2. A prospective, comparative, randomized study to evaluate the safety and efficacy of scalp block with bupivacaine and clonidine versus bupivacaine only for supratentorial craniotomies

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Background: Scalp blocks combined with general anesthesia reduce pin and incision response, along with providing stable perioperative hemodynamics and analgesia. Clonidine has proved to be a valuable additive in infiltrative blocks. We studied the efficacy and safety of addition of clonidine 2mcg/kg to scalp block with 0.25% bupivacaine (Group A) versus plain 0.25% bupivacaine (Group B) for supratentorial craniotomies. **Materials and Methods:** Sixty patients were randomly divided into Groups A and B. All the patients received propofol based general anesthesia. Intra-operatively, propofol infusion was maintained at 75 to 100 mcg/kg/hr up to dura closure and reduced to 25-50 mcg/kg/hr up to skin closure with atracurium infusion stopped at dura closure. Heart Rate (HR) and mean arterial pressure (MAP) were monitored at pin insertion, at 5 minute intervals from incision till dura opening, at 15 minute interval till dura closure and again at 5 minute interval up to skin closure, Fentanyl 0.5 µg/kg IV was given if a 20% increase in either HR and/or MAP was observed. Postoperative hemodynamics and verbal rating scores (VRS) were recorded. When the VRS score increased above 4, rescue analgesia was given. Any complications were noted. **Results:** Group B showed a significant increase in hemodynamic variables during the perioperative period as compared to group A ($P < 0.05$). Addition of clonidine 2 mcg/kg in the infiltrative block potentiated the block action with analgesia lasting 960 ± 120 minutes. Only patient in group A had bradycardia which responded to glycopyrrolate. **Conclusion:** Addition of clonidine to scalp block provided better perioperative hemodynamic stability and significantly prolonged analgesia.

3. Acute kidney injury in post operative neurosurgery patients in ICU: A comparison between the RIFLE and the AKIN classifications

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Background: Acute kidney injury (AKI) is a known complication after major surgery. Early recognition of AKI can reduce morbidity and mortality. AKI have > 30 definitions and therefore the wide variation in definitions has made it difficult for comparisons and conclusions. Recently four new definitions of Acute Kidney Injury have been proposed RIFLE, AKIN, KDIGO and WRF of which later two mainly based ON AKIN criteria. **Materials and Methods:** To compare the RIFLE (Risk, Injury, Failure, Loss and End-stage Renal Failure) and AKIN (Acute Kidney Injury Network) criteria for diagnosis of AKI after Neurosurgery in postoperative ICU patients and associated risk factors in the development of AKI. This is a prospective cohort study of 72 patients from December 2012 to September 2013 with post-op ICU stays > 24 hours. Other factors contributing to the onset of renal failure were analyzed. Statistical data was analyzed using SPSS 17. **Results:** The incidence of AKI using the AKIN and RIFLE criteria was 33.33% and 20.83% ($P < 0.001$) respectively, but individual patients were classified differently. Diabetes mellitus, Hypoalbuminemia, contrast use, blood loss intra-op, duration of surgery, low pre-op creatinine, number of ventilatory days and APACHE II score were positively associated with AKI. **Conclusion:** The incidence of AKI in critical patient varies depending on the definition used. The stepwise incremental mortality risk by AKI severity stage is better in AKIN. Use of Diuretics and IV fluids must be considered for accurate identification and staging of AKI. AKIN applied in patient undergoing Neurosurgery without correction of Sr Creatinine for fluid balance may lead to over diagnose AKI.

4. Efficacy of dexmedetomidine infusion for conscious sedation in patients undergoing awake craniotomy: A preliminary study

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Background: The anesthetic goal for awake craniotomy is not only to maintain adequate sedation, analgesia, respiratory and hemodynamic stability but also to provide an awake yet co-operative patient for proper neurological testing. Dexmedetomidine, an α_2 -agonist, has advantages of being a minimal respiratory depressant with cardiac stabilization properties. Hence, we carried out this study to evaluate the efficacy of dexmedetomidine sedation for awake craniotomy. **Materials and Methods:** All patients with age above 18 years who underwent awake craniotomy for intracranial tumor surgery under MRI guidance were enrolled. The patients who were un-cooperative, had difficult airway and had medical conditions

preventing to lie down for many hours were excluded. In the operating, the patients received a bolus dose of dexmedetomidine 1 µg/kg over 10 minutes followed by an infusion of 0.2- 0.7 µg/kg/hr (BIS target 60-80). Once the patients were sedated, scalp block was given with bupivacaine 0.25%. The data on hemodynamics at various painful stages of the procedure, intraoperative complications, nausea/vomiting, brain bulge, seizures etc., were collected. Total amount of fentanyl used, intravenous (IV) fluids required, blood loss and transfusion, duration of surgery, ICU and hospital stay were also recorded. Postoperatively, the patient's satisfaction was assessed using numerical rating scale. **Results:** A total of 13 patients underwent awake craniotomy during a period of one year. The mean age and weight was 38.7 years and 66.1kg, respectively. The intraoperative vitals remained stable in all patients. None of the patients experienced any episode of desaturation. One patient developed brain bulge and was managed with propofol. The average fentanyl consumption was 200 µg. The duration of surgery, ICU and hospital stays were 6 hours, 1 and 5 days, respectively. The overall patient satisfaction score was 8. **Conclusion:** The use of dexmedetomidine infusion with scalp block for awake craniotomies is a safe and efficacious. Absence of complications and high patient satisfaction score makes it close to an ideal agent for awake craniotomy.

5. Randomized controlled single blinded prospective study to evaluate the effect of bispectral index (BIS) guided sevoflurane on emergence in neurosurgical patients undergoing craniotomy over the conventional method

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Background: Smooth extubation, haemodynamic stability, rapid emergence from anaesthesia allow immediate neurological evaluation. We evaluated the efficacy of BIS guided use of sevoflurane till the head dressing on emergence in neurosurgical patients undergoing craniotomy over the conventional method. **Materials and Methods:** Sixty ASA I and II patients, aged 18-65 yrs, undergoing craniotomy under anaesthesia were randomly divided into two groups using computer generated table. The standard neuroanesthesia protocols and drugs were used for monitoring, induction and maintenance of anesthesia. Group C-patients given sevoflurane till the end of last

skin suture. Group S-patients given sevoflurane till the end of head dressing keeping BIS between 40-60. After surgery extubation was done with reversal of neuromuscular blockade. In both groups heart rate, mean arterial pressure were recorded until the extubation and 10 minutes post extubation. Patients' response to awakening time and response to verbal commands and aldrette score were also noted. **Results:** All data measured and analyzed using standard statistical tests (student's *t*-test, Chi-square, Fisher's Exact Probability tests, Man-Whitney, Wilcoxon rank test). A 'P' value of ≤ 0.05 was taken as significant. The mean arterial-pressure and heart rate were comparable in both groups. The need for rescue medications (nitroglycerine for hypertension, esmolol for tachycardia) was higher in C group. Extubation time and emergence time were comparable in both groups. **Conclusion:** There is no significant difference in hemodynamic response and emergence time in the BIS guided sevoflurane use till the head dressing over the conventional method.

6. Single low dose dexmedetomidine for attenuation of hemodynamic responses and airway reflexes during extubation following spine surgery - A randomized controlled prospective study

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Background: Smooth extubation, haemodynamic stability, rapid emergence from anaesthesia allow immediate neurological evaluation. We evaluated the efficacy of single low dose dexmedetomidine (0.25 mcg/kg) vs. normal saline for attenuation of hemodynamic responses and airway reflexes during extubation following spine surgery. **Materials and Methods:** Eighty ASA I and II patients, aged 18-65 years, undergoing spine surgery under anesthesia were randomly divided into two groups using computer generated table. The standard neuroanesthesia protocols and drugs were used for monitoring, induction and maintenance of anesthesia. After discontinuing sevoflurane, 5 minutes before end of surgery, patients in Group D received dexmedetomidine 0.25 mcg/kg and Group C received 20 ml normal saline intravenously over 5 minutes. With patient supine, extubation was done after reversal of neuromuscular blockade. Heart rate, oxygen saturation, Systolic and Diastolic Blood Pressure were recorded before administration of the drug and at 1, 3 and 5 minutes during drug administration, at completion of dressing, at the time of extubation, and at 1, 3, 5, 7 and