Background: Hypovolemia and fluid imbalance are quite common after aneurysmal SAH and negatively affect the clinical outcome. Hypovolemia correlates with the clinical grade of SAH and may exacerbate vasospasm. Goal-directed fluid therapy (GDFT) utilizes cardiac output (CO) monitoring techniques to guide clinicians for administering fluids, vasopressors, and inotropes. We compared hemodynamic effects and postoperative outcome of patients receiving intraoperative GDFT using left ventricular outflow tract (LVOT) velocity time integral (VTI) by transesophageal echocardiography (TEE) with the CVP–guided conventional fluid therapy in patients undergoing clipping of aneurysm.

Materials and Methods: Fifty adult ASA I and II patients with subarachnoid hemorrhage secondary to aneurysm rupture, scheduled to undergo clipping surgery were included. In the preoperative period, transthoracic echocardiography (TTE) of all patients was done to rule out stunned myocardium or valvular abnormalities. The study patients were then randomly divided into two groups; Group V (n = 25), patients received GDFT using LVOT-VTI. LVOT-VTI was measured with TEE in transgastric long-axis view and kept between 15 and 25 cm. Group C (n = 25), Patients received CVP-guided fluid therapy and a CVP of 8 to 10 cm of water was aimed intraoperatively.

Results: Both the groups had similar heart rates and mean blood pressures intraoperatively throughout the duration of surgery. However, intraoperative fluid administration to Group V was significantly less than that administered to group C ($p < 0.0001$). The baseline serum lactate levels as well as the lactate levels at the end of surgery were comparable in the two groups. The average intraoperative urine output, blood loss, and the average amount of blood administered were also similar in the two groups. Postoperatively, both the groups had similar durations of postoperative mechanical ventilation and ICU stay. The incidence of postoperative complications like ventilator-associated pneumonia, sepsis, vasospasm, and in-hospital mortality were also comparable. MRS scores at discharge (p = 0.169) and eGOS at 1 (p = 0.48) and 3 months (p = 0.556) were comparable in the two groups.

Conclusions: Intraoperative GDFT using TEE in aneurysmal clipping is viable and results in lesser amount of intraoperative fluid administration while maintaining stable hemodynamics during surgery.

A006 Anesthetic Challenges of an Infant with Apert Syndrome and Tetralogy of Fallot for Craniosynostosis Correction

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Background: Apert syndrome (ApS) is characterized by craniosynostosis, craniofacial anomalies, and symmetrical syndactyly. Approximately 10% of Apert syndrome children can have associated congenital cardiac anomalies. It is rare to see ApS with tetralogy of Fallot (TOF). Craniosynostosis corrective surgery is associated with massive bleeding and venous air embolism. The presence of TOF increases the risks of perioperative morbidity and mortality.

Case Description: An 8-month-old infant (weight 6 kg), diagnosed with ApS and TOF was planned for a bifrontal craniotomy with frontal advancement and right frontal orbitotomy. As the child had difficult venous access, it was decided to perform gas induction. After standard monitoring, induction was performed with sevoflurane (4%). An intravenous (IV) line was secured quickly, anesthesia was deepened with fentanyl (1.5 µg/kg), ketamine (1.0 mg/kg), and propofol (1 mg/kg) and sevoflurane concentration was decreased (2%). Intubation was performed using a video laryngoscope. Arterial and the subclavian triple lumen was established. Scalp block, fentanyl, and morphine were given for analgesia. A loading dose of tranexamic acid (20 mg/kg), followed by an infusion (1 mg/kg/h) was given to reduce the bleeding. Scalp dissection and the strip cranioplasty resulted in 150 to 170 mL of blood loss, which was replaced with packed red blood cells (100 mL), fresh frozen plasma (50 mL), and cryoprecipitate (25 mL). A low dose of noradrenaline was started (0.02–0.05 µg/kg/min) to maintain the systemic vascular resistance (SVR). The child remained warm, hemodynamically stable, and the SpO_2 was varying between 85 and 93%. At the end of surgery, the child was extubated and shifted to the neurosurgical ICU. The main anesthetic challenges were the management of difficult airway, C-MAC video laryngoscope helped us to secure the airway. Maintaining the SVR using noradrenaline and avoiding factors which can increase the pulmonary vascular resistance prevented intraoperative "Tet spell." Transfusion of blood and blood products helped maintaining the hemodynamic stability.

Conclusions: Meticulous planning and administration of titrated anesthetics to maintain both cardiovascular and the cerebrovascular homeostasis is paramount important for a successful outcome.

A007 An Unusual Presentation of Guillain-Barré Syndrome with Cervicobulbar Palsy

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Background: Guillain-Barré syndrome (GBS) is an autoimmune disorder. Flaccid paralysis is the hallmark of this disease, there are some rare variants which may be easily missed unless suspected. Here, we present a case of rare pharyngeal-cervical-brachial (PCB) variant of GBS with associated lower motor neuron type of facial palsy. The PCB variant is defined by rapidly progressive oropharyngeal and cervicobrachial weakness, and is often misdiagnosed as brainstem stroke, myasthenia gravis, or botulism.

Case Description: A 48-year-old female patient presented to us with complaints of breathing difficulty, which increased markedly on the same day, followed by facial

deviation to right side. She had high-grade fever with chills and productive cough 15 days back, which subsided after taking symptomatic treatment. She was hypothyroid on regular medication with thyroxine. On examination she was conscious, requiring O_2 support by facemask. Power bilateral lower limb was 4/5 and upper limb was 3/5, plantar were mute, sensation was intact with a decreased neck tone on admission. A provisional diagnosis of unilateral Bell's palsy was made, and she was started on oral prednisolone and valcivir. Nerve conduction velocity revealed de-myelinating neuropathy; a diagnosis of GBS was made and intravenous immunoglobulin was started. The patient had increasing difficulty in breathing and inability to vocalize, and hence, trachea was intubated next day. She recovered after 8 days, and trachea was extubated. Gradually, she regained power in upper limbs, improved further, and was discharged to home care 3 weeks later.

Conclusions: Patients with the PCB variant of GBS typically present with areflexia in the upper limbs while preserved power (or mildly affected) in the lower limbs. It indicates that PCB represents a localized subtype of GBS. Very often patients presenting with PCB are initially misdiagnosed as having brainstem stroke, myasthenia gravis, or botulism, which can be excluded from clinical history and examination. This case highlights the fact that GBS should be considered as a differential in all cases of isolated multiple cranial palsies for early intervention.

A008 Effect of Preemptive Midazolam on Post-Electroconvulsive Therapy Headache, Myalgia, Nausea, and Vomiting

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Background: Electroconvulsive therapy (ECT) is a controlled electrical stimulus that affects central nervous system and leads to convulsion. As every other medical procedure, ECT has some side effects like headache, myalgia, nausea and vomiting. Patients undergoing ECT receive different anesthetic drugs and some drugs like midazolam and atropine to reduce side effects.

Results: Sixteen men (42.1%) and 22 women (57.9%) were studied. The incidence of headache ($p < 0.001$), myalgia ($p = 0.014$), and vomiting ($p = 0.011$) was significantly higher in witness group. The incidence of coughing and laryngospasm was not significantly different between the two groups ($p > 0.050$).

Conclusions: Midazolam can reduce convulsion time, but in most cases, convulsions last more than 25 seconds, which is in therapeutic range. So, it cannot affect the therapeutic value of ECT. Preemptive midazolam reduces post-ECT headache, myalgia, and nausea.

A009 Perioperative Anesthetic Management in Rasmussen's Encephalitis: A Retrospective Analysis

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Background: Rasmussen's encephalitis (RE) is a rare syndrome characterized by intractable seizures, progressive neurological and cognitive deficits associated with unilateral hemispheric atrophy. Antiepileptic drugs (AEDs) have limited effect on seizure control. Hemispherectomy of the affected hemisphere has shown encouraging results. However, anesthetic management of RE has never been reported before.

Materials and Methods: Data of all patients who had undergone hemispherectomy in the neurosurgery operation theater from a period of January 1, 2015 to September 30, 2018 were collected. Preoperative, intraoperative and postoperative data were collected.

Results: A total of 15 patients had undergone endoscopic hemispherectomy (M/F 7/8, mean age 12 years). Predominantly, right hemispheric involvement was seen ($n = 12$). Contralateral seventh nerve palsy (upper motor neuron type) was seen in four patients. Six patients had associated cognitive dysfunction, of whom three patients had a history of delayed development of milestones. Six patients had associated hypothyroidism. Intra- and postoperative parameters are summarized in (►**Tables 1** and **2**), respectively.

Conclusions: Various perioperative considerations in RE includes difficulty in assessment of patients with neurological and cognitive dysfunction, associated hypothyroidism, effect of multiple AEDs on anesthetic drugs, difficult extubation, and management of postoperative medical complications. Moreover, majority of patients are children, and demands understanding pediatric cerebral physiology and various perioperative anesthetic considerations.

Table 1 Intraoperative parameters

ASA class I/II/III	9/5/1
Induction of anesthesia (IV/inhalational)	13/2
Maintenance of anesthesia (balanced)	15
Mean fluid intake	2,270 mL (61 mL/kg)
Mean blood loss	365 mL
Most common complication	Bradycardia
Mean duration of surgery	315 minutes
Mean duration of anesthesia	375 minutes
Number (%) of extubation at the end of surgery	6/15 (40%)

Abbreviations: ASA, American Society of Anesthesiologists; IV, intravenous.