib Hamid, Tanveer ul Haq, Muhammad Shahzad Shamim, Syed Faraz Kazim, Basit Salam. Departments of Radiology and Neurosurgery, Aga Khan University Hospital, Stadium Road, P.O. Box 3500, Karachi 74800 Pakistan.

Objective: To evaluate the technical success, complications and outcome of treatment in patients with carotid cavernous fistula (CCF) managed by endovascular techniques. **Materials and methods:** Medical records and radiology reports of those 26 patients were retrospectively reviewed who were treated for carotid cavernous fistula by endovascular techniques at Aga Khan University hospital from November 2000 to December 2009. 20 patients were male and 6 were female, age range of 14 to 62 years, mean age 30.25 years. Prior to treatment, clinical diagnosis was confirmed in all patients with cross sectional imaging. Endovascular procedures were performed under general anesthesia by interventional neuroradiologist through arterial or venous approach. For fistula closure, detachable balloons, coils and / or glue was used. Follow up was done via patient's files and on phone. **Results:** Technical success rate of endovascular treatment was 92.3 % Single session of embolization was performed in 20 patients while 2 sessions were required in 4 patients due to recurrence. Complication rate was 15.3% (n=4) 1 patient had infarction. There was no procedure related mortality. 5 patients

lost to follow up. In rest of the 19 patients follow up ranged from 1 to 14 months (Mean 11.0 months) 8 out of 19 patients (42.1%) showed complete resolution of symptoms and 9 (47.3%) reported improvement. Conclusion: Endovascular treatment with detachable balloons or coil embolization is a safe and useful therapeutic option in cases of carotid cavernous fistulas.

Post traumatic contusion in patients with cervical stenosis: Should surgery be performed ? Sundus Ali, Khalid Mehmood, Tariq Salahuddin. Department of Neurosurgery, Unit II, Lahore General Hospital, Lahore.

Objectives: To evaluate the role of surgery in patients of post traumatic cord contusion with pre-existing cervical stenosis without fracture and instability. **Methods:** Retrospective chart review was done from jan 2006 till dec 2010 to identify patients presenting with traumatic, complete or incomplete cervical spinal injury, in presence of pre-existing stenosis without fracture or instability (20 cases). Medical records, plain radiographs, tomograms, and MRIs were reviewed. The presence or absence of cervical stenosis was determined by measuring sagittal canal diameter from the posterior aspect of the C5 vertebral body to the spinolaminar line at the same level. Values less than 12 mm were considered abnormal. All patients were offered surgery. Those refusing or not fit for surgery were managed conservatively (08 cases). Surgical treatment included anterior, or posterior procedure, or both as dictated by the site of compression. Effect of treatment on the neurological status of patients was judged in terms change in AIS grade. **Results:** The neurological outcome of surgically treated patients was found no better than those managed conservatively whether injury was complete or incomplete. **Conclusions:** An appreciation of the fact that, the most important prognostic variable relating to neurological recovery in a patient with a spinal cord injury is the extent of parenchymal damage, is vital in managing such subgroup of patients. When an incomplete cervical spinal cord lesion exists, patients have a more favorable prognosis for recovery whether surgical intervention was done or not. In this study, no evidence was found to support surgical decompression in stenotic patients without fracture or instability, whatever the type of injury may be.

Road traffic accident - A preventable cause of head injury: Experience in lady reading hospital, Peshawar. Muhammad Usman, Mumtaz Ali, Khalid Mahmood Khan, Hayat Mohammad Khan,

Muhammad Siddique, Zahid Khan. Department of Neurosurgery, Postgraduate Medical Institute, Lady Reading Hospital Peshawar, Pakistan.

Objective: To study the different causes and aspects of head injury in patients of road traffic accidents. **Material and Methods:** This descriptive study was conducted in Neurosurgery Department of PGMI, Lady Reading Hospital Peshawar from January 2010 to June 2010. Patients of all ages with either sex were included in this study, while those patients of head injury having associated thoracic, abdominal or pelvic injuries were excluded. All the data was collected by using a Performa. Data was analyzed by descriptive statistics using SPSS software version 17. **Results:** Out of total 336 trauma patients, 132 sustained head injury due to Road traffic accident. Male were 88 (66.7%) and female were 44 (33.3%). Most of the patients (69.6%) were up to 30 years of age, i.e., less than 10 years were 24.2% and 45.4% were of the age range of 11-30 years. Majority of the patients (87.9%) were treated conservatively, while sixteen patients (12.1%) required surgical intervention and were treated accordingly. Major radiological findings were extradural hematoma and brain edema, 15.2% each, brain contusions 12.1%, skull bone linear fracture, linear fracture with pneumocephalus and subgaleal hematoma 9.1% each. Out of total 52 patients of severe head injury (GCS=3-8) only 6 expired. Sixty eight percent of the patients had satisfactory condition at discharge. **Conclusion:** Although majority of the patients of road traffic accident did not require any neurosurgical intervention, most of them remained admitted for quite a long period of time, due only to a cause which could have easily be avoided.

Cranioplasty after Decompressive Craniectomy: An Institutional Audit and Analysis of Factors related to Complications. Zain A. Sobani, Mohsin Qadeer, Muhammad Shahzad Shamim, Syed Nabeel Zafar. Syed Ghulam Murtaza, Syed Ather Enam, Najiha Bilal. Section of Neurosurgery, Department of Surgery, Aga Khan University Hospital, Karachi, Pakistan and Department of Surgery, Aga Khan University Hospital, Karachi, Pakistan.

Background: Decompressive craniectomies are an effective modality in reducing intracranial pressure in emergency situations; however in the long run they have been associated with alterations in hemodynamics, venous drainage, CSF dynamics, general metabolic function and gradual neurological decline. These symptoms attributed to the effects of atmospheric

pressure on the flap site can be effectively treated by restoring the cranial compartment to its "closed" state via a cranioplasty. Although a relatively simple procedure; cranioplasties have been associated with high complication rates. Keeping this in perspective, we conducted a retrospective audit of our institution to determine the factors associated with immediate and long term complications of cranioplasties in our setting. Methods: A retrospective review of patient records was carried out for patients having undergone reconstructive cranioplasties at our institution during the last 10 years (2000-2010). All case notes, records and investigations were reviewed and the data was recorded in a predesigned questionnaire. Complications were recorded along with the existing comorbid and measures taken for their prevention and management. Results: Ninety six patients with a mean age of 33+14.8 years were included in the study. Of the sample 76% (n=73) had no co-morbid. The leading primary pathology was blunt traumatic brain injuries in 45.8% (n=44), followed by cerebrovascular incidents in 23.95% (n=23), penetrating traumatic brain injuries in 11.5% (n=11) and tumors in 10.4% (n=10) of cases, with 40.6% (n=39) of patients requiring multiple craniotomies. In a mean follow up of 386 ± 615 days, complications were noted in 36.5% (n=35) of the patients including seizures (15.6%, n=15), neurological deficits (3.1%, n=3), hydrocephalous (3.1%, n=3), sub dural collections (3.1%, n=3), SWI?? (3.1%, n=3), and osteomyelitis (2.1%, n=2). Univariate and multivariate analysis revealed EVD placement and parietal flaps were more likely to be associated with complications.

Microsurgical outcome of post-traumatic brachial plexus lesions- an experience of 100 cases. Sumit Sinha. Department of Neurosurgery, JPNA Trauma Center, All India Institute of Medical Sciences, New Delhi, India.

Introduction: To analyze motor, functional and psychological outcome post-surgery in brachial plexus injuries using statistically validated questionnaires. Methods: One hundred patients operated by same neurosurgeon were analyzed for: i) motor outcome- using MRC scale, ii) functional outcome- by Quality of life questionnaire (SF-36 scale) and disability of arm, shoulder and Hand (DASH), and iii) psychological disability using Dysfunction analysis questionnaire (DAQ scale) and Learned helplessness scale (LH scale); before and after surgery. Mean follow-up was 36.8 months. Results: 65% patients recovered to MRC ≥ grade III. The best results were achieved with neurolysis procedure, with

79% having good to excellent results. Neurotization achieved 62% MRC ≥ grade M3. Intercostal neurotization (ICN) of musculocutaneous nerve (MCN) achieved ≥ M3 in 69% patients, while best results for neurotization were obtained for Oberlin's procedure with good to excellent results in 82%. Postoperative functional and psychological outcome scores improved significantly. Patients with partial plexus injury and those with surgery within 6 months had significantly better motor, functional and psychological outcomes postoperatively. There was no correlation between outcome and location of injury or type of surgery. Conclusion: This series attempts to change pessimistic outlook associated with these lesions. Statistically-validated tools can quantify improvement in quality of life post-surgery.

Lack of Improvement after Audit Assessing the Management of Voiding Dysfunction in Patients with Spinal Cord Injury: Necessity for Institutional Guidelines. Syed Johar Raza, Muhammad Shahzad Shamim, Saniya Siraj Godil, S Raziuddin Biyabani, Muhammad Ehsan Bari, Rajesh Kumar, Atta ul Aleem Bhatti, Saeed Soomro (Late).

Introduction: Standard management guidelines for voiding dysfunction in patients with spinal cord injury (SCI) do not exist and these patients are managed on the basis of institutional protocols or individual judgment of managing physicians. Objectives: To notice general trends and improvements over a five year period, in the institutional practices related to management of voiding dysfunction in SCI patients. Methodology: A retrospective cross-sectional study conducted by Neurosurgery and Urology services together. A nine year (June 1995-June 2004) internal clinical audit of urological management of SCI patients was compared with a similar audit conducted five years later (January 2008 to June 2010). Comparisons were made using chi square test. A p value of <0.05 was considered statistically significant. Results: A total of 146 patients were compared (89-pre audit, 57-post audit). The quality of documentation of examination findings worsened over the two study periods (p=0.002). Although determination of baseline serum creatinine improved to statistically significant levels (p=0.019), no imaging for the kidneys was performed as baseline in the post audit period (p=0.000). Similarly the number of urodynamic studies performed decreased from 11% to 1.75% (p=0.045). The number of urological consultations, however, increased from 26% to 31.58% (p=0.452). During follow up, only 17 (19.1%) patients in the pre audit

study period and 6 (10.5%) in the post audit study period were voiding spontaneously. Conclusion: Our study of two eras clearly demonstrated a worsening trend in quality of patient management, which can be corrected by agreeing upon and implementing standard guidelines for management of SCI patients.

Civilian Craniocerebral Gunshot Injuries in a developing country. Rajesh Kumar, Ehsan Bari, Furqan. Aga Khan University, Karachi.

Introduction: Firearm injuries have been on the rise especially in developing countries. Craniocerebral gunshot injuries (CGI) initially described and managed in military settings are now increasingly encountered by neurosurgeons in civilian and urban settings. Cranial gunshot injuries carry significant morbidity and mortality. **Material & Methods:** Retrospective chart review (1999-2009). **Results:** Total 51 patients of cranial gunshot injuries were included out of them 44 male and 7 were female. 23 patients presented within 1 hour of injury. On the basis of severity, total numbers of patients in different GCS groups are mild (n 25) moderate (n 7) and severe (n 19). Contact and suicidal victims were presented in severe GCS category. Mortality and morbidity increased with delay and low GCS on arrival. Over all 10 patients were expired in severe GCS group. Overall mortality was found to be 21%. **Conclusion:** Mortality of pts managed at AKUH, remained at the lower range of internationally available data.

Can ONUS (Optic Nerve Ultrasound) screen Head Injury patients requiring surgical intervention? Navin Goyal. Udaipur, India.

CT has evolved as the gold standard for evaluation of head injury, but early CT is not always possible and this can be for various reason which can be serious condition of patient to non availability of CT scan. Bedside ultrasonography is available in most trauma units and optic nerve ultrasound (ONUS) examination should be feasible at most centers with little training. A study was conducted at a tertiary care trauma service in a teaching hospital in a large metropolitan city in India. where all adult patients with head injury but without obvious ocular trauma, for whom it was possible to perform CT, were enrolled. Using a 7.5-MHz ultrasonographic probe on the closed eyelids, optic nerve sheath diameter (ONSD) was measured on either side. A mean binocular ONSD less than 5.00 mm was considered normal. Cranial CT findings were used as a reference standard to evaluate ONUS. It was found that

clinical features did not correlate with CT for signs of raised intracranial pressure (ICP). The mean binocular ONSD was significantly increased among individuals with signs of raised ICP on CT compared with the mean ONSD among those without such signs. ONUS revealed evidence of raised ICP in 74 cases (confirmed by CT in 72 cases), 59 of whom had significant intracranial haematoma needing surgical evacuation. Of the 26 cases with negative ONUS, confirmed by CT in 25 cases, only 1 needed surgical intervention for drainage of intracranial haematoma. ONUS was false positive for two and false negative for one person. The sensitivity of ONUS in detecting elevated ICP was 98.6%, specificity 92.8%, positive predictive value 97.26% and negative predictive value 96.3%. So we proposed that ONUS can be effectively used as a screening tool for Head Injury patients at Primary and secondary health centres.

Anterior cervical decompression and fusion with plate fixation. Hamid Akbar, Lal Rehman, A.Sattar M Hashim. Department of Neurosurgery, Jinnah Postgraduate Medical Center, Karachi.

Objective: To evaluate the role of anterior cervical decompression, fusion and titanium plate fixation in sub axial cervical spine assessing neurological outcome, spinal stability and early rehabilitation. **Material and Methods:** This is a descriptive case series study conducted at Department of Neurosurgery, Jinnah Postgraduate Medical Center, Karachi from July'2008- August'2010.: This study included 30 patients with cervical spine injuries (fracture 8, subluxation 10 and herniated disc 12) admitted in department. Among 30 patients, 24 (80%) were males and 6 (20%) were females. Age range was 15-55 years. Mechanism of injury were Road traffic accident (n-20), fall (n-8), assault (n-2). Common mode of injury was road traffic accident All cases were evaluated for their clinical features, level and degree of neurological injury was assessed using Frankle grading. Pre and post operative record with x-rays and MRI were maintained. Cervical traction was applied to all patients. All patients underwent anterior cervical decompression, fusion and titanium plate fixation. The follow-up ranged from 6 to 12 months with clinical and radiological assessment.

Results: Post operative follow up showed pain and neurological deficit were improved in 21 patients, no improvement in 7 patients, one patient was deteriorated and one expired. All patients developed pain at donor site. **Conclusion:** Anterior decompression, fusion and titanium plate fixation is an effective method with good neurological and radiological outcome.