AASSFN & PERSPEBSI
Bali 2015

2015 Asian-Australasian Society for Stereotactic and Functional Neurosurgery (AASSFN) Interim Meeting in conjunction with The 20th Annual Scientific Meeting of Indonesian Society of Neurological Surgeons (PIT PERSPEBSI)

November 4th - 7th, 2015
Bali International Convention Centre (BICC), Nusa Dua, Bali, Indonesia

“Enhancing the Role of Stereotactic and Functional Neurosurgery for the Betterment of Patient Outcome”
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Colleagues and friends,

On behalf of the Organizing Committee, we would like to cordially invite you to participate in the upcoming 2015 Asian-Australasian Society for Stereotactic and Functional Neurosurgery (AASSFN) Interim Meeting in conjunction with The 20th Annual Scientific Meeting of Indonesian Society of Neurological Surgeons (PIT PERSPEBSI), to be held on 4th - 7th November 2015 at Bali International Convention Centre (BICC), Bali, Indonesia.

The theme is Enhancing the Role of Stereotactic and Functional Neurosurgery for the Betterment of Patient Outcome.

These two important meetings will showcase well-known experts in Stereotactic and Functional Neurosurgery as well as expertise in different area of neurosurgery. Innovative concepts, new approaches, radical thinking and personal experiences will be presented and attendees will benefit from lively discussions and debates. Stereotactic and Functional Neurosurgery will be the major topics, however the scientific committee will also prepare other update topics in the field of general neurosurgery. We herewith also warmly invites other specialists that have interest in Stereotactic field such as Neurologist, Radiologist and others to join these meetings.

Free paper submission is now open for both specialist and resident and we welcome you to take this opportunity.

These meetings will be held in one of the most beautiful island in the world, the island of the gods, Bali. The meeting venue is an international standard convention centre where world leaders meet.

Reaching Bali is very easy since the newly renovated Denpasar (DPS) Bali International Airport is landed by major international airlines from 5 continents. Indonesia government also provides free visa for 45 countries.
and Visa on Arrival (VoA) for 31 countries. Please visit the congress website at www.aassfnperspebsi.com for complete information and registration.

Make sure you have block the date and start to plan your trip to Bali. Looking forward to meeting you soon.

With sincerely regards,

Prof. Sri Maliawan, MD, PhD  
Chairman of PIT PERSPEBSI

Prof. Bomin Sun, MD, Phd  
President of AASSFN

Endro Basuki, MD  
Chairman of PERSPEBSI

Alfred Sutrisno, MD  
Chairman of AASSFN Meeting
PATRON

- Rector of Udayana University
- Dean of Faculty of Medical Sciences
- Director of Sanglah Hospital
- President of PERSPEBSI, Endro Basuki
- President Elect of PERSPEBSI, Abdul Hafid Bajamal

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  • I Wayan Nirvana
  • Achmad Fahmi
  • Made A.M Inggas
  • Deny Irwan
## BS 1: Gamma Knife
**Hibiscus Room, BICC**
Moderator: Alfred Sutrisno (Indonesia)
Keynote Speakers:
- Sajeev Thomas (India)
- Hidefumi Jokura (Japan)

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**Hibiscus Room, BICC**  
Moderator: Alfred Sutrisno (Indonesia)  
Keynote Speakers:  
Sajeev Thomas (India)  
Hidefumi Jokura (Japan) |
| 07.00 – 07.30 | Re-Registration                                         |
| 07.30 – 08.00 | Introduction About Gamma Knife  
Principles, Physics & Technology of GKRS  
Introduction About Gamma Knife Machines Scheme |
| 08.00 – 09.00 | Clinical Application & Advantages of GK  
Clinical Indications of GKRS  
Principles of Frame Fixation  
Sharing Experience of GKRS in Japan  
Advantage of Utilize GKRS  
Managing Brain Metastasis using GK |
| 09.00 – 09.15 | Coffee Break                                             |
| 09.15 – 12.00 | Gamma Knife Workshop                                     |
| 12.00 – 13.00 | Lunch                                                    |
| 13.00 – 17.00 | WS 2: Stereotactic & Functional Surgery (Cadaveric Workshop – Day 1)  
**Hibiscus Room, Bali International Convention Centre (BICC), Nusa Dua** |
| 13.00 - 13.30 | Stereotactic Application for Neurosurgery (Overview) – Bomin Sun (China) |
| 13.30 - 14.00 | Anatomy in Stereotactic Surgery – Dianyou Li (China)     |
| 14.00 - 14.15 | Coffee Break                                             |
| 14.45 - 15.30 | Planning for Stereotactic Surgery - Ulrich Albicker (Germany) |
| 15.30 - 16.15 | Hands on Planning Software - Ulrich Albicker (Germany)  |
| 16.15 - 16.45 | Discussion                                               |
| 16.46 - 17.00 | Closing                                                  |
**Thursday, 5th November 2015**

**Anatomy Lab- Faculty of Medicine, Udayana University, Sanglah Hospital**

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<td>Monitoring in Stereotactic Surgery with MER - Ulrich Albicker (Germany)</td>
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<td>Deep Brain Lesioning - Achmad Fahmi (Indonesia)</td>
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<td>Deep Brain Simulation - Kelvin Thong (Singapore)</td>
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<td>Pitfalls and Solution in Stereotactic Surgery - Bomin Sun (China)</td>
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<td>Post Operative of DBS &amp; DBL - Alfred Sutrisno (Indonesia)</td>
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<td>DBS Programming- Kelvin Thong (Singapore)</td>
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**SPECIAL PROGRAM: 5th – 7th November 2015 (Free of Charge)**

**Neuroendoscopy Academy by AMC-STORZ, Bali International Convention Centre (BICC), Nusa Dua**

**5th November 2015**

Bi-Nostril Technique on Endonasal Skull Base Pituitary Surgery: Transphenoidal Approach

_Hibiscus Room, BICC_

Janakiram (India)

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**6th November 2015**

GORE System-Stitchless Spine Surgery under Local Anesthesia

_Hibiscus Room, BICC_

Satishchandra Ramakant Gore (India)

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**Friday, 6th November 2015**

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<td>How to Start a DBS Service – Terry Coyne (Australia)</td>
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<td>DBS for Anorexia Nervosa – Bomin Sun (China)</td>
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<td>Frameless Stereotactic Surgery for Tumor Sella - Alfred Sutrisno (Indonesia)</td>
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<td>Developing Epilepsy Surgery in Countries with Limited Resources : Indonesian Experience – Zainal Muttaqin (Indonesia)</td>
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<td>Deep Brain Stimulation for Rat Model of Dementia – Jin Woo Chang (South Korea)</td>
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<td>The Long Term Follow up Results of GPi DBS for Cervical Dystonia – Ryoong Huh (South Korea)</td>
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<td>Recent Technique in Mechanical Thrombectomy for Ischaemic Stroke - <strong>Abrar Arham (Indonesia)</strong></td>
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<td>Medial Complex Aneurysm; Trick and Technique of Endovascular Approaches – <strong>Muhammad Radhian Arief (Indonesia)</strong></td>
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<td>Deep Brain Stimulation for Parkinson Disease in Indonesia. Early Experience and Challenges – Made A.M. Inggas (Indonesia)</td>
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Saturday, 7th November 2015
*Bali International Convention Centre (BICC), Nusa Dua*

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PLENARY LECTURE 1

PL 1.1 HOW TO START A DEEP BRAIN STIMULATION (DBS) SERVICE

Terry Coyne
Australia-Pacific Centre for Neuromodulation BrizBrain & Spine, Brisbane, Australia

There is Class 1 evidence demonstrating the efficacy of DBS for movement disorders such as Parkinson’s Disease and dystonia. Other indications, particularly in the neuropsychiatric field, appear promising and are under active investigation. Despite the benefit of DBS in many otherwise poorly treated conditions, penetration is low, including in many Asian countries. While there are various reasons for this, this unmet need means there are ample opportunities for introducing a DBS service. Based on the author’s experience in commencing a DBS service from zero, and having progressed to 800 DBS cases, this presentation outlines a process by which a successful DBS programme can be established. The importance of a cohesive multidisciplinary team and involvement with patient groups and local physicians is emphasized. The opportunity for incorporating research into the clinical service is discussed.

PL 1.2 DBS FOR ANOREXIA NERVOSA

Bomin Sun (China)

PL 1.3 FRAMELESS STEREOTACTIC SURGERY FOR TUMOR SELLA

Alfred Sutrisno (Indonesia)
Background: Even with modern medication, 30 to 40% of epilepsy patients will be intractable and this condition leads to cognitive and psychosocial decline, resulting in worse quality of life and higher mortality. With 0.5-0.6% prevalence, there will be about 2.0 million epileptic in Indonesia, about 700,000 will be intractable, and 350,000 of them are potential candidates for epilepsy surgery (ES). A decade has passed since the first ES performed on July 1999, and the number increases every year reaching 40-50 ES per year in 2007-2013. Despite the excellent result shown, all of these ES were still performed in Semarang (Diponegoro University) while the patients were from all part of Indonesia. The major reason behind the unavailability of ES in most part of the country should be discussed for the future development of ES in Indonesia.

Material: Epilepsy surgery was started in July 1999 with anterior temporal lobectomy for a 34 Y-old female with left mesial temporal sclerosis (MTS) causing a long standing intractable seizures. The number of cases increases every year. Until the end of 2014, there were 460 cases of epilepsy surgery, including 360 anterior temporal lobectomies. Among these, 106 cases had been follow up more than 60 months, and evaluated for surgical results.

Method: To evaluate the patient’s selection and the presurgical evaluation, we divide the ES cases into the first 5 years (56 cases) and the recent 7 years (304 cases). But for the purpose of evaluating surgical results, only those with at least 60 months postoperative follow-up were included (106 cases) and grouped into those operated before or after the age of 25 Y-old (group A and group B), and into those operated before or after the length of epilepsy of 10 years (group I and group II).

Results: For the first five years-period, besides seizure semiology, decision to operate were based on MRI and routine interictal EEG in 54 out of 56 TLE cases. One patient had long-term ictal EEG and another had
subdural grid EEG implanted, both patients showed visually normal MRI. But for the recent seven years, decision to operate were based on MRI and routine EEG in only 165 out of 304 TLE cases. Long term ictal EEG were performed in 84 patients, subdural grid EEG in 15 patients, PET study in 31 patients, and EcoG in 5 patients. The overall seizure free (SF) rate were 70.75%, but if grouped according to patient’s age at surgery ( less than or over 25 Y-old ), the SF rates were 75.4% vs 66.04% respectively. So did if grouped according to length of disease ( less than or more than 10 years ), the SF rates were 78.72% vs 64.40% respectively.

**Conclusion:** Concerning the huge potential ES cases, it is imperative to start ES at other provincial-university based hospitals, with microneurosurgical facilities. These centers capable of performing ES for simple TLE cases should be present at least 5 in Java, and another 5 at other large islands. MRI plays very important role to decide the side of the epileptic temporal side, but this role is decreasing as it was 96.4% during the beginning five years to become 54. 27% for the last seven years. This means that we are working on more difficult epilepsy cases recently. SF rate was significantly higher for those who was operated at younger age and for those with shorter duration of epilepsy. This means that surgery should be offered earlier for those intractable TLE patients with obvious focus on MRI.
Objective: Deep brain stimulation (DBS) surgery under general anesthesia is an alternative option for patients with Parkinson’s disease (PD). However, few studies are available that report whether neuronal firing can be accurately recorded during this condition. In this report, we will attempt to characterize the neuronal activity of the subthalamic nucleus (STN) and elucidate the influence of general anesthetics on neurons during DBS surgery in patients with PD. The benefit of median nerve stimulation (MNS) for localization of the dorsolateral subterritory of the STN, which is involved in sensorimotor function, was explored.

Methods: PD patients were anesthetized with desflurane and underwent contralateral MNS at the wrist during microelectrode recording of the STN. We analyzed the spiking patterns and power spectral density (PSD) of the background activity along each penetration track and determined the spatial correlation to the target location, estimated using standard neurophysiological procedures.

Results: The dorsolateral STN spiking pattern showed a more prominent bursting pattern without MNS and more oscillation with MNS. In terms of the neural oscillation of the background activity, beta-band oscillation dominated within the sensorimotor STN and showed significantly more PSD during MNS (p < 0.05).

Conclusions: Neuronal firing within the STN could be accurately identified and differentiated when patients with PD received general anesthetics. Median nerve stimulation can enhance the neural activity in beta-band oscillations, which can be used as an index to ensure optimal electrode placement via successfully tracked dorsolateral STN topography.
**SS 1.2 DEEP BRAIN STIMULATION FOR RAT MODEL OF DEMENTIA**

**Jin Woo Chang (South Korea)**
Brain Research Institute, Department of Neurosurgery, Yonsei University
College of Medicine, Seoul, Korea

We investigate the effect of 192 IgG-saporin intraventricular injections whether it is impair GABAergics as well as cholinergic system. Effect of 192 IgG-saporin between control and injection group was tested by Morris water maze, immunochemistry and western blotting 2wks after intraventricular 192 IgG-saporin (0.63ug/ul dose, 6ul, 8ul and 10ul) or phosphate buffered saline (8ul) injection. In the acquisition phase of Morris water maze, latencies of injection groups were significantly delayed, but it was recovered within 1week. In probe test, two of four indexes (time in platform and the number of crossing) were significantly different between sham and 8ul LV injection group. In immunohistochemistry, the extent of the cholinergic destruction was shown in the basal forebrain of all 192 IgG-saporin injected rats. Arc protein and GAD expression are significantly decreased in the frontal cortex (8ul and 10ul groups), but not in the hippocampus using western blotting. Intraventricular injection of 192 IgG-saporin affected not only cholinergic neurons, but also GABAergic neurons and synaptic plasticity in frontal cortex. Our study support memory acquisition delay and mild memory impairment caused by 192 IgG-saporin are related cholinergic as well as GABAergic system in frontal cortex. As well, we will demonstrate the beneficial effect of the deep brain stimulation (DBS) for this rat model of dementia using 192 IgG-saporin.

**SS 1.3 THE LONG TERM FOLLOW UP RESULTS OF GPI DBS FOR CERVICAL DYSTONIA**

**Ryoong Huh (South Korea)**
 Dept. of Neurosurgery The Catholic Univ. of Korea

Background: Dystonia has been treated well using deep brain stimulation at globus pallidus internus (GPI DBS). Dystonia can be categorized as two
basic types of movement, phasic- and tonic-type. Cervical dystonia is the most common type of focal dystonia, and sequential difference of clinical outcome between phasic- and tonic-type cervical dystonia has not been reported.

Methods: Retrospective cohort of 30 patients with primary cervical dystonia underwent GPi DBS was included in this study. Age, disease duration, dystonia direction, movement types, employment status, relevant life events, and neuropsychological examinations were analyzed whether clinical outcomes following GPi DBS were affected by those.

Results: The only significant factor affecting clinical outcomes was movement types (phasic- or tonic-type). Sequential changes of clinical outcome showed significant differences between phasic- and tonic-type cervical dystonia. A delayed benefit was found both in phasic- and tonic-type dystonia.

Conclusion: The clinical outcome of the phasic-type cervical dystonia is more favorable than that of the tonic-type cervical dystonia following GPi DBS.

Keywords: Cervical dystonia, Deep brain stimulation, Surgical treatment, Prognosis
**SYMPOSIUM 2**

**SS 2.1 OUR EXPERIENCE IN STEREOTACTIC SURGERY FOR SZHIZOPRENNIA**

**Alfred Sutrisno (Indonesia)**
Past 5th President of Asia Pacific Cervical Spine Society Chairman of neuroscience center omni and Pantai Indah kapuk Hopsital

**Introduction:** Psychosurgery, the neurosurgical treatment of psychiatric disease, has a history dating back to antiquity, and involves all of the clinical neurosciences. Its development in the 19th century, and the conditions of its use and abuse in the 20th century, with a particular focus on the frontal lobotomy. The transition to the modern era of psychosurgery is discussed, as well as the neurobiology underlying current psychosurgical procedures. The techniques of stereotactic *capsulotomy*, are described, as well their indications and side effects.

**Methods:** We had 3 patients with refractory schizophrenia who underwent capsulotomy were included. These patients were evaluated first by an assessment team, including a neurosurgeon and psychiatrist.

Capsulotomy could be an alternative therapy for those patients with chronic and severe schizophrenia. But there must be strict inclusion criteria considering the complications and irreversibility of this procedure. Our patients had been confirmed by the assessment team, explained to their family, and the informed content was signed by them only after they had received the information and fully understood the procedure.

Evaluations were performed at baseline, 1 weeks and 6,12,24 months after surgery.

**Result:** Among all the symptoms of schizophrenia, aggressive behavior, hallucination and delusion showed the best response.

**Conclusion:** Capsulotomy is a relatively safe and effective intervention for patients with refractory schizophrenia.
Movement disorders are not directly a dangerous or emergency case, but there will decrease quality of life for the patients. Neurosurgical interventions has clinical advantage for movement disorders patients. In this article we want to share about our experiences in performing neurosurgical interventions for movement disorders. We start Deep Brain Stimulation (DBS) in Indonesia since January 2nd, 2014 and we start Brain Lesioning (Pallidotomy, Thalamotomy, Subthalamotomy) since April 2013. Both of that’s procedure we use for Parkinson’s Disease patient, dystonia, tremor, choreic movement, and hemibalismus patients. For Spasticity post traumatic brain injury and post stroke patients we performed Neurotomy, and Selective Dorsal Rizhotomy (SDR) for Cerebral Palsy (CP). We have performed Selective Nerve Lesion for cervical spasm (Torticollis) with Taira’s Technique. Neurosurgical intervention still have a promising hope for increasing the patient’s life quality.

Keyword : Movement Disorders, Brain Lesioning, Deep Brain Stimulation, Peripheral Nerve Lesion
SS 2.4 CLINICAL RESULTS OF MICRO VASCULAR DECOMPRESSION IN THE TREATMENT OF CRANIAL NERVES DISORDER

M. Sofyanto (Indonesia) Gigih Pramono MD, Agus Anab MD, Bambang K. MD, Budi Setiawan MD, Farhad Balafif MD, Donny W. MD.
Neurosurgeons, Comprehensive Brain and Spine Center.
Surabaya, Indonesia 2015

This is descriptive study which purpose to evaluate clinical outcome of patients who have done micro vascular decompression (MVD). Nine hundred fifty six cases in this series underwent micro vascular decompression for hemi facial spasm (534 cases), trigeminal neuralgia (392 cases), geniculate neuralgia (3 cases), glossopharyngeal neuralgia (2 cases), spasmodic torticollis (14 cases) and disable position vertigo (11 cases) during thirteen years period (2003-2015).

Surgical technique by keyhole retro sigmoid approach on lateral position without intra operative monitoring, the average of surgery duration was 72 minutes and 3 days hospital stay. The spasm free of hemi facial spasm 98.87 % (528/534), pain free of trigeminal neuralgia 97.95 % (384/392), spasm free of spasmodic torticollis 85.71% (12/14).

Complication rate of during this period 1,46%. There are subdural hemorrhage 2 cases, subarachnoid hemorrhage 1 cases, intracranial hemorrhage 2 cases, deafness 1 cases, facial flatness 8 cases but it was temporary and becoming normal after 6-10 weeks, no any infection case.

Keyword: Hemi facial spasm, trigeminal neuralgia, geniculate neuralgia, glossopharyngeal neuralgia, spasmodic torticollis, disable position vertigo (DPV).
LS 1.1 EVOLUTION OF BIODEGRADABLE POLYMER

Mirna Sobana Adriansah (Indonesia)
Division of Pediatric Neurosurgery, Department of Neurosurgery, Hasan Sadikin Hospital/Padjadjaran University

There’s a current trend of implants from metal to biodegradable that increased the technology of biodegradable to inherent disadvantage of metal implant. New generation of biodegradable polymer is now available to overcome the problems of previous materials. Numbers of biodegradable polymers have been approved for internal use. Some of them caused problems like degrade too quickly and or make tissue reactions.

For the last 2 decades biodegradable material used for fixation application such as pins, screw, plates, membranes, ancor, dowels, rods, etc. Surgeries need material that can provide appropriate strength, toughness, malleability and degradation to meet specific clinical requirement.

What surgeons and patients need is material that provide correct amount of strength when necessary and harmlessly degrades overtime until the load can be safely transferred to the healed bone. This means there’s no need of another surgery to remove the implant. The Ideal biodegradable material provides appropriate strength whilst degrading in a predictable fashion throughout the healing process, without causing adverse reaction. Inion Optima materials live up to this ideal.

Keywords : Implant, biodegradable, polymer, tissue reactions.

LS 1.2 BIODEGRADABLE IMPLANT: INDICATION & CLINICAL EFFECTIVENESS (PERSONAL EXPERIENCE IN FOA CASE)

Wihasto Suryaningtyas (Indonesia)
The main factor limiting endovascular treatment of intracranial aneurysms is the shape of the aneurysm sac, particularly the width of the neck. Aneurysm geometry has been shown to predict the need for adjunctive techniques in the endovascular treatment of intracranial aneurysms. We present our experience in the treatment of intracranial aneurysms using stent assisted coiling (SAC) and double microcatheter technique as adjunctive techniques. Most aneurysms treated are geometrically complex and pose a technical challenge.
Endovascular neurosurgery is a specific skill that needs special training. Actually, it is a combination of neurological sciences in managing patients with the skill to utilize radiological technique and equipment to perform treatment. Other factors that determine a successful treatment is the tools and material.

Doctors who have skills in the field of neurological / neurosurgical treatment should have another training to be familiar with the advantages of radiological technique and equipment to perform treatment. While doctors who were skilled in the field of radiology should have training to understand the mechanism and treatment of neurological diseases. After such a specific training, there should be a standard of certification for doctors who had the privilege to perform endovascular neurosurgery treatment. In general, doctors with basic training in Neurosurgery, Neurology, and Radiology can perform Endovascular Neurosurgery procedures after a specific training and get specific certification.

Developing a standard qualification to get certification for endovascular neurological surgeons is important for Indonesia because this method of treatment is increasingly attractive to patients and also there are many advances in this field that makes more indication for this methods of treatment.

In this presentation, several qualifications from several countries are presented and can be taken as references for developing a qualification standard for endovascular neurosurgeons in Indonesia.

**Keywords:** Standard Qualification – Training – Neurosurgeon – Neurology – Radiology – Endovascular Neurosurgery.
Mohamad Saekhu (Indonesia)
Department of Neurosurgery Faculty of Medicine, Universitas Indonesia

**Background:** Ossification of posterior longitudinal ligament (OPLL) is a rare case and patients seldom seek medical attention. Although OPLL is a rare case, it is the most common cause of paralysis (paraparesis or tetraparesis) among patients who come to hospital. The patients usually come to hospital with poor motoric function and poor quality of life. Surgical procedures for OPLL can be done through anterior or posterior approach, with its advantages and disadvantages. We report our experience in OPLL management at dr. Cipto Mangunkusumo Hospital and literature review.

**Method:** Latest literature review medical-based in treatment of OPLL and case review underwent surgical procedure in the last 4 years at dr. Cipto Mangunkusumo Hospital.

**Result and Discussion:** Causes of paralysis originated from the anterior part of spinal cord, but in OPLL cases with three vertebrae levels or more, surgical procedure done with anterior approach contain more complications. Meanwhile posterior approach surgical procedure often appears less effective, specifically in the long-term outcome. As an alternative, surgical procedure were done twice with posterior approach followed by anterior approach, with examination shows decreased of neurological outcome after the first surgical procedure. In patients underwent laminectomy and fixation on the first operation, exoneration of the duramater was more simple at the following surgical procedure with anterior approach procedure.

**Conclusion:** Surgical approach of choice in the management of OPLL is anterior approach. Cases not permitted to be done by anterior approach was done by posterior approach and fixation, with or without anterior approach following.
SS 4.2 OPEN VS MINIMALLY INVASIVE SPINE SURGERY: SELECTION. COMPLICATION. AVOIDANCE

Rully Hanafi Dahlan. Farid Yudoyono. Sevline Estethia
RFS SPINE CARE Division of Spine, Peripheral and Pain. Department of Neurosurgery. Hasan Sadikin Teaching Hospital. Medical of School - Padjadjaran University. Bandung, Indonesia

The spine surgery already performed at least 5000 years ago, from the first evidence from Egyptian mummies until now day. The technologies advancement bring the evolution to instrumentation and surgical techniques. Open Spine Surgery, the first surgical technique and Minimally Invasive Spine Surgery, the latest surgical performed, performed by all spine surgeon around the world through its indications, advantages, and benefits. There was so many journal reporting the comparison of this both procedures. Open Spine Surgery often reported with iatrogenic complication due to wide incision or invasive technique, but in some cases this procedure is still the best choice such as in spine tumor and trauma. Minimally Invasive Spine Surgery reported less complication but need some specials equipment and techniques. Although MISS has a tremendous development in last 4 decades and predicted will continue to make strides in all subdisciplines of spinal surgery, OSS still has a place in some cases.


SS 4.3 SURGICAL INDICATION IN SPINE DEGENERATION

Eko Agus Subagio (Indonesia)
Eko A Subagio. Spine Division, Neurosurgery Dept. Dr. Soetomo Hospital, Airlangga University Surabaya.

Degeneration process of the spine, as part of aging process, affect spine and other system (musculoskeletal as well). The degenerative process involves the disc interspace, facet joints, intraspinal and paraspinal tissues.

Degenerative changes of the intervertebral disc involve one or combination
of: (1) loss of disc interspace height, (2) irregularities in the disc endplate, (3) sclerosis of the disc interspace in the region of the end plate, (4) osteophyte formation. After intervertebral disc changes, several changes will follow; facet degenerative with increase laxity of movement, paraspinous and intraspinous tissue inflammation, calcification, soft tissue proliferation (eg; ligamentum flavum thickening).

Degenerative process of the spine may lead to neurovascular compression, destabilization of the spine, spine mal-alignment (because of disc / bone change, or abdominal and back muscle weakness). Surgical intervention are decompression with/without fusion, and alignment restoration to the normal one (by spine osteotomy and instrumentation). But abdominal and back muscle weakness should be repair by physical therapy (medical rehabilitation program).

SS 4.4 SCOLIOSIS CORRECTION FOR AIS: TIPS AND PITFALLS

Tjokorda Gde Bagus Mahadewa (Indonesia)

Adult Idiopathic Scoliosis (AIS). Approximately 2% of the population. The term idiopathic means a condition or disease with no known cause. Sign and symptoms consist of the abnormality of curvature of the spine, uneven shoulders or protrusion of one shoulder blade, asymmetry of the waistline and one hip higher than the other.

The author presents a review of AIS, incidence, diagnostic, conservative management and operations, including the tips and pitfalls that are often encountered. Given desire to share the difficulties and obstacles during correction. The author share and encourage neurosurgeons start doing scoliosis surgery properly, that actually not difficult. The success of surgery in these patients, the results were encouraging for both patient and doctor. Mild curvature that remains at 20 degrees or less will most likely requires monitoring and observation, but further treatment is rarely needed. Curvature greater than 20 degrees may require non-surgical or surgical intervention, including treatments such as a back brace for scoliosis or scoliosis surgery,
both of which prevent further progression of the curve.

Calculation of appropriate corrections, outsmart wedge vertebra and hemivertebra, mounting screw with anatomy based on landmarks and straighten the curve of the spine is the most interesting part. If all can be done with either the patient can have a near normal curve and is free from the difficulty of expanding lung or neurological deficits. Knowledge of the anatomy of the spine landmarks and strict selection of cases as indicated would support the results of patient outcomes.

*Keywords: AIS, Correction, Tips and Pitfalls.*
SS 5.1 DBS FOR TOURETTE’S SYNDROME?

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Tourette’s syndrome is a chronic neurodevelopmental disorder characterized by involuntary motor and vocal tics, and associated with other neuropsychiatric conditions such as obsessive-compulsive disorder (OCD). While in most patients the condition is not overly disruptive, abates with increasing age, and can be modulated with therapies such as medication and cognitive behaviour therapy (CBT), there are sub groups of patients in whom the condition is severe, poorly responsive to standard therapies, and/or persists into adulthood. It has been postulated that DBS, by modulating motor and/or limbic circuits, can reduce the symptoms of this condition. The optimal target is unknown. This presentation outlines the authors’ experience with GPi DBS for Tourette’s syndrome. 17 patients were reviewed by an independent blinded assessor. At 12 months after institution of DBS there was sustained improvement in tic scores and a number of other neuropsychiatric and quality of life scales. Adverse events are reported. Our data suggests GPi DBS can be of benefit for patients with Tourette’s syndrome where standard therapy does not successfully maintain a satisfactory quality of life.

SS 5.2 DEEP BRAIN STIMULATION IN PATIENTS WITH TOURETTE SYNDROME IN CHINA

Jian-guo Zhang (China)
Background: Surgical treatment of Parkinson disease (PD) was started as early as 1940 and had focused on ablative procedures such as thalamotomy and pallidotomy. These surgical treatments were prominence in the era before levodopa and in the 1990s. They were rapidly replaced by deep brain stimulation (DBS), mainly due to adverse effects appearing from bilateral lesions and the irreversible effects resulting from poorly placed lesions. At present, 70,000 patients have undergone DBS surgery in over the world. Despite the widespread use of this treatment, several aspects of DBS therapy remain controversial. This study to review the indication, selection of PD patient and procedure of DBS in our center.

Cases series: Seven (7) cases of DBS procedures for PD had performed. Mean of age was 50 years. Male : Female was 6 : 1. PD duration before surgery was 5-15 years. We also performed scoring for Motor function, Mental status, Quality of Life before and after surgery. Also reviewed of our limitation and challenges during improvement of DBS services.

Conclusion: Has performed 7 DBS procedures in Parkinson’s cases with good results without any complications. The good result due to conducted by multidiscipline team from early step of selection of patients, clinical neurological examination, scoring system, as well as microelecetrode recording and stimulation during the procedures. Improvements in referral systems and insurance will improve surgical service for PD patient in Indonesia.
**Key words:** Parkinson Disease; Surgery for Parkinson; Deep Brain Stimulation.

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**SS 5.4 DBS SIDE EFFECTS AND COMPLICATIONS**

Shin Yuan Chen (Taiwan)
Deep brain stimulation side effects and complications
Shin Yuan Chen MD

Objective: To assess the surgical morbidity and comorbidity in 140 consecutive patients with various disease entities of movement disorders, epilepsy and obsessive-compulsive disorders that underwent deep brain stimulation (DBS) in a single DBS center of Taiwan.

Methods: From Feb 2002 to Feb 2015, a total of 140 patients in our institute were included for analyzed retrospectively. All patients underwent standard DBS procedures with intra-operative microelectrode recordings, and were followed for at least 6 months.

Results: Among surgical morbidity, symptomatic hemorrhage 2.8%(4/140), lead mal-positioned 3.6%(5/140) and hardware infection 1.4%(2/140). There had no surgical related mortality. Post-operative morbidity within 6 months was 40.7% (57/140), which included: weight gain (more than 5 kg) 28.6% (40/140), mania/hypophonia 8.6%(12/140), transient confusion 7.9% (11/140), depression 4.3%(6/140) and pulmonary edema 2.1%(3/140). Stimulation related morbidity was 47.8% (66/140), which included hypophonia 18.1%(n=25/138), dyskinesia 13.8%(19/138), dysarthria 13.8%(19/138), sialorrhea 12.3%(17/138) and decreased memory 11.6% (16/138). The comorbidity of these patients within the follow-up period up to 13 years was 73%(86/118, loss follow=20), which included patients who expired, demented, received bone/spine surgery and diagnosed as cancer.
Conclusions: The associated morbidity and comorbidity is significant in DBS patients. Stimulation related morbidity was high, nevertheless, most of these was transient, and could be improved after change in stimulation parameters. Though the incidence is low, intracranial hemorrhage remains as a high risk in DBS surgery.
Background: Stroke is one of the most devastating diseases and a leading cause of death and disability in the world with further impact to emotional and economical problems. This research mainly to investigate the role of intraventricular transplantation using bone marrow mesenchymal stem cell in stroke patients.

Material & Methods: This study was a one group (eight patient) pre and post test design. Subjects were selected from supratentorial hemorrhagic stroke patients, after six months treatment with stable neurological deficits with NIHSS of 5 - 25. Clinical outcomes were measured using NIHSS scale three months after transplantation. Bone marrow was aspirated under aseptic conditions and expansion of MSC took 3-4 weeks. All patients were administered a mean of 20 x 10^6 cells intraventricularly.

Results: The result showed significant correlation between the median score value of NIHSS before and after treatment. No important adverse events derived from transplant or surgery observed during 3 months follow up.

Conclusion: Our study demonstrate that bone marrow mesenchymal stem cell can be transplantated intraventricularly with excellent tolerance and without complications. Stem cell transplantation aiming to restore function in stroke is safe and feasible. Further randomized controlled trials are needed to evaluate its efficacy.
Keywords: Hemorrhagic stroke, BM-MSCs, intraventricular transplantation, NIHSS

SS 6.2 THE INTRODUCTION OF MRI GUIDED HIGH INTENSITY FOCUSED ULTRASOUND SURGERY FOR STEREOTACTIC & FUNCTIONAL NEUROSURGERY

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The field of MRI guided high intensity focused ultrasound surgery (MRgFUS) is evolving and offers the new hope for the treatment of many neurological disorders through both ablative mechanism and non-ablative mechanisms such as drug delivery, neuromodulation and etc. Currently, Jeanmond et al demonstrated the beneficial effect of MRgFUS by performing noninvasive central lateral thalamotomies as a treatment for chronic neuropathic pain. And we believe that certain benefits of this MRgFUS are the elimination or the current surgical risk such as infection and hemorrhage by making a lesion with a noninvasive, precise method.

Thus, we also want to evaluate the role of MRgFUS for the management of essential tremor, Parkinson’s disease and obsessive compulsive disorders especially for those who are not good candidates for invasive surgery such as deep brain stimulation (DBS) or conventional lesioning procedures. And we had an approval of the feasibility studies of essential tremor, Parkinson’s disease and obsessive compulsive disorders from the Korean FDA and the IRB of Yonsei University College of Medicine. As well, we had fully informed written consent for making unilateral thalamotomy to control the tremor of the dominant hand or unilateral pallidotomy to control the parkinsonian symptoms or making bilateral lesioning of the anterior portion of the internal capsule to control the symptoms of obsessive compulsive disorders.

The treatment was performed in a 3T MRI (Signa, GE) using the Exablate 4000 device (Insightec), which features a 30 cm diameter hemispherical
1024 elements phased array transduced operating at 680 KHz. The patient’s head was immobilized by fixation in an MRI compatible stereotactic frame (Radionics)

In this presentation, we will demonstrate the results of patient with essential tremor, Parkinson’s disease and obsessive compulsive disorders after MRgFUS with our imaging studies.

**SS 6.3 INTRATHECAL BECLOFEN FOR SPASTICITY**

Kang-Du Liou.
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**Introduction:** Intrathecal baclofen (ITB) delivered by programmable pump device can solve severe spasticity of various origins where systemic administration of antispastic drug or local injection of botulinum toxin has as insufficient effect. however, adverse events are unavoidable part of such treatment. The main problems are pharmacological side effects of ITB, surgical complications, and device-related complications. In this study, we show our experience with some rare type s of spasticity and complications.

**Materials and methods:** Based on positive test trials with ITB we have implanted eighteen pump systems (Synchromed II, Medtronic) for severe spasticity and dystonia. Among the different origins of spasticity of the 30 patients, head injury in 6 patients, cerebral palsy in 10, stroke in 3, spinal cord injury in 5, scoliosis with myoclonus in 2, pontine myelinolysis with dystonia in 1, Hallervorden-Spatz disease with dystonia in 1, hereditary spastic paraplegia in 1 and MSA in 1. Implantation technique was routine by two stages of first prone position for catheter placement under C-arm and second supine position for pump placement. The mean follow-up time was 32 months (range 3-85).

**Results:** Baclofen dose significantly increased in the first 6 months after implantation and then stabilized. No patient developed tolerance. The
mean stabilized ITB dose was 200 ug/day (range 80-420). Complications developed in 5 patients. Three patients developed CSF leakage with seroma formation in puncture region, two patients were CP children patients and the third patient was Hallervorden-Spatz patient. One patient developed catheter broken induced by the spinal instrument. One patient developed catheter obstruction in the pump site.

**Conclusion:** ITB represents an important treatment modality not only in severe spasticity of various origins but in some rare types of dystonia and myoclonus. Most of adverse events and complications were connected with catheters and they were minor and treatable ones. Identification of catheter malfunction requires careful investigation. In cases of cerebral palsy, the fascia flap for covering the catheter is suggested to prevention of CSF leakage or fistula. Although intrathecal drug delivery systems are associated with carious side effects and complications, their benefits outweigh their risk. Prevention, early recognition, and prompt management optimize the patient outcomes.

**SS 6.4 RANDOMIZED CONTROL CLINICAL TRIAL OF COMPARATIVE EVACUATION OF SPONTANEOUS ICH BY CRANIOTOMY AND NEUROENDOSKOPI : STUDY OF GLASGOW OUTCOME SCORE, THE LEVELS OF INTERLEUKIN 1 BETA, INTERLEUKIN 6 AND NERVE GROWTH FACTOR CEREBROSPINAL FLUID**

Arie Ibrahim (Indonesia)

**Background and purposes:** Neuroendoscopy is one of promising optional treatment for spontaneous intracerebral hemorrhage. We evaluated the alteration of IL-1β, IL-6 and NGF levels in cerebrospinal fluid and clinical outcome of patients with spontaneous intracerebral hemorrhage who underwent neuroendoscopic surgery and craniotomy. **Methods:** Randomized control trial was performed by block randomization method during 27 months in 43 hemorrhagic stroke subjects. Twenty-five subjects treated with neuroendoscopy surgery and 18 subjects with craniotomy. The removal
of intra cerebral hemorrhage was done by a neuroendoscopic transparent sleeve made of silastic material, derived from pieces of thoracic tube No. 21F as a conduit working channel. Cerebrospinal fluid IL-1β, IL-6 and NGF levels was examined and measured by a double antibody sandwich ELISA, before and 4 days post operatively. Results:

We analyzed statistically IL-1β, IL-6 and NGF levels in cerebrospinal fluid pre operative and 4 days post operative, clinical outcome assessment by Glasgow Outcome Scale 6 months post operative follow-up period. The mortality rate was significantly higher by Pearson chi-square methods, in craniotomy group n=12 (63.2%) compared with neuroendoscopy group, n=7 (36.8%) (p<0.005). Subjects with Glasgow Outcome Scale score 3–5 was higher in neuroendoscopy group, n=18 (75%) compared with craniotomy group n=6 (25%). We analyzed by Wilcoxon test, found that cerebrospinal fluid IL-6 delta level post treatment was statisically significant (z=-2.575; p=0.010). The survival rate by Kaplan Meier methods was performed, found that subjects in the neuroendoscopy group were a significantly longer survival rate compare with the craniotomy group during 6 months post operative follow-up period. The median survival time of subjects in the craniotomy group was 10 days only, which was not found in the neuroendoscopy group.

Conclusions: Treatment of spontaneous intracerebral hemorrhage with neuroendoscopy was safer and longer survival rate.

Key words: Double antibody sandwich ELISA, spontaneous intracerebral hemorrhage, Neuroendoscopy, 21 F thoracic tube.
PLENARY LECTURE 2

PL 2.1 DBS FOR DYSTONIA
Ryoong Huh (South Korea)

PL 2.2 USEFULNESS OF INTRAOPERATIVE INFRARED THERMOGRAPHIC IMAGING STUDY FOR SUCCESSFUL DETERMINATION OF PERMANENT IMPLANTATION OF SPINAL CORD STIMULATION

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Introduction: Currently, inclusion criteria for permanent IPG insertion after trial stimulation in spinal cord stimulation are induced paresthesia in whole area of pain and greater than 50% of pain relief after series of stimulations during several days after operation. These parameters, however, are based on only subjective responses and there have not been objective measures to demonstrate its efficacy during these stimulations. Also, recently introduced high frequency and burst stimulation technique may not induce paresthesia which may cause more difficulty in determination of successful stimulation objectively. Author has used infrared thermography in these patients to validate its role in providing information whether trial stimulation correlates the symptomatic improvement thus may be used as a parameter for deciding permanent IPG insertion and predictive measurement for successful outcome.

Materials & Methods: A total of twelve patients who underwent trial spinal cord stimulations with complete set of infrared thermographic examinations pre-, intra-, and postoperatively were included in this study. All patients had refractory pain that persisted more than 9 months from various causes. There were 6 male and 6 female patients with average age of 58 (range 48-72). The causes of chronic, intractable pain of these patients were persistent pain
following spinal operations. All patients had pain of neuropathic type and had severe pain (greater than 7 of VAS) for average of 19.4 months (range 9-36 months). IR thermographic examination, using IRIS 5000, was done before and during trial “stimuation on” state. A single, 4 contact electrode was inserted percutaneously in 8 patients and a 8-contact dual type electrode in remaining 4 patients. Trials of test stimulation consisted of 60-150 Hz and 0.5-3.0 v.

**Results:** Good to excellent responses from trial stimulation (more than 75-100% of pain reduction with “pleasant, mildly paresthetic” feelings), in regions where severe pain and dysesthesia were located preoperatively, were observed in these patients at 1.2-2.2 v and 60-150 Hz stimulations. Immediate thermographic changes (normalization) seen in these patients correlated well with clinical improvement with respect to location of pain and dysesthesia, and degrees of improvement. After confirmation of these results, and positive responses (>75% of pain relief) during trial stimulation periods (average 6.2 days, range 5-14 days) patients underwent the implantation of permanent pulse generator. Various types of IPGs were used for the permanent placement. All of these patients showed more than 75% of satisfaction with substantial reduction of previous medications.

**Conclusions:** From these observations, the infrared thermography may provide useful and objective findings that correlate with patients’ improvement after trial spinal cord stimulation which may be used as an objective inclusion tip for the permanent IPG implantation and as a predictive finding for determining the successful results. However, further investigation with more experience will be necessary before its use can be generally indicated for the spinal cord stimulation.

**PL 2.3 SPINAL CORD STIMULATION : TECHNIQUES AND MANAGEMENT**

**Kang-Du Liou.**
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**Purpose:** Spinal cord stimulation (SCS) is a well-accepted therapy to treat a variety of chronic neuropathic pain condition. To avoid the disadvantages of using percutaneous lead for trial and enhance surgical outcomes, we modified the surgical procedures by using a quadripolar surgical lead for trial under local anesthesia, and implanting the permanent system by preserving the trial surgical lead without changing the position in the initial 9 patients, the following patients was under the standard percutaneous lead trial and implantating the permanent surgical lead.

**Materials and Methods:** From JUL.2006 to JUL2015, a total of 27 patients suffering from lower limbs neuropathic pain underwent SCS therapy at Taipei Veterans General Hospital. All 27 patients had experienced pain that was unresponsive to conventional treatment modalities for at least 6 months, and were not considered to be candidate for further spine surgery. Six patients suffered from lower legs pain after cauda equine injury, 13 patients from radicular or low back pain after FBSS, 4 patients from PAOD ischemic pain, 2 patient from radicular pain after complication of vertebroplasty and 1 patient from C-spine injury and 1 patient from the BK amputation stump pain. All 27 patients received our modified SCS surgical procedure- placing a surgical epidural lead for trial and implanting permanent system within one week trial period.

**Results:** During the trial period, all 27 patients had satisfactory paresthesia coverage (>80%) and pain relief (>50%). After permanent system implanted, all 27 patients still reported at least a 50% reduction in pain score of visual analog scale (VAS). Moreover, the image studies showed that no lead migration was found before and after permanent system implanted in all 25 patients. Two patient could not feel the parestehsia after surgery and underwent another surgery for revision of the lead position.

**Conclusions:** As SCS has become an accepted procedure for the treatment of neuropathic pain, it is important to devise ways to avoid any complication or low patient satisfaction associated with the procedure. Our modified surgical procedure, placing a quadripolar surgical lead for trial under local anesthesia, resulted in good parestehsia coverage and clinical outcome.
Abstract: Neck and arm pain caused by cervical spondylosis is one of the most common symptoms and is called as “cervical radiculopathy”. There have been many therapeutic approaches to this unique clinical entity. Various drugs including steroids and non-steroid pain killers as well as neck immobilization is the initial step to begin with. In case this pharmaco-therapy fails, invasive treatments including various kinds of block and surgical approach should be considered.

Microsurgical anterior cervical decompression and fusion (ACDF) is the gold standard of surgical procedure to cervical discogenic diseases. In this clinical entity, laterally to extremely laterally situated herniated disc or spur causes radicular pain. If the patient is old, and cervical spine shows moderate to severe canal or foraminal stenosis, ACDF might be the optimal choice. However, the patient is young and cervical spine is within normal alignment, fusion procedure should be avoided to maintain cervical alignment. Transcorporeal approach using an operating microscope is useful surgical approach as a less invasive procedure. In this paper, indication and surgical technique are presented with reference review.
PL 3.3 FORAMEN MAGNUM DECOMPRESSION FOR ACM

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Decompression of foramen magnum occipitalis and laminectomy of atlas were safe and effective procedure in the treatment of Arnold chiarry malformation ( ACM ) with or without syringomyelia. Positioning of the patient prone with general anaesthesia. Posterior mid line skin incision at the level of C2 to 3 cm above foramen magnum was properly done. Mid line at foramen magnum and at C 1 lamina should be marked in the beginning of the bone drilling to avoid disorientation. About 2 cm bone removal is done at foramen of Monro. Atlanto- occipital fascia is removed. Dura is opened removing all constricting band but keep arachnoid membrane intact. Any arachnoid membrane tear is repaired by tissue glue. Defect of the dura matter can be close by fascial graft.

Keyword; ACM, foramen magnum decompression

PL 3.4 PATIENT SAFETY IN NEUROSURGICAL SERVICES

Endro Basuki (Indonesia)
PLENARY LECTURE 4

PL 4.1 DBS FOR TOURETTE SYNDROME
Jian-guo Zhang (China)

PL 4.2 DBS FOR PARKINSON'S DISEASE
Shin Yuan Chen (Taiwan)

PL 4.3 DBS POST-OP MANAGEMENT
Dianyou Li (China)
The primary aim of the intensive care management of traumatic brain injury (TBI) is to prevent and treat secondary ischemic injury using a multifaceted neuroprotective strategy to maintain cerebral perfusion to meet the brain’s metabolic demands for oxygen and glucose. Because the brain is encased by the non-expandable skull, an increase in intracranial pressure (ICP) may impede cerebral blood flow (CBF) and lead to cerebral ischemia. Increased ICP is an important cause of secondary brain injury, and its degree and duration is associated with outcome after TBI. (1,2) ICP monitoring is the most widely used intracranial monitor because prevention and control of increased ICP and maintenance of cerebral perfusion pressure (CPP) are fundamental therapeutic goals after TBI.

Increased ICP causes a critical reduction in CPP and CBF and may lead to secondary ischemic cerebral injury. A number of studies have shown that high ICP is strongly associated with poor outcome (3), particularly if the period of intracranial hypertension is prolonged (4). Increased ICP can also cause actual shift of brain substance resulting in structural damage to the brain and to herniation through the tentorial hiatus or foramen magnum. The latter results in pressure on the brainstem causing bradycardia and hypertension (the classic Cushing reflex) and, if untreated, respiratory depression and death. ICP is not evenly distributed in pathologic states because CSF does not circulate freely and intracranial CSF volume may be low because of brain swelling. The assumption of one, uniform, ICP is therefore questionable and intraparenchymal pressure may not be indicative of “real” ICP, i.e., ventricular CSF pressure (4). In the injured brain, there may be intraparenchymal pressure gradients between the supra and infratentorial compartments (5) and bilateral monitoring has revealed differential pressures.
across the midline in the presence of hematomas (6) and also in the absence of space-occupying lesions(7). References :


SS 7.2 INTRACRANIAL PRESSURE MONITOR IN PATIENTS WITH SEVERE TRAUMATIC BRAIN INJURY IN SOETOMO HOSPITAL SURABAYA (CASES FROM JANUARY TO OCTOBER 2015)

Tedy Apriawan, Abdul Hafid Bajamal

Method of presentation: Oral Presentation

Objective: To report the number of cases and management of intracranial pressure monitors in Surabaya.

Method: A descriptive retrospective study has been performed by reviewing medical records of traumatic brain injury patient. Data taken from Soetomo hospitals in Surabaya predetermined for 8 months from January 2015 to October 2015. Data presented in the narrative with conclusions accord with the descriptive method.

Result: Severe brain injury have obtained the greatest number for candidate of Intracranial pressure monitor. Patients aged 0-20 years frequently suffered severe brain injury and indicated for intracranial pressure monitor. Male patients had more severe brain injury than women and a lot of male indicated for intracranial pressure monitor. There was 2 patient with moderate brain injury, 1 patient with stroke infarction, and 42 patient with severe brain injury that indicated for intracranial pressure monitor.

Conclusion: Intracranial pressure monitor management in Surabaya basically used for observation and treatment in traumatic patient. There is a difference in the number of Brain injuries by sex, age, morphology of Brain injury. Improvements for new technique are still needed to improve services for people with Brain injury.

Keyword: Intracranial pressure monitor, severe brain injury, Soetomo Hospital
Objective: In our institution, endoscopic endonasal transphenoid surgery has become a routine surgical approach for pituitary tumors. The purpose of this study is to review the result and complication of this approach.

Methods: All the data were collected retrospectively from March 2008 till July 2014. All the patients characteristic data were collected from the medical record, including the presenting symptoms, hormonal profile, ophthalmologic review, post operative complications, length of stay, Olfactory dysfunction, visual improvement, and symptoms improvement. Most surgery were done through one nostril (right). Univariate analysis were done and presented as percentage.

Results: There were 349 cases (183 F, 166 M), average age 43.6 yo (range 14-80 y.o). Majority of the cases are non functional adenoma (272 cases), the rest presenting with hormonal syndrome (31 cases) and pituitary apoplexy (26 cases). Others, turn out to be other lesion such as craniopharyngioma, infected mucocele, etc. Visual improvement after surgery 91.09%, 8.5% remain stable, 0.8% get worst on one eye. The surgical complication; CSF leak 7.7%, Mild DI 7.7%, Infection (meningitis, cacosmia) 6%, post operative delayed epistaxis 1%, post operative hematoma at tumor bed 0.5%, and other complication such as empty sella syndrome 0.2%, carotid injury 0.2%, second nerve injury 0.4%. One patient may have more than one complications.

Conclusion: Overall, an endoscopic endonasal transphenoid surgery for pituitary tumors is a safe approach.

SS 8.2 PURE SINGLE NOSTRIL ENDOSCOPIC ENDONASAL TRANS-SPHENOIDAL HYPOPHISECTOMY SURGERY: CLINICAL SERIES OF 50 CASES

Rahadian Indarto Susilo, M.D,
Irwan Barlian Immadoel Haq, MD. joni Wahyuhadi, MD PhD
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Introduction: Endoscopes are now used for transsphenoidal pituitary surgery and eventually replaced the use of operating microscope. Endoscopic Endonasal Transsphenoidal Hypophysectomy (EETH) surgery has now increasingly accepted by most neurosurgeons in many centers throughout the world. This study evaluates a series of consecutive EETH performed since 2012 in our center

Objectives: The aim of the study was to analyze the outcome and the surgical technique to enlighten advantages and limitations of this procedure.

Methods: All patients underwent a pre- and postoperative evaluation of neurological status, hormonal investigations and magnetic resonance imaging. Surgical time, post-surgical complications, post operative diabetes insipidus, and post operative length of stay (LOS) were considered, based on medical records.

Result: EETH was done in 50 cases of pituitary adenoma. Bleedings during the surgery were minimal; they were less than 50 cc in 11 cases, and 50 – 200 cc in 30 cases and 9 cases that over 200 cc. Post-operative LOS of most patients was 7 – 14 days and 9 patients can be discharged within 7 days. Re-operation was done in 6 patients. Those was due to post operative hemorrhage and profuse cerebrospinal fluid leakage in 4 and 2 cases respectively.

Conclusion: EETH procedure resulted in a safe, effective, and well-tolerated procedure. From our experience, complications can be further reduced after achieving the learning curve, good understanding of limitations with proper patient selection. We conclude that EETH appears to be a better
surgical option in most pituitary adenoma.

Key Words * pituitary surgery * transsphenoidal approach * endoscopy * endoscopic endonasal * EETH

SS 8.3 PERSONAL EXPERIENCE: ENDONASAL HIPOPHYSETONY AND IT’S PITFALL

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A retrospective experience and review was performed on 75 cases of pituitary adenomas during the period January 2010 until October 2015. Randomized approach both nasal and single nasal endoscopic transsphenoidal was used in all patients. There were 42 male and 32 female, with mean age was 40 years old. Thirty-nine patients were come to hospital with visual fields disturbances and almost half of them was consult from Ophthalmology Department, 12 patients combined with hormonal abnormality, and most of all companying with headache or only with headache complain. The most common cases were nonfunctioning lesions in 63 patients. Functioning lesions were diagnosed in 12 patients, 10 patients with prolactinomas and last 2 patients with growth hormone imbalanced. Near complete resection or decompression was proved by post operatively CT-Scan, twentyseven patients were dramatically improve the bitemporal hemianopia and proved by Humphrey visual perimetri test ophthalmology and rest of it also improve within 2 until 3 month follow up, among 12 patients with functioning lesions post-operative endocrinological control was achieved all of them by consult to endocrinology expert and 3 until 8 month post operatively pituitary functions become better. One patient was died after Intra ventricular bleeding and hydrocephalus also diabetes insipidus happen and prolong intensive care also with other complications, 32 patients also have diabetes insipidus after surgery but improve with desmopresine therapy, 21 patients have electrolyte imbalanced with one of them had severe complication until hemodialized
needed, 19 patients have post-operative CSF leak and stop after 5 until two weeks later with consumption acetazolamides. Other post-operative discomfort such as headache, vomiting, and difficult to breathe sensations was minimal and hospitalization period was 5 to 15 days.

**Keywords:** Endoscopic endonasal hipophysectomy, pituitary adenomas, outcome.

**SS 8.4 PERSONAL EXPERIENCE: DEEP SEATED TUMOR RESECTION**

**Nyoman Golden**

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**Background:** Surgical management of deep-seated brain tumors needs comprehensive understanding of the anatomy, intensive practice (not occasional surgery) and familiarity of surgical approach. In some cases, it requires a multidisciplinary team. In this meeting I would like to share my personal experience in surgical management of these tumors including skull base one.

**Material and methods:** All patients with deep-seated and skull base tumors that were operated both in private and government hospitals from 2001 to 2015 were clinically reviewed. Pathologically, they were divided into malignant, benign and uncertain behavior tumors.

**Results:** benign tumors: meningioma with different locations: 134, acoustic schwannoma 26, non-acoustic schwannoma 6, cavernous hemangioma 6, dermoid cyst 2, arachnoid cyst 1. Uncertain behavior tumors: craniopharyngioma 12, immature teratoma 3, hemangiopericytoma 2, fibrous dysplasia 3. Malignant tumors: adenoid cystic carcinoma 5, plasmacytoma 5, squamous cell carcinoma 2, germinoma 3, nasopharyngeal carcinoma 1, round cells tumor 1, Leiomyosarcoma 1. Various surgical approaches used to remove these tumors. The surgical outcomes were various depending on the location and pathology.
Conclusion: Surgical management of these tumors is demanding, therefore it needs intensive practice and willingness.

SS 8.5 THE CONTROVERSY OF VENTRICULO-SUBGALEAL SHUNT

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Ventriculo-subgaleal shunt (VSGS) is one of procedures of CSF diversion in hydrocephalic patient. This procedures is commonly used as temporary yet closed system. VSGS provides continuous ventricular decompression for several weeks or months, while awaiting improvement of either CSF characteristic, abdominal status or local as well as systemic infection. However, as other neurosurgical procedures, VSGS comes with several complication. Infection is occurred in 5.9% cases, commonly caused by gram positive bacterias. CSF Leakage is also threatening because its risk of developing another infection. Another complication is migration of shunt, either slipping inside or extruded into subgaleal. Depressed skull fracture have been reported as another unique complication of VSGS. In our recent experience, we encounter rather complicated cases of patient with VSGS. We have 3 cases of post-VSGS with complication. Two cases were post-traumatic hydrocephalus treated with exposed VSGS, the remaining was TB meningitis with ineffective drainage of VSGS. Coming along those experience, we have questioned the effectiveness of VSGS as a long-term temporary CSF diversion. Further study should be conducted to evaluate whether ventriculo-subgaleal shunt still have its place as an option for temporary CSF diversion.

Keyword: ventriculo-subgaleal shunt, complication.
SS 9.3 DISKIT TECHNIQUE FOR LUMBAR DISCOGENIC PAIN

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Indonesia

**Background:** Up to 40% of all chronic spine pain is related to a problem in one or more intervertebral discs. If you have chronic neck or low back pain, but you don’t have a herniated disc, you may have discogenic pain. Discogenic pain is thought to occur in relationship to disc degeneration.

Exactly what causes lumbar disc pain is not well understood. There are differences that can be seen between a normal lumbar disc and a degenerative lumber disc. The problem of lumbar disc degeneration is part of the normal aging process. The vast majority of degenerative discs cause no symptoms at all. Exactly why some people have significant pain is not well understood.

A condition in which the physical and chemical properties of the disc slowly deteriorate. But the problem is, degenerating discs don’t always cause pain, and experts have yet to explain this relationship in full.

Discogenic pain often subsides on its own, or it may come and go.
Conservative care is usually the first type of treatment that’s tried. As far a surgery goes, generally it’s not necessary. But if you’re in debilitating pain for 3 months or longer and/or have spinal instability, it may be an option.

A minimal invasive spine surgery known as IDET (Intradiscal Electrothermal Therapy) looks promising for discogenic pain. This surgery cauterizes (heats) the fibers of the annulus so that the tear knits together and the nerve endings die. With the nerve endings dead, you won’t be able to feel the discogenic pain anymore.

**Method:** The Diskit II is a new concept developed for treating discogenic pain in the lumbar (and thoracic) region by Intradiscal Pulse Radiofrequency or Radiofrequency technic. It is applied in 10ms with 60 volts for 20 minutes (With a single electrode). This procedure has a good preliminary results, multiple studies take place with the original study of NeuroTherm (done by Dr O. Rohof in The Netherlands), the result with Pulsed RF are as good as the result with thermal RF.

The Diskit II is composed of two straight sharp insulated needles of 15 or 20 cm length with active tips of 30 or 20 mm; the proximal end of the active tip has a radiopaque marker. Also, two thermocouple electrodes of suitable length (15 or 20 cm) are in the kit. These are needed for electrostimulation and making the (P)RF lesion bilaterally in the annulus.

**Result:** Since 2010, we had 25 patients with average age 21 - 53 years old, 13 patients with lumbar discogenic at L4-5, 9 patients at L5-S1 and 3 patient with 2 level at L4-5 and L5-S1. Pulse Radiofrequency procedure is applied to all of these patients and the outcome is satisfying.

**Conclusion:** Diskit II is most economical way for disc treatments. The most easiest placement of the needles/electrode currently on the market, Can be used in thermal RF and Pulsed RF (dual electrode mode on the machine), Results are as good as Biacuplasty, annuloplasty and IDET

Key word: Discogenic pain, Biacuplasty annuloplasty, IDET, DISKIT II
SS 9.4 PULSED & PULSED DOSE RADIOFREQUENCY MEDIAL BRANCH NEUROTOMY AND DORSAL ROOT GANGLIONOTOMY AS A NEUROMODULATION TECHNIQUE FOR TREATMENT OF REFRACTORY LOW BACK AND LEG PAIN

Jung Yul Park, M.D, Ph.D.
Department of Neurosurgery, Korea University Medical Center, Anam Hospital

Recently, various other types of treatment that can be considered as neuromodulation technique have been introduced. Among these, pulsed radiofrequency (PRF) has gained a great interest by many physicians in responsible for the management of chronic intractable pain. The advent of PRF, unlike to conventional heat producing RF technique, has markedly increased the safety of this modality and possibly added selectivity for nociceptive neurons. Recently, it has extended the application of this therapeutic modality as a neuromodulation treatment in various disorders since it not known to, as a definition of neuromodulation implies, destruct or cause structural damages to the tissue while providing similar therapeutic effects. Here, author present the basic and updated concept of pulsed- and pulsed DOSE RF technique for the present and future application of its use in various clinical fields based on literature review and personal experience, focused on treatment of refractory low back and leg pain and/or paresthesia of spinal origin in a total of 650 patients consecutively treated during last 2 year period from our institution.

KEY WORDS: Radiofrequency, Neuromodulation, Spinal pain, Neurotomy, Rhizotomy

SS 9.5 TRIAL TO AVOID POSTOPERATIVE AXIAL PAIN IN CERVICAL LAMINECTOMY OR LAMINOPLASTY

Junichi Mizuno, M.D., Ph.D.
Center for Minimally Invasive Spinal Surgery
Shin-Yurigaoka General Hospital
Postoperative axial pain is one of the serious complications due to posterior procedures to the cervical spine. The patients with this pain do not appreciate the surgical outcome even if preoperative symptoms are almost resolved. The effective medical approaches to such patients include pain killers, muscle relaxants and rehabilitation. The mechanism of axial pain is still debatable. In surgery, this complication is always considered and should be avoided as much as possible. Minimally invasive approach to the posterior compartment of the cervical spine is essential. Paraspinous muscles and ligaments should be preserved, and extensive separation must be avoided. Attachment of paraspinous muscles to C2 and C7 spinous process is extremely important to maintain the curvature of the cervical spine, particularly at the cranio-cervical and cervico-thoracic junctions. Another important point is preservation of lateral mass. Unnecessary exposure of the lateral mass may enhance axial pain.

In this presentation, surgical tips to minimize the postoperative axial pain is discussed with reference of the previous articles in this issue.
Brain metastases from extracranial primary tumors is a common complication of systemic cancer and an important cause of morbidity and mortality. Brain metastases are the most common form of brain tumor in adults. About 200,000 new metastatic brain tumors are seen annually in the United States. The most common primary tumors are lung, breast, kidney, gastrointestinal, and melanoma. Twenty percent to 40% of all cancer patients will develop a metastatic brain tumor sometime during the course of their illness. These tumors will be multiple 60% to 70% of the time; the remainder are solitary. The overall incidence of brain metastases is increasing, probably because treatment of the primary tumors has improved, leading to longer life expectancies and hence longer times during which a brain metastasis can develop. The treatment for brain metastases include surgery, radiation, chemotherapy.

Keywords: Brain metastases, surgery, radiation, chemotherapy
SS 10.4 EPILEPSY & BRAIN TUMOR

Zainal Muttaqin, MT Arifin, E Andar, and Y Bakhtiari
Department of Neurosurgery, Diponegoro University

Background: Neurosurgical procedures have been increasingly applied for the treatment of epilepsy with beneficial effect, especially for partial or localization-related epilepsies. Recent advances were much influenced by the introduction of magnetic resonance imaging (MRI) in epilepsy. MRI has allowed patients with refractory partial epilepsy to be separated into two groups: those with substrate-directed (those whose MRI showed one or more potentially epileptogenic structural abnormalities that may coexist with the epileptogenic zone), and those with non-substrate-directed disease. The major pathological entities in substrate-directed disease include mesial temporal sclerosis (MTS), primary brain tumor, vascular anomaly, and malformations of cortical development (MCDs).

Materials: Our experiences in surgery of more than 430 partial epilepsy cases showed the presence of primary brain tumor as the responsible pathology related to the chronic intractable epilepsy in 23 cases, vascular hamartomas in 15 cases, and Malformations of Cortical Developments or Cortical Dysplasias in 12 cases, and will be discussed here. Tumors taken from intractable epilepsy patients can be divided into mixed neuroglial or mixed glial tumors (ganglioglioma, dysembryoplastic neuroepithelial tumor or DNT, oligoastrocytoma, pilocytic astrocytoma, and pleomorphic xanthoastrocytoma), various grades of glioma (astrocytoma, oligodendroglioma, glioblastoma), and hamartomas such as vascular malformations. These tumor-related epilepsy patients were all referred because of the chronic epilepsy, and none of the tumor caused expanding mass effect to the surrounding brain.

Results: MRI is a the most sensitive modalities to detect the presence of these tumors. Surgery was performed in all of these cases with the help of Electro Corticography (ECoG), so that the aim of surgery in eliminating the epileptogenic zone, not just the tumor might be achieved. The Histopathological studies showed to be Dysembryoplastic Neuroepithelial
Tumor (DNT) in 7 cases, Ganglioglioma in 6 cases, Pilocytic Astrocytoma in 2 cases, Low Grade Diffuse Astrocytoma in 3 cases (2 of them showed malignant changes later), Tuberous Sclerosis Complex in 2 cases, and 1 cases each for Epidermoid, Pleomorphic Xanthoastrocytoma, and unknown pathology

Conclusion

Results of surgery in terms of Seizure Eliminations showed Class 1 (Seizure Free) in 18 cases, Class 2 (not more than 2 seizures per year) in 3 cases, and Class 3 (decrease of seizure frequency more than 75%) in 2 cases. The presence of tumorous lesions should not be overlooked in chronic epilepsy cases, and seizure elimination should be the main purpose of surgery, not just the tumor removal

SS 10.5 PEDIATRIC BRAIN TUMOR AND IT’S CHALLENGE

Mahyudanil (Indonesia)
SYMPOSIUM 11

SS 11.1 ACUTE ISCHEMIC STROKE; THE ROLE OF THROMBOLYTIC AGENT

Aditya Wicaksana (Indonesia)

SS 11.2 CAROTID CAVERNOUS FISTULAS; TECHNIQUE OF ENDOVASCULAR APPROACHES

Achmad Adam (Indonesia)

Carotid Cavernous Fistula (CCF), abnormal connection between ICA and ECA, is multiple etiology. visual. And Occular impairment, bruit and redness can occur as the result of blood accumulation in cavernous sinus. It is very important to understand the angioarchitecture. How the disease supplied and how the disease is drained Endovascular procedure is treatment of choice for dealing with this dis with good outcome

SS 11.3 THE RULES OF BRAIN AVMS EMBOLISATION

Wismaji Sadewo (Indonesia)

Wismaji Sadewo MD PhD, Setyo Widi N MD, Hanif GT MD. Syaiful I MD, M Saekhu MD
Dept of Neurosurgery Faculty of Medicine, University of Indonesia RSCM Hospital

Vascular malformations involving the brain are divided into subgroups, including arteriovenous malformations (AVM), developmental venous anomalies (DVA), cavernous malformations and capillary telangiectasias.
These lesions are further categorized into those that demonstrate shunting from arterial to venous systems (i.e. the AVM), and those that do not have shunting (DVA, cavernous malformation, and capillary telangiectasia).(2).

Arteriovenous malformations are high flow shunts between the arterial and venous systems without an intervening capillary bed. These lesions are subdivided into the classic arteriovenous malformation and the arteriovenous fistulas.

The classic AVM (also known as pial AVM) results from an abnormal connection between the arteries that normally supply the brain parenchyma and the veins that would normally drain this region. Arteriovenous fistulas are distinguished from AVMs by the presence of a direct, high flow fistula between artery and vein. There is no intervening nidus. These include the dural arteriovenous fistula (dAVF), the cavernous carotid fistula (CCF) and the vein of Galen malformation (VOG).

AVMs can be treated with surgery, endovascular embolization, radiosurgery, or a combination of these methods.(1.3)

Understanding the associated imaging findings and potential complications of these lesions assists in determining the appropriate treatment options.

References


**SS 11.4 NEUROSURGICAL MANAGEMENT OF BRAIN CAVERNOMA**

Asra Al Fauzi, Nur Setiawan Suroto, Zaky Bajamal
Department of Neurosurgery, Airlangga University, Surabaya Neuroscience Institute, Surabaya, Indonesia

Brain cavernomas are the most common vascular malformations and can be found in many locations in the brain. If left untreated, cavernomas may lead to intracerebral hemorrhage, seizures, focal neurological deficits, or headaches. The authors report the microsurgical management of brain cavernomas in a series of 21 consecutive patients that include 14 patients with supratentorial cavernoma, 5 brainstem cavernoma and 2 infratentorial cavernoma. A careful selection of the surgical candidate, surgical approach and optimal entry zone into the brainstem play a major role for the success of the procedure. With a meticulous microsurgical technique and the use of additional tools such as nerve monitoring and neuronavigation system, even deeply located brain cavernomas can be removed without creating additional morbidity.

Keywords: Brain cavernomas, microsurgical management, outcome
SYMPOSIUM 12

SS 12.1 SYNDROMIC CRANIOSYNOSTOSIS: THE COMBINED NEUROSURGICAL AND MAXILLOFACIAL SURGERY MANAGEMENT DURING THE CHILD GROWTH

Wihasto Suryaningtyas, MD¹
Muhammad Arifin, MD¹
Magda Hutagalung, MD²
Lobredia Saharazade, MD²

¹ Section on Pediatric – Department of Neurosurgery Faculty of Medicine - Airlangga University, Soetomo General Hospital Surabaya, Indonesia
² Department of Plastic Surgery
Faculty of Medicine - Airlangga University, Soetomo General Hospital Surabaya, Indonesia

Summary: Syndromic craniosynostosis is the syndromes that feature craniosynostosis and other abnormalities, mainly craniofacial dysmorphism, abnormalities of extremities and other related organs. Epidemiologically, these syndromes are not prevalent. While non-syndromic craniosynostosis affects as much as 1 per 2500 births, the syndromic ones are only found in 1 per 6250 births. It includes the relatively common syndromes such as Apert syndrome, Crouzon syndrome, Pfeiffer syndrome, and Muenke syndrome. Kleeblattschädel (cloverleaf skull) maybe associated with those craniofacial syndromes, since an isolated Kleeblattschädel is rare.

Surgical intervention is almost unavoidable when the syndrome is diagnosed. Multiple malformations warrant a multi discipline approach and will be treated in a multi stage surgery. The timing for surgery and involvement of certain specialist(s) at every stage are based on the craniofacial growth of the child and whether the need for urgent surgery exists. Some general considerations need to entertained, i.e. airway management, ophthalmological consideration, hydrocephalus, intracranial pressure management, odonthological consideration, and hand functionality (if any). The presence of other specialists such as ENT, clinical geneticist, physical rehabilitation are also expected.
Case studies of Crouzon syndrome, Apert Syndrome and Kleeblattschädel are presented, along with the operation results at some stages.

Keyword: Syndromic craniosynostosis, pediatric neurosurgery, maxillofacial surgery

SS 12.2 TRAUMA IN PEDIATRIC PATIENT
Handoyo Pramusinto (Indonesia)

SS 12.3 UNUSUAL MENINGO ENCEPHALOCELE
Mirna Sobana Adriansah
Pediatric Neurosurgery Division, Department of Neurosurgery, Hasan Sadikin Hospital

Encephaloceles represent a group of malformations in which there are calvarial and dural defects with extracranial herniation of leptomeninges, brain and cerebrospinal fluid (CSF). The incidence of encephaloceles varies worldwide with geographic location and race. Anterior encephalocele occur with greater frequency (1 in 3500 to 1 in 5000 live births) in Southeast Asia (Thailand, Indonesia, Burma, Philippines, Malaisia), parts of Russia, and central Africa. Basal encephaloceles are much less common and comprise less than 10% of encephaloceles.

Patients with unusual encephalocele has very different anatomical structures that have to get a special attention. A certain examinations and imaging are needed for planning the surgery and considering the outcomes. Variations of anatomically structur can be partially modified into “closed to normal anatomy” reconstruction. Most of them still need further long term follow up for better result and quality of live.

Encephalocele are entities of calvarial defect that associated to herniation of leptomeninges dan CSF, usually with brain tissue. The serial cases of
encephalocele in Hasan Sadikin Hospital Bandung show some unusual anatomical structures that have to pay attention in surgery, reconstruction and long term follow up.

Keywords : encephalocele, unusual anatomy, surgery, reconstruction, long term follow up

SS 12.4 ENDOSCOPIC INTRAVENTRICULAR TUMOR REMOVAL

Yudi Yuwono Wiwoho*, Syaiful Ichwan, Wawan Mulyawan
Brain and Spine Center, Neurosurgery Department, Indonesian Airforce Hospital Dr. Esnawan Antariksa, Halim Perdanakusuma, Jakarta, Indonesia

Background: Today, the development of minimally invasive neurosurgery technique, has become a choice of treatment for many neurosurgical disease. Indonesian Airforce Hospital Dr. Esnawan Antariksa, Halim Perdanakusuma, Jakarta, Indonesia, has responsibility in public health services for military and civilian community. Therefore, to make better quality of neurosurgical health services, Indonesian Airforce Hospital Dr. Esnawan Antariksa, has provide minimally invasive neurosurgery services, including intracranial neuroendoscopy technique as a choice of treatment of many special and selective neurosurgical diseases. This paper has an objective to share some experiences in giving treatment with intracranial neuroendoscopy technique for two patients with intraventricular tumor in children, at Indonesian Airforce Hospital Dr. Esnawan Antariksa, Halim Perdanakusuma, Jakarta, Indonesia.

Methods and Result: Case report of patient 1 : Boy, 16th years old, with symptoms of headache, vomiting and blurred vision. Neuro-ophtamology examination finding was papil edema, and from brain CT Scan, there was a tumor in third ventricle, with ventriculomegaly and cerebral edema. The diagnosis was hydrocephalus and intraventricular tumor. He was performed endoscopic third ventriculostomy and endoscopic intraventricular tumor biopsy. After surgery he had no headache, no vomiting and his vision was improved. Histopathology finding was germinoma, and radiotherapy was given afterwards. From serial follow up of brain CT Scan, there was improvement
in ventricle size and also in tumor (there was no significant appearance of tumor after radiotherapy).

Case report of patient 2: Boy, 13th years old, with symptoms of headache, vomiting and blurred vision. Neuro-ophtamology examination finding was papil edema. He was previously shunted, three years before, with indication of hydrocephalus, at other hospital. From physical examination, the shunt was malfunction, and from brain CT scan, we found a tumor in third ventricle and it was expanding to lateral ventricle, with ventriculomegaly and cerebral edema. The diagnosis was hydrocephalus, shunt malfunction and intraventricular tumor. He was performed endoscopic intraventricular tumor removal and placement of additional ventriculoperitoneal shunt. After surgery he had no headache, no vomiting and his vision was improved. Histopatology finding was dermoid cyst. From post operative brain CT Scan, there was improvement in ventricle size and also in tumor.

In patient 1, we used intracranial neuroendoscopy device from Karl-Storz Company, Germany, 2008, and in patient 2, we used intracranial neuroendoscopy device from B-Braun Aesculap, Germany, 2012.

Conclusion: Intracranial neuroendoscopy technique can be applied for the treatment of many special and selective neurosurgical diseases, including intraventricular tumor in children. In those two patients, endoscopic intraventricular tumor removal, had good result. We still need more many of cases for determine the success rate of this endoscopic intraventricular tumor removal technique statistically, espescially in children.

Keywords: intracranial neuroendoscopy hydrocephalus intraventricular tumor germinoma dermoid cyst
# Free Paper 1

Nusantara 1 Ballroom

Day/Date: Friday/ 6 November 2015  
Time: 16.00 - 17.50 WITA  
Moderator: Tjokorda Gde Bagus Mahadewa  
Judge: 1. Julius Jully  
2 Nyoman Golden

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<td>16.00 - 16.10</td>
<td>OP 001</td>
<td>Agus C. Anab</td>
<td>Indonesia</td>
<td>The Supraorbital Approach to Anterior Skull Base Tumors : Cases Series</td>
<td>Department of Neurosurgery, Airlangga University, DR. Soetomo Hospital, Surabaya, Indonesia</td>
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<td>16.10 - 16.20</td>
<td>OP 002</td>
<td>N. Budi Setiawan</td>
<td>Indonesia</td>
<td>Description of 289 Lumbar Spine Surgery Experience Between 2013 until 2015</td>
<td>Department of Neurosurgery, Airlangga University, DR. Soetomo Hospital, Surabaya, Indonesia</td>
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<td>OP 003</td>
<td>Donny Wisnu Wardhana</td>
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<td>Keyhole Approach for CPA (Cerebellum Pontine Angle) Tumor with and without IOM (Intra Operative Monitoring) in Malang 2014-2015 : Case Series</td>
<td>Department of Neurosurgery, Airlangga University, DR. Soetomo Hospital, Surabaya, Indonesia</td>
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<td>Roland Sidabutar</td>
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<td>Sphenoorbital Meningioma: Outcome Analysis</td>
<td>Departement of Neurosurgery, Faculty of Medicine, Padjadjaran University/ Hasan Sadikin Hospital, Bandung, Indonesia</td>
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<td>Farid Yudoyono</td>
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<td>Observation Of Neurological Symptoms Following Incidental Durotomy During Spinal Surgery In Six Month Follow Up</td>
<td>Departement of Neurosurgery, Faculty of Medicine, Padjadjaran University/ Hasan Sadikin Hospital, Bandung, Indonesia</td>
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<td>16.50 - 17.00</td>
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<td>Dody Priambada</td>
<td>Indonesia</td>
<td>Microsurgery of Skull Base Meningioma: Timeless and Endless Method in the Evolution Period</td>
<td>Departement of Neurosurgery, Faculty of Medicine, Diponegoro University/ Dr. Kariadi Hospital, Semarang, Indonesia</td>
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<td>Xiao Anqi</td>
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<td>Imaging Features and Stereotactic Surgical Effect of Cavernous Sinus Cavernous Hemangioma</td>
<td>West China Hospital, Sichuan University</td>
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<td>Magnetic Resonance Diffusion Tensor Imaging (DTI) Study of Rhesus Optic Nerve Radiation Injury Caused By A Single Dose/ Fractionation Scheme Radiosurgery (SRS) In The Early Stage</td>
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<td>Hyo Joon Kim</td>
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<td>External Guide for Safe Orthogonal Approach</td>
<td>Presbyterian Medical Center, South Korea</td>
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<td>Vertigo As An Uncommon Complication Following Microvascular Decompression For Trigeminal Neuralgia</td>
<td>Departement of Neurosurgery, Faculty of Medicine, Padjadjaran University/ Hasan Sadikin Hospital, Bandung, Indonesia</td>
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<td>Celia</td>
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<td>Cerebellar Pilocytic Astrocytomas</td>
<td>Departement of Neurosurgery, Faculty of Medicine, North Sumatera University, Adam Malik General Hospital, Medan, Indonesia</td>
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# Free Paper 2
## Nusantara 2 Ballroom

**Day/Date:** Friday, 6 November 2015  
**Time:** 16.00 - 17.50 WITA  
**Moderator:** I Wayan Niryana  
**Judge:** 1. Achmad Adam  
2. Eko Agus Subagio

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<td>Departement of Neurosurgery, Faculty of Medicine, North Sumatera University, Adam Malik General Hospital, Medan, Indonesia</td>
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<td>Departement of Neurosurgery, Faculty of Medicine, North Sumatera University, Adam Malik General Hospital, Medan, Indonesia</td>
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<td>Surgical Outcome After Six Months Trauma In Brachial Plexus Injury Management</td>
<td>Departement of Neurosurgery, Faculty of Medicine, North Sumatera University, Adam Malik General Hospital, Medan, Indonesia</td>
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<td>Characteristics Of Patients With Depressed Skull Fracture And Intracranial Hemorrhages in Hasan Sadikin Hospital, April 2014 - 2015</td>
<td>Departement of Neurosurgery, Faculty of Medicine, Padjadjaran University/ Hasan Sadikin Hospital, Bandung, Indonesia</td>
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<td>Subduro-Peritoneal Shunting For External Hydrocephalus And Porencephaly: Case Report</td>
<td>Departement of Neurosurgery, Faculty of Medicine, Padjadjaran University/ Hasan Sadikin Hospital, Bandung, Indonesia</td>
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<td>17</td>
<td>16.50 - 17.00</td>
<td>Jusuf Desman</td>
<td>Indonesia</td>
<td>Correlation Between Skull Base Fracture Middle Fossa With Awareness Levels, Injury Mechanism and Type of Intracranial Bleeding lesion</td>
<td>Departement of Neurosurgery, Faculty of Medicine, Padjadjaran University/ Hasan Sadikin Hospital, Bandung, Indonesia</td>
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<td>Yohanes Putra Mbama</td>
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<td>Intramedullary Cavernous Hemangioma of Thoracic spine: A case report</td>
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<td>Intramedullary Spinal Lipoma a Surgical Challenge : Case Report</td>
<td>Departement of Neurosurgery, Faculty of Medicine, Padjadjaran University/ Hasan Sadikin Hospital, Bandung, Indonesia</td>
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<td>Bintang Christo Fernando</td>
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<td>Pediatric Patient Distribution in Neurosurgical Department Hasan Sadikin Hospital Bandung 2011-2015</td>
<td>Departement of Neurosurgery, Faculty of Medicine, Padjadjaran University/ Hasan Sadikin Hospital, Bandung, Indonesia</td>
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<td>21</td>
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<td>Selfy Oswari</td>
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<td>Mathematical Modeling in a Single Cell of Subthalamic Nucleus</td>
<td>Departement of Neurosurgery, Faculty of Medicine, Padjadjaran University/ Hasan Sadikin Hospital, Bandung, Indonesia</td>
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<td>22</td>
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<td>Anne Saputra</td>
<td>Indonesia</td>
<td>Skull-Base Meningoencephalocoele Presenting as a Labiognatopalatoschizis and Bilateral Macrostomia on Impending Partial Airway Obstruction in a Neonate : A Case Report in Sanglah General Hospital Denpasar</td>
<td>Division of Neurosurgery, Faculty of Medical, Udayana University/ Sanglah Hospital, Denpasar, Indonesia</td>
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</table>
BACKGROUND: The minimally invasive supra orbita keyhole approach is being increasingly used for diagnosis and treating skull base tumors. Skull base tumor may originate from the neurovascular structures of the base of the brain and the basal meninges, the cranial base itself, or subcranial structure.

METHOD: All consecutive patients who underwent a supraorbital approach craniotomy with endoscopy assistance for skull base tumor such as meningioma and craniopharingiomas were analyzed for location, pathology, operative times, length of stay, and complications.

RESULTS: The supraorbital approach is considered ideal for removal of many, if not most, planum tuberculum sellae meningioma as some alfactory groove meningiomas, as well as suprasellar craniopharingiomas, particularly these with far lateral extension. These approaches have been used in 12 patients, mean age: 36 years, 9 women, underwent supra orbital procedures to resect anterior skull base tumors. Pathologies included meningioma (n = 7), craniopharingioma (n=5). Gross total or near total removal was achieved in 90% of the cases. Median length of hospital stay was 3 days (range 3-6 days). Morbidity included 1 case eyelid hematoma treated medically with no mortality. There were no new neurologic deficits, infections, or cerebrospinal fluids leaks.

CONCLUSION: The supraorbital eyebrow craniotomy approach, provide minimally invasive access to a wide range of anterior skull base tumors. Particularly lesions of frontal pole and parasellar region, allowing for minimal disruption of normal brain parenchyma and promoting a rapid recovery and short hospital stay.
OP 04 SPHENOORBITAL MENINGIOMA: OUTCOME ANALYSIS

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**Background:** Spheno-orbital meningioma (SOM) is a complex tumor because of many different factors that influence clinical, cosmetical and oncological outcome after treatment. The tumor could involve sphenoid wing, orbit, and brain parenchyma. Due to the difficulty of complete total tumor removal, they have many variation in outcome.

**Objective:** To present the outcome of sphenoorbital meningioma surgery through exophthalmometry to determine extent of tumor resection.

**Materials and Methods:** We reported a retrospective series of 184 surgically managed sphenoid wing meningioma patients. We evaluated proptosis management and other ocular symptoms at our department in the last 3 years. Clinical analysis outcome was assessed by comparing preoperative and postoperative ophthalmological and neurological signs. Proptosis Index was measured by Hertel Exophthalmometry, meanwhile visual acuity and other disturbances were rated as normalized, improved, unchanged or worsened. Surgery goal to achieve good cosmetical results by accomplish Simpson grade I and II. Acute postoperative complications were reported, clinical and radiological outcome was assessed at 3, 6 months.

**Result:** Most common presenting symptoms were proptosis (95.7%), visual impairment (61%), and cranial nerve deficit (38.2%). Surgery via frontotemporal approach accompanied with bony orbital reconstruction was performed in all cases. The primary aim was to relieve symptoms and maximize tumor resection. Complete resection was achieved in 72% of cases (Simpson grade I and II) with minimal morbidity. At a mean follow-up of 6 months, 42% proptosis was normalized with the remaining improved, 27.5% visual acuity was normalized with 32.8% improved, and 17.2% had cranial nerve deficit. Recurrence rate was 2.7%.
Conclusion: Normalization of proptosis can be achieved by accurate resection of superior and lateral orbital walls accompanied with careful reconstruction of orbital bone and frontobasal dura. Complete tumor resection should not be pursued at the expense of increased morbidity.

Keywords: spheno-orbital meningioma, proptosis, ocular symptoms, outcome

**OP 05 OBSERVATION OF NEUROLOGICAL SYMPTOMS FOLLOWING INCIDENTAL DURATOMY DURING SPINAL SURGERY IN SIX MONTH FOLLOW UP**

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Division of Neurospine, Pain and Peripheral Nerve, Department of Neurosurgery, Faculty of Medicine, Universitas Padjadjaran–Dr. Hasan Sadikin Hospital, Bandung, Jawa Barat, Indonesia.

Objectives: Incidental durotomy is an underestimated and relatively adverse event during spinal surgery. Several consequences of inadequate treated of dural tears have been reported. To assess the incidence, treatment, clinical consequence, complications of incidental durotomy during spine surgery and results of 6 months clinical follow-up.

Methods: Retrospective case series of patients who underwent spinal surgery at a single spine unit during a 2 year period was conducted on 120 consecutive patients who underwent spinal surgery performed in Neurosurgery division and Neurospine unit from March 2012 to December 2014.

Results: Thirteen cases of dural tears were identified (3.97%). Incidental durotomies were associated with anterior cervical approach in 1 case, with posterior cervical approach in 1 case, with posterior thoracolumbar approach in 11 cases. Thirteen patients presented post operative complications including 2 cerebrospinal fluid leaks, 3 wound infections and 1 pseudomeningoceles. One of these 13 patients required a revision procedure. A mean follow-up of
Conclusions: Incidental durotomy is a common complication of spine surgery and must be repaired primarily. All Dural tears that were immediately recognized and treated manifest to any significant sequelae at a mean follow-up of 6 months. However, long-term follow-up studies will be needed to confirm this finding. The risks associated with dural tears and cerebrospinal fluid leaks are serious and should be discussed with any patients undergoing spine surgery.

Keyword: Incidental durotomy, Neurological deficit, Spine Surgery

OP 06 MICROSURGERY OF SKULL BASE MENINGIOMA, TIMELESS AND ENDLESS METHOD IN THE EVOLUTION PERIOD

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The Method of Surgery is developing and be evolution time by time, include the Surgery of Skull Base. The Big issue now is the evolution from Microsurgery to Endoscopic Surgery for Skull Base Surgery.

Even though, not all methods will be evolution and changing. Some Skull Base Surgery includes Skull Base Meningioma cases will be still in old method, the Microscopic Surgery.

The Microsurgery of Skull Base Meningioma, still always develops and useful in most of cases. You will not walk alone in doing Microsurgery of Skull Base Meningioma.

All Neurosurgeons must very well understand the Principle of The Microscopic Skull Base Surgery is, include: the anatomy, the imaging and the interpretation of imaging, the approach, and the skill technics.
The well knowledge of Anatomy is the basic to do this. It is useful to avoid any damage of vital structure during surgery.

The good quality of Imaging is the next important thing. The types of slice imaging are needed to interpret the position of the mass. Coronal, Sagittal and Axial must be made.

The Choosing of Approach, some different by operator. Even though, the principle of choosing the approach is not by like or dislike of operator, but by what is the best for the each case.

The Skill Technics are could be learned. By time we will improve our skill. Skill to identify the Meningioma, dissect the Meningioma from the brain, vessel, important nerve and important structure without damaging. The Important Thing, that actually the meningioma is separated with another organ by a layer of arachnoid.

Keyword: Skull Base Meningioma, Evolution, Anatomy, Imaging, Approach, Skill Technics

**OP 07 IMAGING FEATURES AND STEREOTACTICSURGICAL EFFECT OF CAVERNOUS SINUS CAVERNOUS HEMANGIOMA**

**Object:** To investigate the imaging features of Cavernous Sinus Cavernous Hemangioma (CSCH) and evaluate the therapeutic effect of Gamma Knife Radiosurgery (GKRS) in treatment of CSCH.

**Methods and materials:** 15 patients with CSCH treated by GKRS in our institute, including 6 males and 9 females, age range 20-77 years old, were analyzed retrospectively. 3 of them were given craniotomies as the initial therapy. All cases had performed conventional and contrast-enhanced MRI and 5 patients underwent dynamic enhanced MRI preoperatively. In 6 cases, the multi-directional continuous data of axial, coronal and sagittal enhanced MRI were acquired. 3 cases performed digital subtraction angiography (DSA) simultaneously. The diagnoses of lesions were determined
mainly depending on typical imaging features. In 3 patients, the diagnoses of CSCH were confirmed histopathologically. The radiation dosimetry was done with a goal of conformal and selective coverage of the lesion with a 50% prescription isodose line. The mean marginal dose constituted 13.4 Gy (range 10–16 Gy). After GKRS was performed, all patients were arranged regular clinical and MRI follow-up every 6 months during the first 12 months, and once per year thereafter.

**Results:** On MRI, the lesions were typically demonstrated as iso/hypo-intensities on T1WI and remarkable hyper-intensities on T2WI, and apparent homogeneous enhancement. The phenomenon of dynamic enhancement was found in 11 cases. The progressive enhancing process from heterogeneous to uniform was displayed in the 5 patients performed same-slice dynamic MRI, including imaging characteristics of ‘edge to center’ enhancement in 2 cases. In the other 6 cases, the delayed homogeneous enhancement of lesion was observed. 10 patients obtained radiological follow-up results after GKRS. Reviewing the follow-up data of 8 patients during the period of 3-6 months, the lesions were apparently shrunk in 5 patients with shrinkage rate of 20.8-46.8%. In 4 patients with imaging follow-up during the period of 6-12 months, the lesions of 3 patients were remarkably shrunk with shrinkage rate of 53.5-81.7%. 4 patients had imaging follow-up data over 12 months, and all their lesion sizes were reduced with shrinkage rate of 19-83.6%. The clinical presentations of all patients after GKRS were followed up during the period of 1-30 months. In 7 of 9 cases with headache, the symptom was improved; in 5 of 6 cases, facial hypesthesia was improved; in 6 of 9 cases with visual impairments, the visions were markedly improved; and in 8 cases with preoperative diplopia, the symptoms were all resolved.

**Conclusion:** Although bright hyper-intensities on T2WI and significant homogeneous enhancement on contrast-enhanced T1WI are considered as typical imaging characteristics of CSCH, the dynamic process of progressive delayed enhancement on contrast-enhanced MR is more persuasive in diagnosis. According to our study, GKRS could be chosen as an effective and safe alternative treatment for CSCH. We consider that using relatively low marginal dose may get better effects in tumor shrinkage and protection of cranial nerves.
Objective: The aim of this study was to investigate the performance of magnetic resonance diffusion tensor imaging (DTI) early after injury of the optic nerve of rhesus monkeys by a single dose/fractionation scheme radiosurgery (SRS). We discuss the value of DTI in the diagnosis of radiation-induced optic neuropathy (RION).

Materials and Methods: 5 rhesus monkeys were examined by MRI and the contour of intraorbital optic nerve was acquired from MRI image. The unilateral intraorbital optic nerves of 5 rhesus monkeys were injured by gamma knife surgery (GKS) with a single dose/fractionation scheme (marginal dose of 15 Gy, 50% isodose curve). DTI was performed before operation and 1 week, 2 weeks, 4 weeks, and 24 weeks after injury. The cross-sectional area, fractional anisotropy (FA) value, apparent diffusion coefficient (ADC) value, axial diffusivity (AD) value and radial diffusivity (RD) values of the optic nerve were measured by 3T MRI at the aforementioned time points.

Result: Compared with the contralateral optic nerve, the cross-sectional area of the injured optic nerve exhibited significant atrophy 24 weeks after SRS. FA declined 1 week after injury, then increased slightly but remained lower than before injury (P<0.05). AD began to decline in the 2 weeks after injury and gradually disappeared. The change was statistically significant. ADC increased significantly in the first week after injury, then gradually decreased until it was no longer significantly different after 2 weeks. The
change in RD was not significant.

**Conclusion:** SRS with a single dose/fractionation scheme (marginal dose of 15 Gy, 50% isodose curve) on the unilateral intraorbital optic nerves can induce RION. DTI can detect RION in the early stage. FA and AD are useful indicators for RION diagnosis. The primary site of RION may be the vascular endothelium in the early stage.

**OP 09 EXTERNAL GUIDE FOR SAFE ORTHOGONAL APPROACH**

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**Objectives.** Orthogonal approach is an useful route to evacuate the intracerebral hematoma or to implant the depth electrodes. However, variable courses of venous structures on the surface of lateral brain sometimes cause the unwanted hemorrhage while inserting instrument. This study is aimed to figure out the course of sylvian and vein of Labbe using external landmark

**Material and Methods.** Thirty-four patients’ angiographic were transferred to PC. Sylvian veins and vein of Labbe were redrawn in all the patients. Boundary of lateral skulls was realigned to fit together, and subsequently venous structures were overlaid. Half length of the line connecting external ear canal glabella was used to draw circle (Sylvian circle: SC). Sylvian circle and real course of sylvian veins were compared. Another line connecting external ear canal and coronal suture (Line of Labbe: LL) was made to create the zone between LL and SC (Labbe zone: LZ). Distribution of vein of Labbe in SC were measured.

**Results:** Twenty-seven patients (79%) showed that their sylvian veins were located within 5mm of SC. Five sylvian veins were located above SC and 2 below SC. Most vein of Labbe was distributed in LZ (95.8%). However, distribution span of vein of Labbe is not narrow, consequently it requires additional contrast enhancement to avoid the veins in CT or MRI.
Conclusion. Sylvian circle and Labbe zone are helpful to grossly locate the sylvian vein and vein of Labbe during orthogonal approach.

OP 10 VERTIGO AS AN UNCOMMON COMPLICATION FOLLOWING MICROVASCULAR DECOMPRESSION FOR TRIGEMINAL NEURALGIA: A CASE REPORT

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Microvascular decompression is a common procedure that performed by neurosurgeon to treat several condition, such as trigeminal neuralgia. Despite having a high success rate, this procedure was also associated with complications. Vertigo is one of the uncommon complications associated with this procedure. A 55-years old female was presented in our department with right facial pain. Physical examination reveals hyperalgesia on her right hemifacial, associated with the distribution of right trigeminal nerve, with Visual Analog Scale (VAS) of 7. There were no abnormalities. Head MRI of the patient showed that the right trigeminal nerve was intersected by right anterior inferior cerebellar artery, about 2 mm from pons. The diagnosis of right trigeminal neuralgia was made and the patient was admitted for microvascular decompression of right trigeminal nerve. The patient recovers well immediately after surgery, with VAS had decreased to 0. To our dismay, the patient complained unbearable spinning sensation that made her bedridden. Our attending neurosurgeon added betahistine and cinnarizine in the postoperative medication. The patient responded quite well; her complain was gradually subsided. She was discharged on the 6th day after surgery. On one-month follow-up, the patient was pain-free but still having acceptable degree of vertigo. Here we reported a case of vertigo as an uncommon complication in microvascular decompression for treating trigeminal

Keyword: Vertigo, Trigeminal Neuralgia, Microvascular Decompression
OP 11 CEREBELLAR PILOCYTIC ASTROCYTOMAS

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**Background:** Pilocytic astrocytomas are the most common pediatric cerebellar neoplasm and occur at a mean age of 7 to 8 years. Pilocytic tumors typically arise from the vermis and the cerebellar hemispheres but can extend into the ventricular system. Computed tomography (CT) imaging reveals a well-demarcated lesion with cystlike features, very occasional calcifications, and intense enhancement of the solid component with contrast agent administration. Magnetic resonance imaging (MRI) provides better anatomical definition than a CT scan. The tumor has decreased signal compared with white matter on T1 images, and increased signal on T2 images. The margins of the tumor on T2 images are usually very discrete.

**Objective:** To find out even though the size of the tumor in the posterior fossa is large enough, does not affect the prognosis or outcome in patients.

**Method:** Female, 11 years old came to H Adam Malik hospital with chief complain balance disorders since 6 months ago. Decrease of visual field since 3 month ago. Patient with cerebellar sign: gait ataxia, truncal ataxia, intentional tremor and nystagmus. From physic diagnostic we found GCS 15, pupil equal 3 mm, light reflex +/-, funduscopy papil atrophy bilateral. CN VIII, IX, X and XII dextra are paralyzed. An imaging head non contrast ct scan we found an enhancing mural nodule or mass accompanied by a nonenhancing cyst.

Female, 3 years old came to RSHAM with chief complain balance disorders since 2 week ago. Headache since 1 month ago, not relieved by analgetic. Patient with cerebellar sign: gait ataxia and truncal ataxia. From physic diagnostic we found GCS 15, pupil equal 3 mm, light reflex +/-, funduscopy papil edema bilateral. Cranial nerve paralysis are not found. An imaging show unenhanced T1 magnetic resonance imaging (MRI) scans of a large, partially cystic, partially solid. And The MRI scans show an enhancing...
mural nodule with an intensely enhancing cyst.

Results: Patient concorde position with general anesthesia, midline incision, suboccipital craniectomy then Y-shaped durotomy, trans hemispheres tumor removal and resection of the mural node were done. We performed tumor removal peace meal.

From anatomic pathology examination we found a classic biphasic pattern of loose glial tissue and compacted piloid tissue. The piloid component comprises dense sheets of bipolar cells with fibrillary process containing Rosenthal fibers. The loose glial component contains protoplasmic astrocytes and eosinophilic granular bodies such as pilocytic astrocytoma.

Patient recovered well with visual and swallowing problem caused by tumor location.

Conclusion: Gross total resection of a pilocytic astrocytoma is considered curative. Resection of the mural nodule is key in the surgical extirpation of pilocytic astrocytomas to prevent recurrence of the tumor.

Keyword: Cerebellar astrocytomas, Pilocytic astrocytomas, Midline incision, Mural node.
arachnoid membrane and the arachnoid villi. Olfactory groove meningiomas, have the incidence of 9-18% of all meningiomas and arise on frontosphenoid suture region, from crista galli to the planumsphenoidale. The invasion of ethmoid bone and paranasal sinuses makes complete resection difficult.

**Objective:** The objective of this article is to discuss the advantages of transbasal approach for anterior skull base tumors especially olfactory groove meningiomas in our institution.

**Method:** A 58-year-old woman presented with visual disturbance, headaches, and frontal lobe syndrome. Radioimaging showed 6.3 x 5.5 x 5.9 cm³ midline frontal hypodense lesion with perifocal edema, strong enhancement with contrast.

**Result:** One step tumor removal with transbasal approach and cranioplasty has been done. Patient recovered well post operatively.

**Conclusion:** Transbasal approach is considered superior to any other approaches because providing more tumor exposure, less brain retraction, and early proximal vascular control.

**Keyword:** olfactory groove meningioma, transbasal approach

**OP 13 SPONTANEOUS INTRACEREBRAL HEMORRHAGE : IS FREQUENT FLYING A RISK FACTOR?**

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**Background:** Spontaneous intracerebral hemorrhage (SICH) is defined as a blood clot that arises in the brain parenchyma without history of trauma or surgery. Incidence of primary SICH is approximately 80%. SICH is due to spontaneous rupture of small vessels that damaged by hypertension or amyloid angiopathy. Secondary SICH is associated with a
number of congenital and acquired conditions such as vascular anomalies, coagulopathies, tumors and various medicine.

**Method:** 38 yo male with loss of consciousness (GCS 8) since 1 day. Patient with history of craniotomy ICH evacuation on left basal ganglia on previous 6 months. No drugs abused found. On physical examination presented with vital signs normal, no laboratorium abnormality, anisocoria (R) 4mm (L) 2mm and negative light reflex. The patient worked as a commercial aircraft pilot flying height of 10,000 meters. No AVM on MRA was found.

**Result:** This case is secondary SICH with Idiopathic etiology. It’s still a big question that is SICH related with frequent flying as a commercial aircraft pilot. It caused by wall of vascular thinner and fragile.

**Conclusion:** Patients had twice experienced SICH on different side. With alleged AVM already removed through the head MRI Examination. Whether spontaneous hemorrhage is caused by repetitive changes of air pressure, as of piloting in this case.

Keywords : Spontaneous Intracerebral Hemorrhage, Commercial aircraft pilot

**OP 14 SURGICAL OUTCOME AFTER SIX MONTHS TRAUMA IN BRACHIAL PLEXUS INJURY MANAGEMENT**

Marsal Risfandi, Iskandar Japardi, Suzy Indharty

**BACKGROUND:** The brachial plexus is a network of nerves that provides movement and feeling to the shoulder, arm and hand. This nerve complex is composed of four cervical nerve roots (C5-C8) and the first thoracic nerve root (T1). These roots combine to form three trunks. C5-C6 form the upper trunk, C7 continues as the middle trunk and C8-T1 form the lower trunk. In one study/series, the rate of incidence to the local population was 1.75/100000/year. Twentyone cases occurred due to traction (60%), 9 to gun shot wound (25%), 3 to compression (8.5%) and two perforation/laceration (5.7%).
Any brachial plexus injury which has not shown substantial spontaneous recovery in 3 months deserves to be explored. Timing is crucial due to the eventual loss of neuro muscular end plates at 20 to 24 months after denervation. Operation can be performed in days or weeks to get the maximum out of any possible nerve transfers. The best window is in the first three months and the next subsequent 3 months.

OBJECTIVE:to report a case series of brachial plexus injury management in Adam Malik General Hospital and its outcome.

MATERIAL AND METHODE:Five patients who suffered brachial plexus injury (all caused by trauma) were operated, three nerve transvers, one nerve graft, and one entrapment release. After that outcome was observed and compared among them.

RESULTS:None of them get the best result, only pain can be treated.

Keyword: Brachial Plexus Injury, surgical strategy.

OP 15 CHARACTERISTICS OF PATIENTS WITH DEPRESSED SKULL FRACTURE AND INTRACRANIAL HEMORRHAGES IN HASAN SADIKIN HOSPITAL, APRIL 2014 - 2015

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Background: Even with the advances in technology and development in Indonesia today, the frequency of head injuries still tend to increase. The risk of intracranial bleeding in head injury patients with skull and loss of consciousness is one in four, and in previous studies of mixed population trauma patients, there was a significant relationship between the incidences of compression skull fractures with epidural hemorrhage.
Objective: Our objectives are to determine the characteristics of patients with depressed skull fractures and intracranial hemorrhage in head injury patients of the Emergency Unit of Hasan Sadikin Hospital.

Methods: This is a descriptive research performed by reviewing medical records of Hasan Sadikin Hospital between April 2014 – 2015.

Result: During that period, out of 121 cases of suspected depressed skull fractures, we found 71 cases that met the inclusion criteria. We found that male patients had higher risk than women. The average age of our patients are 23.7 years. Commonly found clinical signs are decrease of consciousness, with moderate head injury determined by Glasgow Coma Scale. Most patients have multiple trauma. It was found that many types of intracranial bleeding in depressed skull fractures affect the patients’ level of consciousness during hospitalization.

Conclusion: Intracranial hemorrhage were found in 58.7% of all patients with depressed skull fractures. Most patients come with moderate head injury, with only one type of intracranial hemorrhage, and went home with improvement in level of consciousness.

Keywords: depressed fracture of the skull, intracranial hemorrhage, head injury

OP 16 SUBDURO-PERITONEAL SHUNTING FOR EXTERNAL HYDROCEPHALUS AND PORENCEPHALY: CASE REPORT

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BACKGROUND: External hydrocephalus is a rare clinical entity, usually with a benign clinical course which does not require neurosurgical intervention. Such cases are seldom found, which makes it difficult to calculate epidemiological data for external hydrocephalus. External hydrocephalus
with continuing head growth is even more rarely found, with few documented cases in the literature. There have been previous reports of using subduro-peritoneal shunting for these cases, although no controlled study had been performed.

Porencephaly is a rare congenital disorder causing degeneration and encephalomalacia, connecting with the ventricular system of the brain. The presence of porencephaly had not been previously connected with external hydrocephalus.

OBJECTIVES: To report a rare clinical entity, which is external hydrocephalus with continuing head growth, requiring neurosurgical intervention using a subduro-peritoneal shunt.

METHOD: A case report was made of our patient, a 4-month-old male child presenting with head enlargement. Imaging studies using ultrasonography and contrast-enhanced CT scan shows the presence of external hydrocephalus over all hemispheres, as well as porencephaly of the left parietooccipital region. The child was treated with subduro-peritoneal shunting.

RESULTS: The subduro-peritoneal shunting was placed at the right Keen’s point. There was no complications in the surgical procedure. We continue to follow-up the child clinically.

CONCLUSION: We present a case of external hydrocephalus with porencephaly, which was treated with subduro-peritoneal shunting because of progressive head enlargement. Our case is unique in that external hydrocephalus usually does not cause continuing enlargement of the head, as represented by its other names such as benign enlargement of the subdural space. The case was also complicated by the presence of porencephaly. Subduro-peritoneal shunting was the treatment of choice for this case, and we continue to monitor the clinical course of our patient.
Background: Skull base fracture middle fossa are often encountered in head injury patients, usually caused by a direct impact at the temporal or occipital region. Clinical signs of skull base fracture middle fossa accompanied with loss of consciousness increases the chances of finding an intracranial hemorrhage. Identifying the type and location of intracranial hemorrhage through clinical and radiological features may provide the surgeon with critical moments to decide if surgical intervention is necessary. This study aims to explore the relationship between skull base fracture middle fossa with awareness level, mechanism of injury and intracranial hemorrhage.

Objectives: Our objectives are to study the correlation between skull base fracture middle fossa with the level of awareness, type and location of intracranial bleeding lesions on head injury patients in the Emergency Unit of Hasan Sadikin Hospital.

Methods: Research was conducted by performing retrospective analysis of all cases of head injury with skull base fracture middle fossa, who had a head CT scan performed in Neurosurgery Emergency Unit of Hasan Sadikin Hospital, between April 2014 to March 2015. Head CT Scan are used to identify the type and location of intracranial bleeding lesions. The level of consciousness in patients with head injury were assessed using the Glasgow Coma Scale (GCS ) at admission in Emergency Unit Hasan Sadikin Hospital.

Result: From 42 samples fitting our inclusion criteria, we found that the most common types of intracranial lesions is epidural hemorrhage (21 patients), mostly located in temporal lobe. Linear fractures accompanying skull
base fracture middle fossa was found in 26 patients and the majority of the mechanism of injury in intracranial bleeding lesion is focal mechanisms/coup of (27 patients).

**Conclusions:** Epidural hemorrhage (EDH) are most commonly found in patients with skull base fracture middle fossa, caused by local trauma mechanism (coup), accompanied by the presence of linear fractures that can be the source of the epidural hemorrhage. The level of awareness varies greatly depending on the onset of events, hemorrhage volume, and other intracranial lesions.

**Keyword:** Skull base fracture middle fossa, intracranial lesions, *Glasgow Coma Scale* (GCS).

**OP 18 INTRAMEDULLARY CAVERNOUS HEMANGIOMA OF THORACIC SPINE: A CASE REPORT**

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Many diseases process can involved spinal cord, either congenital or acquired ones. Intramedullary cavernous hemangioma (CH) is rare. Due to its slow growth, most of the patient presented with slow progressing myelopathy. In this report we would like to present a case of CH with slow progressing myelopathy.

A 55-year-old male presented with a fifteen-year history of weakness of the lower extremities. Urination and defecation difficulties were noted in the last one month. Preoperative magnetic resonance images showed an isolated intramedullary mass at the level of Th 4-5, which was isotense to the myelum on T1WI, hypertense on T2WI and enhance after contrast administration causing dilatation of spinal cord and central canal stenosis.
T4 – T5 laminectomy was done and the tumor was totally removed. The histopathology result was an cavernous hemangioma.

Keyword: intramedullary cavernous hemangioma, cavernous malformation, spinal cord

OP 19 INTRAMEDULLARY CAVERNOUS HEMANGIOMA OF THORACIC SPINE: A CASE REPORT

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A 55-year-old male presented with a fifteen-year history of weakness of the lower extremities. Urination and defecation difficulties were noted in the last one month. Preoperative magnetic resonance images showed an isolated intramedullary mass at the level of Th 4 -5, which was isointense to the myelum on T1WI, hypertense on T2WI and enhance after contrast administration causing dilatation of spinal cord and central canal stenosis. T4 – T5 laminectomy was done and the tumor was totally removed. The histopathology result was an cavernous hemangioma.

Keyword: intramedullary cavernous hemangioma, cavernous malformation, spinal cord
OP 20 PEDIATRIC PATIENT DISTRIBUTION IN NEUROSURGICAL DEPARTMENT

Hasan Sadikin Hospital Bandung 2011-2015

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**Introduction:** As a Medical referral center in West Java, Hasan Sadikin Hospital faced with the increasing of pediatric patient in various cases, then need an illustration of pediatric patient to support and increase better medical care.

**Objective:** Studying distribution and demographic data from neurosurgical pediatric patient, so then able to further research to improve medical care in Hasan Sadikin Hospital.

**Method:** Searching retrospectively in five years from 2011 - 2015, to pediatric patient in Hasan Sadikin Hospital.

**Conclusion:** The most case that we have found for 5 years at Hasan Sadikin Hospital is Congenital Hydrocephalus with age 3-4 month, and then SOL Infratentorial with the most Anatomical Pathology Results is Medulloblastoma and Meningoencephalocele, and the most common locating in anterior.

Keywords: pediatric neurosurgical patient, distribution, demographic.
Subthalamic nucleus is an essential component of basal ganglia which plays an important role in controlling intended movement. Initially, a signal is received by a receptor and ascendantly transmitted to central nervous system including cerebral cortex, thalamus and basal ganglia, where the signal integration takes place. Integrated signals then travel downward to the effectors and produce movement. Basal ganglia suppress useless movement that might interrupt the intended movement. The signal transmission process is done with the involvement of several ions which are responsible for the dynamic of potential membrane, such as sodium, potassium, and calcium.

In this project, a model of single subthalamic nucleus is analyzed in order to draw normal pattern of neuronal signaling process and define the role of input in the dynamic of potential membrane. The model which is based on Hodgkin Huxley model contains ions’ behaviors and neuronal signaling pathways. In order to simplify the complexity of signaling pathways involving subthalamic nucleus, it is assumed that all current input is constant. From the simulation with Matcont, it is shown that, in the absent of input, the spontaneous spiking behavior of subthalamic nucleus occurs. Periodic spiking with a conflicting connection between input and periodicity appears in the excitatory input between 150.75248 pA and -5.2665336 pA. Inhibitory input below -5.2665336 pA creates a decrease in membrane potential which remains until the input disappears and a burst which has amplitudes and length corresponded to the amount of inhibitory input is seen. These simulations are very useful in understanding the behavior of neuronal signaling process in subthalamic nucleus for further studies in brain stimulation as an alternative therapy for diseases with resting tremor as the main symptom.

Keyword : Subthalamic nucleus, signaling process, spiking behavior.
OP 22 SKULL-BASE MENINGOENCEPHALOCELE PRESENTING AS A LABIOGNATopalatoschizis AND BILATERAL MACROSTOMIA ON IMPENDING PARTIAL AIRWAY OBSTRUCTION IN A NEONATE

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Introduction: A unique skull-base meningoencephalocele presenting as a labiognatopalatoschizis and bilateral macrostomia in a neonate is reported, with impending partial airway obstruction. The skull base meningoencephalocele itself represents 1.5-10% of all encephalocele. The prolapsed cephalocele according to Suwanwela and Suwanwela system could be through the sphenoethmoid bone defect, ethmoid bone defect, sphenoid bone defect or fronto-sphenoid bone defect. This prolapsed cephalocele may protrude into the nasal cavity or nasopharynx or into the mouth and in such situation causes airway partial obstruction. The prolapsed brain tissue might be nonfunctional glial elements or vital structure. Surgical management requires neurosurgical intervention and plastic reconstruction.

Case: A term neonate was noted at birth to have a soft, fixed, 5-cm mass fulled of his mouth with the impending partial airway obstruction. The neonate, who was otherwise healthy, had several episodes of apnea related to partial airway obstruction by the mass. Computed tomography (CT) scan showed a large complex cystic and solid mass on lamina cribrosa of ethmoidal bone. Focal calcification was seen within the mass. The mass extended resulting in complete cleft of lip and palate, and bilaterally macrostomia. The brain on CT scan was normal with no dysmorphic structures. A transcranial approach by neurosurgeon was performed to excise the cephalocele and close the duramater. The bone defect on lamina cribrosa of ethmoidal bone was closed using periosteum tissue. The procedure was followed by total
excision of the prolapsed brain tissue and osteotomy on the left palate and then nasal airway reconstruction, continued with gradual reconstruction with external compression for close loopholes of the palate. Six months after the initial surgery, defect of the palate was narrowing and without cranial nerve deficits.

**Conclusion:** Skull base transethmoidal meningoencephalocele with labiognatopalatoschizis and bilateral macrostomia is a rare congenital abnormalities. Neurosurgical procedures through transcranial approach is safe and provide good results. And gradual reconstruction will improve patient’s quality of life and activity of daily living.

Key words: skull-base meningoencephalocele, labiognatopalatoschizis, macrostomia, congenital abnormalities, treatment

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PO 01 SURGICAL RESECTION OF CEREBELLAR HEMANGIOBLASTOMA WITH SOLID MASS: A CASE REPORT

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Abstract. Hemangioblastomas are tumors of the central nervous system, and the cerebellum is the most common site of occurrence. At present, no unified radiological classification system based on magnetic resonance imaging (MRI) findings exists for cerebellar hemangioblastoma, and this tumor type can be solid or cystic mass, according to the MRI findings. The most effective treatment is complete resection of the solid mass. The present case reports the successful treatment of one case of cerebellar hemangioblastoma with solid mass, including the MRI findings for the differential diagnoses and the surgical experiences.

Introduction: Hemangioblastomas are tumors of the central nervous system that most frequently arise from the vascular system; they are classed as is WHO grade I tumors (1). In adults, 7-10% of tumors arise in the posterior fossa (2) and the cerebellum is the most common site of occurrence (3). As a number of features may be observed on magnetic resonance imaging (MRI), (1,3,4) according to previous reports, cerebellar hemangioblastoma can be predominantly divided into two categories on the basis of MRI findings. The most common radiological presentation of cerebellar hemangioblastoma is a large sac or cyst and small tumor nodules. The less common type of cerebellar hemangioblastoma is a solid mass, and also comprises two subtypes: One type contains multiple solid tumors and exhibits homogeneous enhancement on MRI; the other subtype is a solid tumor with single or multiple cysts, where the solid portion is enhanced and the cystic region is non-enhanced (5). In addition to the two main tumor
types, the rarest variant of this tumor exhibits an enhanced cyst wall, based on the cystic nodules, and is accompanied by enhanced uneven walls (4). The first type (a large sac or cyst with small tumor nodules) has surrounding edema. The other two types (one type is a solid mass, one type exhibits enhanced cyst wall) exhibit an obvious mass and do not have surrounding edema. However, in spite of these characteristic features on imaging, in the preoperative and differential diagnoses, solid cerebellar hemangioblastoma and nodular cerebellar hemangioblastoma with enhanced wall are often misdiagnosed as high-grade gliomas (4).

For cerebellar hemangioblastoma with a solid mass, surgical resection is the most effective treatment. The tumor is unlikely to recur following complete resection, therefore chemotherapy or radiotherapy is not usually required. Cerebellar hemangioblastoma exhibits a good prognosis following complete resection, with a five-year survival rate of >50% (2). The current study presents one case of cerebellar hemangioblastoma, which solid mass.

**Case reports**: *Case one.* A 31-year-old male, was admitted in Sutomo Hospital with the chief complaint of an intermittent headache for one year, with six months of ataxia. Physical examination showed abnormal ataxia in the right extremities. Funduscopy showed ODS early papilloedema with visus ODS >2/60. MRI revealed a cystic mass in the right cerebellar hemisphere. The mass was showed an enhanced solid portion on the wall of the mass following the injection of gadolinium (Fig. A, B, C). The patient was treated using the suboccipital approach under general anesthesia; with feeding arteries surrounding the tumor, all of which were closely adhered to the surrounding tissues. After cutting the wall membrane, the cluster of red vascular masses with abundant blood supply was evident. The tumor boundary was separated by occluding the blood supply and blocking the draining veins (Fig D, E). The total complete resected mass was 3x4x4 cm size. Patology anatomy result was cerebellar Haemangioma. Postoperatively, the headache and ataxia completely regressed.. At the time of writing the patient was well, patien was normal activity (Fig F)
Discussion: Cerebellar hemangioblastoma is the most common form of hemangioblastoma (3,4). Based on MRI findings, there are several known types of this tumor. The most common type consists of small nodular tumors on the side of a large cyst and the two rarer types comprise a solid mass, or a lesion with an enhanced cyst wall due to cystic nodules, which exhibits enhanced uneven walls on imaging (2).

Surgical resection is the most effective treatment for cerebellar hemangioblastomas with solid mass (6). The enhanced tumor wall indicates that it contains partial tumor cells, therefore to avoid recurrence of the tumor, the wall and the solid part of the tumor require total resection (7). This type of tumor has a benign characteristic, and is generally located in the brain
parenchyma (7). However, tumors may perforate the surface of the brain and metastasize to the surrounding regions (8). Following complete resection, it is unlikely that the tumor will recur, and therefore chemotherapy or radiotherapy is not frequently required (7). Even in cases where residual tumors are identified, only a small number of these tumors become malignant.

According to surgical procedures, in order to achieve separation of the lesion from the surrounding tissue in the present cases, initially the feeding artery was occluded until the surface tension decreased, and subsequently the draining veins were blocked (9). The tumors were then resected completely. Multiple feeding arteries are often present, as well as more than one abnormally thick draining vein, with large diameters and thick walls (7), which were identified in this cases Occasionally, a localized flow and rich blood supply within the tumor is observed and the color of intravenous blood is bright red (7), which occurred in the present cases. However, caution must be taken not to block the draining veins mistakenly based on the color of the blood, as this may result in heavy bleeding due to the venous return obstruction.

In the present case, the tumor was resected successfully. No subsequent treatment was required following surgery, and a full recovery was achieved. At this time, the patient can do normal activity, no ataxia and writing fluently. Continued follow up of the patient has been planned.

References


PO 02 SINGLE PTERIONAL APPROACH FOR MULTIPLE BILATERAL CEREBRAL ANEURYSMS CLIPPING

Mochamad Rizki Yulianto, Nur Setiawan Suroto, Asra Al Fauzi
Department of Neurosurgery, Airlangga University, Dr Soetomo Hospital, Surabaya, Indonesia
A 73-years-old women with multiple cerebral aneurysms, involving bilateral posterior communicans artery, right superior hypophyseal artery, and right superior cerebellar artery. The patient presented to our hospital with a severe headache, and history of decrease of consciousness, caused by ruptured of right posterior communicans aneurysm. The diagnostic work up was complemented by CT scan, CT angiography, and trans-femoral cerebral angiography. The first treatment attempted was coiling. However, due to the anatomical difficulty of the vascular structure, this procedure has failed. The treatment then followed by an open surgery. This report describes the treatment performed for this case, a craniotomy and clipping of bilateral posterior communicans artery aneurysms, and right superior hypophyseal artery aneurysm, from a single right pterional approach.

PO 03 OCCIPITAL EXTRA-AXIAL CAVERNOUS HEMANGIOMA

Adi Wismayasa, Wihasto Suryaningtyas
Dr. Soetomo Hospital – Department of Neurosurgery, Airlangga University, Surabaya, Indonesia

Male, 5 years old with mass lesion on occipital region. The mass first appear 1,5 years ago with 1 cm in diameter. He has tumor removal because misdiagnose as lipoma, but pathological finding says fibro lipoma. The mass then going bigger and bigger and the patient undergo FNAB, with result as vascular lesion. No history of vomiting, seizure or decrease of consiousnes. Head MRI revealed extra-axial mass on occipital region with skull deformity above the tumor. We performed total excision of the tumor. Intraoperatively we find the tumor was extra-axial, with the base on the confluence sinus. Operation takes 3 hours and 100cc of bleeding. Post operatively, patient has no neurological deficit. He was discharged 3 day postoperative.
PO 04 SPONTANEOUS RESOLUTION OF ANEURYSM AFTER AVM EXCISION

Mohammad Zakaria Shahab, Nur Setiawan Suroto, Asra Al Fauzi
Department of Neurosurgery, Airlangga University, DR. Soetomo Hospital, Surabaya, Indonesia

Arterial aneurysm associated with cerebral AVM may be classified as intranidal, flow-related, or unrelated to the AVM nidus. Intranidal aneurysms have a high correlation with hemorrhagic clinical presentation and a risk of bleeding during the follow-up period that considerably exceeds that which would be expected in their absence. Patients with flow-related aneurysms in association with an AVM may present with hemorrhage from either lesion. Aneurysms that arise on distal feeding arteries near the nidus have a high probability of regressing with substantial or curative AVM therapy.

We describe a case of 28-year-old woman who presented with an unruptured aneurysm on the Right ICA segment supraclinoid. The nidus of the AVM was successfully excluded 60-70% with glue embolization, with initial regression of the Supraclinoid ICA aneurysm on serial imaging. One and half years after the endovascular treatment, the aneurysm showed significant spontaneously regressed.

Key words: Arteriovenous malformation, Aneurysm, Endovascular Treatment, spontaneous regression, follow-up

PO 05 AN UNUSUAL TRANSORBITAL PENETRATING BRAIN INJURY VIA OPTIC CANAL : CASE REPORT

Wisnu Baskoro, Tedy Apriawan, Irwan Barlian Immadoel Haq
Department of Neurosurgery, Faculty of Medicine Airlangga University, Dr Soetomo General Hospital Surabaya

Penetrating Brain Injury constitute 0.4% of all head injuries and are usually the result of falls, motor vehicle collision and explosion. Transorbital
penetrating brain injuries usually are caused by foreign object entering through the orbital roof or the superior orbital fissure. Entry via the optic canal is considered extremely. A 23 year old man suffered orbitocranial injuries by wooden material motorcyle accident. Noncontras head CT study revealed a linier hypodense lesion in the perimesencephalic cistern contigous with the left optic canal. Patient underwent OZ approach craniotomy and retrieval foreign object done by cutting wooden material into two part. Any neurological deficit or deterioration of consciousness would be marked. Finally detailed history, neuroradiological investigation, early surgical to explore are very important to obtain a good outcome

Key Word : Transorbita, Craniotomy, Optic canal

PO 06 SURGERY IN THE DORSAL ROOT ENTRY ZONE FOR PAIN

Fatkhul Adhiatmadja, Achmad Fahmi, Agus Turchan
Department of Neurosurgery Airlangga University/Dr.Sutomo Hospital Surabaya

The dorsal root entry zone (DREZ) lesion, as a curative surgery, can be a neurosurgical target to treat chronic and resistant pain. It has been established on the basis of the functional anatomy of the Dorsal Root Entry Zone (DREZ) and aims at a lesion of the dorsal-most layers of the dorsal horn of the deafferented cord segments, shown to be involved in pain generating. Lesioning techniques include microsurgical coagulation, radiofrequency thermo coagulation, laser beam or ultrasound lesion maker. Indications are (1) malignant pain in patients with long life expectancy and cancer; (2) persistent neuropathic pain that is due to (a) brachial plexus injuries, especially those with avulsion, (b) spinal cord lesions (predominantly in the conus medullaris), especially the pain corresponding to segmental lesions (pain below the lesion is not favorably influenced), (c) segmental pain caused by lesions in the cauda equina, (d) peripheral nerve injuries, amputation, or herpes zoster, when the predominant component of pain is of the paroxysmal type and/or corresponds to provoked alldynia or hyperalgesia; and (3) disabling hyperspastic states with pain.
PO 07 PEDIATRICS SUBDURAL HAEMATOM : CASE SERIES IN DR.
SARDJITO GENERAL HOSPITAL YOGYAKARTA FROM JANUARY

Satyapermana, Ganniz B.*
Neurosurgical Resident, Faculty of Medicine, GadjahMada University,
Yogyakarta

**Background:** SDH in children differs significantly from SDH in adults
because abusive head injury is a common etiology, especially in pediatric
patients < 2 years age. Infantile acute subdural hematoma (IASDH) is often
considered as a special case of SDH. Roughly defined as an acute SDH
in an infant due to minor head trauma without initial loss of consciousness
or cerebral contusion, possibly due to rupture of a bridging vein. The most
common trauma is a fall backwards from sitting or standing. The infants will
often cry immediately and then (usually within minutes to 1 hour) develop a
generalized seizure. Patients are usually < 2 yrs old (most are 6-12 month,
the age when they first begin to pull themselves up or walk). Indications for
operative management of SDH are less clear, and surgery is less likely to
prevent morbidity and mortality. Research concerning the profile of pediatrics
subdural hematom in Indonesia’s neurotrauma centers are limited.

**Objective:** To determine the profile of Pediatrics Subdural Haematom in
Yogyakarta as one of the center for Neurotrauma in Indonesia.

**Settings and Design:** This is a retrospective study of Pediatrics Subdural
Haematom in DR. Sardjito General Hospital, a major referral center for TBI in
Special Distric of Yogyakarta between January 2014 to Juni 2015.

**Material and Methods:** We studied patient’s data regarding age, gender,
geographical distribution, parents occupation, nature of injury, mode of
injury, condition at presentation, management and outcome of intervention.
Data were collected from Medical Record Department.

**Results:** On going research

**Conclusion:** On going research
PO 08 THE OUTCOME OF STROKE HEMORRHAGE PATIENTS TREATMENT FROM JANUARI 2014 – AUGUST 2015 IN RSUP DR. SARDJITO YOGYAKARTA.

STB, T Jauhardin.*
Neurosurgical Resident, Faculty of Medicine, Gadjah Mada University, Yogyakarta

**Background:** Spontaneous, nontraumatic intracerebral hemorrhage (ICH) remains a significant cause of morbidity and mortality throughout the world. The role of surgery for most patients with spontaneous ICH remains controversial. The theoretical rationale for hematoma evacuation revolves around the concepts of preventing herniation, reducing ICP, and decreasing the pathophysiological impact of the hematoma on surrounding tissue by decreasing mass effect or the cellular toxicity of blood products. Studies concerning outcomes of hemorrhage stroke patient’s treatment in Indonesian’s neurosurgery centers are limited.

**Purpose:** The aim of this research is to present outcome of patients stroke haemorrhage with surgical and conservative in RSUP Dr. Sardjito.

**Settings and Design:** A retrospective study to compare clinical outcomes of hemorrhage stroke patients that do not receive or receive surgical interventions in RSUP Dr. Sardjito, a major referral center for stroke haemorrhage in Special District of Yogyakarta between January 2014 to August 2015.

**Material and Methods:** We studied patient’s data regarding age, gender, management and outcome of the selected treatment. Data were collected from Medical Record Department of RSUP Dr. Sardjito.

**Results:** On going research

**Conclusion:** On going research
**Venue:**
Bali International Convention Centre (BICC)
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