



HISTORY OF NEUROSURGERY

Neurosurgery

“Only the man who knows exactly the art and science of the past and present is competent to aid in its progress in the future”

Christian Albert Theodor Billroth

Neurosurgery

1700 B.C.- Edwin Smith surgical Papyrus

460- 377 B.C., Hippocrates, Greece

“Father of Medicine”

Neurosurgery

History of Neurosurgery- 3 epochs

1. 3 technological advances

1. Cerebral localization theory
2. Antiseptic/ aseptic techniques
3. Anesthesia- general / local

2. Neurosurgery becomes distinct profession

Neurosurgery

1. Pre-modern: before Macewan, 1879
when all 3 tenets used in practice
2. Gestational: 1879- 1919
transition into distinct profession
3. Modern: after Cushing, 1919
develops into distinct profession
4. Contemporary: present day
operative microscope, imaging advances, GKRS

Neurosurgery

★ 1835- 1911, John Hughlings Jackson:
Founder of cerebral localisation & Neurology

★ Cerebral localization of function:
1881, International Medical Congress, London
Goltz Vs Ferrier

★ 1888, Victor Horsley: *cortical map*

★ Charles Sherrington (1857-1952):
'Father of Modern Neurophysiology'

1906, *'The integrative Action of the nervous system'*

Neurosurgery

- ★ 1846: Anesthesia
- ★ 1867: Antisepsis
- ★ 1883, Camillo Golgi: Nerve network doctrine
- ★ Cajal: Neuron theory
- ★ Waldeyer: coined 'Neuron' for independent nerve unit
- ★ 1891: Asepsis

Neurosurgery

- ★ 1870, Ernst von Bergmann, Germany
1st Textbook on surgery on nervous system
- ★ 1876, Pierre Paul Broca, Paris :
1st to localize & drain brain abscess
- ★ Sir William Macewan :
1879- localized + excised tumor (meningioma)
1883- Laminectomy

Neurosurgery

- ★ 1884, Francesco Durante *diagnosed & removed Olfactory groove meningioma*
- ★ 1888, William Bennett- *posterior rhizotomy for pain*
- ★ 1908, Fedor Krause-
Founder of German Neurological surgery
1st to study human cerebral cortex in detail
- ★ 1929, Berger : *introduced EEG*
- ★ 1935, Foerster & Altenburger: *1st described EEG*

Neuroendoscopy

★ 1879, Max Nitze- *1st modern endoscope*

★ 1910, L' Espinasse- *1st NSx endoscope*

★ *Fulguration of choroid plexus*

★ 1922, Walter Dandy-

★ *Endoscopic choroid plexectomy*

★ 1923, Mixter- *1st ETV using urethroscope*

Neuroradiology

- ★ 1895, Wilhelm Conrad Roentgen : *X rays*
- ★ 1901, Oppenheim : *Cranial Roentgenology*
- ★ Walter Dandy: *Ventriculography*
- ★ Arthur Schuller: *Father of modern Neuro-radiology*
- ★ 1947, George Moore: *Radionuclide imaging*
- ★ 1960s, Lars Leksell: *GKS*
- ★ 1972, Godfrey Hounsfield: 1st EMI machine (CT scan)
- ★ Luessenhopp: *interventional neuroradiology (embolised AVM)*

Neurosurgery

★ William William Keen Jr:

Pioneer american neurological surgeon
Suture duramater - *decrease CSF leak*

★ **1920, Society of Neurological surgeons**

Harvey Cushing (President)

Ernest Sachs (Secretary Treasurer)

Charles H Frazier

Edward Archibald

Neurosurgery

World Federation of Neurological Societies

- ★ Founded in 1955
- ★ Brain child: Dr William B Scoville, Connecticut
- ★ Sir Geoffrey Jefferson, England (President)
- ★ First congress in 1957

Neurosurgery

- ★ 1910, Oscar Hirsch-
Trans-septal approach to pituitary
- ★ 1932, W Gayle Crutchfield- *skeletal traction for cervical spine fractures*
- ★ 1952, Irving Cooper-
Chemo-pallidectomy for parkinsonism

Microneurosurgery

- ★ 1892; 'microsurgery' - neurologic pathway, amphibia
- ★ 1950s: William Lougheed in lab
- ★ 1957: Theodore Kurze & William House, *acoustics*
- ★ 1960: Julius Jacobson- *1st microvascular neurosurgery*
MCA embolectomy
- ★ 1962: Jules Hardy, *M/E TNTS*
- ★ 1964: Robert Rand, *M/E Aneurysm Sx*
- ★ 1967: M Gazi Yasargil, *1st EC-IC bypass*
- ★ 1967: Jannetta & Rand, *CN V decompression*

Indian Neurosurgery

Legend and History

- ★ Hindu mythology-

Ganesha: First recipient of head transplant

- ★ Sushrutha- ‘*Sushrutha Samhita*’

Greatest surgeon of ancient India

Describe cranial N.(2,8),surgical procedure

- ★ ‘*Jivaka*’ - *personal physician of Lord Buddha*

Removed intracranial tumors through trephine hole

Indian Neurosurgery

Legend and History

- ★ 2 drugs- *'sammohini'* and *'sanjivini'*
- ★ Neurology flourished before birth of Christ
- ★ **Yoga**- means to realise one's true self
- ★ Madras & Calcutta Medical College, 1835
- ★ Grant Medical College, 1848

Indian Neurosurgery

Legend and History

PRE- INDEPENDENCE

- ★ 1935, Col Anderson- *Trans-sphenoidal Hypophysectomy*
- ★ Bombay:
 - Ardeshir P Bacha, GV Deshmukh, RN Cooper, AV Baliga
- ★ Madras:
 - NS Narasimhan, CP Vishwanatha Menon, U Mohan Rao
- ★ Amritsar: Col R Mirajkar, Baldev Singh
- ★ Bangalore: Balakrishna Rao

Indian Neurosurgery

Legend and History

POST- INDEPENDENCE

★ Ram Ginde (Canada), Omar Jooma (UK)

★ Jacob Chandy:

- 1946, Montreal Neurological Institute

★ Narasimhan:

- 1946, New York Neurological Institute
- 1948, Private NSx and EEG clinic (Madras)

★ Ramamurthi: 1948, UK

Indian Neurosurgery

Legend and History

★ Jacob Chandy:

1949, 1st N.Sc Dept at CMC, Vellore

★ B Ramamurthi:

*1950, N.Sx Dept, Madras Medical College
Later became Institute of Neurology*

★ Ram Ginde:

1953, N.Sx Dept, Seth GSMC & KEM, Bombay

Indian Neurosurgery

Early Challenges

- ★ Misconceptions: brain tumors rare in indians
- ★ Brain tumors remained undiagnosed
- ★ Fear amongst public about brain surgery
- ★ 90% patients seen were blind
- ★ Few facilities for diagnosis and even fewer Rx
- ★ High operative mortality
- ★ Resource Crunch

Indian Neurosurgery *Leaders*

- ★ Col Ray: 1st Indian Army Neurosurgeon
- ★ R N Chatterjee, Calcutta (1955)
- ★ Victor Rao, Delhi (1956)
- ★ Balaparameswara Rao, Vishakapatnam (1956)
- ★ Dayanand Rao, Hyderabad (1957)
- ★ Homi Dastur, Bombay (1958)
- ★ R M Varma, Bangalore (1958)
- ★ P N Tandon, Lucknow (1961)
- ★ Desraj Gulati, Chandigarh (1962)

Indian Neurosurgery

Leaders

★ Dr Baldev Singh:

- ★ Founder of Modern Neurology in India
- ★ Dr T K Ghosh: another father figure

★ University of Madras: 1st recognized NS as speciality

★ CMC, Vellore & Madras Medical College, Madras: 1st started training programs

★ MS Neurosurgery: Madras University, 1961

★ Dr K V Mathai: CMC, Vellore first recipient

Indian Neurosurgery

Neurological Society of India

- Founder President: Dr Jacob Chandy
- Founder Treasurer: Dr Baldev Singh, S T Narasimhan
- Founder Secretary: B Ramamurthy
- 8th December, 1951
- 1st Meeting: Hyderabad, 1952; 32 members
- 1953, Journal of NSI
- 1974, Started CME
- 1985, Progress in Clinical Neurosciences
- NSx subsection: member of WFNS

Neurosurgical Giants

William Halsted

★ John Hopkins Medical School, Baltimore

★ ‘Asepsis’ practice

★ Rubber glove

★ Surgical technique

- ★ Gentle dissection

- ★ Fine silk ligature to secure vessels “only”

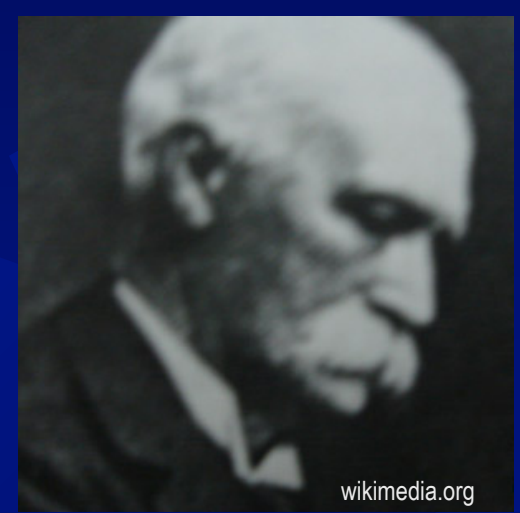
- ★ Sealing wound with silver foil

- ★ Avoidance of drainage and frequent dressing

★ Cocaine as *local anaesthetic agent*- ‘truncal block’

Neurosurgical Giants

Sir William Macewan



1848- 1924 . Pioneer Scottish Neurosurgeon

Chief pioneer of Craniocerebral surgery

Antiseptic to aseptic surgery,

Abandon wooden instruments

2 great advances

- 1st to explore brain & spinal cord on basis of localized neurological dysfunction
- Study pyogenic infection of brain and spinal cord

Neurosurgical Giants

Sir William Macewan



Introduce

- Endotracheal intubation in place of tracheostomy (1880)
- New radical cure of hernia
- Chromic catgut
- Pneumonectomy (1895) - 'severe' tuberculosis

Transplantation of bone-

- repair of skull defect

Neurosurgical Giants

Victor Horsley



1857- 1916

Founder of modern Neurological Surgery
'First specialized surgical neurologist'

1. Experimental research

Electrical stimulation of motor area, rhesus monkey

- localization, 1888 Horsley's cortical map

Surface markings for the underlying cortex

Epilepsy

Motor function of internal capsule

Cerebral edema

Artificial respiration

Neurosurgical Giants

Victor Horsley



Forms of treatment

Acceptable operative mortality

Antiseptic technique

Smooth anaesthesia- preferred chloroform over ether

Excision of gasserian ganglion- *trigeminal neuralgia*

Significance of *papilledema*

Decompression to save eyesight in *raised ICP*

1887, removed spinal neoplasm

Decompressive laminectomy for *potts*

Craniectomy for *microcephaly*

2^o debridement - infected craniocerebral wound

Lumbar Drain to decrease ICP

Neurosurgical Giants

Victor Horsley



3. Surgical craft

Dexterity - Speed of operating

small vessel hemorrhage- hot saline douches

bone bleed- '*bone wax*'

use muscle to control bleed

curved skin incision

1886, 1st Sx for focal epilepsy

1890, retrogasserian neurotomy - *tic douloureux*

+ Clarke (1908)- stereotaxic apparatus

Neurosurgical Giants

HARVEY WILLIAMS CUSHING



www.neurosurgery.org

- ★ April 8, 1869- October 7, 1939
- ★ American first neurosurgeon, Father of modern NSx
- ★ W S Halsted & William Osler- teachers
- ★ + Ernest Amory Codman: 1st anaesthetic , “Ether Chart”
- ★ First to map human cerebral cortex with faradic stimulation in conscious patients
- ★ March 1909, first operation for acromegaly
- ★ 1910, small silver clip (Cushing’ s clip).



Neurosurgical Giants

HARVEY WILLIAMS CUSHING

- ★ Introduced suction to deal with
 - blood in deep recesses of brain
- ★ Described Cushing's law & Cushing's triad
- ★ + Dr William Bovie: electric coagulation (1926)
- ★ Defined acoustic neuroma & syndrome of CPA
- ★ Syndromes & Clinical entities:
 - ★ Cushing's Syndrome
 - ★ Rokitansky Cushing Ulcer
 - ★ Neurath-Cushing syndrome
 - ★ Cushing's symphalangism

Neurosurgical Giants

HARVEY WILLIAMS CUSHING



- ★ Standardisation of Surgical techniques-
 - *Compressing scalp for hemostasis,*
 - *Waxing the bone edges,*
 - *Hemostatic clips,*
 - *Electrocautery, motor driven suction*
- ★ Classified brain tumors with Percival Bailey
- ★ Exp with cocain nerve blocks,
 - coined ‘ regional anaesthesia’
- ★ Medical Historian: Biographer of Sir William Osler
(Pulitzer, 1926)

Neurosurgical Giants

Walter Edwards Dandy



- ★ 1886- 1946; John Hopkins Medical School
- ★ + Kenneth Blackfan, established **modern concept of circulation of CSF and hydrocephalus.**
- ★ Developed *choroid plexectomy, third ventriculostomy and catheterisation of aqueduct of sylvius*
- ★ First to discover *pneumoperitoneum*
- ★ 1918, *Ventriculography.* 1919, *pneumoencephalography*
- ★ Expose & resect *pineal tumor*

Neurosurgical Giants

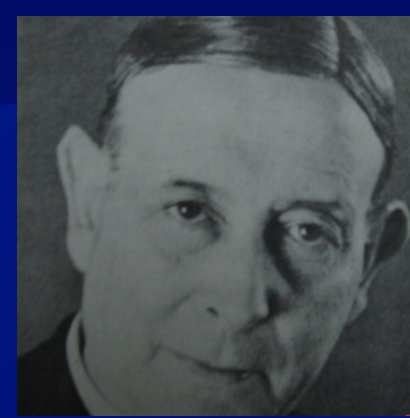
Walter Edwards Dandy



- ★ **1917, Remove 1st *acoustic neuroma* completely**
- ★ **Pioneer in Sx of *AVM & intracranial aneurysm***
(1937, 1st to clip neck of intracranial carotid aneurysm)
- ★ **Rx *Meniere's disease* by sectioning CN VIII**
- ★ **First to intracranially section CN IX -**
Glossopharyngeal neuralgia.
- ★ **Section *sensory root of CN V - tic douloureux***
- ★ **“Dandy’s embryo”**

Neurosurgical Giants

Antonio Egas moniz



www.snpcultura.org

- ★ 1874-1955; Portuguese neurologist, Lisbon
- ★ 1920s-Cerebral angiography & encephalography
(Nominated for nobel prize, 1928)
- ★ **Founder of neuroradiology**
- ★ 1935- prefrontal leucotomy for schizophrenia
(Nobel prize, 1949)
- ★ Coined term – psychosurgery.

Neurosurgical Giants

Francesco Durante



★ 1844-1934; Germany

★ Durante- Conheim theory:

- ★ *genesis of tumors from enclosed embryonic rests*

★ General surgery:

- ★ Cure of surgical TB with iodo-iodurate
- ★ cuneiform resection of knee articulation
- ★ Partial/ total astragalectomy
- ★ First arterial suture

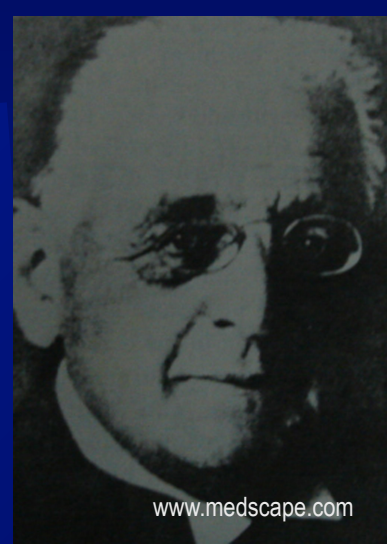
★ Successfully removed olfactory groove meningioma

★ Osteoplastic flap

★ Hypophysectomy by pharyngeal approach

Neurosurgical Giants

Fedor Krause



- ★ 1856- 1937; Augusta Hospital, Berlin
- ★ **Father of German surgical neurology**
- ★ Extensively used radiography for diagnosis
- ★ ‘Modified’ Preganglionic resection of CN V-
trigeminal neuralgia
- ★ Transfrontal craniotomy- pituitary tumors
- ★ Acoustic neuromas-
 - ★ sitting position, intradural posterior fossa craniectomy
- ★ Suprasellar subtentorial approach
to pineal gland & posterior third ventricle

Neurosurgical Giants

Otfrid Foerster



- ★ 1873- 1941; Germany
- ★ Foerster's operation: Posterior rhizotomy
dividing posterior roots did not cause spasticity in hemiplegic
- ★ Anterolateral cordotomy: for pains
- ★ Defined dermatomal borders
- ★ Successful removal of intramedullary tumor
- ★ Surgery for post traumatic epilepsy
- ★ + Altenburger: 1st EEG of brain tumor
- ★ Hyperventilation to evoke seizure
- ★ Coined 'psychomotor epilepsy'

Neurosurgical Giants

Wilder Graves Penfield



www.daviddarling.info/encyclopedia/P/Penfield

- ★ 1891- 1976, “Greatest living canadian”
- ★ Centrencephalic theory of generalised epilepsy
- ★ + Herbert Jasper: Montreal procedure
t/t seizure by destroying originating nerve cells
- ★ ‘Penfield dissector’
- ★ “Montreal neurological institute”

Neurosurgical Giants

James Clark White



★ 1895- 1981; Massachusetts General Hospital

★ Contributions

- ★ Autonomic neurosurgery
- ★ Normal & pathologic physiology of pain & T/t
- ★ Neuroprotection in neurosurgery

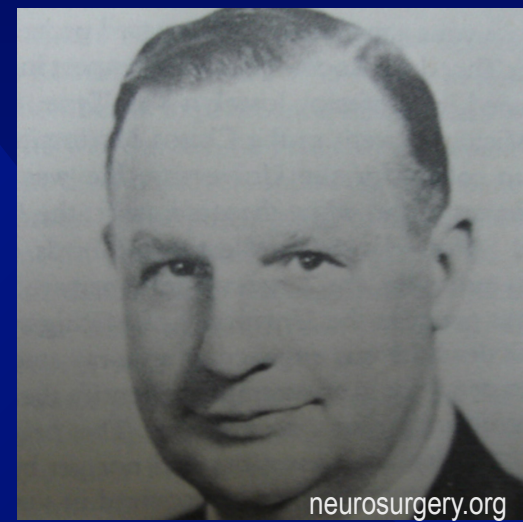
Neurosurgical Giants

A Earl Walker

- ★ 1907- 1995
- ★ Topical application of penicillin (EEG)
- ★ Stereotaxic or functional neurosurgery
- ★ Post traumatic epilepsy
- ★ Anatomic studies on thalamic systems
- ★ Dandy Walker syndrome

Neurosurgical Giants

Max Minor Peet



1885- 1949

Contributions:

- pineal gland,
- sensory root (gasserian ganglion) division,
- 50% dextrose in raised ICP,
- Arterial HTN (B/L splanchnic section)
- SDH- craniotomy & evacuation in failed aspirations

Favored local anaesthesia

Probably 1st attempted Eck fistula in man

1st successfully completely removed craniopharyngioma

ornithology: nesting place of Kirtland warbler

Neurosurgical Giants

Herbert Olivecrona



neurosurgery.org

- ★ 1891-1980; Karolinska Institute, Sweden
- ★ Seminal work: Parasagittal meningioma
- ★ 1939, CN VII preservation in acoustic (65%)
- ★ Pioneer in t/t of AVM
- ★ Under him, Sjoqvist developed
 - Medullary tractotomy for trigeminal neuralgia
- ★ His doctrine:
 - precise preoperative diagnosis,
 - meticulous tech, minimum surrounding tissue trauma

Neurosurgical Giants

Lars Leksell



- ★ Pupil of Olivecrona
- ★ Karolinska Institute, Sweden
- ★ 1949, stereotaxic apparatus for intracerebral surgery
- ★ Gamma Knife Radiosurgery
- ★ 1955, echoencephalography.
- ★ 1st to use USG in clinical practise
- ★ Double action 'Leksell rongeurs'
- ★ Surgical technique of *Recanalising cerebral aqueduct in atresia*

Neurosurgical Giants

William H Sweet

- ✦ + Gordon Brownell- PET
- ✦ Boron Neutron Capture therapy for brain tumors
- ✦ Pituitary stalk section –
 - ✦ diabetic retinopathy
- ✦ Percutaneous thermal rhizotomy
 - ✦ Trigeminal neuralgia
- ✦ hypothermia during neurosurgical operations
- ✦ First carotid bifurcation reconstruction



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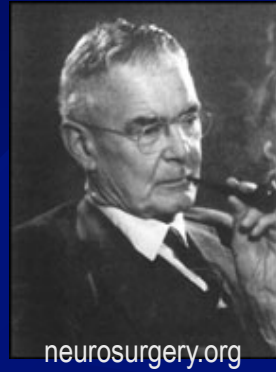
Neurosurgical Giants

Charles Harrison Frazier

★ 1870- 1936, Philadelphia

★ Contributions

- ★ ‘Learning through doing’ practical learning
- ★ Subtemporal approach (tic douloureux)
- ★ Cordotomy
- ★ Hyperthyroidism



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Neurosurgical Giants

Norman McOmish Dott

★ 1897- 1973, Scotland

★ Seminal work:

- ★ pituitary,
- ★ CSF circulation,
- ★ Facial pain

★ 1st to demonstrate aneurysm on angiography and treat aneurysm successfully

★ Pioneer in rehabilitation in neurosurgery

Neurosurgical Giants

Irwing S Cooper

★ **Pioneer in functional neurosurgery**

★ **Parkinson Disease**

- ligated anterior choroidal artery to control tremor and rigidity

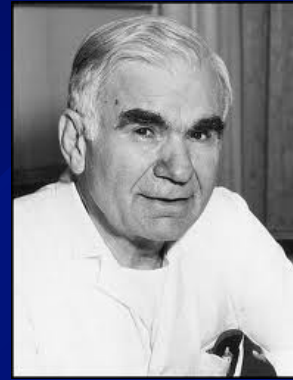
- chemopallidectomy and cryothalamectomy

★ **electrical stimulate cerebellum/ thalamus**

- to treat spasticity

Neurosurgical Giants

Mahmud Gazi Yasargil



neurosurgery.org

- ★ Turkish
- ★ Greatest 20th century neurosurgeon
- ★ Founder of microneurosurgery
- ★ 1967: first cerebral vascular bypass under M/E
- ★ Invented
 - ★ floating microscope,
 - ★ self retaining adjustable retractor,
 - ★ microsurgical instruments,
 - ★ ergonomic aneurysm clips and appliers

Irving S Cooper

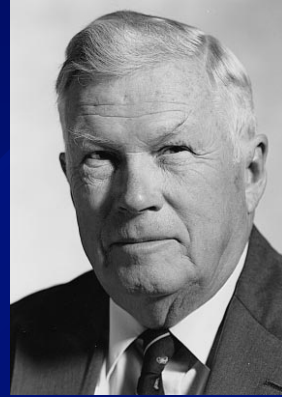
- 1922-1985, Born-Atlantic City ,New jersey
- MD. From George Washington Uni.
- Ph.D from Uni. Minnesota. Fellow at Mayo Clinic
- 1952- Joined New York Medical College
- **Pioneer in functional neurosurgery**
- Parkinson Disease
 - ligated anterior choroidal artery to control tremor and rigidity
 - chemopallidectomy and cryothalamectomy
- electrical stimulation cerebellum/ thalamus (DBS)
 - to treat spasticity



Charles G

S

- 1920-1998
- Born-Windsor, Ontario
- Medicine Graduate-Uni. Of Western Ontario
- 1952-Faculty at University.
- Posterior circulation aneurysm surgery
- Giant aneurysm
- Occlusion of bilateral vertebral artery, basilar or middle cerebral artery.
- Pioneered work on Vasospasm with Allcock and Aitken.



AJNR 1999 20: 358-359

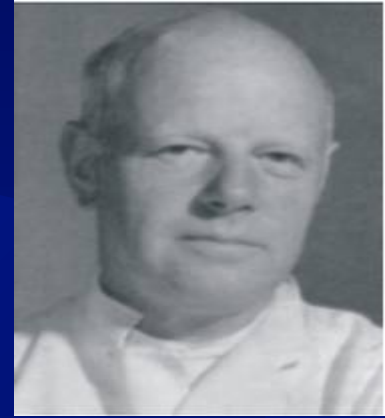
Albert Rhoton Jr

- Born , Kentucky
- Studied at Washington University
- Residency-under Dr Henry Schwartz
- Professor, 1972.University of Florida
- Fatherly figure for microscopic neurosurgery
- Brain anatomy - microsurgical perspective



Neurosurgery.ulf.edu

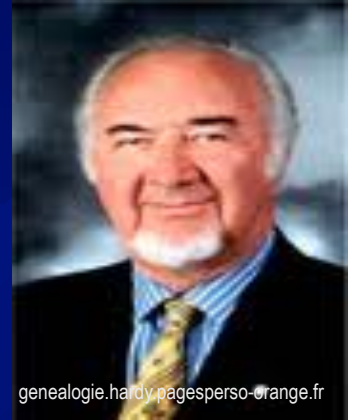
Herbert Olivercrona



en.wikipedia.org

- 1891-1980
- **Founder and Father of Swedish Neurosurgery**
- Serafimer Hospital, Stockholm
- Students-Leksell and Lundberg
- First successful surgery for intracranial AVM.
- Facial Nerve preservation in Acoustic tumors
- First used power suction

Jules Hardy



- ✦ Born, 1932, Sorel
- ✦ Prof. at Notre-Dame Hospital and University of Montreal
- ✦ Trans sphenoidal pituitary surgery with Peroperative Fluoroscopy , Microscope and Microinstrumentation.
- ✦ First to recognize small intrapituitary lesions “Micoradenomas”

Ossama Al-Mefty

- ✦ Skull base surgery, meningioma,
- ✦ brain tumors , cerebro vascular surgery



neurosurgery.org

Tikeshi Kawase (Tokyo):

- ✦ skull base surgery
- ✦ kawase approach for petroclival meningiomas.



worldacademyns.org



en.wikipedia.org

- ✦ Born, 1944 , Germany
- ✦ Director , Barrow Neurological Institute, Arizona
- ✦ Atlas of Microneurosurgery
- ✦ Vascular surgery
- ✦ Skull base surgery
- ✦ Spetzler –martin grading for AVM

Neuroendoscopy

- ★ 1910- L' Espinasse- *1st NSx endoscope*
 - *Fulguration of choroid plexus*
- ★ 1918- Walter Dandy-
 - *Endoscopic choroid plexectomy*
- ★ 1923- Mixter- *1st ETV using urethroscope*

NEURORADIOLOGY

- ★ 1918, Walter Dandy: *Pneumoventriculography & Pneumoencephalography*
- ★ 1921, Jean Sicard : *Myelography*
- ★ Arthur Schuller: *Father of modern Neuro-radiology*
- ★ 1947, George Moore: *Radionuclide imaging*

★ 1972-CT scan :

- British engineer **Godfrey Hounsfield & Allan Cormack** ,jointly awarded the Nobel Prize in 1979.

★ 1970- 1974 –MRI

- Block & Purcell-Nobel prize winning work in 1940' s

★ 2003 –

- Nobel Prize to **Paul C Lauterbur and Peter Mansfield** for their discoveries concerning magnetic resonance imaging.

★ 1981: **Gd-DTPA** dimeglumine.

★ 1991: **functional MRI**

ENDOVASCULAR NEUROSURGERY

- **Serbinnenko F A:**
 - Founder of Endovascular Neurosurgery
 - Nondetachable Balloon for endovascular treatment
- **Guido Guglielmi :**
 - Detachable Coil(GDC)
- **Pierre Lasjaunias:**
 - Expertise in treating Vein of Galen Malformation
 - pediatric arteriovenous malformation.



biographyha.com

MADJID SAMII

- Born, 1937. Tehran
- Neurosurgical training in Germany
- Director, International Neurosciences Institute, Hanover
- Microneurosurgery
- Skull base surgery
- C-P angle tumors
- Microscopic Nerve repair with good functional outcome
- Established microneurosurgery training laboratory.



wikipedia.org

Arnold H Menezes

- Born , Mumbai
- Medical Edu.-TNmedical college, Mumbai
- Neurosurgical Training at university of Iowa.
- Craniovertebral junction anomaly-surgical techniques-investigations
- Spinal dysraphic states
- Hydrocephalus
- Spinal bony compression lesions in children
- Cranial base
- Rheumatoid arthritis and the cervical spine
- Tethered spinal cord
- Craniosynostosis - craniofacial dysostosis
- Somatosensory evoked potentials for the diagnosis of tethered cord in patients with myelomeningocele



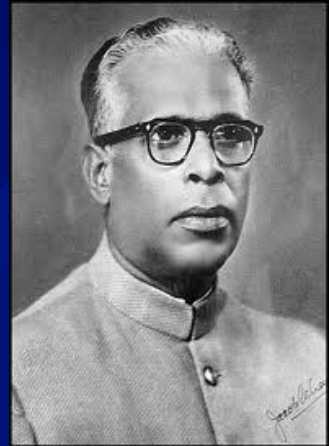
Laligam N Shekhar

- ✦ Born, Tamilnadu
- ✦ Medical education, MMC-1973
- ✦ Residency – Cincinnati college, pittsburgh
- ✦ Professor, University of Washington.
- ✦ Skull base tumors (meningioma, chordoma, acoustic neuroma)
- ✦ President of WFNS, Skull Base Societies
- ✦ Aneurysmal, A-V malformation surgery
- ✦ Surgery for trigeminal neuralgia, hemifacial spasm-Microvascular Decompression



www.seattlecca.org

PROF. JACOB CHANDY



neurosurgery.org

- 1910-2007
- 1949- First Department of Neurosurgery in India at CMC, Vellore.
- Founder President of Neurological Society of India in 1951.
- Started residency programme in CMC, at 1958.
- Pioneer of development of Neurosurgery in India.
- Received Padmabhusan
- Honors from American Associations of Surgeons, WFNS, WHO and World Council of Churches.

Prof. Balasubramaniam Ramamurthi

☀ 1922–2003

☀ October 24, 1950 started the neurosurgical service at the Government General Hospital, Chennai.

☀ December 8, 1951 - Neurological Society of India-
founder Secretary

☀ First editor of *Neurology India*

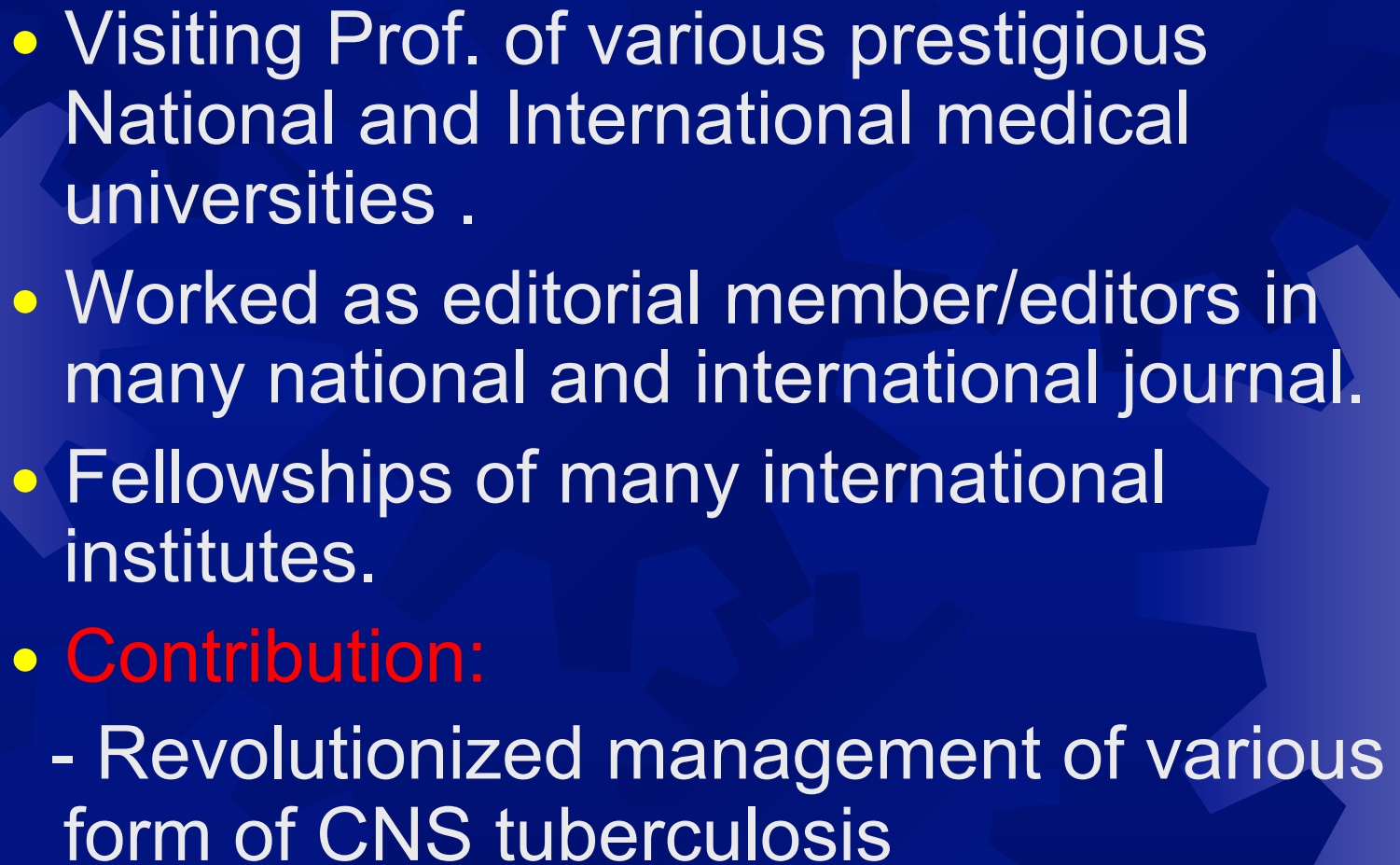
☀ 1970, Institute of Neurology
- 1st comprehensive neurosciences center, South
Asia

Prof. P. N. TANDON

- Born-13 th Aug-1928.
- MBBS, MS from KGMC, Lucknow
- FRCS(England)-1956
- Neurosurgical training- Ulleval Hospital, Oslo University 1957-58; Montreal Neurological Institute, McGill University 1959-60.
- Posts held-
 - Prof Neurosurgery-lucknow(1963-65)
 - Prof Neurosurgery-AIIMS(1965-90)
 - Bhatnagar Fellow(CSIR),AIIMS-1990-95
 - President, National Brain Research Society.
 - Emeritus Professor, AIIMS.



www.nbrc.ac.in

- 
- Visiting Prof. of various prestigious National and International medical universities .
 - Worked as editorial member/editors in many national and international journal.
 - Fellowships of many international institutes.
 - **Contribution:**
 - Revolutionized management of various form of CNS tuberculosis

- Pathophysiology of Head injury-
 - Temporal lobe injury
 - primary and secondary brainstem injury
 - enlarging skull fractures in children
- Pituitary tumors, Glioma, Brain abscess, Cysticercosis, optic nerve injuries, brachial plexus injuries.
- Spontaneous subarachnoid heamorrhage,
- National Neural Transplantation Unit at AIIMS (1986)
- Has written 8 books, 14 monograph,
- Approximately 220 publications in national and international journal.
- **Honors**; Padma Vibhusan(2005), Padma Shree (1973), Padmabhusan(1989), B.C.Roy awards (1982,1993)., various other prestigious awards for development of sciences in india.

PROF. A K BANERJI

- Educational Qualifications

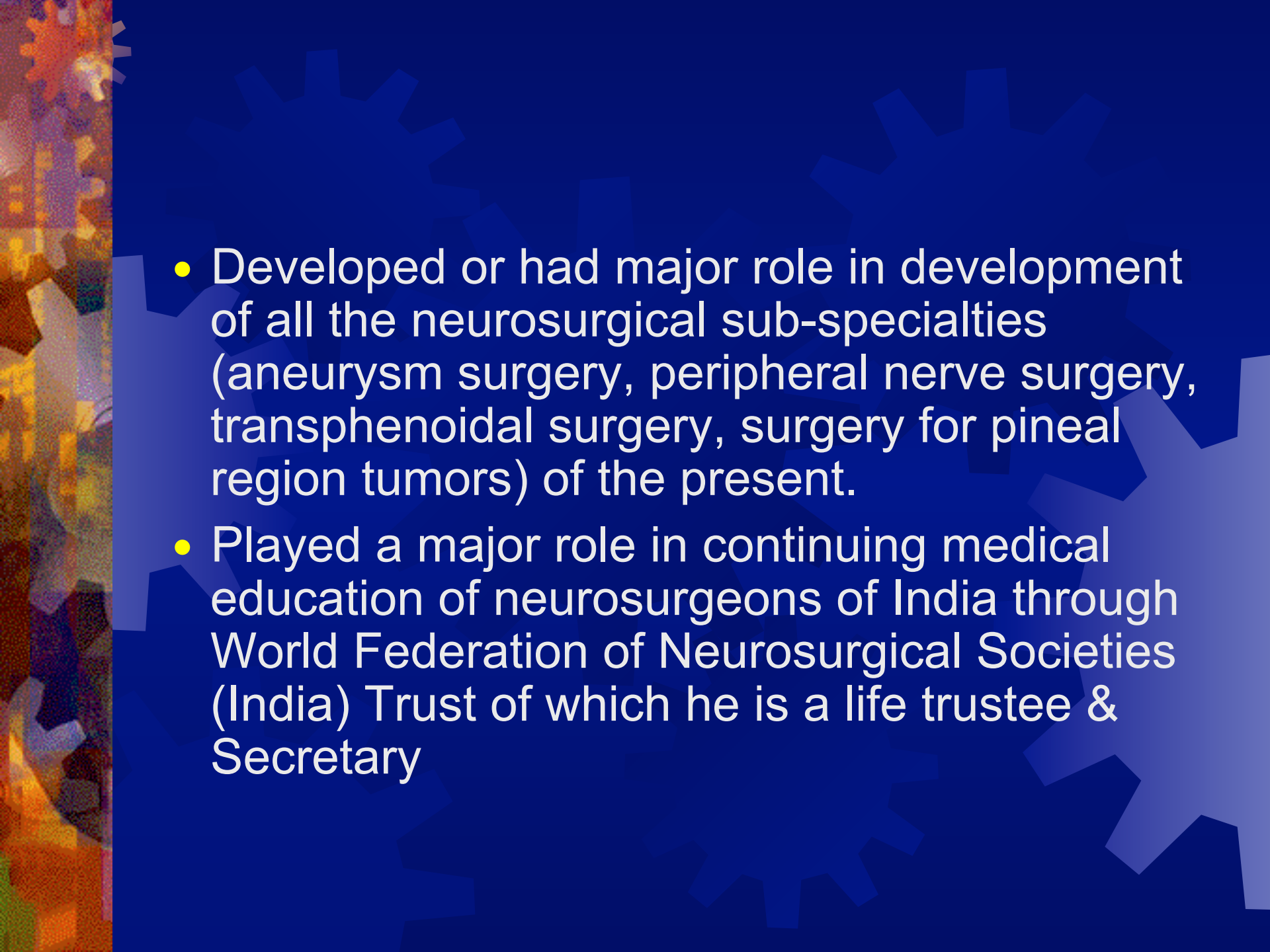
- MBBS 1957, K.G. Medical College, Lucknow
- M.S. (Surgery) 1961, K.G. Medical College, Lucknow.
- M.S.(Neurosurgery) 1964, Christian Medical College, Vellore

- Professional Experience in Neurosurgery

- Lecturer Christian Medical College, Vellore 1964-65
- Assistant Professor AIIMS, New Delhi 1965-69
- Professor AIIMS, New Delhi 1979-95
- Head of Dept. of Neurosurgery AIIMS, New Delhi 1988-90
- Chief of Neurosciences Centre AIIMS, New Delhi 1988-95



- 
- ✦ Director & Senior Consultant VIMHANS, New Delhi 1995-Feb 2007
 - ✦ Emeritus Consultant Apollo Hospital, New Delhi March 2007 onwards
 - ✦ Emeritus Professor AIIMS, New Delhi 2003-Life time appointment
 - ✦ **Main contributions**
 - ✦ Established **Microneurosurgery in India.**
 - ✦ Standardised **neurosurgical training & evaluation** in the country.

- 
- Developed or had major role in development of all the neurosurgical sub-specialties (aneurysm surgery, peripheral nerve surgery, transphenoidal surgery, surgery for pineal region tumors) of the present.
 - Played a major role in continuing medical education of neurosurgeons of India through World Federation of Neurosurgical Societies (India) Trust of which he is a life trustee & Secretary

Neurosurgical Giants

- ★ **Norman McOmish Dott**- *aneurysm, facial pain*
- ★ **Sir Geoffrey Jefferson**- *atlas #*
- ★ **Charles Harrison Frazier**
 - ★ *subtemporal approach (tic douloureux), cordotomy*
- ★ **James Clark White**- *ANS, chronic pain, neuroprotection*
- ★ **William Jason Mixter**-*herniated PIVD ,spinal injuries*

Neurosurgical Giants

- **Max Minor Peet**- pineal gland, sensory root (gasserian ganglion) division, 50% dextrose in raised ICP, arterial HTN (B/L splanchnic section), favored local anaesthesia
- **Kenneth G Mckenzie**- clips, skull tongs
- **Hugo Kraysenbuhl**
- **Gerard Guiot**- hypothermia in NS, pituitary tumors (TNTS), thalamus, stereotaxic frame, parasagittal approach
- **Paul C Bucy**- premotor cortex, oligodendroglioma
- **Alfred W Adson**- nerve regeneration, sympathectomy (PVD), ANS, upright position, vertical incision

Bibliography

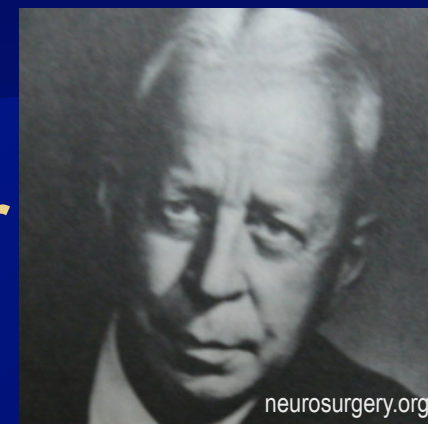
- Edited by Greenblatt Samuel H., Dagi T. Forcht and Epstein Mel H.. History of Neurosurgery, 1997. Park Ridge, Illinois: The American Association of Neurological Surgeons
- Ramamurthi and Tandon. Textbook of Neurosurgery, 2nd Edn
- Pandya SK: Neurosciences in India- Retrospect and Prospect, 1989
- Bucy Paul C. Neurosurgical giants: Feet of Clay and Iron, 1985



THANK YOU

Neurosurgical Giants

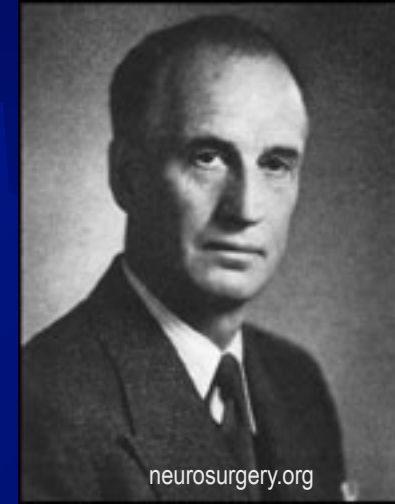
Howard Christian Naffziger



- ★ 1884- 1961; University of California, San Francisco
- ★ Seminal Work- *SDH, CSF spaces, pineal shift*
- ★ Surgical techniques-
 - Occipital flap, ‘California flap’ for pituitary tumors
 - Fascial fringe closure,
 - Depressed skull fracture,
 - 1931, 1st orbital decompression (infiltrative exophthalmos)
- ★ Clinical tests-
 - B/L jugular compression test (Naffziger’ s test)
 - Scalenus anterior syndrome (Naffziger syndrome)

Neurosurgical Giants

Kenneth George Mckenzie



1892- 1964; Toronto General Hospital

Contributions

- Detethering in Scoliotic Paraplegics
- Modified Cushings' silver clips
- Skull tongs in cervical fracture dislocations
- Intracranial divisions of vestibular portions in Meniere's disease

1st decortication for epilepsy

Developed new perforator & ball burr

Neurosurgical Giants

Albert Rhoton Jr

- ★ University of florida
- ★ Fatherly figure for microscopic neurosurgery
- ★ Brain anatomy - microsurgical perspective
- ★ Microneurosurgical techniques

Neurosurgical Giants

Ernest Sachs



- ★ 1879- 1958
- ★ Washington university, St Louis
- ★ Structure & function of optic thalamus
- ★ Society of Neurological Surgeons
 - Founder member & first secretary



neurosurgery.org

Neurosurgical Giants

Gerard Guiot

- ★ Suresne, France
- ★ *Corneo pterygoidian reflex* for brain stem lesions
- ★ 1947, *subtemporal approach* to brain stem
- ★ *Mesencephalic tractomy* for pain
- ★ *Peduncular tractotomy* for parkinsonian tremors
- ★ 1950s, ganglioplegic drugs
- ★ Electrophysiological exploration of deep cerebral structures
- ★ 1960, 1st brain surgery in profound hypothermia
- ★ Surgical repair of skull malformations

Neurosurgical Giants

Alfred Washington Adson



www.orthopedicsone.com

1887-1951; Mayo clinic

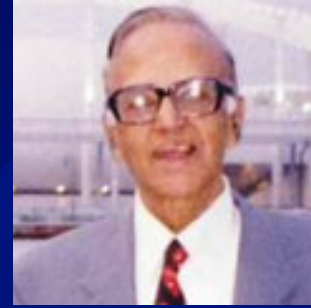
Contributions

- Nerve regeneration,
- Sympathectomy ganglionectomy
 - for peripheral vascular disease,
- Surgery of Autonomic nervous system,
- Transcranial repair of CSF rhinorrhoea

Temporal extradural approach (gasserian ganglion)

- upright position, vertical incision

Various 'outlet syndromes'



www.bookandborrow.com

Neurosurgical Giants

Balasubramaniam Ramamurthi

- ★ 1922–2003
- ★ October 24, 1950 started the neurosurgical service at the Government General Hospital, Chennai.
- ★ December 8, 1951 - Neurological Society of India- founder Secretary
- ★ First editor of *Neurology India*
- ★ 1970, Institute of Neurology
 - 1st comprehensive neurosciences center, South Asia

Neurosurgical Giants

Murray Alexander Falconer



link.springer.com

★ 1910- 1977; New Zealand

★ Contributions

- ★ Surgery of Subarachnoid hemorrhage
- ★ Temporal lobe epilepsy
 - Amygdalohippocampectomy en bloc
- ★ Pathology of brain abscess

Neurosurgical Giants

★ Three Frontal lobe Guys:

1. Egas Moniz
2. Walter J. Freeman (lobotomist)
3. Spafford Ackerly

★ “**The Tritarians**” 3 great figures of 20th medicine

1. Harvey Cushing
2. Arnold Carl Klebs (Switzerland)
3. John Farquhar Fulton

Bibliography

- ★ Edited by Greenblatt Samuel H, Dagi T Forcht, Epstein Mel H. History of Neurosurgery, 1997. Park Ridge, Illinois: The American Association of Neurological Surgeons
- ★ Ramamurthi, Tandon. Textbook of Neurosurgery, 2nd Edn
- ★ Pandya SK: Neurosciences in India- Retrospect and Prospect, 1989
- ★ Bucy Paul C. Neurosurgical giants: Feet of Clay and Iron, 1985

The background is a dark blue field filled with various sizes of semi-transparent gear shapes. On the left side, there is a vertical strip of colorful, textured gears in shades of orange, yellow, and brown. The text 'THANK YOU' is centered in a large, white, sans-serif font.

THANK YOU