

(A Health Awareness Initiative)

NEURO NEWSLINE

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NEUROSURGICAL DEVICES IN VOGUE !....

Surgery on the brain is the oldest among the medical arts practised dating back to the Neolithic (late Stone Age) period. Aulus Cornelius Celsus in ancient Rome did operate on depressed skull fractures in the first century A.D. Asia was home to many talented brain surgeons and an Islamic school of brain surgery flourished between 800 and 1200 A.D. Harvey Williams Cushing (1869-1939) an American neurosurgeon is considered the father of modern neurosurgery. Cushing used to control bleeding with silver clips, and his contribution included the development of electro-surgery and basic technical methods for performing neurosurgical operations.

Neurosurgical microscopes (CARL ZEISS & LEICA for example) transformed the way by which modern brain and spine surgeries are all about. It was a small group of neurosurgeons in 1960 who transformed microneurosurgery from a revolutionary experiment into the standard of care in much of modern neurosurgery. Many of the refinements of the last 50 years have greatly improved the handling and practical operation of the microscope. Today's sophisticated operating microscopes allow for advanced real-time angiographic and tumour imaging during the course of the surgery on the brain and spinal cord.

Neuroendoscopy (STORZ for example) has become an integral field within neurosurgery by allowing neurosurgeons unprecedented access

to deep structures within the cranial and spinal compartments, while allowing for minimal incisions, tissue retraction and post operative healing time. Though standalone applications of endoscopy in neurosurgery are few, it helps alongside microneurosurgery to a large extent.

Ultrasonic Surgical Aspirator (CUSA & SONOCA for example) plays a major role in surgery of the tumours that



so as to perform biopsy, injection, aspiration, stimulation and radiosurgery.

Intra operative Neurophysiological Monitoring (IONM) has been defined as the use of electrophysiological methods such as EEG, EMG and EP (evoked potentials) to monitor the functional integrity of the brain, spinal cord and other neural structures. It

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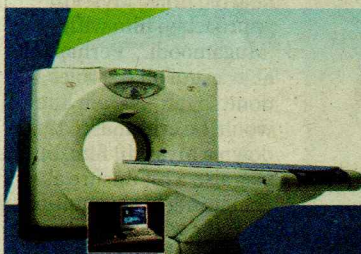
Neurosurgical devices in Vogue at the Hannah Joseph Hospital !

involve the brain and spinal cord. These devices generate ultrasonic waves in the range of 23 kHz to produce tissue cavitation. This mechanical energy is delivered through a hollow 3 mm tip that vibrates at 23,000 cycles per second. The entire device is embedded with an irrigator and aspirator in order to dispose of the tumour tissue debris. This greatly reduces the operating time, increases safety, improves quality and facilitates selective surgery.

CT guided Stereotactic biopsies & craniotomy are done using the LEKSELL or the CRW frames. It is a minimally invasive form of surgical intervention which makes use of a three-dimensional coordinate system to locate small targets inside the brain

helps to reduce the risk of iatrogenic damage to the nervous system and provides functional guidance to the neurosurgeon and anesthetist.

Neuronavigation is a set of computer-assisted technology used by neurosurgeons to navigate within the confines of the skull or vertebral column during surgeries on the brain and spine. Intra operatively the surgeon can visualise the surgical scenario in a 3D fashion so as to know the target which can help him to remove the tumour efficiently. It has adaptation to real-time imaging, transfer of information to the operating room for 3-D localisation, real time neuro monitoring and for robotics in neurosurgery using computer technology.



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