

**NESON**

NEPALESE SOCIETY OF  
NEUROSURGEONS



**3<sup>rd</sup> International Conference of**

**Nepalese Society of Neurosurgeons (INCONESON III)**

**2<sup>nd</sup> Annual Meeting of Neuro-Spine Chapter**

**&**

**2<sup>nd</sup> Interim Meeting of**

**Asian Australasian Society of Neurological Surgeons (AASNS)**

**Hybrid**

# ABSTRACT BOOK

Date: 25<sup>th</sup>, 26<sup>th</sup> and 27<sup>th</sup> November, 2021

Theme: "Taking neurosurgery beyond borders"

Venue

Hotel Yak & Yeti, Kathmandu, Nepal

**6<sup>th</sup> Executive Committee(2019-2021)**  
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## MESSAGE FROM AASNS PRESIDENT

### WELCOME MESSAGE FOR ICONESON III MEETING/2<sup>ND</sup> INTERIM AASNS MEETING



I would like to congratulate Dr Krishna Sharma, the President of the Nepalese Society of Neurosurgeons (NESON) and the members of the Nepalese Society, for successfully organising this 3rd International Conference of the Nepalese Society of Neurosurgeons (INCONESON III), in conjunction with the Asian Australasian Society of Neurological Surgeons' 2<sup>nd</sup> Interim AASNS Meeting in Kathmandu, Nepal.

When we discussed with President Krishna about holding the Interim AASNS Meeting in Kathmandu during the AACNS in Mumbai in 2019, we were all very excited about visiting Nepal and attending this meeting. However, because of the COVID-19 pandemic and travel/quarantine restrictions, many of us are unable to now attend the meeting physically. It is such a shame because most of us in the AASNS Executive Committee very much want to be there in Kathmandu, to meet with you all and get to know you, and learn together in a manner that can only be experienced with physical meetings, and also use this opportunity to visit your beautiful country, and possibly even catch a glimpse of Mount Everest.

It is heartening to know that the Nepalese Society has grown in quantity and quality since it was formed 12 years ago, and as a result, the people of Nepal are getting the high quality neurosurgical care they deserve. The theme of this meeting - "Taking neurosurgery beyond borders" - is very much alive even in spite of the pandemic. With video conferencing technology, and the ability to send our self-recorded video recordings across the Internet, we are taking neurosurgery education, a most important reason for the existence of the AASNS, across physical borders to Nepal and beyond. We will continue to provide high quality neurosurgical lectures and talks from well-renown Asian Australasian neurosurgeons and colleagues from around the world. The benefit will ultimately go to the patients we all attend to.

And so I wish all of you a fruitful time of learning, and I hope we can all meet physically soon, and I especially hope to see you all in September 2022 in Jerusalem at the 16<sup>th</sup> AACNS. See you all there!

Wan Tew SEOW

President, AASNS

## MESSAGE FROM THE PRESIDENT



Dear friends,

We welcome you all to the 3rd International Conference of Nepalese Society of Neurosurgeons (INCONESON III), 2<sup>nd</sup> Annual meeting of Spine Chapter of NESON & 2<sup>nd</sup> Interim Meeting of Asian Australasian Society of Neurological Surgeons (AASNS) organized on 26<sup>th</sup> and 27<sup>th</sup> November 2021 in hybrid modality, at Hotel Yak & Yeti, Kathmandu, Nepal.

Due to the Corona pandemic, last year we had to organize the annual conference of NESON in virtual modality. Fortunately, with stabilization of the covid pandemic, we are able to hold this conference in hybrid form and bring together all neurosurgeons of Nepal and abroad under one roof, sharing their knowledge, experience and suggestions with each other. Neurosurgeons in Nepal have widened their horizon, gradually serving in more and more areas of Nepal. Our experience and knowledge have likewise has been broadened, dealing with the most modern neurosurgical technology as well as tackling neurosurgical problems under different and source constrained circumstances, innovating ways to deal with them intelligently and diligently. The conference will definitely serve to share these unique experiences with each other.

This conference is conducted in hybrid pattern and most of our international colleagues are presenting virtually. We are very grateful to the international neurosurgeons who have travelled from far and beyond, overcoming all the hassles and difficulties faced during traveling, to be with us in-person.

We are very excited to meet all old and new friends, and to have a great academic and social gathering. I hope every attendee of the conference will enjoy, teach, share and learn a lot. I am deeply indebted to all the sponsors who have helped us to organize this conference, despite they themselves being in financially difficult positions.

I must remind that the worst is not over with COVID and we still have to fear it and follow all the necessary precautions strictly. I wish everybody an enjoyable, healthy and the most fruitful time during the conference.

Thank you,



Yours sincerely,

Krishna Sharma

President, Nepalese Society of Neurosurgeons

## MESSAGE FROM THE VICE PRESIDENT



It gives me great pleasure to pen down a few lines for this joint conference. Once again NESON has proved the old saying that “where there is a will, there is a way”. The past two years brought the whole world to a standstill in unimaginable ways. In spite of that the scientific committee globally especially in the medical field pursued its knowledge finding and sharing in the same zeal as before. NESON too conducted almost monthly webinars, subspecialty spine and neurovascular chapter webinar and even a national conference virtually in 2020.

This year even though the COVID pandemic was looming over us NESON decided to go for a Hybrid Conference and today we are proud that it has been a wise decision. The three days of conference including a workshop will help share the knowledge, experience, research and technology between neurosurgical minds. We have around 125+ papers from different centers all around the world. A dozen of them have been presented as a video recording and few of them as live talks. They have covered almost all the major specialties and subspecialties in neurosurgery catering to the senior and junior minds alike. I thank all the delegates nationally, especially those from the periphery of Nepal and internationally to attend physically and others who have lent their thoughts through their recordings or virtual presentation to make this conference a grand success. I also thank the President of NESON, Dr Resha Shrestha and other members of this committee who helped plan and conceptualize the scientific program.

Although the pandemic seems to be waning there are still new variants of the virus and thus, I request all to exercise caution during travel or daily routine. I pray for everyone’s good health and hope that next time we meet physically and relive the golden earthly days!

A handwritten signature in black ink, appearing to read 'Yam Bahadur Roka'.

Dr Yam Bahadur Roka

Chairman, Scientific Committee

Chairman, Scientific Committee

November 2021, Nepal

## MESSAGE FROM THE GENERAL SECRETARY



Dear colleagues,

I hope this letter finds you well.

I am pleased to announce that, the NESON Executive Committee, we are organizing 3rd International Conference of Nepalese Society of Neurosurgeons (INCONESON III), 2nd Annual Meeting of Neuro-Spine Chapter & 2nd Interim Meeting of Asian Australasian Society of Neurological Surgeons (AASNS).

The theme of this event will be “Taking neurosurgery beyond borders”.

This will be a hybrid event, combining in-person attendance and virtual meeting components, will provide a solution for all comfort levels in light of COVID-19.

There are many excellent scientific papers which have already been submitted and I am excited to see the benefit it will bring to the attendees.

My deepest gratitude and appreciation to the collective effort put together by the Scientific Committee and all other Committees for their tireless work to make this event a reality.

Sincerely,

A handwritten signature in black ink, appearing to read 'Rajiv Jha'.

Dr Rajiv Jha

General Secretary

Nepalese society of Neurosurgeons(NESON)

## MESSAGE FROM CHAIRMAN, SPINE CHAPTER OF NESON



On behalf of the executive committee of the Spine Chapter of Nepalese Society of Neurosurgeons, I welcome you all to the 2nd Annual meeting of Spine Chapter of NESON. This year we are organizing this conference along with 3rd International conference of NESON and the 2nd Interim meeting of the Asian Australasian Society of Neurological Surgeons (AASNS) in the majestic city of Kathmandu.

The spine chapter, over its last 5 years of existence, has seen lot of improvisations and achievements. It has been possible due the encouragement and contributions by our dear members. The monthly CME which started as a breakfast CME on the first Saturday of each month, continued even during COVID restrictions however in a modified platform of Zoom. This provided us with an opportunity to have a foreign faculty as an expert and also engaged those who were not able to join previously due to their distant working places. We plan to start physical interaction soon but keep the goodies of Zoom in our future meetings.

Continuing the academic contributions, the chapter is also involved in writing books and drafting guidelines which are applicable to our Nepalese terrain. We have also successfully lobbied to get our Spine fellowship program, the first in history of Nepal from any professional society, provisionally ratified by Nepal Medical Council. We are now in phase of starting the program soon.

This year also marks our partnership with World Spine Care, a team of world experts on spine care who are the force behind “Global Spine Initiative”. Our vision is to ensure that everyone has access to the highest quality spine care possible through the health care system in Nepal. The World Spine Care symposium planned on the morning of 27<sup>th</sup> November, 2021 is a position paper on our initiative “National Spine Health Program” and would see NESON taking a leading role in transforming spine care in Nepal.

COVID has taught us many lessons, one of which is how to maximize the efficiency. This two-days hybrid meeting preceded by hands-on drill workshop is packed with lot of activities and knowledge sharing and we hope this would help all of us attending the meeting and leave sweet memories of interacting with colleagues after a long gap of physical restrictions.

Stay safe, have a safe trip.



Prof Dr Amit Thapa  
MBBS, MS, MCh, IFAANS  
Director, Advance Neurosciences Centre

Head of Department, Neurological Surgery  
Kathmandu Medical College Teaching Hospital, Kathmandu, Nepal

Editor-in-Chief: Nepal Journal of Neuroscience (NJNS)

Chairperson: Neuro-Spine Chapter, NESON

email: dramitthapa@yahoo.com

**PROGRAM SCHEDULE**

Nov 25th 2021

**MIDAS REX HANDS-ON WORKSHOP (MHROW) –**

Cranial &amp; Spine

**Course objective :** The purpose of this workshop is to gain an understanding of precise and efficient methods of bone removal with optimal safety for patients. In addition, participants will be offered the opportunity to become familiar with the many applications of the Midas Rex System to the aspects of Neurosurgery & Orthopedic Surgery by using it on specially prepared bone models in a laboratory environment. By the end of the workshop, participants would have gained a significant “comfort level” in the actual use of high speed motors, their attachments and dissecting tools.

**Format/Schedule:** Participants will be shown short video segments that describe particular attachments and tools along with suggested exercises that will demonstrate the use of these items of equipment. Each video segment will be followed by a period of laboratory dissection during which participants will be provided with attachments and tools described in the videos, as well as, animal bone models that can be used to carry out the exercises described.

**A. Basic Course: (2 Hours)**

- Understanding the plane of dissection & control of tool with precise motion
- Debriding techniques
- Periosteal Exploration
- Osteotomy
- Suture hole – Straight / Angled/ L-shaped
- Harvesting unicortical bone graft
- Burr hole techniques
- Unroofing of nerve
- Craniotome technique

**B. Advance Course: (1 Hour)**

- Cranial Applications
- Bur hole drilling with different tools on sheep head
- Turning of bone flap of sheep head without damaging the dura
- Corpectomy, Laminectomy & Foraminotomy of the goat lumbar spine bone
- Multilevel laminoplasty with footed attachment
- Eggshell dissection

**Date & Timings for the course :****25th Nov at 9:30 AM**

## Agenda

<u>Activity</u>	<u>Timing</u>	<u>Tool/Attachment Used</u>
Welcome	9.30am – 9.45am	
MR8 Pre-operative Instructions	9.45am – 9.55am	
MR8 Nomenclature	9.55am - 10.00am	
Attachments/Tool Installation	10.00am - 10.15am	
MR8 Introduction	10.15am - 10.20am	
Initial Exercise - Tapered Tool	10.20am - 10.25am	
Exercise	10.25am - 10.50am	F2/8TA23 + AS08
Match Head Tool	10.50am - 10.55am	
Exercise	10.55am - 11.15am	9MH30 + AS09
Acorn Tool	11.15am - 11.20am	
Exercise	11.20am – 11.30am	9AC60 + AS09
BREAK	11.30am - 12.30pm	
Ball/Round Tool	12.30pm - 12.35pm	
Exercise	12.35pm - 12.55pm	14BA90 + AS14
Footed Attachment/Craniotome	12.55pm - 1.05pm	
Exercise	1.05pm - 1.30pm	F2/8TA23 + AF02
Extra Time – Egg Dissection	1.30pm - 1.55pm	9MH30D + AS09
MR8 Post-operative Instructions	1.55pm - 2.10pm	
Wrap up and Close/Evaluation	2.10pm – 2.30pm	

**Day 1. Hall A**  
**Interim meeting of AASNS**  
**Program Schedule**

**November 26, 2021**

<b>Registration: 7:30-7:50</b>	
7:45-8:00	<b>Welcome speech Dr Krishna Sharma</b>
	<b>Welcome speech President AASNS</b>

	<b>Plenary session</b>	<b>Chairpersons: Aditya Gupta, Basant Pant, Achyut Sharma</b>
8.00-8.15	Basant Pant	Technique and result of epilepsy surgery in Nepal
8.15-8.30	Seow Wan Tew	Diffuse intrinsic Brainstem Gliomas(DIPGs) in children-to biopsy or not to biopsy
8.30-8.45	Lokendra Singh	When Care kills
8.45-9.00	Mohan Raj Sharma	Progressive Mathematization of Glioblastoma Treatment! Implication to Neurosurgical Education
9.00-9.15	Iddo Paldor	Intraoperative neuromonitoring during resection of cranial meningiomas and its effect on the surgical workflow – A single center experience
9.15-9.25	Yam Roka	Introduction of the Neurovascular oration
9.25-9.40	Aditya Gupta(oration topic)	Aneurysm clipping relevance in endovascular era
9.40-9.50	Prabin Shrestha	Introduction of the NESON President
9.50-10.05	Krishna Sharma	Ethics in spine surgery

**Tea Break: 10.05-10.20**

**Break out session Hall A**

Session I	<b>Neurovascular</b>	<b>Chairpersons:Gopal Raman Sharma, Mohan Raj Sharma, Rajiv Jha</b>
<b>Special lectures</b>		
10.20-10.35	Bin Xu	Revascularization for Moyamoya disease
10.35-10.50	Vipul Gupta	Cerebral AVM-Advances in Endovascular technique
10.50-11.05	Asra Al Fauzi	Microsurgical treatment strategy for ruptured cerebral Aneurysm
11.05-11.20	Vipul Gupta	Cerebral Aneurysm: Latest technology and newer approaches
11.20-11.35	Pravesh Rajbhandari	Treatment of Cerebral Aneurysm during the COVID pandemic: Our experience at Annapurna Neurological Institute and Allied Sciences
<b>Free paper</b>		
11.35-11.43	Bikesh Khambu	Analysis of Outcome of Early Versus Late Surgical clipping of Anterior Circulation Aneurysm at NNRC, Bir Hospital(NAMS))

**Day 1. Hall A**  
**Interim meeting of AASNS**  
**Program Schedule**

Session II	Functional	Chairpersons: Takaomi Taira, Basant Pant, Sudan Dhakal
<b>Special lecture</b>		
11.50-12.05	Takaomi Taira	A new stereotactic target for movement disorders and beyond: Forel area/pallidothalamic tract
12.05-12.20	Kanwaljeet Garg	Role of pallidotomy in patients with dystonia
12.20-12.35	Resha Shrestha	Deep Brain Stimulation Versus Lesioning in Parkinsons disease in Nepal
12.35-12.50	Naaoki Ikegaya	Starting an Epilepsy surgery in Yokohama, why and how?
<b>Free paper</b>		
12.50-12.58	Pritam Gurung	Effectiveness of ventro-oral anterior and posterior junction thalamotomy for task specific focal hand dystonia
<b>13.00-14.00</b>	<b>Lunch</b>	Medtronic luncheon session
	<b>Amit Thapa</b>	Case of Cranial robot in neurosurgery: Is it necessity or luxury
	<b>Srikanth</b>	Future of Enabling Technologies in Neuro and Spine Surgeries

Session III	Spine	Chairpersons: Sushil Shilpakar, Rajendra Shrestha, Yam Roka
<b>Special lecture</b>		
14.00-14.15	Desmond Kwok	Shortening procedure for kyphus deformity in spine infection and tumor
14.15-14.30	Prabin Shrestha	Intramedullary Spinal Tumor Surgery: Our Experience
14.30-14.45	Samir Acharya	Lumbar disc herniation in young adults
14.45:15.00	Stravinsky Perera	Degenerative cervical spine a SriLankan Perspective
<b>Free paper</b>		
15.00-15.08	Hitesh Kumar	Thoracolumbar pedicle screws in children younger than 8 years
15.08-15.16	Raj Ghoniya	Pediatric traumatic thoracolumbar spondyloptosis : a series of 7 patients
15.16-15.24	SACHIN ANIL BORKAR	MANAGEMENT OF INTRAOP DURAL TEAR DURING ANTERIOR CERVICAL DECOMPRESSION
15.24-15.32	Janam Shrestha	Outcome of Anterior Cervical Discectomy and fixation with Acrylic Bone Cement (Polymethylmethacrylate) for Degenerative Cervical Disease

**Tea break 15.32-15.42**

Session IV	Miscellaneous	Chairperson:Shabal Sapkota, Nikunj Yogi, Prakash Kafle
<b>Special lecture</b>		
15.42-15.57	Mohan Raj Sharma	Strengthening the Neurosurgical Workforce in Nepal: Challenges and Opportunities
15.57-16.12	Prabin Shrestha	Peripheral nerve tumors: Our experience
16.12-16.27	Yam B Roka	Intraoperative Complications: Definition and Classification
16.27-16.42	Amit Thapa	The Nepalese Journal of Neuroscience: the road ahead!
<b>Free paper</b>		
16.50-16.58	Sambardhan Dabadi	Cranioplasty in patients with cranial defects using 3D molded cranial implant.
17.06-17.14	Bipin Chaurasia	Social Media in Neurosurgery
17.14-17.22	Sudarshan Awal	Lumboperitoneal (LP) Shunt : Alternative to VP shunt
17.22-17.30	Sandesh Dahal	The practice of treating Chronic Sub-Dural hematoma among Neurosurgeons in Nepal: A nationwide survey

**18.30 onwards Inaguration session followed by Gala Dinner**

**Day 1, Hall B**  
**Program Schedule**

**November 26, 2021**

Session II	Oncology	Chairpersons: Pawan Kumar Sultania, Paawan Bahadur Bhandari, Gopal Sedain
<b>Special lectures</b>		
10.30-10.45	Prakash Kafle	Skull Base Surgery: Single Centre personal experience
10.45-11.00	Sudan Dhakal	Treatment strategy in the management of high grade glioma
11.00-11.15	Paawan Bahadur Bhandari	Newton's Apple; Taking Advantage Of Gravity In Brain Surgery
11.15-11.30	Dwarkanath Srinivas	Condylar preserving approaches to Foramen Magnum Meningioma
11.30-11.45	Shabal Sapkota	Ondine Curse In Neurosurgery
<b>Free paper</b>		
11.45-11.53	Alok Dahal	Review of cases of Intracranial meningioma in adulthood : clinical characteristics and surgical management in BPKIHS
11.53-12.01	Prarthana Subedi	Foramen Magnum Meningioma : A case report and review of literature
12.01-12.09	Subash pandit	Glial tumors- Current management and where we stand.

Session III	Skull base	Chairperson:Ramesh Teegala, Pratyush Shrestha, Suraj Thulung
<b>Special lecture</b>		
12.15-12.30	Ramesh Teegala	Keyhole cranial Neurosurgery: Concepts, Scope and Experience
<b>Free paper</b>		
12.30-12.38	Nishant Goyal	Trans-ciliary keyhole supra-orbital craniotomy for skull base pathologies: More than just "good cosmesis"
12.38-12.47	Ramesh Teegala	Design and development of biodegradable ETV training model and its effective utilization in training the young neurosurgeon in basic neuroendoscopic technique
12.47-12.55	Paawan Bahadur Bhandari	Treading Into Dolenc's Turf - Experience With Surgery In & Around The Cavernous Sinus
13.00-14.00	Medtronics lunch symposium Hall A	

**Day 1, Hall B  
Program Schedule**

**November 26, 2021**

<b>Session IV</b>	<b>Trauma and Basic science</b>	<b>Chairpersons: Resha Shrestha, Manoj Bohara, Amit Pradhanang</b>
<b>Special lecture</b>		
14.00-14.15	Dominik Tattera	Glycosaminoglycan (GAG) content in the intervertebral disc
14.15-14.30	Amit Thapa	A synergistic function to be considered for shoulder reanimation surgery
<b>Free paper</b>		
14.30-14.38	Sushan shrestha	Review of Decompressive Craniectomy in Nepal Medical College Teaching Hospital
14.38-14.46	Prashant singh	TRAUMATIC EVISCERATION OF BRAIN: MANAGEMENT DILEMMA
14.46-14.54	Sandesh Dahal	The practice of treating Chronic Sub-Dural hematoma among Neurosurgeons in Nepal: A nationwide survey
14.54-15.02	Rajendra Shrestha	Predictors of Post Traumatic Hydrocephalus in tertiary centre
15.02-15.10	Niranjana Bhatt	PRESSURE SORE: CURRENT UNDERSTANDING AND NEWER MODALITIES OF TREATMENT
15.10-15.18	Sushil pandit	Review of Tracheostomy in Neurosurgery ICU in Nepal Medical College and Teaching Hospital

Tea break: 15.20-15.30

	<b>Moderators: Richard Wohn, Amit Thapa, Samir Acharya,</b>	
<b>Session VI</b>	<b>Spine symposium(2nd spine conference)</b>	
	Concepts and ideas:	
15.30-15.45	Edward Benzel	Understanding biomechanics to prevent instrumentation failure
15.45-16.00	Atul Goel	Central AAD
16.00-16.15	Mehmet Zileli	Philosophy of Minimally Invasive spine surgery
	Controversies in Spine	Recurrent lumbar discs herniation
16.15-16.30	Sushil Patkar	I shall do discectomy
16.30-16.45	Sachin Borkar	I shall do fusion
	How I do it	
16.45-17.00	Richard N. W Wohns	Robotically assisted Outpatient Lumbar fusion
17.00-17.15	Onur Yaman	Spinal Osteotomies: Why and How?
17.15-17.30	Se Hoon Kim	Overcoming Complicated Kummell's Disease: Feasibility of single stage transpedicular vertebral body reconstruction
18.30 onwards	Inauguration and Gala dinner in Hall A	

**Day 2 Hall A  
Program Schedule**

**November 27, 2021**

8.00-9.00	Plenary session	Chairpersons: Pawan Sultania, Basant Pant, Gaurav Goel
8.00-8.15	Gopal Raman Sharma	More than a decade of intracranial aneurysm surgery and our outcome analysis of patients with microsurgical clipping
8.15-8.30	Asmi Alias	Multidisciplinary team approach in Pediatric Epilepsy Surgery: Local Experience
8.30-8.45	Kate Drummond	Quality of life in Brain tumors
8.45-9.00	Andrew Kaye	Trips and tricks on facial nerve and hearing preservation on Vestibular Schwannoma

**Session I**

9.00-11.00	<b>World spine care and Global Spine care initiative symposium</b>	
<b>Moderator: Amit Thapa, Scott Haldeman, Anish Man Singh</b>		
	Amit Thapa	Introduction to Symposium and speakers
	Amit Thapa	Current Spine care in Nepal and initiative to improve care
	Scott Haldeman	World spine care and Global Spine care initiative
	Sandeep Bohara	The impact of spine disorders in Nepal; Review of literatures
	Geoff Outerbridge	"The WSC and GSI Model of care"
	Nilam Khadka	Difficulties in providing spinal care in remote areas of Nepal
	Adam Wilkey	"The GSCI Classification system"
	Nibha Bajracharya	"Challenges that are inhibiting the institution of evidence based care in Nepal"
	Margareta Nordin	"The Nepal Task Force to Advance a National Evidence based Spine care Program"

Tea break: 11.15-11.25

<b>YNS award(6+2 min)</b>		<b>Chairpersons: Pawan Sultania, Basant Pant, Gopal Raman Sharma, Mohan Raj Sharma</b>	
11.25-11.33	Prasanna Karki	Surgical outcome prediction according to eloquence of brain arteriovenous malformation: A retrospective study in Nepal	Medicity
11.33-11.41	Pritam Gurung	Volumetric analysis of Radiofrequency lesioning in Globus Pallidum in Parkinsons and outcome	ANIAS
11.41-11.49	Alok Dahal	Management of Neurosurgical cases during COVID-19 Pandemic. An experience from B.P Koirala institute of health sciences academic tertiary hospital in Nepal.	BPKIHS
11.49-11.57	Sumit Joshi	Risk factor and outcome analysis of patients with intraoperative rupture(IOR) of ruptured cerebral aneurysm during microsurgical clipping	
11.57-12.05	Sandeep Bohara	Role of continuous cisternal drainage in prevention of hydrocephalus following intracranial surgeries	KMC
12.05-12.13	Rajan Kumar Sharma	CORRELATION BETWEEN CLINICOPATHOLOGICAL FEATURES AND SURGICAL OUTCOME IN SPINAL TUMORS	NAMS

**Day 2 Hall A  
Program Schedule**

**November 27, 2021**

Resident Award session(5+2)			
12.15-12.22	Jessica Kayastha	Asymmetry of anterior cerebral arteries as a predictor of anterior communicating artery complex aneurysm	ANIAS
12.22-12.29	Upama Sharma	To determine the diagnostic accuracy of MRS in detection of glioma and its severity taking histopathological findings as gold standard.	ANIAS
12.29-12.36	Gopi Nepal	PRE OPERATIVE BLOOD OXYGEN LEVEL DEPENDENT FUNCTIONAL MRI IN PATIENT WITH INTRA-AXIAL PRIMARY BRAIN TUMOR IN AND AROUND FUNCTIONALLY ELOQUENT AREAS: CLINICAL APPLICATION AND OUTCOME.	ANIAS
12.36-12.43	Bishal Shrestha	Fronto-orbital advancement for craniosyntosis: our experiences	ANIAS
12.43-12.50	Prabhat Jha	Outcome of surgery for primary tumors at National Academy of medical Sciences, National Neurological Referral Center, Bir Hospital	NAMS
12.50-12.57	Subodh Gautam	Surgery of eloquent areas of brain at Bir Hospital NAMS	NAMS
12.57-13.04	Anjan Singh Karki	Chronic Subdural Hematoma (cSDH) Score for Predicting Outcome in Chronic Subdural Hematoma in a Tertiary Care Centre in Nepal	TUTH

**13.04-14.00 Lunch**

Session II	Functional	Chairpersons: Aditya Gupta, Prabin shrestha, Pranaya Shrestha
<b>Special lectures</b>		
14.00-14.15	Basant Pant	Psychosurgery a possible new era in neurosurgery
14.15-14.30	Lynne Lourdes N. Lucena	Task sharing/shifting model: Addressing the scarcity of neurosurgeons in the Bicol region of the Phillipines
14.30-14.45	VD Sinha	Comparative evaluation of microscopic vascular decompression and endoscopic vascular decompression for trigeminal neuralgia
14.45-15.00	Aditya Gupta	Interesting DBS cases
15.00-15.15	Girish Nair	Deep brain stimulation. Evolution from awake framed to asleep frameless. How and why?
15.15-15.30	Pranaya Shrestha	Surgical techniques for the management of Trigeminal Neuralgia
15.30-15.45	Deepak Gupta	MicroDreztomy for BPI Neuralgia
15.45-16.00	Rajiv Jha	Frame-based versus Frameless Stereotactic Brain Biopsies
<b>Free paper</b>		
16.00-16.08	Bibesh Pokhrel	Systematic use of sonoscopy in neurosurgical intensive care unit

**16.08-16.20 Tea break**

Session III	Neurovascular	Chairpersons: Gopal Raman Sharma, Yam Roka, Pravesh Rajbhandari
<b>Special lecture</b>		
16.20-16.35	Dwarkanath Srinivas	Management strategies in complex MCA aneurysms
16.35-16.50	Gaurav Goel	Unclippable and uncoilable aneurysm Management
16.50-17.05	Subash Phuyal	Stroke care in Nepal- Initial Results of Endovascular Management of Acute Stroke patients with Large vessels occlusion in Nepal.
17.05-17.20	Manoj Bohara	Flow diverters in intracranial aneurysms: a paradigm shift
17.20-17.35	Gopal Sedain	Management Nuances in Posterior Fossa Hemangioblastoma
17.35-17.50	Amol Raheja	STA-MCA bypass for symptomatic Moya Moya disease – Lessons learnt from 89 revascularisations
17.50-18.05	Aditya Guta	High resolution angio CT guided AVM robotic radiosurgery
<b>Free paper</b>		
17.50-17.58	Sabal Sapkota	Nepalese Pupillary and IntraCerebral Hemorrhage (NePLICH) Score for prognosis of Intracerebral Hemorrhage
17.58-18.06	Rupesh Chakradhar	should we avoid surgery in left sided stroke?
18.06-18.14	Gaurav Goel	Intrasaccular devices: Our initial experience and contour and WEB
18.14-18.22	Robin Bhattarai	Initiation of endovascular neurosurgery in eastern Nepa
18.30	Closing ceremony	

**Day 2 Hall B  
Program Schedule**

**November 27, 2021**

<b>Session I</b>		
	<b>Spine/ Miscellaneous</b>	<b>Chairpersons: Nilam Khadka, Binod Bhattarai, Paawan Bahadur Bhandari</b>
Special Lectures		
14.00-14.15	Azmi Alias	Multimodal treatment strategies in Complex Pediatric Spine Surgery
14.15-14.30	Kate Drummond	Controversies in Spine surgery
14.30-14.45	Pankaj Singh	Long term outcome of surgical management for vertebral hemangioma presenting with myelopathy
14.45-15.00	Amit Bahadur Pradhanang	Craniovertebral Fusion: Nuances to a safe surgical approach
Free paper		
15.00-15.08	Hamid R Abbasi	Physiologic Decompression of Lumbar Spinal Stenosis Through Anatomic Restoration Using Trans-Kambin Oblique Lateral Posterior Lumbar Interbody Fusion (OLLIF): A Retrospective Analysis
15.08-15.16	Binod Rajbhandari	Intraoperative Neurophysiological Monitoring to Prevent New Neurological Deficits in Patients with Intramedullary Spinal Cord Tumors
15.16-15.23	Sundarakrishnan Dharanipathy	Introduction of a novel concept to decompress foramen magnum in chiari 1 malformation without affecting stability

<b>sessionII</b>		
	<b>Pediatrics /Miscellaneous</b>	<b>Chairpersons: Maya Bhattachan, Bikram Shakya, KI Singh KC</b>
Special lecture		
15.30-15.45	Isha Dhungana	Botulinum Injection in Neurological Problems: Our Experience
Free Paper		
15.45-15.53	Shabal Sapkota	Assessing the clinical and socioeconomical perspective of patients leaving against medical advice
15.53-16.01	Leepy Paudel	Huge Hydrocephalus: a case report

**16.01-16.15      tea break**

**Day 2 Hall B  
Program Schedule**

**November 27, 2021**

(5+2)	Award Session Allied	Coordinator:Amit Thapa	
	<b>Nurses/Allied</b>	<b>Chairperson:Balgopal Karmacharya, Sumit Joshi, Chandra Prakash limbu</b>	
16.15-16.22	Ekta adhikari/ khadka	Intervention to decrease incidence of leave against medical advice among neurosurgical patients attending emergency department	KMC
16.22-16.29	Manju Gyawali	Effect of action observation execution and motor imagery for upper extremity recovery in cognitively impaired individual post stroke.	Medicity
16.29-16.36	Apsara Pangini	Role of nurses in Aneurysm surgery	TUTH
16.36-16.43	Rasmita aryal	Role of Nurses in Pediatric Neurosurgery	NMC
16.43-16.50	Sanjay lama	Role of Physiotherapy in Neurosurgical Patients	NMC
16.50-16.57	Sanjita thapa	NURSING CARE OF PATIENT WITH CVP LINE	NMC
16.57-17.04	Pramila deuja	Nursing care of unconscious patient	NMC
17.04-17.11	Bipana thapa shrestha	Role of nursing in preoperative preparation of neurosurgical patients	NMC
17.11-17.18	Shani Mali	Role of neuro OT nurse during first lockdown in COVID Pandemic	ANIAS
17.18-17.25	Kabita Gajurel	Critical nursing care of neurosurgical patients	NAMS
17.25-17.32	Sindhu Gautam	Aneurysmal SAH: Intraoperative Nursing challenges and Management	NAMS
17.32-17.39	Bhumika Gurung	Audit of head injury patient s in Neurospine ward of Natonal trauma center	NAMS
18.30	Closing ceromony in Hall A		

# ABSTRACT

**Management of Neurosurgical cases during COVID-19 Pandemic. An experience from B.P Koirala institute of health sciences academic tertiary hospital in Nepal.**

**Alok Dahal, Nimesh Bista, Devendra Karki**

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**Introduction**

The covid 19 pandemic have severely affected the health care system worldwide however the impact of it in lower economic countries like Nepal is much more severe and worse. Though the neurosurgeons are not the frontline warriors in managing COVID, but the consequences we face dealing in neurosurgical cases with covid is much more fearful, tearful and sometimes painful as well. Our article focuses of our emotional experiences in managing the neurosurgical cases in BPKIHS during the period of covid19 pandemic.

**Material and Methods**

Data were collected from the software database from emergency, ward and covid hospital of BPKIHS admitted under neurosurgery department. Details on neurosurgical cases done during first and second wave of COVID-19 were collected and analyzed.

**Results:**

We performed 193 cases in first wave including 14 surgeries in COVID positive neurosurgical cases. During second wave, 141 cases were performed including 17 surgeries in COVID positive cases.

**Conclusion:**

Slowly and steadily, developing a little courage, with full precautions, management of neurosurgical cases can be done.

**Keywords:**

COVID-19, Frontline, Precaution.

## **Review of cases of Intracranial meningioma in adulthood : clinical characteristics and surgical management in BPKIHS**

**Alok Dahal, Nimesh Bista, Devendra karki**

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### **Introduction**

Meningioma are slow growing benign extraxial tumours. Presentations of meningioma differ from being very small lesions to very large tumours involving the various important areas of brain. Clinical features depends upon the anatomic location of meningioma and structures involved by it. Management options vary from careful observation with medical management, surgical removal of tumour and very rarely other palliative methods. Our paper entirely focuses on the clinical characteristics and difficulties in management of intracranial meningiomas in minimal setup like ours.

### **Materials and Methods**

This is a retrospective analysis of data of patients managed surgically for intracranial meningioma from 2017 November to 2021 September.

### **Results**

Total of 103 cases were operated who were radiologically diagnosed as meningioma. Only 97 cases were later diagnosed histologically as meningioma. Out of 97 cases transitional meningioma (41.23%) was the most common histological subtypes of meningioma. Convexity meningioma (37.11%), parasagittal meningioma (27.8%) and olfactory groove meningioma (11.3%) were the most common location of meningioma that were operated. Male: female ratio was 1:1.1. Headache (62.8%), visual disturbances (53.6%) and seizures (40.2%) are the most common clinical presentation of the patients. Simpson grade I resection was achieved in 62.8 % of cases. Surgical mortality was in 3.09%.

### **Conclusion**

Despite of all the odds, with very minimal setup, with no microscope and using only loops, still by getting adequate and complete surgical resection we can achieve a good outcome for intracranial meningiomas.

### **Keywords**

Meningioma, Surgical removal.

## **Craniovertebral Fusion: Nuances to a safe surgical approach**

**Amit Bahadur Pradhanang, Gopal Sedain, Mohan Raj Sharma**

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**Tribhuvan University Teaching Hospital, Kathmandu, Nepal**

### **Introduction**

Craniovertebral fusion posteriorly is a challenging procedure. Its complex anatomy demands a thorough understanding of the anatomy and biomechanics of the region. Its frequent association with developmental anomalies requires an individualistic approach. The objective was to identify certain important aspects while approaching such patients that make this complex surgery safe.

### **Materials and methods**

A total of 15 cases of posterior craniovertebral junction fusion in the last 4 years were retrospectively reviewed. Thorough study of each patient's preoperative CT craniovertebral junction and vascular course were studied. Surgery was done using Goel and Harms technique, incorporating certain perioperative steps. Postoperative and follow up clinical status and scans of the patients were recorded.

### **Results**

One patient had a complication of worsening neurology postoperatively. A protocol of managing such patients that required fusion were followed. Other 14 patients have been stable until the last follow up.

### **Conclusion**

Posterior craniovertebral junction requires a thorough understanding of the anatomy and appreciation of any anomalies of individual cases. It can be done safely if certain safety measures are observed.

### **Keywords**

Anomaly, Craniovertebral fusion, Protocol

**The Nepalese journal of Neuroscience: the road ahead!**

Dr Amit Thapa

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Nepalese Journal of Neuroscience (NJNS), the official journal of Nepalese Society of Neurosurgeons, started almost two decade back is now maturing into an all-inclusive source of information in neurosciences. The collective effort of the editorial board, the enthusiastic contribution of the authors and the guidance of our reviewers have catapulted us to our present status. Recently NJNS earned a CiteFactor index of 1.07.

Now the editorial management is fully web based, minimising any chance of missed communications. All submissions are subjected to two double-blinded peer review. NJNS publishes ORCID id of all authors and its association with DOAJ, Crossref and Index Copernicus - World of Journals has helped make each contribution along with their authors instantly available on widely used search-platforms. To reduce the time to publish, we are now publishing 4 issues in a year.

At present all the work which goes in making the journal is 100% voluntary however there are recurring cost in lay-outing and printing the journal. Over the years, we have been getting unconditional support of the industry sponsors in form of classified advertisements in our printed publications which has increased in these two years.

We have conducted courses in research writing, publication, ethical aspects of publication, reviewing for journal and even on how to avoid or face rejections. These webinars were overwhelmingly appreciated and has been kept on our website as resources for future reference.

We have been recognizing our reviewers by providing them certificate for their review which can be submitted to Nepal Medical Council for claiming CPD points.

We have seen increasing ratio of contributions from foreign authors and authors from non-neurosurgical background. NJNS being an open access and completely free to contribute platform for publication, is being favoured by the scientific community in the region.

However there are miles to go ahead which involves strengthening of editorial board, speeding up review process, bringing professional editors and language experts on board, getting indexed with pubmed and economically strengthening the organization to afford services of professional expertise in disseminating the research work.

## A synergistic function to be considered for shoulder reanimation surgery

**Amit Thapa**

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### Introduction

Brachial plexus injury (BPI) or pathologies can affect shoulder movement. We have seen excellent results with neurotization for shoulder reanimation with dual neurotization aimed for both shoulder abduction and external rotation. We present our experience and discuss on various surgical options to manage this condition.

### Methods

All patients who underwent neurotization for shoulder reanimation (NSR) during last 6 years were included in the study. Neurotization of supra scapular (SSN) and axillary nerves (AX) using various donors were performed. Outcome was analyzed based on Medical Research Council (MRC) grades of restoration of power and external rotation in shoulder.

### Results

A total of 52 patients among 102 operated for BPI underwent NSR, of which 9 underwent neurotization of both SSN and AX, 22 for AX and 17 for SSN only. The mean age was 27.04 years with 44 males (91.7%). 56.3% had incomplete BPI with 72.9% being involved on right side and 31.4% being operated after 6 months of delay. SSN was neurotized using Spinal Accessory Nerve branches or Phrenic nerve. Axillary Nerve was neurotized using either nerve to long head of Triceps or Medial Triceps, Intercostal nerves, Phrenic, Spinal Accessory, Medial Pectoral or contra lateral C7 nerves. 84.6% of SSN and 83.9% of Axillary Nerve neurotized improved to MRC grade > 3. External rotation of >90degrees was achieved in 75% patients which was associated with significant effect in daily activities use of upper limb. Except for statistically significant effect on outcome in males undergoing neurotization of SSN ( $p=0.004$ ), neither age > 25 years, laterality of injury, severity of BPI or delay in surgery beyond 6 months had significant impact on outcome of reanimation of SSN or AX. Using branches of nerves to triceps had significantly better outcome in reanimation of AX as compared to other donors ( $p=0.008$ ).

### Conclusion

Shoulder reanimation surgery with the objective of achieving both shoulder abduction and external rotation has excellent outcome. Reanimation of AX using nerve to long head of Triceps or Medial Triceps provides best improvement in power as compared to other donors.

### Keywords

Shoulder reanimation, neurotisation

## Use of cranial robot in Neurosurgery: is it a necessity or a luxury?

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### **Introduction**

The dilemma of introducing any new technology in developing countries like us is to get convinced for the cost- effectiveness, acceptability and indispensability of the equipment. We introduced robot for the first time in Nepal in surgical practice and here review its need and indications.

### **Materials and Methods**

We reviewed the literature for the use of robot in Neurosurgery and evaluate indications where precision and minimal invasive approach is paramount. We study the effectiveness and cost-efficiency of using the robot over conventional methods and reflect on new uses of robot.

### **Results**

A systematic approach to indications for cranial robot in neurosurgery has been defined. We have formulated a protocol on how to use and validate the accuracy of the robot in our institution. Currently robot is being preferred in procedures which demands precision like implantation of stereotactic depth electrodes both for evaluation and surgical therapy of seizure, radiofrequency or laser ablation of deep seated tumours or pathologies, taking biopsy and even carry endoscope to the target area besides helping put screws in cranio-vertebral junctions. As the robot adjusts it's position automatically, it saves time in adjusting angles.

### **Conclusion**

Though the initial cost of acquiring a robot is high, it has brought precision in neurosurgical procedures and made procedure faster by decreasing the time in adjustment.

### **Keywords**

Cranial robot, stealth autoguide, neurosurgery

## Current spine care in Nepal and the initiative to improve care

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With the refinement in surgery and technological advancement, spine surgery as in other parts of world have seen unprecedented growth in Nepal. However this growth rate is not uniform across our geographical landscape, with most people living in remote areas missing out on basic spine care services. Though we have progressed on surgical management of spine disorders, a comprehensive spine care centre involving combined expertise of surgeons, pain physicians, physiotherapist and occupational therapist is still a far cry. The burden of spine related diseases is increasing, however in absence of the trained primary care givers and a proper referral system, patients have to suffer either due to unnecessary or late referrals and expensive unwanted investigations.

Realising these deficiencies, the spine chapter of Nepalese Society of Neurosurgeons (NESON) with the team of spine specialists experienced in various field of epidemiology, chiropractic, neurology, psychology, physiotherapy under the banner of “World Spine Care” are collaborating to adopt the “National Spine Health Program”. Our Vision is to ensure that everyone has access to the highest quality spine care possible through the health care system in Nepal. Our Mission is to provide a practical, evidence-informed, and sustainable spine health care model for communities across Nepal. We strive to create a proper referral system by training primary care givers, enrich our current spine fellowship programs, provide training to allied specialists, help in developing a national registry for spine problems, generate database and improve research and evidence based practice in spine care. We also look forward to create outreach clinical services in remote part of Nepal. This collaboration would involve multiple stakeholders from government of Nepal, non-governmental organizations, medical institutions, universities and public societies.

We hope with this multi-specialist approach would contribute to overall growth of spine services in Nepal.

### **Keywords**

Disease burden, Nepalese Society of Neurosurgeons, Spine health, World Spine Care

## STA-MCA bypass for symptomatic Moya Moya disease – Lessons learnt from 89 revascularisations

Amol Raheja, Sanjeev A Sreenivasan, Ashish Suri, Manmohan Singh, Shashwat Mishra, Vivek Tandon, Subhash Phuyal, Leve J Devarajan, Mani Kalaivani, P Sarat Chandra, SS Kale

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### Introduction

The study aims to comprehensively evaluate clinical and angiographic outcome in symptomatic MoyaMoya-disease (MMD) patients undergoing STA-MCA bypass.

### Materials and methods

Consecutive MMD patients who underwent direct-revascularisation (DR) via STA-MCA bypass were studied. Primary outcome measures were mRS scale and stroke risk reduction. Secondary outcome measure was angiographic outcome score (AOS).

### Results

There were 70 patients (89 DR procedures), including 37.9% adults (>18yr), who were operated over a duration of 8 years and followed up for 2 years (mean). Long-term bypass-patency rates were deemed 83.3% and 88.8% in children and adults respectively. In pediatric age group, median mRS scores improved from 3 to 2 ( $p=0.001$ ), 97.3% were free of recurrent strokes and AOS scores improved significantly ( $p=0.002$ ). Amongst adult MMD patients, median mRS score marginally improved from 3 to 2 ( $p=0.25$ ), 100% were free of recurrent strokes and AOS improved significantly ( $p=0.02$ ). On comparing pediatric and adult patients, improvement in mRS scores ( $p=0.14$ ) and AOS scores ( $p=0.65$ ) were similar across the two age groups. Overall late stage MMD patients (Suzuki stages IV-VI) showed better improvement in mRS scores when compared with early stage MMD patients (Suzuki stages I-III;  $p=0.04$ ). Recurrent stroke rates were similar in both groups ( $p=0.26$ ). AOS scores improved significantly in both early and late stage MMD ( $p<0.001$  in both), though the improvement amongst the two groups was similar ( $p=0.88$ ).

### Conclusion

Using meticulous surgical technique, excellent long-term bypass patency rates can be achieved to facilitate optimal clinical and angiographic outcome in symptomatic MMD patients, irrespective of the age group and stage of disease.

### Keywords

Moya Moya Disease, STA-MCA bypass

## **Chronic Subdural Hematoma (cSDH) Score for Predicting Outcome in Chronic Subdural Hematoma in a Tertiary Care Centre in Nepal**

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### **Introduction**

The main aim of the study is to assess cSDH score in predicting outcome in chronic subdural hematoma at the time of discharge and after 6 months. Furthermore, the additional objectives were to assess the functional status as measured by the Modified Rankin Scale as Favorable (mRS : 0-1) Vs Unfavorable (mRS : 2-6) at the time of discharge and after 6 months and to describe the demographic characteristics of chronic SDH.

### **Materials and methods**

This is a prospective observational study including all operated patients with a diagnosis of chronic subdural hematoma undergoing evacuation at a single institution from December 15, 2019 - April 15, 2021. The primary endpoint was a dichotomized score on a modified Rankin Scale score at 6 months follow-up (favorable outcome score 0-1; unfavorable outcome score 2-6). Logistic regression analyses were performed to model determinants related to outcome. A prediction rule for diagnosing poor postoperative prognosis with unfavorable modified Rankin Scale score was analyzed.

### **Results**

Our results demonstrated that GCS, hematoma thickness, presence of a motor deficit, orientation and overall cSDH score are the predictors of outcome after surgery for cSDH. Our results correlate to the findings of many previous publications on outcomes and prognosis in patients with cSDH. At six months, 82.4% had a favorable outcome. An unfavorable outcome was seen in 12.1%. Four patients (5.4%) died within six months.

### **Conclusion**

cSDH score is a simple reliable score to predict the outcome in patients diagnosed with chronic subdural hematoma. Further multicenter study with a larger sample size is recommended to clarify the predictive ability of the cSDH score.

### **Keywords**

Chronic subdural hematoma, evacuation, predictors

## Psychosurgery a possible new era in neurosurgery

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Psychosurgery is the neurosurgical treatment for psychiatric disease. It was very controversial due to indiscriminate use of the transorbital lobotomy in the mid twentieth century which resulted in profound ethical consideration. Psychosurgeries includes development of the stereotactic cingulotomy, capsulotomy, subcaudate tractotomy, and limbic leucotomy; rather than removing the entire frontal lobe to produce symptom relief. The cingulotomy involves lesioning of the cingulate gyrus and adjacent white matter fibers of cingulum bundle. The cingulotomy can be used in the treatment of obsessive-compulsive disorder (OCD) severe anxiety, treatment-resistant depression (TRD), and was similarly found to be effective for individuals suffering from chronic, intractable pain. Anterior capsulotomy has also been found to be effective for OCD, likely due to the disruption of frontothalamic fiber connections. Subcaudate tractotomy which disrupts the orbitofrontal cortex from its thalamic and limbic connections has been also described for TRD and OCD. Limbic leucotomy combines cingulotomy with tractotomy to target both frontothalamic and cingulate circuitry. Lesions in Nucleus Accumbens has been used for drug dependence and alcohol use. We present our experience on limbic leucotomy on a case of severe OCD. Deep brain stimulation has been also used for treatments of TRD and OCD. Recent advancement in DBS uses long leads which can change local Field Potential Oscillations in Nucleus Accumbens and Anterior Limb of the Internal Capsule in ObsessiveCompulsive Disorder.

### Keywords

Depression, Obsessive compulsive disorder, Psychosurgery.

## Technique and results of Epilepsy Surgery in Nepal

**Basant Pant, Resha Shrestha, Pravesh Rajbhandari, Pranaya Shrestha, Sudan Dhakal, Samir Acharya, Pritam Gurung**

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### Introduction

The study is done to study the safety and efficacy of epilepsy surgery in intractable seizure.

### Materials and methods

We performed a retrospective review of 90 cases who had undergone surgery for intractable epilepsy at Annapurna Neurological Institute and Allied Sciences between January 2002 and September 2021. To increase the accuracy of the ictal onset zone identification we started doing intraoperative ECOG since 2004, which increased our resectability of ictal area of the brain in a more tailored manner so that eloquent area were well preserved. Out of different alternative surgical modalities of epilepsy treatment like Vagal nerve stimulation, gamma knife surgery & recently developed thalamic stimulation; anterior temporal lobectomy, corpus callosotomy, lesonectomy & selective amygdalohippocampectomy are some of the surgeries we have been conducting.

### Results

Our overall result is 90% and more than 83% of our patient have Engel's classification 1 and 7% have Engel's classification 2. Due to this excellent result our referring doctors are convinced that epilepsy surgery is an effective and viable option for intractable seizure and to prevent decrease in cognitive function and to give a good overall outcome of life.

### Conclusion

When an epilepsy patient present with features of intractability they should be subjected to investigation as a potential candidate for surgery and operated at the earliest period to give a best overall outcome of life.

### Keywords

Epilepsy, Seizure, Surgery

**Audit of head Injury Patient in Neuro spine ward of National Trauma Center(NTC)****Bhumika Gurung**

National Academy of Medical Sciences(NAMS), Bir Hospital, Nepal

The access to care by a dedicated neurosurgical unit is limited in the developing world, and the vast majority of patients who sustain a head injury are managed by general surgeons. Prevention of secondary brain injury is paramount. While the principles of management are relatively straightforward, delivering this care may be difficult. This audit looks at the spectrum of head injuries presenting to the only Trauma Hospital in Nepal and attempts to study about the head injury patients in neuro spine ward of the National Trauma Center. The retrospective descriptive study conducted in various sections show that Males are two times more likely than females to sustain a brain injury and the highest rate of injury is for males of age 20-39. Among the total Trauma Patients of 18,263 (2075/76) arrived in emergency, Head Injury(Emergency) was 3,580 (2075/76) and Admitted in the ward during one year was 289 cases. Among the admitted cases, 70% were non operative while 30% of the cases were operative. The outcome of patient with traumatic brain injury was 84% recovered, 10 % death and 6 % others.

Keywords: audit, head injury, NTC

## **Systematic use of sonoscopy in neurosurgical intensive care unit**

**Bibesh Pokhrel, Amit Thapa**

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### **Introduction**

Bedside ultrasonography or sonoscopy is a cost-effective, non-invasive procedure which provides real time information and is more specific in diagnostic and therapeutic utilities. However, for various reasons, it is not being used routinely in neurosurgical ICU.

We have introduced a systematic use of sonoscopy in critically ill patients in our ICU. We here study the various indications and methods used in neurosurgical ICU setting.

### **Materials and methods**

This is a prospective, single cohort observational study done in patients who were admitted in a tertiary neurosurgery ICU for last 1 year (Asoj 1st 2077 to Bhadra 31st 2078). USG was used for multiple purposes for the management of various neurosurgical conditions. It was used for primary resuscitation, daily secondary surveys including optic nerve sheath diameter (ONSD) measurement, trans-fontanelle USG, transcranial doppler (TCD), USG chest, deep vein thrombosis (DVT), ventriculo-peritoneal shunt functionality and transcranial defect ultrasound and focused ultrasound like blue protocol and evaluation of hemodynamic shock. Besides sonoscopy was used to place central venous lines and trans-fontanelle tapping.

### **Results**

There were 240 neurosurgery ICU admission which accounts for 22.9% of total neurosurgery admissions. Different modalities of USG were used for all the ICU patients according to the department protocol. As all the images are seen in real time by the practitioner, timely diagnosis and in turn improvement in the outcome of patients has been seen. There was initial lag in adopting the technique, however with practice, the team developed confidence and the accuracy and time taken to perform the procedure was reduced significantly.

### **Conclusion**

Routine systematic use of sonocopy can be beneficial not only, for the rapid diagnosis and prompt management of patients, but also helpful in performing various procedures in neurosurgery ICU.

### **Keywords**

Diagnosis, sonoscopy, therapy.

## **Analysis of Outcome of Early Versus Late Surgical clipping of Anterior Circulation Aneurysm at NNRC, Bir Hospital(NAMS)**

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### **Introduction**

The study is done to analyze the outcome of early versus late surgical clipping of anterior circulations aneurysm.

### **Materials and methods**

This is a prospective comparative observational study including all the cases admitted and undergone surgical clipping of anterior circulation artery aneurysm at Bir hospital.

### **Results**

In the study 118 patients are prospectively investigated, with 84 anterior circulation aneurysm with SAH undergone surgical clipping. Patients who came within 3 days of ictus are submitted to surgical clipping on the same day but after 3 days' patients are submitted surgical clipping after 9 days of ictus. Regarding the timing of treatment post-hemorrhage, patients were divided into early surgery, treatment on days 1,2, or 3; and late surgery >9 days. The grade of SAH on admission was assessed by Hunt and Hess scale. Outcomes on discharge were investigated using the Glasgow outcome scale and mortality rate. In 63 patients admitted with good clinical grade, 8 showed poor outcome (mortality rate: 7.9%) while, in 21 patients admitted with poor clinical grade, 8 showed poor outcomes (mortality rate: 28.57%). No statistically significant relationships were verified between the early vs late and a poor outcome and mortality, even classifying patients according to aneurysm location and Hunt and Hess scale.

### **Conclusion**

Early versus late surgical clipping for anterior circulation aneurysm with SAH has no statistically significant association among mortality or poor outcome. Morbidity and mortality occurred primarily as a direct result of a severe initial hemorrhage; thus, the measured benefits of early surgery were less than might have been predicted

### **Key words**

Anterior circulation artery aneurysms, subarachnoid hemorrhage, intracranial aneurysm

## **Role of nursing in preoperative preparation of neurosurgical patients**

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### **Introduction**

Pre-operative phase begins with decision to perform surgery and continues until the patients have reached the operative area. In neurosurgery department we prepare the patients for various surgical procedures which include emergency surgeries and elective surgeries. this presentation reviews about the role of nursing in preoperative preparation of neurosurgical patients

### **Materials and methods**

This is a retrospective observational and descriptive study from Neurosurgery department of Nepal Medical College and Teaching Hospital (NMCTH) during July 2018 to July 2021 (3years). After patients were planned for operative procedures, pre-operative assessment was done, informed consent was taken, a good communication with patient and patient's family was done , physical preparation of the patient was done, psychological preparation of patient and patient's family was done.

### **Results**

Total number of surgery performed in 3 years was 336. Among them cranial surgery was 65%, spinal Surgery was 16 % and Pediatric surgery was 18%.

### **Conclusion**

Preparing the patients for surgery with meticulous documentation helps prevent errors during surgery with multiple check point for the surgeons. Preparing and counseling the patient and the patient's family before surgery helps in their postoperative and convalescence period.

### **Keywords**

Nursing, preoperative preparation

## Social Media in Neurosurgery

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This presentation is about the increasing social media use for the purposes of neurosurgical education worldwide. Covid 19 pandemic has made many of us to stay locked inside room for many days which has led to increase in online education. All the leading social media including Facebook and Twitter were taken into consideration. most commonly used social media group “ Neurosurgery Cocktail for neurosurgical education were evaluated for its impact in global neurosurgery. All the metric and data from the group were extracted and evaluated. A total 36 thousands neurosurgeons in the group most of them is habituated to use Facebook. Twitter and Telegram were used next for educational purposes. For Webinars WhatsApp was mostly used for dissemination of Flyers and date of virtual conferences.

Neurosurgery Cocktail is one the most commonly used social media group in world for neurosurgical education worldwide. It has made dissemination of knowledge online very easy.

## **Fronto-orbital advancement for craniosyntosis: our experiences**

**Bishal Shrestha, Pritam Gurung, Resha Shrestha, Samir Acharya, Sudan Dhakal, Pravesh Rajbhandari, Pranaya Shrestha, Basant Pant**

Annapurna Neurological Institute and Allied Sciences, Kathmandu, Nepal.

### **Introduction**

The study is done to study the outcomes of fronto-orbital advancement for craniosyntosis.

### **Materials and methods**

This is a retrospective study including craniosyntosis patients in which fronto-orbital advancement was performed.

### **Results**

There were four cases who underwent fronto-orbital advancement in different craniosyntosis affecting either the metopic, one or both coronal sutures. The study included 2 boys and 2 girls, and the age ranged between 6 months and 5 years. Supraorbital horizontal bar is mobilized on either side anteriorly and fixed with autologous bone. There was significant improvement in the outcomes.

### **Conclusion**

Fronto-orbital advancement technique for craniosyntosis seems to be a simple and cost-effective technique for correction of craniosyntosis with good results.

### **Keywords**

Craniosyntosis, Fronto-orbital advancement.

## **Shortening procedure for kyphus deformity in spine infection and tumor**

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The paper is aimed to explore the challenge of spine with kyphus deformity which is common in infection and tumor. This is based on the clinical experience in various approaches for the above clinical condition. The various approaches are explained along with long term followup details.

Comparison of decompression with fixation in situ, reconstruction of anterior column and shortening procedures to regain the global alignment of the spine were done. Shortening provides the best clinical outcome in the management of this clinical challenge.

## **Glycosaminoglycan (GAG) content in the intervertebral disc.**

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### **Introduction**

The correct spatial distribution and high negative charge of glycosaminoglycans (GAGs) within the intervertebral disc (IVD) are responsible for discs' water imbibition, proper osmotic pressure and as such IVD's physiological swelling behaviors and compressive properties. The aim of this study was to investigate the association of the concentration and distribution of GAG with IVD degeneration as measured by Pfirrmann et. al and Thompson et al. grading systems.

### **Materials and methods**

One hundred lumbar spine columns (L1-S1) were harvested from cadavers.

Full spinal columns (vertebrae L1-S1 and IVD between them) were harvested from fresh cadavers through an anterior dissection. MRI scans of all spinal columns and were assessed using Pfirrmann grading system. All vertebral columns were cut in the midsagittal plane. The level of degeneration was assessed morphologically using Thompson et al. grading system. Samples from 5 regions of the L5/S1 IVDs were taken for GAG concentration analyses. Standard curve spectrophotometry was utilized for this purpose.

### **Results**

A total of 478 samples from 5 regions of L5/S1 IVDs were included in the analysis of GAG content. The samples from the nucleus pulposus showed on average the highest concentration of GAG, although the differences were not statistically significant. The one-way analysis of variance (ANOVA) showed no statistically significant differences in mean GAG mass between different Pfirrmann grades ( $F=1.85$ ,  $p=0.13$ ) and between different Thompson grades ( $F=1.17$ ,  $p=0.33$ ).

### **Conclusion**

Our study showed no association between GAG concentration levels and degeneration grade of the IVD as measured by radiological Pfirrmann and morphological Thompson grading systems.

### **Keywords**

Glycosaminoglycans, Intervertebral disc

## **Intervention to decrease incidence of leave against medical advice among neurosurgical patients attending emergency department**

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In developing countries like ours, patients attending emergency who need admissions quite frequently leave against medical advice (LAMA), putting their lives at risk or delaying the treatment process. To avoid mis-information and lack of information leading to LAMA, we trained nursing staff to handle our emergency cases. We conducted a study to see how this intervention has helped in our scenario

## More than a decade of intracranial aneurysm surgery and our outcome analysis of patients with microsurgical clipping

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### Introduction

One of the major complications of aSAH is rebleeding. Mortality after re bleeding goes up to 70 % and to prevent this serious complication ruptured aneurysm has to be occluded promptly and efficiently. Aneurysm can be occluded either by open microsurgical clipping or endovascular procedure. Both procedures are well established and have advantages and disadvantages. Which one is best? It is still a matter of debate. Treatment decision should be based on patient's choice, clinician's experience, availability of experts and financial aspect. Infact, treatment should be indivisualized from patient to patient.

### Methods and Materials

Over a period of 13 year we have operated on 500 patients harboring intracranial aneurysms in different institutes by our Neurosurgical team. Patients other than microsurgical clipping were excluded from this study. During operative procedures intracranial Doppler, ICG videography and operating microscope were used in all cases. Followed up period ranged from 3 months to 13 years.

### Results

Male/female ratio was 0.511 and median age was 53. There were 117 Mongol and 383 Aryan in our series. Ninety percent of aneurysm were located in anterior and 10 % in posterior circulation. Twenty two percent had high grade and 77 % had low H & H clinical grade on admission. Similarly, 28 % had low and 82% had high MF grade on CT scan of brain on admission. About 86% aneurysms were less than 11mm and 14% more than 11 mm in size. Intra-operative rupture occurred is about 10%. At the time of discharge 80% had favorable outcome and 20% had unfavorable outcome. Subsequently on last follow up 96.8% achieved favorable outcome and 3.7 had unfavorable outcome. Initial H & H clinical grade and MF grade were major outcome predictors in our study.

### Conclusion

Microsurgical Clipping of cerebral aneurysm is a well established and standard procedure. H & H grade and MF Grade were main outcome predictors in this series. Hypertension and regular use of alcohol and smoking were risk factors for unfavorable outcome. Microsurgical clipping of aneurysm is still treatment of first choice where there is financial constraints and endo-vascular experts are not available.

### Keywords

Aneurysm, microsurgical clipping

## **Management Nuances in Posterior Fossa Hemangioblastoma**

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The study is done to discuss the epidemiology, patient characteristics and outcome of patients with posterior fossa hemangioblastomas managed at Teaching Hospital Institute of Medicine, Kathmandu Nepal. This is a retrospective review including 18 patients of which 13 were male and five were female. There were two mortality. Regarding morbidity, pseudomeningocele was noted. Proper management with multimodal therapy may be required in selected cases.

## **Pre operative blood oxygen level dependent functional MRI in patient with intra-axial primary brain tumor in and around functionally eloquent areas: clinical application and outcome.**

**Gopi Nepal, Bishal Shrestha, Sambridha Malla, Jessica Kayastha, Janam Shrestha, Upama Sharma, Dinuj Shrestha, Pritam Gurung, Resha Shrestha, Samir Acharya, Sudan Dhakal, Pravesh Rajbhandari, Pranaya Shrestha, Basant Pant.**

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### **Introduction**

The study is done to evaluate the usefulness of Blood Oxygen Level Dependent (BOLD) Functional MRI in patient with intra-axial primary brain tumor and to identify functionally active area in relation to tumor margin and its application in pre-surgical planning and post-operative functional outcome.

### **Materials and methods**

The study is retrospective study that included 31 consecutive cases from January 2020 to September 2021 who had intra-axial primary brain tumor in functionally eloquent areas i.e in or near motor and language cortices. All the patients were examined and instructed regarding task prior and during performing functional MRI. Task specific i.e BOLD Functional MRI was performed in all the cases in Siemens 3TMRI. Distance between tumor margin and functional cortex is measured in all cases. Pre and Post-operative neurological status of the patient were compared and analyzed.

### **Results**

Acquisition of BOLD functional MRI image was successful in all cases. The operating Neurosurgeons uses the f-MRI results for pre-operative planning in all the cases. Post-Operative deficit was found relatively higher in the patients who has functional area less than 5mm from the outer margin of the tumor.

### **Conclusion**

Pre- operative functional MRI is very useful in pts with primary brain tumor in eloquent areas. A distance of 5mm or less between the tumor outer margin and the functional cortex as delineated with f-MRI ,there is slightly higher risk of post-operative deficit.

### **Keywords**

Brain tumor, MRI

# Physiologic Decompression of Lumbar Spinal Stenosis Through Anatomic Restoration Using Trans-Kambin Oblique Lateral Posterior Lumbar Interbody Fusion (OLLIF): A Retrospective Analysis

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## Introduction

Lumbar spinal stenosis (LSS) is one of the most common indications for spinal surgery. Traditionally, decompression is achieved by removing bony and ligamentous structures through open surgery. However, recent studies have shown that symptomatic relief can be accomplished in many patients by increasing intervertebral and interpedicular height using fusion alone. In this study, we evaluate whether trans-Kambin oblique lateral lumbar interbody fusion (OLLIF) can effectively and safely relieve symptoms of LSS when an indication for fusion is present.

## Materials and methods

This is a retrospective single surgeon cohort study of 187 patients with LSS who underwent 189 OLLIF procedures between 2012 and August 2, 2019. Inclusion criteria for this study were age >18 years with symptoms of LSS, including pain, sensory, and motor deficits, and an additional indication for fusion, which included spondylolisthesis, degenerative disk disease, disk herniation, or scoliosis. Exclusion criteria were the bony obstruction of the approach, osteogenic spinal canal stenosis, large facet hypertrophy, and listhesis grade II or greater. The primary outcome was a change in the Oswestry Disability Index (ODI) one year after surgery. Secondary outcomes were the resolution of radiculopathy at the first follow-up visit and one year after surgery, complication rates, surgery time, blood loss, and hospital stay.

## Results

Demographics of the study population along with indications for surgery are displayed in Table 1. There were 189 patients in our study with a mean age of 63±14 and a mean BMI of 31.9±6.9. Perioperative outcomes are listed in Table 2. Blood loss averaged 84.8±81 ml. Mean hospital stay was 1.8±1.9 days. Skin to skin surgery time ranged from 56.4±21.5 minutes for one-level procedures to 159.5±62.7 min for operations involving Patient-reported disability on the ODI improved from 52% pre-op to 37% at the one-year follow-up (Table 3), with significant improvements in all categories of the ODI. Radiculopathy, as assessed by physical exam, improved in the majority of patients (Table 4). At the first postoperative visit, radiculopathy was completely gone in 39% of patients and 72% of patients experienced at least significant improvement in radiculopathy, defined as an improvement of 50% or greater. This improvement in radiculopathy was durable at one year when 52% of patients experienced complete resolution of radiculopathy and 74% experienced significant improvement.

Trans-Kambin OLLIF delivers anatomic restoration of intradiscal and interpedicular distance, which results in physiologic decompression of lumbar spinal stenosis in patients undergoing lumbar fusion for degenerative or herniated disk disease, spondylolisthesis, or scoliosis. Amongst patients with LSS, OLLIF results in significant improvement of radiculopathy and patient-reported disability in the majority of patients with low rates of long-term complications.

## Conclusion

Unlike other minimally invasive surgery (MIS) fusions, OLLIF can be safely used from T12-S1.

## Keywords

Anatomic restoration, lumbar spinal stenosis

## **Intraoperative neuromonitoring during resection of cranial meningiomas and its effect on the surgical workflow – A single center experience**

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### **Introduction**

Resection of meningiomas adjacent to the central sulcus presents a special challenge, as it entails a high rate of postoperative morbidity and requires careful preoperative and intraoperative assessment. Explored for intra-axial lesion resection, intraoperative neuromonitoring IONM has been shown to decrease postoperative neurological deficits. However, the use of IONM is relatively uncommon, and is not considered a routine clinical practice in the removal of cranial extra-axial lesions. In this study, we sought to characterize IONM's impact on the surgical workflow in supratentorial meningiomas

### **Materials and methods**

We retrospectively analyzed a prospectively collected database, searching all cases in which IONM was used for resection of meningioma between the years 2017 and 2020. Using IONM and operative reports, we classified the effect of IONM on surgical workflow into 5 distinct categories of workflow changes (WFC).

### **Results**

Forty cases of supratentorial meningiomas in which IONM was used were identified. Out of the 40 cases observed, in 1 case (class 1 WFC), the operation was stopped due to IONM input. In 5 cases (class 2 WFC), a decision was made to incompletely resect the tumor due to input from the IONM team. In 14 cases (35%), IONM enabled localization of the motor cortex underlying the tumor, leading to an alteration of the surgical workflow so that area of the tumor overlying the motor area could be resected last (alteration of approach, class 3 WFC). In 4 cases (10%), anesthesia care was modified based on IONM input (class 4 WFC). In 16 cases, no changes were made to surgery or anesthesia (class 5 WFC). In all patients in whom a change of any kind was made (24 cases, WFC: 1–4), only 2 (8.3%) suffered a temporary deficit, and there were no permanent deficits.

### **Conclusion**

This study presents an algorithm that connects specific changes in IONM with specific surgical steps, taken in real time regarding the surgical plan. Our data suggest that IONM is impactful during the resection of meningiomas in eloquent areas, and has a role in guiding the surgical technique, approach to tumor resection and extent of resection. Further research is required to clarify the role of monitoring for preservation of other neurological functions such as speech, sensory and visual functions during the resection of eloquent area meningiomas

### **Keywords**

Cranial meningioma, Neuromonitoring

## Botulinum Injection in Neurological Problems: Our Experience

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### Introduction

Botulinum toxin is one of the most poisonous biological substances known. It is one of the eight exotoxins produced by the bacterium *Clostridium botulinum* which interferes with neural transmission by blocking the release of acetylcholine, the principal neurotransmitter at the neuromuscular junction, causing muscle paralysis. Currently, botulinum toxin has been established as an efficacious therapeutic agent for the treatment of numerous medical disorders. Botulinum toxin is now used in the management of wide variety of neurological conditions, like focal dystonia, hemifacial spasm, spastic movement disorders, headache, hypersalivation, hyperhidrosis; conditions that respond only partially to medical treatment. The list of possible new indications is expanding rapidly.

### Materials and methods

Its a retrospective case series study on use of botulinum injection in neurological problem.

### Results

We have used Injection Botox in total 50 patients for various indications like hemifacial spasm, blepharospasm, post-stroke spasticity, dystonias, neuralgic pain, chronic migraine etc. The patients receiving injection Botox showed varying degree of responses to the therapy.

### Conclusion

Botox injection is helpful in different neurological conditions.

### Key Words

Botox, neurological indications, our experience

## **Outcome of Anterior Cervical Discectomy and fixation with Acrylic Bone Cement (Polymethylmethacrylate) for Degenerative Cervical Disease**

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Degenerative Cervical disease is one of the common causes of Neck pain and may be associated compression and inflammation of the cervical nerve roots exiting the cervical spine (cervical radiculopathy), and compression and inflammation of the adjacent cervical spinal cord (cervical myelopathy). Anterior Cervical discectomy and fixation with bone cement is an excellent alternative to traditional fusion with autologous bone graft or implants. The objective of this study is to evaluate the outcome and safety of Anterior Cervical Discectomy and fixation with Bone Cement (PMMA) in patients with Degenerative Cervical Disease.

Hospital-based retrospective study done in the Neurosurgery department of Annapurna Neurological Institute and Allied Sciences over a period of 5 years. Patients of age group 18 years -70 years visiting the Neurosurgery OPD with degenerated cervical disease undergoing surgical intervention were included. They are sorted by the inclusion and exclusion criteria.

Patients of age group 18 years -70 years visiting the Neurosurgery OPD with degenerated cervical disease undergoing surgical intervention. Detailed history, clinical examination for assessing cervical spine dysfunction is performed preoperatively. Standard Anterior Cervical Discectomy and fixation with Acrylic Bone Cement (PMMA) is done. Postoperatively the patient is evaluated on 1 week, 3 months, and in 1 year in OPD Clinic, and dynamic Xray is done along with clinical examination. The acceptable outcome is determined by absence of motion or subluxation in dynamic cervical spine Xray, maintenance of adequate disc height, pain score reduced to > 30% (on VAS), no dislodgement/migration of the bone cement graft.

## **Asymmetry of anterior cerebral arteries as a predictor of anterior communicating artery complex aneurysm**

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### **Introduction**

Anterior communicating artery complex aneurysm (AcomAC) is the commonest ruptured cerebral aneurysms. People with variations in cerebral arteries, particularly in Anterior Cerebral Arteries (ACA) territory are thought to be subjected to imbalance in cerebral blood flow leading to cerebrovascular pathologies including cerebral aneurysms.

### **Materials and methods**

This is a retrospective study including 81 patients who underwent direct surgical intervention for aneurysms between August 2019 to August 2021. Among them, patients harboring aneurysms located in ACOM were included. Internal diameter of A1s were measured on Cerebral CT angiography (CCTA) images obtained from 81 adult individuals and the image were used to determine the presence and absence of AcomAC aneurysms. The images were taken between August 2019 to August 2021. Cerebral CT Angiography from August 2019 to August 2021 were evaluated and internal diameter of A1s were measured. Correlation of the diameter of A1 with the occurrence of AcomAC aneurysm was done.

### **Results**

The risk of development of aneurysm in AcomAC was much greater when one A1 segment's radius was larger than the other and the aneurysm is more incorporated towards the dominant side of the A1 with the dome facing towards the opposite side. The asymmetry ratio of A1 is a good predictor for the development of AcomAC aneurysms.

### **Conclusion**

Prediction and early detection of aneurysms allow treatment, thus could prevent or reduce the incidences of cerebral stroke and also recurrences of aneurysms.

### **Keywords**

Aneurysm, Prediction

## Critical Nursing Care of Neurosurgical Patient

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### Introduction

Critical care is a key aspect of neurosurgical training and practice. Patients with neurosurgical conditions represent a great number of admissions to intensive care units which include traumatic brain injuries, spontaneous hematomas, ischemic strokes, subarachnoid hemorrhages or elective surgeries. The main purpose of caring a patient in Neurosurgical Intensive care unit is to prevent secondary brain injury and early detection of possible complication that can occur with the pathology of patients with a aim to stabilize and prevent from further deterioration.

### Materials and methods

Some of the key elements of care in neurosurgical patients are; vigilance and early detection of surgical complications (stroke, seizures and bleeding), emergence and recovery from anesthesia, assessment of impaired consciousness, restoring and maintaining normal body temperature, pain management, post-operative nausea and vomiting, prophylaxis for DVT and GI bleeding. For the patient undergoing surgery post-operative care should focus on smooth and timely emergence from anesthesia while optimizing hemodynamic, respiratory and electrolyte parameters.

### Results

Critical nursing care of neurosurgical patients is highly sophisticated. It needs a lot of keen observation and experience to take care of the patients. If nurses can timely detect a problem they can save many precious lives.

### Conclusion

Management of systemic complications in neurosurgical patients is an essential task that can help minimize serious neurological consequences. Careful and frequent neurological assessments by neurology-trained staff are the cornerstone of neurosurgical care.

### Keywords

Critical care, Nursing

## Role of pallidotomy in patients with dystonia

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### Introduction

Dystonia is a debilitating and often progressive disorder. It can be divided into primary and secondary types. It is a therapeutic challenge, and the available surgical modalities include pallidotomy and DBS. The objective of the present study was to determine the outcomes of pallidotomy in patients with dystonia.

### Materials and methods

This is a retrospective study including patients with primary/secondary dystonia who underwent bilateral pallidotomy at our centre, a tertiary care hospital in north India. The study duration was from July 2014 to January 2021. Data of all these patients was retrieved from the computerized database of our hospital. The patients were followed up in our clinics and BMFDS score was noted at the final follow up.

### Results

During the study period 25 patients underwent pallidotomy for dystonia. Mean age was 24.75 years (range 5 to 48 years). Male to female ratio was 3:1. Mean duration of dystonia was 5.1 years (range 1-18). All the patients had generalized dystonia. 52% of patients had primary dystonia while rest had secondary dystonia. Clinically significant response was seen in 82.3% of patients (100% in primary dystonia and 60% in secondary dystonia). Seven patients developed bulbar symptoms in post-operative period and 2 out of these 7 improved over time.

### Conclusion

Pallidotomy is a viable option in patients with dystonia. The response is poorer in secondary dystonia as compared to primary dystonia. The patients with secondary dystonia show some improvement which improves the functional status of the patients and is helpful for the caregivers as well.

### Keywords

Dystonia, pallidotomy

## **Huge Hydrocephalus: a case report**

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This case aims to improve early diagnosis and treatment of hydrocephalus and distinguish hydrocephalus from huge hydrocephalus.

It is a case study of a 9 month old male child with huge hydrocephalus. The subject was studied since the day of visit for treatment and even after discharge on regular follow-ups.

Thorough case study was done of the subject since the 1st day of treatment. The size of the fontanelles was measured everyday after surgery and Glasgow Coma Scale with pupil size were noted regularly. The child was called for regular follow-ups even after discharge.

No intraoperative and early postoperative complications were seen. The patient was discharged on the 10th post operative day. Regular follow-up was done.

Keywords: Huge Hydrocephalus

## **Effect of action observation execution and motor imagery for upper extremity recovery in cognitively impaired individual post stroke.**

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### **Introduction:**

There are certain effects of action observation therapy followed by motor imagery and execution of observed action on upper extremity function in cognitive impaired individual with post stroke.

### **Methods:**

The study will use double blinded (assessor and treating physical therapist) matched pair experimental design (age +\_5 years and side of stroke). Purposive sampling technique will be used. Participants will be cognitively impaired stroke patient (both ischemic and hemorrhagic) with age between 18-66 years old.

The study will use double blinded, matched pair experimental design. The subject will be asked to observe the action on computer screen, practice motor imagery and execute that action. Both group will receive AOE but experimental group will receive additional MI. Treatment will be given 45 min per day for 5 days per week for 4 weeks.

### **Results:**

Result will be concluded comparing the data of pre intervention, post intervention (immediate post) and 1-month post intervention to see the long term effect of the intervention.

### **Keywords:**

Action observation, cognitive impaired, Post stroke

## **Flow diverters in intracranial aneurysms: a paradigm shift**

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The use of flow diverters (FDs) for treatment of intracranial aneurysms represents a major paradigm shift in neuro-endovascular therapy. Flow diversion preserves the parent artery and leads to intra-aneurysmal thrombosis following shrinkage of the aneurysmal sac. Many studies have shown the safety and efficacy of FDs in various types of intracranial aneurysms.

Here we discuss the mechanism, clinical uses, indications, possible complications and recent advances in the management of intracranial aneurysms using FDs.

We present few representative cases of aneurysms treated with FDs and their outcomes, along with few rare complications. We also discuss the possible causes behind the complications and measures to prevent those.

Literature review regarding evolution of FDs in treatment of aneurysms was done. We will discuss various aspects on the use of FDs along with representative cases.

Use of FD was found to be safe and effective in most of the cases. FDs have revolutionized the treatment of difficult aneurysms.

In conclusion, FDs have brought a major paradigm shift in the treatment of intracranial aneurysms including the most complex ones and are invaluable modality in the present neuroendovascular therapy.

Keywords: Aneurysm, Flow diverters

**Porencephaly with suprasellar dermoid cyst: Illustrative report of a rare association****Mitesh Karn. Shabal Sapkota**

Porencephalic cysts are CSF filled clefts or cystic cavities within the brain parenchyma communicating with the ventricular system. Intracranial dermoid cysts are benign midline cysts occurring due to ectodermal trapping during neural tube closure. Both porencephalic cysts and dermoid cysts are rare neurosurgical lesions. In this report, we discuss rare occurrence of both these conditions in a pediatric patient. To the best of our knowledge, this is the first reported case describing such condition in English literature.

A 14-years-old boy, born out of an unwanted pregnancy to a 15-years-old lady, presented to us with gradual painless diminution of vision. Examination revealed bilateral nystagmus and optic atrophy. Neuroimaging showed presence of a large, well-defined, white matter lined lesion on the right fronto-temporal region and a heterogenous mass in the suprasellar region. A diagnosis of porencephaly with suprasellar dermoid cyst was made.

We describe the co-existence of porencephaly with suprasellar dermoid cyst in a single patient and its presentation as optic atrophy. We have also tried to explain the mechanism for simultaneous occurrence of these two conditions and to establish a novel association for further research.

## **Nepalese Pupillary and IntraCerebral Hemorrhage (NePLICH) Score for prognosis of Intracerebral Hemorrhage**

**Mitesh Karn, Shabal Sapkota**

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### **Introduction**

ICH is a major cause of stroke with catastrophic consequences. Several tools are available to predict outcomes in ICH but Pupillary Reactivity is not considered in them. Pupillary reactivity may independently affect outcome in ICH patients and using it, along with other components of the ICH score together, might improve prognostication in ICH patients. We aim to update the audience about a nationwide study being carried out in Nepal that will try to propose a new scoring system for prognosis of Intracerebral Hemorrhage.

### **Materials and methods**

The study is nationwide prospective study including all the patients with Spontaneous ICH admitted at selected study sites across all the seven provinces of Nepal. Patients with spontaneous ICH will be included in the study and their demographic information, GCS, Site of ICH, its volume, intraventricular extension, Pupillary Information (reaction) and mortality at 30 days will be recorded. The primary outcome will be determined by telephone contact with the patient or their kin. Association between Pupillary Reactivity and other components of the ICH score will be tested against 30-day mortality using univariate and multivariate logistic regression. A new NePLICH score will be proposed and its correlation with 30-day mortality will be calculated. Net benefit with the new NePLICH score against the existing ICH score will also be calculated. A new scoring system for prognosing ICH will be created.

### **Results**

Pupillary information may influence treatment decision and predict outcomes in patients with Intracerebral Hemorrhage, but has neither been assessed properly as an independent variable nor used in the tools used to predict mortality after ICH.

### **Conclusion**

Using this information and incorporating it in the ICH score may improve its prognostic efficacy and influence treatment decisions in ICH patients.

### **Keywords**

Prognosis, Score

## **Strengthening the Neurosurgical Workforce in Nepal: Challenges and Opportunities**

**Mohan Raj Sharma**

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Of many factors responsible for a viable medical service is the availability of its well trained workforce. Nepal suffers from inadequate number of neurosurgeons. Even though the country got the first neurosurgeon in 1989, it took another 10 years to start a neurosurgery training in 1999. Now Nepal has well over 100 neurosurgeons, but we still need another 200 to meet the current need. Though there are many centers capable of providing adequate neurosurgical training, only a few offer formal education due to various reasons. In this presentation current status of neurosurgery training in Nepal are discussed along with challenges and opportunities.

### **Keywords**

Nepal, Neurosurgery, Training, Workforce

## **Difficulties in Providing Spine Care in Remote Areas of Nepal.**

**Nilam Kumar Khadka,**

Karnali Province Hospital, Surkhet, Nepal

In 2015, over half a billion people worldwide had low back pain and more than a third of a billion had neck pain of more than 3 months duration. Low back and neck pain are the leading causes of years lived with disability in most countries and age groups. In the developing and even in developed countries, spinal cord injury (SCI) is another problem faced by these populations. With the expansion of human activities, the incidence of SCI also increased gradually. The incidence varies from 13.019 per million to 163.420 per million people. Among them, the incidence rates of developed countries ranged from 13.121 to 163.420 per million people. The rates of non-developed countries varied from 13.019 to 220.022 per million people. The most important aspect of clinical care for the SCI patient is preventing complications related to disability. Supportive care has shown to decrease complications related to mobility.

Delayed access to hospital for treatment is another major observation from one of the studies of Nepal (38% patients arriving at the hospital after 48 hours of trauma). To speculate, the cause of delay can be difficult terrain, lack of proper transportation, proximity to hospital facility and financial constraints. There are lots of difficulties in providing spine care in remote areas of Nepal. The most and foremost thing is the difficult terrain, rough and mountainous, followed by lack of proper transportation, lack of accessibility of proper hospital facility and spine care set up and financial constraints.

### **Keywords**

Back pain, Spinal cord injury, spine care, remote areas, Nepal

## Pressure sore: Current Understanding and newer modalities of treatment

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### Introduction:

This paper aims to review the mechanism, symptoms, causes, severity, diagnosis, prevention and present recommendations for surgical as well as non-surgical management of pressure ulcer. Particular focus has been placed on the current understandings and the newer modalities for the treatment of pressure ulcers. This presentation also covers the role of nutrition and pressure-release devices such as cushions and mattresses as a part of the treatment algorithm for preventing and quick healing process of these wounds.

### Methods:

This is a retrospective Observational Study. The number of subjects are 260. Data were obtained retrospectively from the respective discharge files and summaries of the patient admitted. Follow-up was done in out-patient visit and by contacting via phone.

### Results:

Among the 260 patients admitted to the neurosurgery ICU over a period of 1 year, 97 developed a pressure sore, and we calculated a prevalence of 37%. Younger and middle-aged patients were the most commonly affected; 40% of these patients did not survive but in none of them was mortality attributed to the pressure ulcer directly. The most common cause of admission of these patients was trauma [road traffic accidents (65%) and fall from height (35%)], meningitis and stroke. 66% of our patients had just a single pressure area affected, most commonly the sacrum followed by trochanters and occiput. The majority were managed with dressings while 12% received surgical treatment in the form of debridement. Special dressings used for grade I and II pressure ulcers include hydrocolloid dressings, collagen dressings, and negative pressure dressings. Most of the patient had a prolonged hospital stay on an average of 48 days. At the time of discharge, of those 37% who had developed grade I bed sore had recovered. At two months, only 124 patients were followed-up. The remaining patients had either expired or were discharged and did not report for follow-up. Of the patients with stage one ulcers, 32% had healed completely at two months. This number was 16% in stage two and 7% in stage three patients. No patients with stage four ulcers had healed at two months. At discharge, 18% of all patients had healed and the same number improved or healed after discharge, but 34% worsened after discharge and needed dressing and debridement in follow-up.

### Conclusion

Bed sore is common problem seen in neurosurgical patients which has been creating nuisance to the care providers due to lack of enough research data regarding its prevention and management. Thus, with the details provided above we will be able to prevent and manage bed sores in an efficient way.

**Keywords:** current, pressure sore, treatment

## Trans-ciliary keyhole supra-orbital craniotomy for skull base pathologies: More than just “good cosmesis”

**Nishant Goyal**

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### Introduction

With advancement in instrumentation and operating microscope, it is now possible to approach many skull base lesions through a ‘band-aid’ incision on the eyebrow.

### Materials and methods

All patients who were operated by keyhole supra-orbital craniotomy by the author over one year from September 2018 to March 2021 were included in the study. Preoperative and post-operative CT and MRI scans were done for all cases of intra-cranial lesions. For the cases of aneurysms, preoperative CT and CT angiography was done and CT scan and check DSA was done post-operatively.

### Results

Nine patients (4 males, 5 females) with mean age of 34.5 years (range 11-60 years) underwent keyhole supra-orbital craniotomy during the study period. Of these, three patients had craniopharyngioma, two had ruptured aneurysm of anterior communicating artery, two had meningioma and one patient had frontal epidural abscess with frontal osteomyelitis. The patients with craniopharyngioma had good excision with removal of the cystic portion along with the cyst wall as well as the solid component. Of the three patients with aneurysm of anterior communicating artery, one was a 60 years old lady with Hunt and Hess grade II. This lady had a good outcome and the check DSA shows no residual aneurysm. The second lady was a 40 years old lady with Hunt and Hess grade IV. This patient expired on post-operative day 30 due to sepsis. The third patient was a 37 year old gentleman who presented with Hunt and Hess grade 2 +1. He had a good outcome and check DSA showed no residual aneurysm. Of the two patients with meningioma, one had olfactory groove meningioma and one had anterior third falcine meningioma. In the post-operative MRI, there was a tiny residual lesion in case of the olfactory groove meningioma. However, the patient did well and has been planned for Gamma Knife Therapy for the tiny residual lesion. In case of the falcine meningioma, the tumor was completely removed. The patient with frontal epidural abscess with osteomyelitis underwent tapping of abscess and removal of the infected frontal bone.

### Conclusion

Apart from cosmetic incision, trans-ciliary keyhole supra-orbital craniotomy provides direct access to the anterior cranial skull base with minimal retraction to the frontal lobe. The author believes it to be an excellent approach to reach till the skull base.

### Keywords

Craniotomy, Keyhole.

## Newton's Apple; Taking Advantage Of Gravity In Brain Surgery

**Paawan Bahadur Bhandari**

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### Introduction

The study is aimed to discuss the the advantages & pitfalls of optimizing patient position during surgery to take advantage of gravity in expanding the operative corridor.

### Materials and methods

This is a prospective study carried out over a period of thirty-six months. We discuss our experience in 'Optimizing' patient position using 'Not-So-Conventional' patient position during surgery of various complex brain lesions & present various case examples with operative videos.

### Results

Over a period of thirty-six months, we have used a supine position with the head placed horizontal for four intraventricular tumors, one distal anterior-cerebral artery aneurysm, one falcine meningioma & two brain metastases. Similarly, all surgeries in the cerebello-pontine angle (six tumors & eight microvascular decompressions) were performed with the patient supine & head rotated towards contralateral side. Gross total resection was achieved in all tumors & adequate decompression were performed in all neuro-vascular conflicts without the use of any fixed retractors.

### Conclusion

In the age of 'Retractorless' brain surgery, taking advantage of gravity in expanding the operative corridor to brain lesions & avoiding fixed retractors is possible with optimal patient position.

### Keywords

Patient, position.

## Treading Into Dolenc's Turf - Experience With Surgery In & Around The Cavernous Sinus

**Paawan Bahadur Bhandari**

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### Introduction

The study is aimed to discuss the the challenges & pitfalls of a 360 degree approach to lesions involving the cavernous sinus.

### Materials and methods

This is a prospective study carried out over a period of thirty months. We share our experience in dealing with different tumors in & around the cavernous sinus through either endoscopic approach or microsurgery & present various case examples with operative videos.

### Results

Over the period of thirty months, we performed endoscopic surgery in three patients with pituitary macroadenomas & microsurgery in two patient with meningiomas, one patient with sarcoma, one patient with juvenile nasal angiofibroma, one patient with round cell tumor & one patient with trigeminal schwannoma, all involving the cavernous sinus. Gross total resection was achieved in all cases except one patient with round cell malignancy.

### Conclusion

Though long considered a 'No Man's Land' in Neurosurgery, surgery of complex lesions involving the cavernous sinus is feasible through careful selection of case & appropriate approach.

### Keywords

Cavernous sinus, tumor.

## **Peripheral nerve tumors: Our experience**

**Prabin Shrestha, Manish Kolakshyapati, Sudarshan Awal, Anish Man Singh, Isha Dhungana**

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### **Introduction**

The presentation is about our experience on peripheral nerve tumor (PNT) surgery.

patients with peripheral nerve tumors

### **Materials and Method**

This is retrospective case series of PNT. This is to briefly present our surgical experience of PNTs of different types, those in limbs, brachial plexus, lumbar plexus etc. We also share our surgical experience of malignant peripheral nerve sheath tumor (MPNST) and spinal PNT mimicking spinal intra-dural (dumbbell) tumor.

### **Results**

Complete excision of PNTs was done in all the cases.

### **Conclusion**

PNT surgery is simple yet needs highly technical skill and knowledge. Complete excision is possible in majority of the cases. Surgical outcome is most often rewarding.

### **Keywords:**

Peripheral nerve tumors, Spinal tumors.

## **Intramedullary Spinal Tumor Surgery: Our Experience**

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### **Introduction**

This presentation aims to share our experience of Intramedullary Spinal Tumors (ImSTs).

### **Materials and Method**

This is a retrospective analytical case series study involving ImSTs.

### **Results**

There were thirty three ImSTs out of 107 different spinal tumors, excluding vertebral body mass like Tuberculosis (TB) and Metastatic lesions (Mets), operated in last 11 years, from 2010-2020.

Of 33 ImSTs, 17 were in cervical spine and 16 in Dorso-lumbar, 18 were females and 15 were males of 3 to 68 years of age. All the cases presented with neurological deficits and radiculopathy/myelopathy. They were 11 pilocytic astrocytomas (Gr I), 8 ependymomas, 4 inflammatory lesions, 3 astrocytomas (Gr II), 2 arachnoid cysts, 1 metastatic lesion, 1 malignant lesion-medulloblastoma, 1 ganglioglioma, 1 schwannoma and 1 epidermoid. Total follow up period was 1-10 years. Gross total resection was achieved in 25 cases and small residual was noted in 8 cases. Majority of cases improved significantly by the end of 6 months after surgery.

### **Conclusion**

Gross total removal of mass with relatively preserved neurological status could be achieved in majority. We still need to improve our skill and overall technology to give better result.

### **Keywords**

Intramedullary spinal tumor, metastatic lesion.

## **Skull Base Surgery: Single Centre personal experience**

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### **Introduction**

Skull base surgery started almost about 5 year ago routinely at Nobel Medical college, Biratnagar, Nepal. There is no documented series on skull base surgery from the institute. The aim of the present study is to reflect the first skull base series and to analyze morbidity and mortality related to disease, surgical approaches, mode of treatment from Nobel Institute of neuroscience (NINS) at Nobel Medical College teaching hospital.

### **Materials and Method**

This is a retrospective case series of consecutively treated patients over year period.

All the skull base cases including tumors and vascular irrespective of age are included.

### **Results**

In the present study we analyzed 36 patients with skull base tumors and vascular lesion operated on by single author over the period of 12 months. In the present series all the skull base lesion including pontine cavernoma , aneurysm are included. Different surgical approaches used are discussed including endoscopic trans nasal surgery. Patients clinical characteristics, surgical approaches, early outcome were analyzed and relevant literature were reviewed.

Total 36 cases were studied .There were 17 were vascular lesion mainly aneurysm and 19 skull base tumors mainly meningioma followed by pituitary tumor. Mean age of study population was 48 years ranging from 2 to 74 years. The male to female ratio was 1:1.2. Anterolateral skull base was the commonest approach .Overall all the functional improvement was achieved in about 88% and functional outcome in tumor were 94.73% .Mortality rate was 5.2%. Commonest complication encountered was infection .

### **Conclusion**

The surgical outcome of complex skull base vascular and tumor surgery can be safely performed when proper neurosurgical instruments are available along with correctly selected approaches.

Keywords:

Skull Base Surgery, Vascular Lesion

## **Nursing care of unconscious patient**

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### **Introduction**

Proper nursing care of unconscious patient determines final outcome. this study reviews about the importance of proper nursing care in unconscious patient.

### **Materials and Method**

This is retrospective descriptive study on 953 admitted case in neurosurgery.

### **Results**

Retrospective data was collected from neurosurgery department of Nepal Medical College and Teaching hospital from July 2018 to July 2021 (3 years). Among 953 cases admitted in, most of the unconscious patient gained consciousness within a month. Few patients were unconscious for more than three months. Holistic nursing care was provided to the patient. Counseling and teaching to patient parties about patient care is also done as some patients remained unconscious for a long period of time.

Total number of unconscious patients who stayed more than three months in three years duration was five. Among them three patients died due to chest infection. difficulties regarding their physical, mental and social health is mentioned along with problems of their families while taking care of them.

### **Conclusion**

Many patient in neurosurgery remain unconscious for long period of time who needs holistic nursing care as well as teaching and counseling to patient is very important. rehabilitation is another important issues that needs to be emphasized in neurosurgery patient.

### **Keywords**

Nursing care, Rehabilitation

## **Surgical techniques for the management of Trigeminal Neuralgia**

**Pranaya Shrestha, Pravesh Rajbhandari, Jessica Kayastha, Samridha Malla, Bishal Shrestha, Janam Shrestha, Basant Pant**

Annapurna Neurological Institute and Allied Sciences, Kathmandu, Nepal

### **Introduction**

Microvascular decompression (MVD) is the most preferable technique for management of TN. Percutaneous RFA is other option suitable for the patients with TN who are unfit for General Anesthesia because of the co-morbidities and recurrent TN following MVD.

### **Materials and Method**

This is retrospective study design in which we reviewed 24 cases of TN, who underwent surgical procedure for the management of TN in last 4 years.

### **Results**

The age ranged from 37 to 79 years. MVD was preferred in 16 cases and remaining 8 cases underwent RFA under fluoroscopic guidance, either due the recurrence after the MVD, being unfit for GA or because of the patient's own wish. In >2 years of follow up, all the cases have shown good result so far. Pre operative facial pain was subsided immediately in all of the cases. CSF leakage was seen in 3 of the MVD cases, one of which required dural repairing using Fascia Lata graft. One of the RFA cases required reattempting after few days because of poor visualization of Foramen Ovale.

### **Conclusion**

MVD is the most preferable technique for the management of TN, because of it's prolonged post-operative pain free period. Percutaneous RFA may be an option specially for the recurrent TN following MVD and for those who are unfit for GA, however, the facial pain may recur in shorter period of time requiring re intervention.

### **Keywords**

Microvascular decompression, RFA

## **Surgical outcome prediction according to eloquence of brain arteriovenous malformation: A retrospective study in Nepal**

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### **Introduction**

The goal of this study was to analyze the association of brain arteriovenous malformations (AVMs) location and its outcome after microsurgical excision. The relation of outcome using modified Ranklin Scale (mRS) at follow ups with respect to location of AVM.

The location of brain AVM plays key role in the neurological outcome of the patient after surgical resection. Grading schemes are used to predict the associated risk, when surgery is planned. Among the factors used in grading system, location is one of the major components.

### **Materials and Method**

Demographic data, AVM characteristics, and treatment outcomes were evaluated in 47 bAVMs treated with microsurgery between November 2009 and April 2021. For this series, 47 patients were retrospectively reviewed. The mRS was used to assess functional outcome post-surgery with respect to its location. Logistic regression analyses were performed.

### **Results**

Forty-seven patients, average age 33.4 years) with brain AVMs were included in this review. The mean AVM size was 5.5cm. The non-eloquent AVM comprised of 25.5%. The most common eloquent location was language (36.2%), sensorimotor (23.4%), visual 8.5% and coordination 6.4%. There was no statically significant difference in the baseline patient and AVM characteristics among different subtypes of eloquence. Favorable outcome (mRS 0-2) was seen on both eloquent (100% in visual) and non-eloquent AVMs. Age and AVM size were significant predictor for good overall outcome in last follow-up.

### **Conclusion**

Although the sample size of this study is a limitation, the result of our case series demonstrated excellent surgical outcome for visual eloquence, good outcome in sensorimotor and language eloquence. Coordination eloquence had worse overall outcome

### **Keywords**

Eloquence, Surgical outcome

## **Traumatic Evisceration of Brain: Management Dilemma**

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This is the details regarding the case who presented with traumatic brain evisceration. The aim is to know the current management strategies when to operate when the patient presents very late.

This is a case report of 24 year gentleman who presented with traumatic brain evisceration. Management was done conservatively initially but later on after gradual improvement, he was operated. such details are mentioned in this presentation. Patient presented with pupil dilated and GCS of 5/15(E1V1M3) on his arrival with a poor prognosis. He was managed conservatively, intubated and treated accordingly. He showed signs of improvement gradually and decompressive craniectomy and lax duraplasty was done on 3rd day of admission.

Traumatic brain evisceration is rare. management dilemma exists when patient present with low GCS and dilated fixed pupils, its hard to make tough decision as it was for us in the management of this patient.

## **Foramen Magnum Meningioma : A case report and review of literature**

**Prarthana Subedi, Prashanta Kaphle, Priajan Ale Magar , Puja Thapa , Pujan Maharjan , Rabindra Thapa**

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### **Introduction**

Foramen magnum meningiomas are rare forms of meningiomas. Among all the meningiomas, only about 1 to 3% arises at foramen magnum level. The neurological signs and symptoms are very bizarre for these meningiomas. There are very few case reports on Foramen Magnum Meningiomas in Nepal.

### **Case Presentation**

A 62 year old male with co-morbidities like, Right sided hemiparesis, Hypertension and Diabetes Mellitus II presented to the Emergency department with an increase in weakness of the right arm and leg for 2 days and Fever for 1 day. He suffered a stroke 2 years ago with right sided hemiparesis. CT images revealed a mass in the posterolateral foramen magnum area . Meningioma of Foramen magnum was suspected, which was confirmed by MRI. The tumor was excised by far lateral approach with laminectomy at the level of C1 and C2 vertebrae , the operation lasting for 8 hours. Anticipated complications were blood loss , infections and CSF leak post surgery. Follow up outcomes could not be ascertained because of the COVID lockdown

## Treatment of Cerebral Aneurysm during the COVID pandemic: Our experience at Annapurna Neurological Institute and Allied Sciences

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### Introduction

The study is done to retrospectively analyze patient characteristics and outcomes among patients diagnosed with aneurysmal subarachnoid hemorrhage during the pandemic.

### Materials and Method

Data were extracted from hospital's electronic health records for all patients diagnosed with aneurysmal SAH from the period of February 15, 2020 to May 15, 2021.

Information on patients' medical and surgical history, vitals, GCS on presentation, Hunt and Hess classification (HH), Computed Tomography (CT) finding Fisher's Classification (FC), Computed Tomography Angiography (CTA), and blood parameters were extracted for the purpose of the study. Postoperative assessment was done on the basis of modified Rankin Scale score (mRS). Descriptive statistics was used for the purpose of this study. All the values were expressed in terms of means and percentages.

### Results

A total of 75 patients were admitted with the diagnosis of aneurysmal SAH with 44% patients presenting within 48 hours of presentation while 18% had delayed presentation of more than one week. 74% patients had Hunt and Hess grade 2 or less on presentation. 84% had ruptured aneurysm on presentation. 96% underwent aneurysmal clipping while others underwent coiling. 52% patients had full functional recovery with mRS grade 2 or less; moderate to severe disability as classified by mRS grade 3 and 4 was reported in 10.6% and 6.6% patients respectively. Mortality was reported in 8% cases especially in those with delayed presentation, elderly and other preexisting comorbidities. Cerebral ischemia (14.6%) and cerebral edema (9.33%) were most frequently reported postoperative complications.

### Conclusion

Results from our study showed good outcomes in surgical patients with aneurysmal SAH at par with those reported in preCOVID era. COVID pandemic although posed initial difficulties, with proper guidelines and protocols in place, we were able to perform the emergency surgeries without risking our standards.

### Keywords

Cerebral aneurysm, SAH

## **Effectiveness of ventro-oral anterior and posterior junction thalamotomy for task specific focal hand dystonia**

**Pritam Gurung, Resha Shrestha, Sambardhan Dabadi, Raju Raj Dhungel, and Basant Pant**

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### **Introduction**

The study is done to know the safety and efficacy of ventro-oral anterior and posterior (VoA-VoP) junction thalamotomy for task specific focal hand dystonia (TSFD).

### **Materials and Method**

The study is retrospective study including cases of TSFD.

### **Results**

Four patients with TSFD underwent VoA-VoP thalamotomy at Annapurna Neurological Institute and Allied Sciences. Among 4 cases, 3 were writer's cramp and 1 was musician's dystonia. All patient were refractory to medical treatment for more than two years. Writer's cramp rating scale was used. The study included 2 men and 2 women, and the age ranged between 25 and 55years (average age 34.5). All the patients were right-handed ( 100%). The symptoms of dystonia present in all four patients with TSFD completely disappeared following the selective lesioning of the thalamic VoA-VoP junction nucleus. The lesion was detectable on MRI T2- and DWI image after the procedure.

### **Conclusion**

VoA-VoP junction thalamotomy is a feasible and reasonable treatment for patients with refractory task-specific focal hand dystonias.

### **Keywords**

Task specific focal hand dystonia, Thalamotomy

## **Role of Pallidotomy in Status Dystonicus**

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The study is done to know the outcomes of pallidotomy in acute setting of status dystonicus(SD) and complications associated with the procedure. Patients of any age with status dystonicus were included in the study. From 2014-2020, GPi pallidotomy was done in five patients with status dystonicus. Etiology of SD, Rate of termination of SD, time to best response, adverse events were studied. GPi pallidotomy was done by direct visualization. Total of five patients underwent bilateral GPi pallidotomy for SD. Mean age of study group was  $13.2 \pm 6.3$  years. SD was terminated in all patients and weaned off from ventilatory support.

Our experience suggests that bilateral pallidotomy can be considered in selected patients for the control of status dystonicus.

Keywords: Pallidotomy, status dystonicus

## **Pediatric traumatic thoracolumbar spondyloptosis : a series of 7 patients**

**Raj Ghoniya, Amandeep Kumar, Pankaj Kumar Singh, Dattaraj Sawarkar, Satish Verma, Sarat P Chandra, Shashank Sharad Kale**

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This study enlightens readers about this rare but severest form of pediatric thoracolumbar spine injury and its management.

It is a retrospective study. Seven children, ranging from 9 to 18 years (mean years) age were included in the study. Five patients had spondyloptosis at thoracolumbar junction and one each in lumbar and thoracic spine. Retrospective analysis of patients treated here with spondyloptosis between 2008 to 2016 was done.

All patients underwent single stage posterior surgical reduction and fixation except one patient who refused surgery. Intraoperatively, cord transection was seen in 5 patients while dura was intact in one patient. The mean follow up period was 17 months (1-36 months) during which one patient expired due to complications arising from bed sores. All patients remained ASIA A neurologically.

Pediatric traumatic spondyloptosis is a challenging proposition to treat and the aim of surgery is to stabilize the spine. Rehabilitation remains the most crucial but neglected part and dearth of proper rehabilitation centres inflict high mortality and morbidity in developing countries.

Keywords: Pediatric, thoracolumbar spondyloptosis

ABSTRACT BOOK

## **Correlation between clinicopathological features and surgical outcome in Spinal Tumors**

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### **Introduction**

Spinal Cord Tumors are ten times less frequent than intracranial tumors with the majority of them being benign. The objective of this study was to correlate the clinicopathological features and surgical outcomes of spinal cord tumors. A series of fifty patients treated according to the principles of aggressive total resection, especially trying to correlate preoperative neurological condition, the surgeon intraoperative impression concerning resection extent and functional recovery at National Academy of Medical Sciences, Kathmandu, Nepal.

### **Materials and Methods**

A Non-randomized prospective observational, clinical hospital-based study

All cases of spinal cord tumors were admitted to the Department of Neurosurgery, National Academy of Medical Sciences, Bir Hospital, Kathmandu in the duration of one year.

A Non-randomized prospective observational, clinical hospital-based study was conducted among 50 patients who were admitted to the Department of Neurosurgery of the National Academy of Medical Sciences, Kathmandu, Nepal. Informed consent was obtained from the patients. The demographic data and relevant variables were collected using a predesigned proforma. For the assessment of correlates, regression analyses were done using SPSS v 23.0. The p-value 0.05 was considered statistically significant.

### **Results**

In this study, 50 patients were included. Patients were of age 16 to 77 years with a mean age of 43.62 years. There was male predominant with male to female ratio of 2:1. The most common location was Intradural extramedullary. We compared Frankel's score and McCormick's Grading System with preoperative and post-op assessments. There was a significant relationship seen between Frankel's score and McCormick's Grading system.

### **Conclusion**

Surgery is the primary treatment in the majority of spinal cord tumors. Predictors of outcome include preoperative functional status (limited to no neurologic deficit predicts for better outcome), histological grade of the tumor (lower grade predicts for improved survival), and extent of surgical resection (image verified complete resection improves survival).

**Keywords:** clinicopathological features, spinal tumor

## Predictors of Post Traumatic Hydrocephalus in tertiary centre

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### Introduction

Post traumatic hydrocephalus (PTH) is a commonest treatable and serious complication that follow traumatic brain injury (TBI). We have revealed the development of PTH frequently seen in patients with TBI and after decompressive craniectomy (DC). The aim of this study was to identify predictors of the patients who were developed PTH and their outcome after V.P. shunt.

### Materials and Methods

Our retrospective study was conducted in National Trauma Center/ Bir Hospital, NAMS on the basis of clinical and radiological examination of the patient between during 2016 to 2021. Both clinical and radiological predictors of hospitalized patients were studied. These PTH cases were treated by medium pressure ventriculoperitoneal shunt (V.P shunt) and outcome was analysed.

### Results

We found 39 cases of PTH. Among them, 28 (71.79%) and 11(28.2%) were male and female respectively. Incidence of PTH in our study is (2.26%, 39/1723). Patients Middle Ages group was 60%. Coexisting injuries were found in 25% of the patients aggravated the prognosis. 55 % of cases were traffic accidents which were the most common mode of injury. Acute subdural hematoma (SDH) was the most common finding on C.T scan in 18 cases (46.15 %). Decompressive craniectomy was performed in 79.48% at time of initial trauma. CT scan findings revealed that patients with Subarachnoid hemorrhage, intraventricular hemorrhage and subdural hygroma, alter cisterna ambiens, the long duration of comatous state and intracranial infection were very important prognostic factors in TBI. PTH had favourable outcome with V.P. shunting.

### Conclusion

The age of the patient, GCS at admission, the long duration of comatous state, postoperative meningitis, Severe head injury, CT scanning at admission with diffuse SAH, ventricular extension, disappearance of cisterna ambiens, and CT scanning with hygroma in older age were significant predictors of outcome.

**Keywords:** Post traumatic hydrocephalus, tertiary care

## **Frame-based versus Frameless Stereotactic Brain Biopsies**

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Stereotactic brain biopsies have been increasing procedures because of its accuracy. Stereotactic Brain biopsies can be done with and without frame. Objective of this meta analysis is to compare yield and safety of each of these techniques.

This is a prospective study of 68 cases of brain biopsies, 18 procedures were performed using the frame while rest were performed without frame. Study was conducted at National Academy Of Medical Sciences, Bir Hospital. Primary objective was diagnostic yield and secondary outcome included intracranial hemorrhage, seizure and need of rebiopsy.

A total of 68 stereotactic brain biopsies were included in this study. The result did not show any significant difference between the two stereotactic systems.

Both frame-based and frameless stereotactic procedures are safe and effective for brain biopsies.

**Keywords:** Frame-based, frameless, stereotactic

## Keyhole cranial Neurosurgery: Concepts, Scope and Experience

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### Introduction

This study aims to discuss the scope and spectrum of Keyhole cranial approaches. It helps to effectively treat pathology with minimal disturbance of normal anatomy, leaving “the smallest footprint” is the basic tenet of the surgery. With recent technical advances, majority of the brain pathologies can be managed surgically with these keyhole principles using as small as 2.5cm cranial opening.

### Materials and Methods

Cranial Keyhole procedures performed over last 15 years by the author are discussed

Supra orbital keyhole cranial approaches, navigation guided supra tentorial lobar craniotomies, parasagittal approaches, contralateral trans falcine or tentorial approaches, keyhole basi temporal middle fossa approaches and retro sigmoid keyhole approaches performed by the author are included in this study. Microscope and neuroendoscopes were used where ever they are required.

### Results

Over last 15 years, author performed 680 cases of keyhole cranial procedures without major added post-operative deficits. Navigation guided mini craniotomy (lobar lesions, parasagittal lesions, intra ventricular procedures, para falcine lesions, middle fossa lesions) was performed in 330 patients, supra orbital keyhole craniotomy in 225 cases and keyhole CP angle approaches in 125 cases. Age ranged between 9 to 78 years.

### Conclusion

With advanced equipment and good surgical skills, majority of brain pathologies which are reasonably small in size can be managed with keyhole cranial approaches. These approached require special tools like navigation, endoscope and few shaft like instruments along with standard microscopic set up. In properly selected cases, one can perform an effective keyhole surgery without added deficits.

**Keywords:** cranial, keyhole, neurosurgery

## Role of Nurses in Pediatric Neurosurgery

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### Introduction

Specialized area of nursing practice includes preventive, promotive, curative and rehabilitative care of neurological pediatric patient. This presentation reviews about the method of investigation, treatment modalities, nursing care, physiotherapy as well as good outcome in children.

### Materials and Method

This is a retrospective study conducted at Neurosurgery department of Nepal Medical College Teaching Hospital, Kathmandu Nepal from July 2018 to July 2021(3years).

A total of 188 patient data were collected from medical records of Nepal Medical college. The age ranged between 1 day to 18 years. Among these, 69% were male and 31% females. Out of these cases, 110(56%) had Head injury, 24(13%) had Meningomyelocele, 18(10%) had Hydrocephalus, 12(6%) had seizure, 8(4%) had Spinal injury, 6/6(3%) had Meningocele and Tumor, and 4(2%) had Meningitis. Among these cases, 67% were recovered from conservative management and 33% needed operative management. 165 (88%) patients were discharged after making satisfactory recovery, 19 (10%) cases went home on their request with medical advice, 3(1.5%) were refer to another hospital and 1(0.5%) expired.

### Conclusion

Children are different from adults and they need special care with trained staff. Pediatric nursing care is also family-centered care. So continued education and counseling is required. As the fall from height was the main cause of admission, if the parents were given good attention we may be able to minimize lot of injuries pediatric patients.

### Keywords

Pediatric, Surgical management.

## Impact of Frailty on short-term outcomes following aneurysmal subarachnoid hemorrhage : A novel scoring system

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### Introduction

This study attempts to determine the short-term outcomes at discharge following aneurysmal SAH (aSAH). We also aim to compare frailty versus chronological age as predictor of these outcomes.

### Materials and Method

This was a retrospective study of patients with aSAH admitted at our institute from 2009 to 2019. Data regarding the clinical and radiological characteristics as well as surgical outcomes were collected from the institute's electronic database. Frailty was estimated using the 11-point modified frailty index (mFI-11).

### Results

A total of 953 aSAH patients were divided into three groups: robust, with an mFI score of 0 (380, 39.87 %); moderately frail, with an mFI score of 1 or 2 (369, 38.72%) and severely frail 204 (21.41%), with an mFI score  $\geq 3$ . There was a significant correlation between age group and frailty category (p 0.001). Frail patients had higher Hunt & Hess grade (HH) (p 0.001), modified fischer grade (p 0.001) and WFNS grade (p 0.001). Severely frail patients were significantly more likely to have worse mRS at discharge (p 0.001), higher in-hospital mortality (p 0.001) and higher complication rates (p 0.001). On multivariate regression analysis, frailty category (OR 2.21; 95 % CI 1.5-3.3), WFNS grade (OR 1.7; 95% CI 1.3-2.2) and modified fischer grade (OR 1.5; 95% CI 1.16-1.96) were found to be independent predictors of in-hospital mortality. A scoring system was developed using these three parameters which predicted in-hospital mortality with a sensitivity 87.09% and specificity of 78.19%.

### Conclusion

Frailty is a better predictor of short-term outcomes including in-hospital mortality and complication rates as compared to the chronological age of the patient. Along with clinical (WFNS grade) and radiological (modified fischer grade) parameters, frailty can predict in-hospital mortality with significant accuracy.

### Keywords

Aneurysmal subarachnoid hemorrhage, frailty

**Deep Brain Stimulation Versus Lesioning in Parkinsons disease in Nepal****Resha Shrestha, Pritam Gurung, Pranaya Shrestha, Pravesh Rajbhandari, Sudan Dhakal, Samir Acharya, Sambardhan Dawadi, Raju Dhungel, Basant Pant**

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**Introduction**

Surgical treatment of Parkinsons disease (PD) is already an established mode of treatment. Both Deep brain stimulation and Lesioning (pallidotomy) surgeries can be used in PD. The targets for DBS are either Subthalamic nucleus(STN) or Globus pallidus internus(GPi).

**Materials and Methods**

All the patients who underwent either DBS or lesioning for idiopathic Parkinsons disease in Annapurna Neurological institute and Allied Sciences from 2014 to till date were included in this study. The demographics and their clinical status were measured in terms of Unified Parkinsons Disease Rating Score(UPDRS). For DBS we used Brio rechargeable system and Scene ray. For lesioning we used Cosman RF generator with 0.75mm diameter with 2 mm exposed tips. The decision for DBS and lesioning was based on patients' preference and affordability. In cases of Pallidotomy we used staged lesioning with at least three months gap in most of the cases.

**Results**

There were total of fifty four cases out of which 24 cases were DBS and 30 cases were that of lesioning. There were total of 39 male(68.9%) and 15 female(31.1%) patients. The mean age of patients in DBS was 60.4 years and in Lesioning was 55.2 years(p value 0.96). The mean preoperative UPDRS in DBS was 61 and in lesioning was 63 . Mean postoperative UPDRS was 22 in DBS group and 16 in lesioning group(p value<0.05). Mean change in UPDRS in DBS 63% and was 74% in lesioning. (p value = 0.47). Mean duration of illness in DBS group was 6.4 years and that in lesioning was 6.8 years( p =0.64). Mean surgical time in DBS was 6.1 hours and in lesioning was 1.5 hrs.

**Conclusion**

Though DBS is more popular than lesioning nowadays, our results show that there is no significant difference in improvements in terms of UPDRS score. We still believe that lesioning has a definite place in PD and it is cheaper and does not require time consuming battery adjustment.

**Keywords:** DBS, Lesioning, Parkinsons disease

## Should we avoid surgery in left sided stroke?

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### Introduction

Neurosurgeons generally tend to avoid surgery on left side as outcome is considered not favorable. Conservative management is the preferred modality of treatment for most of left sided stroke in the current practice. However the question always arises regarding whether surgical interventions be really avoided in such cases?

### Materials and Method

We retrospectively studied patients admitted in both neurosurgery and neuromedicine departments from 2070 to 2077 presenting with both right and left sided ischemic as well as haemorrhagic stroke. We compared their outcomes in terms of mRS scores at 6month and 1year of discharge in those managed conservatively as well as operatively. Data analysis and comparison were done using SPSS.

### Results

Total of 397 patients were included in the study with mean age of 53.60 years and 63.20% males. 231 haemorrhagic and 88 ischemic strokes of left side were compared with 70 haemorrhagic and 8 ischemic strokes of right side. Outcomes following surgery was comparable for hemorrhagic stroke irrespective of side. There was no significant difference in outcome for hemorrhagic stroke irrespective of side (mRS scores at 6months ( $p=0.297$ ) and 1year ( $p=0.544$ )). However there was better outcome in right side ischemic stroke (mRS scores at 6months ( $p=0.043$ ) and 1year ( $p=0.029$ )).

### Conclusion

Surgical intervention when indicated for left side hemorrhagic stroke is equally safe and outcome is also comparable but for ischemic stroke, outcome is favorable for right side.

### Keywords

Left sided stroke, Surgery

## **Management of intraoperative dural tear during Anterior cervical decompression**

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The aim is to present the risk factors, surgical nuances and management of this rare complication. This is a case-based discussion

OPLL surgery by anterior approach has the highest risk of dural tear. Protocol based management helps.

**Keywords:** anterior cervical decompression, dural tear

## **Cranioplasty in patients with cranial defects using 3D molded cranial implant.**

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### **Introduction**

This article aims to share our experience on the use of 3D printed customized (patient specific) implants for the cranial defect repair.

### **Materials and Methods**

The retrospective analysis of the patient who underwent customized PMMA based 3D printed implants for repair of the cranial defect are analyzed. Patients who underwent decompressive craniectomy or had cranial defect due to some other factors.

The implants can be designed using a computed tomography (CT) images taken at 1mm slice thickness. The CT images in dicom format is 3D reconstructed using the DICOM application. The 3D model is then imported to 3D designing application, necessary adjustment and manipulation is done to cover up the cranial defect, maintaining the symmetricity of the skull. The model is then printed and silicone molded. The mold is filled with poly-methyl methacrylate (PMMA) to create an implantable bone.

### **Results**

Till date 20 patients have undergone customized 3D printed bone implant. The average age of the patients was 35 years (3 to 70 years). Cranial contour and approximation of the margins were excellent and aesthetic appearance improved in all patients. No any major complication were noted in the patient with the implant.

### **Conclusion**

Low-cost customized PMMA implant made using digital 3D printer mold is related with reconstruction of the deformed skull contour, which has given satisfactory results to the patient and their family members, at a low cost compared with other commercially available implants. This technique has a lot to explore on and could be a breakthrough in cranioplasty.

### **Keywords:**

Cranioplasty, Implant

## **Lumbar disc herniation in young adults**

**Samir Acharya, Pranaya Shrestha, Sudan Dhakal, Pravesh Rajbhandari, Resha Shrestha , Pritam Gurung, Basant Pant**

Annapurna Neurological Institute and Allied Sciences

### **Introduction**

The study is done to know the possible features of lumbar disc herniation in young adults.

### **Methodology**

With an aim to study lumbar disc herniation in the young adult (14-30 years); 141 cases who had underwent surgery in Annapurna Neurological Institute and Allied Sciences, Kathmandu were analysed retrospectively. The data of the patient from the period of January 2016 to September 2021, who had underwent microdiscectomy were studied.

### **Results**

The study included 91 men and 50 women, and the age ranged between 14 and 30 years (average age 25.6). Five percent had cauda equine syndrome and 2.8% had recurrence. One patient had a history of trauma. The average day of stay in hospital was 6. The L4-L5 and L5-S1 level was equally involved with 47% and 46% respectively.

### **Conclusion**

Surgical treatment is indicated in those patients with incapacitating persistent low back pain or radicular pain that lasted more than 6 weeks, despite rest and medication.

### **Keywords**

Lumbar disc herniation, Microdiscectomy

## **Role of continuous cisternal drainage in prevention of hydrocephalus following intracranial surgeries**

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### **Introduction**

The study is done to determine the role of continuous cisternal drainage in prevention of hydrocephalus following intracranial surgeries.

### **Materials and Method**

The study is done in patients who underwent major intracranial surgery with continuous cisternal drainage. We conducted a retrospective study. Ethical approval was taken from institution ethical committee. 172 patients who underwent major intracranial surgeries with continuous cisternal drainage were included in the study. The patients were divided into 3 groups: traumatic brain injury (TBI) group, aneurysmal subarachnoid hemorrhage (SAH) group and non TBI non SAH group. Each group was studied for demographic profile and observed for hydrocephalus. The data was analysed with the help of SPSS version 21 and p value 0.05 was considered as significant.

### **Results**

A total of 172 patients were included in the study according to inclusion criteria. There were 76 patients in the traumatic brain injury group, 48 patients in the aneurysmal SAH group and 48 patients in the non trauma non SAH group. A total of 15 patients (8.72%) developed hydrocephalus in the post operative period. 73 patients in TBI group (p value=0.048), 43 patients in aneurysmal SAH group (p value= 0.624) and 41 patients in non TBI non SAH group (p value=0.09) did not develop hydrocephalus in the postoperative period. 9 patients underwent temporary CSF diversion and 6 patients underwent permanent CSF diversion.

### **Conclusion**

Continuous cisternal drainage is an important procedure in preventing the development of hydrocephalus following surgery in the traumatic brain injury patients.

### **Keywords**

Hydrocephalus, Traumatic brain injury

## **The practice of treating Chronic Sub-Dural hematoma among Neurosurgeons in Nepal: A nationwide survey**

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### **Introduction**

The study is done to investigate the practice of neurosurgeons regarding the treatment of chronic subdural hematoma in Nepal.

### **Materials and method**

The study is quantitative observational study using internet questionnaire amongst neurosurgeons of Nepal. The questionnaire was distributed through the internet to registered members of the Neurosurgical Society of Nepal (NESON) from 1st April 2020 to March 31st, 2021. The Questionnaire included the duration of practice, preferred method of treatment either using single/double burr holes, twist drill or craniotomy, number of cases operated annually, size and number of burr hole(s) made, placement of drain, washing of subdural space, placement of head position after surgery, use of prophylactic antiepileptic drugs (AEDs), perioperative antibiotic use and preference of postoperative CT scan. The study was approved by the Institutional Review Board of the Institute of Medicine, Kathmandu. Implied Consent was considered as the answer was submitted. The requirement of informed consent was waived because of the anonymous nature of the data.

### **Results**

Fifty of all registered neurosurgeons participated. The majority of them had been practicing neurosurgery for 5 -10 years. 3/4th of surgeons preferred a single burr hole to double burr holes. None used twist drill craniostomy or Minicraniotomy ever. The majority of the surgeons managed up to 50 cases annually. Most preferred the size of the burr hole about 2.5cm. The majority of the surgeons did not place any kind of drain. All of the surgeons washed the subdural space with Normal Saline. Only a very few surgeons did not prefer placing the head flat post-operatively, in the rest, half placed the head flat for 24 hours and a half for 48 hours. Only a third gave post-operative prophylactic AEDs. The majority used perioperative antibiotics for up to 7 days. Half of all did a post-operative CT only if the patient was symptomatic.

### **Conclusion**

There is wide variation in the management of chronic subdural hematoma in Nepal.

### **Keywords:**

Chronic subdural hematoma, Neurosurgeons.

## **Role of Physiotherapy in Neurosurgical Patients**

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### **Introduction**

The progress and outcome of most of the neurosurgical problems specially those with neurological deficits largely depends on initiation, continuation and aggressive of Physiotherapy Treatment. the main objective of this presentation is to make all aware about the role of physiotherapy.

### **Materials and method**

Study is Descriptive and data taken at Department of Neurosurgery of Nepal Medical Collage Teaching Hospital, Kathmandu, Nepal from July, 2018 to July 2021

### **Results**

Total no. of cases admitted is 953. Neurosurgical department have so many cases for the intervention. They have different problems. To gain the maximum functions of the patient's physiotherapy intervention is done. Physiotherapy treatment helps them to regain their functions.

### **Conclusion**

Physiotherapy Treatment is very important in Neurosurgical Patients which helps to achieve the maximum functions of the patients.

### **Keywords:**

Physiotherapy, Neurosurgical patients

## **Nursing care of patient with CVP line**

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CVP insertion procedure is important in our neurosurgery department. CVP line is inserted by our senior doctors and we nurses have important role in caring of CVP line by providing proper nursing care, preventing from complications and infections. the objective is to know the role of nursing care in CVP line, post care and preventing CVP complication. This Data was collected from neurosurgery department of Nepal Medical College Teaching Hospital (NMCTH) Jorpati, Kathmandu-Nepal from April 2020 to July 2021(1year) by using simple retrospective observational method where total number of patient admitted were 133 and total number of CVP line inserted case were 30.

While inserting CVP line sometime there can be immediate and delayed complications due to CVP insertion like bleeding, hemothorax or pneumothorax and infections. In our unit as a result of CVP insertion complication there was 1 case of pneumothorax out of 30 CVP insertion case.

A central venous line can be very useful and effective in neurosurgery patient for prolong IV access use if placed and maintained properly by minimizing the risk of complications and providing proper nursing care by doctors and nurses.

**Keywords:**

CVP, Neurosurgery

## Assessing the clinical and socioeconomical perspective of patients leaving against medical advice

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### Introduction

Leave Against Medical Advice (LAMA), also referred to as Discharge Against Medical Advice (DAMA) refers to the behavior of patients and/or their families to terminate their treatments and leave the hospital ignoring their physicians' permissions. LAMA is a common concerning problem that challenges hospital staff and increases the risk of adverse clinical outcomes. It is a common problem in the health-care system globally. Available data suggest that patients discharged against medical advice have an increased risk of hospital readmission, potential morbidity, increased economic costs and even sudden death.

### Materials

A prospective study was carried out at Gandaki Medical College to establish the baseline prevalence of LAMA cases, including the epidemiology, clinical profile and reasons for discharge AMA from the department of Neurosurgery and comparing this with discharged against medical advices from other departments.. This data was collected in a structured proforma and served to fulfill the paucity of data regarding LAMA cases and helped develop necessary policies and interventions in this regard.

The study was conducted in the patients who were discharged or who left against medical advices during the 6 month study period at seven different departments of the college.

Considering a very small size of the study population, a census method was applied to include all the patients meeting our inclusion criteria.

### Results

Of 150 patients with mean age 50.55, and almost equal male:female ratio, 70% of patients were above 30 years old. Almost 50% patients were from Kaski district with 44% being illiterate and around 60% being unemployed. Half of these patients were admitted in ICU with 11.3% being on ventilators. Most discharged against medical advices were encountered in department of Medicine (39.3%) followed by department of Neurosurgery (29.3%).90% of patients did not have insurance status with financial cause (42.7 %) being most common reason for Leaving Against Medical Advices. The decision for discharge against medical advices was made by family members in most instances.

### Conclusion

This study described the epidemiological characteristics and clinical profile of patients leaving against medical advices. It also assessed the reasons for LAMA among different departments.

### Keywords

LAMA, Socioeconomic

## Ondine Curse In Neurosurgery

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Ondine Curse, defined as central hypoventilation syndrome, is a rare post operative complication encountered in neurosurgery. We describe a case of central sleep apnea after posterior fossa craniectomy for excision of hemangioblastoma in a lady.

A 56 year old lady attended neurosurgery OPD complaining of progressive difficulty in swallowing since 2 month associated with weakness of left side of body and tingling sensation of her lower extremities. MRI showed enhanced mass in the posterior fossa. Posterior fossa decompressive craniectomy followed by excision of tumor done under general anaesthesia. Histopathologically, it was diagnosed as Hemangioblastoma.

Though the surgery was uneventful, our patient showed evidence of sleep apnea which failed to be managed conservatively using respiratory stimulants and tracheostomy.

Ondine curse can be considered as one of the rare complication of posterior fossa craniectomy.

**Keywords:**

Ondine Curse, Posterior fossa.

## **Aneurysmal SAH: Intra-Operative Nursing Challenges and Management.**

**Sindhu Gautam**

**NAMS**

### **Introduction**

SAH is bleeding into the subarachnoid space (space between Arachnoid and Pia matter from the cerebral arteries. Cerebral Aneurysm is an abnormal widening or ballooning of a portion of an artery due to weakened in the wall of the blood vessel. The role of nursing preparedness (pre-operative and intra-operative) is vital and they should be competent experienced and educated well about the surgical procedures and care to minimize the surgery associated complications and infections. This study aims to identify pre-operative and intra-operative care of patient undergoing craniotomy for surgical/clipping along with the operating team members.

### **Methods**

This is a prospective study conducted at NAMS, Bir Hospital from 2020 to Oct 2021. During this period total 33 case of cerebral artery aneurysm were surgically treated which include 27 elective and 6 emergency surgeries. All the cases were carefully observer to identify the major nursing responsibilities.

### **Findings**

Among 33 cases, 22 patients were female and 11 were male and most of people were aged above 50 years. The most common site of cerebral aneurysm was A Com. aneurysm (42.42%). Through this study, we found that the pre-operative nursing responsibilities included ensuring fully equipped room with functioning equipment, ensuring comfort and safety to the patient, assisting in application of monitoring device, catheterization and positioning of patient and performing WHO safety checklist. Also the intra-operative nursing responsibilities included preparations of all required instruments and micro instruments, suction tips, drill, cautery machine and aneurysm clip etc. Preparedness of hemostatic agents, cotton patties, draping of microscope, continuous monitoring the microscopes monitors so that instant management can be done in case of emergency, observing the time of application of temporary clips and ensuring permanent clips are functioning, provision of needed sutures materials for closure.

### **Conclusion**

Nurses play a vital role during the surgeries. In addition, pre-operative and intra-operative nursing preparedness plays an important role for successful and smooth operation of cerebral aneurysm surgery.

## Stroke care in Nepal- Initial Results of Endovascular Management of Acute Stroke patients with Large vessels occlusion in Nepal.

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### Introduction

Endovascular therapy has become the mainstay of treatment of acute ischemic stroke (AIS) due to large vessel occlusion. A direct aspiration first pass technique (ADAPT) using large bore aspiration catheters has been introduced as a rapid, simple method for achieving good revascularization and good clinical outcomes. The aim of this study was to assess the safety and efficacy of ADAPT in the treatment of AIS due to large vessel occlusion in the Nepali patient population.

### Materials and Method

All consecutive patients of AIS due to large vessel occlusion who underwent mechanical thrombectomy were included in the study. Retrospective data were collected for all consecutive patients treated for AIS with ADAPT from March 2019 through January 2021 at 2 hospitals. Outcomes were successful revascularization (modified thrombolysis in cerebral infarction score of 2b-3), time to revascularization, procedural complications, and good clinical outcome (modified Rankin Scale score of 0-2) and mortality at 90 days.

### Results

Sixty-eight patients treated for AIS with ADAPT were included. The median National Institutes of Health Stroke Scale score at presentation was 13 (IQR 10-13.25). The median time from arterial puncture to revascularization was 40 minutes (IQR 30-45). Successful revascularization was achieved in 54 patients (79.4%). No cases of symptomatic intracranial hemorrhage occurred. Good clinical outcome at 90 days was achieved in 57 patients (83.8%), and the mortality rate at 90 days was 4 of 68 patients (5.9%).

### Conclusion

Primary thromboaspiration technique utilizing large bore aspiration catheters appears to be a fast, simple, safe, and effective method for the management of acute ischemic stroke in the Nepalese patient population.

### Keywords:

Endovascular, Stroke

## **Treatment strategy in the management of high grade glioma**

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Gliomas are the most common primary brain tumor in adult. Fifty to 70% are of high grade glioma. Overall prognosis of the high grade glioma is always guarded; however individualized treatment plan may give maximum benefit in a particular patient with respect to survival and quality of life. Considering the location, extent, age of the patient and other co-morbidities we clearly offer three initial treatment options viz. no intervention at all, only biopsy and safe maximum resection. Whenever there is diagnostic dilemma MR spectroscopy might give an idea about if it is a neoplastic or non-neoplastic lesion. Pre operative investigations such as functional MRI(fMRI) are very helpful while operating the tumor at eloquent areas. Awake craniotomy has also great role in the resection of tumor lying at eloquent areas. Rapid intraoperative diagnosis of the tumor by crush smear cytology or frozen section helps the surgeon to plan the extent of surgery and modify it accordingly. Intraoperative monitoring of motor evoked potentials (MEPs) has been reported to be useful for preventing postoperative motor dysfunction for glioma locating near pyramidal tract. Immunohistochemical(IHC), molecular and genetic studies of the tumor sample provides further detail information about the characteristics of tumor which will guide in the further adjuvant therapy.

### **Keywords:**

Glioma, Tumor

## **Lumboperitoneal (LP) Shunt : Alternative to VP shunt**

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### **Introduction**

Lumboperitoneal (LP) Shunt is a minimally invasive neurosurgical procedure, in which cerebrospinal fluid (CSF) from lumbar thecal sac is diverted into peritoneal cavity. LP shunt has an advantage of being totally extra-cranial procedure and is an alternative procedure to Ventriculoperitoneal (VP) shunt. It is indicated in large number of conditions of hydrocephalus except the obstructive one.

### **Materials and Method**

This is a retrospective case series study of Lumboperitoneal (LP) Shunt. This is a routine procedure in our center. Here we present our experience of LP shunt for various indications. In most of cases, MRI brain and MRI screening of whole spine was done preoperatively. We use Chhabra Lumboperitoneal Shunt system with touhey needle in every case. Three small incisions are made, one over lumbar spinous process of L3-S1 region, one in flank region and another in abdominal paraumbilical region. Immediate postoperative x-ray of lumbar spine are routinely done in every cases to confirm the location of shunt.

### **Results**

It has been found to be effective and useful and no significant complications have been encountered in our experience.

### **Conclusion**

LP shunts are safer and have less complications and less rate of revision. Therefore, LP shunt can be an alternative procedure to VP shunt in treatment of various types of communicating hydrocephalus.

### **Keywords:**

LP Shunt, VP Shunt

## Review of Decompressive Craniectomy in Nepal Medical College Teaching Hospital

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### Introduction

The objective of this study is to review the outcome of decompressive craniectomy based on Glasgow Outcome Scale (GOS). This study also helps evaluate the significance of decompressive craniectomy in malignant cerebral infarction. This study also mentions about the early complication of decompressive craniectomy.

### Materials and Method

This is a retrospective observational study. Total no of patient undergoing decompressive craniectomy is 23 in our hospital during the study period. All patient who underwent decompressive craniectomy from 1st January 2020 till 30 September 2021 were included.

Data was obtained from medical records available in the hospital Functional outcome was assessed using Glasgow outcome score.

### Results

Of the 23 decompressive craniectomies, majority was male (71.7%) with mean age of 47. The most common mode of injury was traumatic (18). GCS score  $>8$  at presentation (72.2%, P 0.001), bilaterally intact pupillary reflexes (75%), Marshall grade injury  $\leq 3$ , and age 50 years (50%) were significantly associated with favorable outcome. Procedure-related complications were seen in 35%. Complications were described as wound infection (12), meningitis(5), Hydrocephalus (5), swelling of the contralateral lesions (5.3%) and CSF leak (10%). 2 had inhospital mortality.

Favorable outcome was seen in young age, higher GCS score at presentation ( $>8$ ), intact pupillary reflexes, and lower Marshall grade injuries. All 3 of our patients undergoing decompressive craniectomy for malignant cerebral infarction survived so it supports operative management for malignant cerebral infarction. Further follow up studies are required.

### Keywords

Decompressive craniectomy, Operative management.

## **Review of Tracheostomy in Neurosurgery ICU in Nepal Medical College and Teaching Hospital**

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### **Introduction**

This study reviews about the perioperative and postoperative complications of NMC neurosurgery patient who underwent tracheostomy. this study also reviews about the preventive method and ways to handle the complication of tracheostomy.

### **Materials and Method**

Study is Descriptive and data taken at Department of Neurosurgery of Nepal Medical Teaching Hospital, Kathmandu, Nepal Out of 980 admitted Neurosurgery patient, 13 underwent tracheostomy. perioperative and postoperative complication data were obtained from medical records.

### **Results**

The average length of ICU stay is 12days post tracheostomy with length of hospital stay ranging from 25 days to 4months. The length of tracheostomy tube in situ ranges from 15 to 4months. Procedure related complications include 1 tracheostomy site hematoma. 10 had pneumonia most commonly Klebsiella being the organism which subsided with chest physiotherapy and nebulization with strong antibiotics. subcutaneous emphysema and stoma site infection were observed in 2 patient each. Two cases (15%) developed obstruction and were reintubated, however tracheostomy was reinserted later on. Despite the complication 11(92%) cases were able to wean off the mechanical ventilator.

### **Conclusion**

Although majority of patient were able to wean off the mechanical ventilator, tracheostomy is associated with complications. Such complications are managed effectively when all necessary supplies are readily available at the bedside.

### **Keywords**

Tracheostomy, Neurosurgery

## **A new stereotactic target for movement disorders and beyond: Forel area/pallidothalamic tract**

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For stereotactic treatment of movement disorders, several targets like Vim thalamus, Vo thalamus, subthalamic nucleus (STN), and internal globus pallidum (GPi) have been used for many years and their clinical efficacy is well accepted. These targets are basically classified belonging to the cerebello-thalamo-cortical pathway (CTC) and pallido-thalamo-cortical pathway (PTC). CTC is used mainly for control of tremor and PTC for parkinsonism and dystonia. In PTC, there are two outputs from GPi to the thalamus; ansa lenticular (AL) is and lenticular fasciculus (LF). In the traditional GPi operations, the area of AL output is targeted, and this area is close to the optic tract and the internal capsule, and therefore surgical complications such as visual field defect and dysarthria are major concern. AL and LF have a unique fibers course running around the STN, and unite together at the dorso-medial aspects of STN that is called Forel H area. By targeting this Forel area, we can interrupt more outputs from GPi to Vo thalamus, and we expect more robust clinical improvement. This target is far from OT and IC, and can be done even under general anesthesia. We call the operation pallidothalamic tractotomy (PTT). We have finished PTT clinical studies in patients with dystonia and now started a study for intractable epilepsy. This target is not new. In 1950s, Spiegel & Wycis named it campotomy and used it for parkinsonism. Jinnai found lesioning of Forel H area results in marked reduction of epileptic attacks. PTT area is well-visualized with MRI, and direct targeting is possible. Some patients may show transient sleepiness and decrease of voice volume, but there are no major complications. I will show the clinical cases and discuss about usefulness of this target in functional neurosurgery.

**Keywords:**

Stereotactic, Pallidothalamic

**Diagnostic accuracy of MRS in detection of glioma and its severity taking histopathological findings as gold standard.****Upama Sharma, Shilpa Giri, Janam Shrestha, Dinuj Shrestha, Pritam Gurung, Resha Shrestha, Samir Acharya, Sudan Dhakal, Pravesh Rajbhandari, Pranaya Shrestha, Basant Pant**

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**Introduction:**

The optimum treatment of glioma varies with the type and its grade i.e., its degree of malignancy, location and the extent of resection. The clinical management for malignant brain tumors is challenging, as this type of glial tumors had very high mitotic activity, i.e., very fast growing causing rapid deterioration in health status of patient.

**Materials and Methods:**

In this study, 71 suspected cases of glioma evaluated with MRI brain with contrast were recruited in this research.

Presence or absence of glioma and tumor grading made based on contrast MRI. MRS was performed through multiple-voxel spectroscopy and was graded as low and high. All these patients were gone for either microsurgical excision or stereotactic biopsy and specimen was sent for histopathology.

**Results:**

Average age of the patients was  $48.15 \pm 13.84$  years. Sensitivity, specificity, PPV, NPV and diagnostic accuracy of MRS in detection of glioma was 98.46%, 0%, 91.43%, 0% and 90.14% respectively. Furthermore, diagnostic accuracy of MRS in detection of high- and low-grade glioma was above 85%.

**Conclusion**

Evaluation of gliomas can be undertaken by utilization of contrast enhanced MRI with MRS which has a high sensitivity, moderate specificity and a high diagnostic accuracy in detection and its grade.

**Keywords:**MRS, Glioma

## **Intra Operative Adverse Events: Definition and Classification**

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Intraoperative adverse events can lead to increased morbidity or mortality along with prolonged hospital stay, ventilator use, newer deficits, infection and re-exploration. There are many scales to measure pre and postoperative events with outcome but those addressing intraoperative events are limited. A few have been tried, but lack of a standardized classification system and fear of litigation has led to its under reporting in the medical literature.

This talk discusses the available scales like, Clavien-Dindo-Strasberg et al, Shackleton et al, Satava Classification, Kaafarani et al, Rosenthal et al, Biyani et al, Dell-Kuster S et al and ICARUS (which is undergoing). Lesser number of scales used in neurosurgery is also discussed like, Preoperative ASA physical status classification the Karnofsky performance score (KPS), Charlson comorbidity score, The modified Rankin Scale (mRS), SKALE Score (sex, KPS, ASA physical status classification, location, and edema)-Meningioma and The Milan Complexity Scale- tumor.

Presence of a universally validated, accepted, repeatable scale to report such intraoperative adverse events will help to expand the literature, discuss outcome, management and steps taken to improve the postoperative outcomes and prevent such events from occurring.

*World Spine Care and Global Spine  
Care Initiative Symposium.*

**World Spine Care and Global Spine Care Initiative Symposium,**

*November 27, 2021 (9-11 am Kathmandu time)*

10 minutes per speaker–8 speakers

20-minute panel discussion chaired by Amit Thapa and Scott Haldeman

1. Amit Thapa “Introduction to the symposium and the speakers”
2. Amit Thapa “Current spine care in Nepal and the initiative to improve care”

**Current spine care in Nepal and the initiative to improve care**

Amit Thapa,

With the refinement in surgery and technological advancement, spine surgery as in other parts of world have seen unprecedented growth in Nepal. However this growth rate is not uniform across our geographical landscape, with most people living in remote areas missing out on basic spine care services. Though we have progressed on surgical management of spine disorders, a comprehensive spine care centre involving combined expertise of surgeons, pain physicians, physiotherapist and occupational therapist is still a far cry. The burden of spine related diseases is increasing, however in absence of the trained primary care givers and a proper referral system, patients have to suffer either due to unnecessary or late referrals and expensive unwanted investigations.

Realising these deficiencies, the spine chapter of Nepalese Society of Neurosurgeons (NESON) with the team of spine specialists experienced in various field of epidemiology, chiropractic, neurology, psychology, physiotherapy under the banner of “World Spine Care” are collaborating to adopt the “National Spine Health Program”. Our Vision is to ensure that everyone has access to the highest quality spine care possible through the health care system in Nepal. Our Mission is to provide a practical, evidence-informed, and sustainable spine health care model for communities across Nepal. We strive to create a proper referral system by training primary care givers, enrich our current spine fellowship programs, provide training to allied specialists, help in developing a national registry for spine problems, generate database and improve research and evidence based practice in spine care. We also look forward to create outreach clinical services in remote part of Nepal. This collaboration would involve multiple stakeholders from government of Nepal, non-governmental organizations, medical institutions, universities and public societies.

We hope with this multi-specialist approach would contribute to overall growth of spine services in Nepal.

Keywords: Disease burden, Nepalese Society of Neurosurgeons, Spine health, World Spine Care

**3. Scott Haldeman “World Spine Care (WSC) and the Global Spine Care Initiative (GSCI)”**

**Abstract:**

World Spine Care is a non-profit charity registered in the United States, Canada, and the United Kingdom with the goal of helping people with spinal disorders in underserved communities throughout the world. It was established in 2009 with the mission of “*Improving the lives of people in underserved communities through sustainable, evidence-based spine care*”. It has established clinical programs in Botswana, India, the Dominican Republic, and Ghana. The WSC program has been identified by the WHO as a “Leading Practice”. WSC convened the Global Spine Care Initiative consisting of 68 clinicians and scientists from 24 countries. The mission of

the GSCI is for “*The Development and Evaluation of an Innovative, Integrated Model of Care to Improve the Management of Spinal Disorders with the Goal of Reducing the Associated Global Disability and Burden of Disease.*” The GSCI reviewed the literature on interventions that are evidence-based and conducted a 3 level Delphi consensus process that led to the publication of 15 peer reviewed articles published in a special edition of the European Spine Journal in 2018. These articles included a review of the literature on the management of spinal disorders, the development of a diagnostic “Classification Tool” that is linked to evidence-based interventions. The GSCI also presented a “Care Pathway”, “Model of Care” and “Resources to Implement a spine care program”. The GSCI focused on spine care in low- and middle-income countries. It recently published in JMIR a second consensus article titled “*Distance Management of Spinal Disorders During the COVID-19 Pandemic and Beyond: Evidence-Based Patient and Clinician Guides from the Global Spine Care Initiative.*”

#### 4. Sandeep Bohara “The impact of spinal disorders in Nepal. Review of the literature”

**Sandeep Bohara, Amit Thapa**

Kathmandu Medical College Teaching Hospital, Sinamangal, Kathmandu

Objectives

To review the impact of spinal disorders in Nepal

Design

Review study

Methods

A systematic search of PubMed, Wiley Online Library and Google Scholar was performed with the keywords “Low back pain”, “Back pain”, “Neck pain”, “Spinal disability burden”, “Spinal trauma”, “Nepal” and “Nepalese population” on September 14th, 2021. All the results were screened by the author. Cross references of the studies were also screened. A primary screening of all the articles identified by searching the database was done based on the titles and abstracts. Secondary screening involved extraction of full text articles which was reviewed. The following inclusion and exclusion criteria were applied to select the final set of articles for analysis.

##### **Inclusion and exclusion criteria**

All studies describing the etiology, epidemiology, clinical course, clinical outcome, disease burden and disability due to disease in Nepal were included. The studies describing the epidemiology and etiology of neck pain, back pain and low back pain in Nepalese population were included in the study. The studies describing the disability due to spine related condition and burden in the society due to spine related disease in Nepal were included in the study. Study types included retrospective studies, prospective studies and case reports. Studies which did not take into account the Nepalese population were excluded as were the studies which did not describe the burden in the population as a result of the disease.

Results

A total of 162 articles were identified using the search criteria. 12 studies met the inclusion criteria and were included in the study. Back pain was the most common spinal disorder seen in Nepalese population and was seen most commonly seen in the elderly population with males being affected more than female.

The most common profession associated with back pain was agricultural sector. This burden seemed to increase due to increasing proportion of elderly population. Most of the patients underwent conservative management with surgery being reserved for refractory cases.

#### Conclusion

Spinal disorder in the form of back pain is common in Nepalese population. Very few studies are present in the literature describing this burden in Nepalese population. Further studies are needed to know the exact impact of this burden in the society.

### 5. Geoff Outerbridge “The WSC and GSCI Model of Care”

#### Abstract:

The current model of care for people in most countries around the world focus on the most expensive and least effective care interventions. It is generally recognized that only 10% or less of the population whose lives are impacted by spine pain require access to high-cost imaging, emergency room, hospital or surgical care. Despite this fact, in most communities in this world and especially in low income underserved communities these are the only options available. This model tends to provide the wrong care at the wrong place, to the wrong patient at the wrong time and is extraordinarily expensive. The GSCI Model of care has been proposed to reverse this process by dividing spine care into community-based care, primary spine care, secondary spine care and tertiary spine care. It requires a focus on public health, a greater role for community and primary spine care to provide triage for serious spinal disorders and the management of much of the population whose lives are impacted by uncomplicated spine pain (no neurological signs or red flags for serious pathology). It also requires training of primary spine care clinicians in symptom, disability, and psychosocial management of spine pain. It also requires close cooperation with secondary spine care facilities (usually district hospitals) and tertiary spine care centers where advanced testing, specialty and interdisciplinary care and surgical interventions are available. The GSCI is one where the right care is provided to the right person, in the right place at the right time.

### 6. Nilam Khadka “Difficulties in providing spine care in remote areas of Nepal”

Karnali Province Hospital, Surkhet,

National Academy of Medical Sciences (NAMS).

In 2015, over half a billion people worldwide had low back pain and more than a third of a billion had neck pain of more than 3 months duration. Low back and neck pain are the leading causes of years lived with disability in most countries and age groups.

In the developing and even in developed countries, spinal cord injury (SCI) is another problem faced by these populations. With the expansion of human activities, the incidence of SCI also increased gradually. The incidence varies from 13.019 per million to 163.420 per million people. Among them, the incidence rates of developed countries ranged from 13.121 to 163.420 per million people. The rates of non-developed countries varied from 13.019 to 220.022 per million people. The most important aspect of clinical care for the SCI patient is preventing complications related to disability. Supportive care has shown to decrease complications related to mobility.

Delayed access to hospital for treatment is another major observation from one of the studies of Nepal (38% patients arriving at the hospital after 48 hours of trauma). To speculate, the cause of delay can be difficult terrain, lack of proper transportation, proximity to hospital facility and financial constraints.

There are lots of difficulties in providing spine care in remote areas of Nepal. The most and foremost thing is the difficult terrain, rough and mountainous, followed by lack of proper transportation, lack of accessibility of proper hospital facility and spine care set up and financial constraints.

**Keywords-**Back pain, Spinal cord injury, spine care, remote areas, Nepal

## 7. Adam Wilkey “The GSCI Classification system”

### **Abstract:**

The GSCI Model of Care is based on a Classification of Spinal Disorders that is linked to evidence based interventions that are defined by the presentation of patient complaints rather than the specialty and training of the clinician initially consulted by the patient. There are 5 major classifications for spinal disorders. Class I is when a patient has minimal or no symptoms but is seeking information on the prevention or self-management of symptoms. Class I is when there are sufficient spinal pain for the patient to seek care but without serious disability or impact on daily activities. Class I is divided into Ia (acute) and Ib (chronic symptoms). Class II is where the spinal pain is causing serious disruption in normal daily activities but there are no neurological deficits or red flags for serious disease. Class II is further divided into IIa (moderate acute), IIb (Moderate Severe), IIc (serious acute) and (serious chronic). Current evidence suggests that each of these classes and subclasses of symptoms require different clinical diagnostic and treatment considerations. Class III is where there are neurological signs or symptoms related to the spine. Class III is further divided into the following subclasses, IIIa (mild or non-progressive), IIIb (acute and progressive) and IIIc (chronic and stable). Class IV is where the patient has serious spinal pathology and includes spine trauma, scoliosis or other structural spinal pathology. Class VI is divided into the following subclasses, IVa (stable and not causing significant symptoms) and IVb (acute or symptomatic). Class V is where there are red flags for serious disease including inflammatory joint disease, infection, neoplastic disorders or spine symptoms related to non-spinal pathology such as kidney stones or abdominal aneurysm.

## 8. Nibha Bajracharya “Challenges that are inhibiting the institution of evidence-based care in Nepal”

## 9. Margareta Nordin “The Nepal Task Force to Advance a National Evidence Based Spine Care Program”

### **Abstract:**

World Spine Care has developed clinical and educational programs in several countries primarily to provide evidence-based spine care to underserved communities. The experience gained from these programs has demonstrated the importance of close communication and cooperation

between the WSC team, local professional organizations and NGOs, government agencies, local authorities and when possible commercial entities. In July of this year WSC was contacted by NESON with the desire to develop a national spine care program based on the WSC and GSCI Model of Care. To achieve this goal, it has been recommended that a Nepal Task Force to Advance a National Evidence Based Spine Care Program be formed. The Task Force has developed a Mission that states: “A health care system in which everyone in Nepal has access to the highest quality spine care possible”, and Vision of “To reduce the national burden of disease and disability by bringing together leading healthcare providers, scientists, specialists, government agencies, and other stakeholders to transform the delivery of spine care. To provide a practical, evidence-informed, and sustainable spine health care model for communities across Nepal. To adopt and foster use of accepted model for prevention and care that could reasonably be considered by communities and all tiers of government hoping to reduce the disability caused by spinal disorders”. It is anticipated that participants on this Task Force will include multiple stakeholders including WSC, NESON, other Health professional organizations, Universities and the Nepal Ministry of Health and Population and other stakeholder organizations. Only with multiple stakeholders involved is it possible to initiate programs to improve the care of underserved people disabled by spine related disorders.

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