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Awake brain surgery while patient watches Baahubali movie- A novel cinema therapy.

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Abstract:
Awake brain surgery , also called as awake craniotomy, is a type of procedure performed on the brain while patient is awake and alert. Awake craniotomy is used to treat some brain tumors or epileptic seizures. Here in we are reporting a rare case of cavernoma at left sensory cortex abutting motor area in a 43 yr old female presenting with recurrent seizures. She underwent awake brain surgery and gross total excision of cavernoma. The patient was nervous, so to distract her we played her favourite movie Baahubali while performing surgery. The surgery got over in one and half hours, well before the movie finished. To the best of our knowledge this is a a unique way of stress relief for the patient, we named it as cinema therapy.

Key words: *Awake craniotomy, Baahubali, Cavernoma.*

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I. Introduction

Awake craniotomy is a robust and versatile procedure in Neurosurgery, which can decrease iatrogenic neurological injury. Awake craniotomy was introduced for surgical treatment of epilepsy, and has subsequently been used in patients with supra tentorial tumors, vascular lesions, deep brain stimulation near critical regions of brain[1,2,3]. During awake craniotomies, active participation by the patient is necessary to facilitate the surgeon's intra operative decisions. Awake craniotomy offers the unique possibility of reducing post operative morbidity, facilitating early discharge from the hospital. The primary goal of the neurosurgeon and his team is to make the operation safe and effective by reducing the psychophysical distress of the patient and morbidity. We noticed that intra operative distraction of patient can be done effectively by playing her favourite blockbuster movie Baahubali. We report a rare case of cavernoma at left sensory cortex abutting motor area presenting as recurrent seizures.

II. Case Report

A 43 yr old female presented to our hospital with complaints of recurrent complex partial seizures for past 2 months. On examination showed GCS 15/15 Neurological examination revealed no motor/ sensory deficits with MMSE 25/30. Cranial nerve examination normal. Family history is not significant. MRI brain done(Fig 1) which showed 2.5 x 1.8 cm lesion present at left sensory cortex abutting motor cortex area just above the sylvian fissure. In view of functional areas involvement we planned for awake craniotomy. Thorough pre op evaluation done with proper pre op counselling by team of doctors includes neurosurgeon, neurologist and anaesthetist. During pre op counselling we noticed her apprehension for that we given different options to distract her, at that time we given option to watch her favourite movie Baahubali. Finally we taken decision to play her favourite Baahubali movie on laptop while performing surgery. In view of intra op requirement of Neuro navigation machine we did surgery in another hospital where this facility available locally. Intraoperatively scalp block given by senior anaesthetist by using 0.25% bupivacaine. After scalp block we used Mayfield for head fixation. Patient was positioned in a comforatable position. Navigation registration process done. After positioning , we started playing of Baahubali movie in a well sterilised laptop. She underwent left parietal craniotomy centered on tumor. After craniotomy ropivacaine soaked cotton gauge applied over dura for 5 min. After durotomy, by using navigation(figure2,3) perfect localisation of tumor done and intraop movements of upper limbs and speech tested while excising the tumor. Gross total excision of cavernoma along with surrounding gliosis done. Patient was quite comfortable through out the procedure, in fact she was humming the Dandalayya song in the Baahubali movie during the surgery (Figure3). Throughout the procedure patient was managed by senior anaesthetist team. Post op patient had no fresh deficits and had seizure free in the 2yrs follow up period.

III. Discussion

The first applications of awake craniotomy can be traced to remote antiquity, where practitioners performed trepanations of the skull to release demons and treat a variety of conditions, including seizures, contusions and fractures[4]. It is from these humble beginnings that this technique evolved to become a robust neurosurgical tool in the management of a variety of diseases affecting the CNS. The first contemporary use of awake craniotomy was for epilepsy surgery under local anesthesia[5]. The expansion of the technique to other domains, namely neuro-oncology, is partially a result of improvements in anaesthetic agents and patient-monitoring equipment, as well as enhancements in intra operative functional mapping technology.

The main advantage of awake craniotomy is to allow for intra operative electrocorticography and cortical mapping to identify eloquent brain areas, thereby decreasing postoperative neurological morbidity. The primary cortical regions of interest, which will be subsequently discussed, are those controlling motor and language function. A secondary advantage that has been proposed is the ability to perform more aggressive tumor resections. Furthermore, recent emphasis has been placed on innovative application of awake craniotomy to tumors that lie beyond the eloquent cortex to facilitate early patient discharge, and allow the conduct of brain tumor surgery in low-resource settings.

The success of awake brain surgery depends on several factors:

1) Appropriate patient selection
2) Preoperative psychological preparation
3) Rapport building between patient and surgical and anaesthesia team.
4) Comfort in patient positioning
5) Appropriate scalp nerve block
6) Anaesthetic technique selection
7) Appropriate intra operative monitoring.
8) Continuous team communication.

Pre operative psychological preparation: This plays very crucial rule in the success of this awake craniotomy. Operating neurosurgeon as well as anaesthetist must gain the patient's confidence, as the patient will depend on him during the procedure. Prior to surgery, the patient must be informed about realistic description of the operating room, expected discomforts and level of co-operation expected, potential risks, safety measures and stages of the procedure. The patient must understand that these discomforts are essential for the success of the procedure. A visit to the operating room before surgery in order to familiarize the patient with the sounds and equipment in the rooms is a good idea. The patient should be explained the tasks that will be performed for speech and motor testing. Questions should be encouraged and if possible speaking to a prior patient who has undergone this procedure successfully in the past can be invaluable. During detailed preop counselling session we showed our previous awake brain surgery which we did it by playing old classic songs in a cell phone. At that time she herself asked us to show her favourite movie Baahubali.

Premedication: with sedatives and anticholinergic in patients is quite controversial, and decisions should be made based on the patient's clinical condition and the anaesthetic technique. Midazolam and clonidine are among the most efficacious agents. Antiemetic prophylaxis is desirable as a preventive measure. Low dose propofol administration is useful to prevent perioperative nausea and vomiting.[6] The majority of antiemetics used were metoclopramide (10 mg)[7,8], ondansetron (4-8 mg), droperidol (0.625-2.5 mg) and dexamethasone (4-16 mg).[9,10,11,12,13]

Scalp block: is quite indispensable for an awake craniotomy. The branches of cranial nerves blocked are supratrochlear, supraorbital, auriculotemporal, greater and lesser occipital, great auricular, zygomatic and infraorbital nerves. Local anesthetic (40-60 mL) with epinephrine assures long duration of block. Large volume of local anesthetic and well-vascularized areas predispose to anesthetic toxicity hence individual nerve blocks are preferred over wide areas of infiltration to decrease probability of local anaesthesia toxicity. The use of adrenaline (5 μg/mL, 1:200 000 dilution) both minimizes acute rise in plasma concentration and maximizes the duration of the block. Bupivacaine is the most commonly used local anesthetic but ropivacaine and levobupivacaine appear to be safer than bupivacaine. Our anaesthetist used the bupivacaine 0.25% for scalp block.

Monitored Anaesthesia care: According to the American Society of Anesthesiologists, monitored anesthesia care is a specific anesthetic protocol that includes careful monitoring and support of vital functions. The ASA recommends that the provider of MAC be qualified and prepared to convert to general anesthesia if necessary.[14] Propofol is widely employed for awake craniotomy because of its easily titratable sedative effect and rapid recovery with clear-headedness.[15] Propofol decreases cerebral oxygen consumption, reduces intracranial pressure, and has potent anti-convulsant properties. Propofol also has antiemetic properties and may be administered using a target controlled infusion (TCI) technique Normally, propofol infusion for TIVA is set to 100-200 mcg/kg/min; this does not appear to interfere with electrocorticography (ECoG) if infusion is

stopped 15 min before recording according to Herrick and 20 min in pediatric settings. Some employ propofol sedation only in combination with local anesthesia and without opioids infusion and are able to achieve good pain control.

Dexmedetomidine is a highly selective α_2-agonist with dose-dependent sedative, anxiolytic, and analgesic effects without ventilation suppression.[16] Dexmedetomidine has been used to treat discomfort in patients sedated with a propofol and remifentanil combination. Generally, a dexmedetomidine load of 0.5 to 1 μg/kg/h over 20 min is followed by infusion at rates of 0.1 to 0.7 μg/kg/h to 20 min prior to testing. During cortical mapping the infusion rate is usually set to 0.1 to 0.2 μg/kg/h. In our case our anaesthetist used Dexmedetomidine which given good result for patient.

Intraoperative monitoring: It typically includes electrocardiogram, invasive and non-invasive blood pressure measurements, pulse oximetry, respiratory rate, capnography, and temperature. If large blood losses are expected, a large bore IV and or a central venous catheter are inserted. Intra-operatively, the respiratory rate and end-tidal carbon dioxide are measured by means of nasal prongs-port with capnometry. Urinary catheter may or may not be inserted. In our case we not introduced urinary catheter. During surgery we used Neuro navigation for perfect localisation of tumor site. In our setup we don't have cortical mapping. So while removing tumor we intermittently checking upper limb movements and speech. In present scenario Cavernoma location corresponds to muscles supplying tongue, larynx and face area on the right side. So we intermittently checked the speech by nice talks with the patient.

During surgery, to distract her we played her favourite movie, Baahubali. The surgery got over in one and a half hours, well before the movie finished. In fact she was humming the Dandalayya song during the surgery. Now we can able to say this type of innovative entertainment will definitely give benefit to therapy, so named as Cinema therapy.

IV. Conclusions

Awake craniotomy for tumor resection is a complex technique that requires good patient and equipment engagement where psychological support might be more helpful than the pharmacological approach. Dexmedetomidine appears to be the best drug for sedation without interference with respiratory function. In awake brain surgeries addition of amusements like showing movies, sports etc may definitely gives extraordinary advantage to scientific results.

References

[1]. Burchiel KJ, Clarke H, Ojemann GA, Dacey RG, Winn HR. Use of stimulation mapping and corticography in the excision of arteriovenous malformations in sensorimotor and language-related neocortex. Neurosurgery. 1989;24:322–7.

[2]. Duffau H, Capelle L, Sichez JP, Faillot T, Abdennour L, Law Koune JD, et al. Intra-operative direct stimulations of the central nervous system: The Salptrière experience with 60 patients. Acta Neurochir (Wien) 1999;141:1157–67.

[3]. Lüders JC, Steinmetz MP, Mayberg MR. Awake craniotomy for microsurgical obliteration of mycotic aneurysms: Technical report of three cases. Neurosurgery. 2005;56(1 Suppl):E201.

[4]. July J, Manninen P, Lai J, et al. The history of awake craniotomy for brain tumor and its spread into Asia. *Surg. Neurol.* 2009;71(5):621–624. Discussion 624–625. A history of the use of awake craniotomy.

[5]. Penfield W. *No Man Alone. A Neurosurgeon's Life*. Little Brown, MA, USA: 1977.

[6]. Tramèr M, Moore A, McQuay H. Propofol anesthesia and postoperative nausea and vomiting quantitative systematic review of randomized controlled studies. Br J Anaesth. 1997;78:847–55.

[7]. Keifer JC, Dentchev D, Little K, Warner DS, Friedman AH, Borel CO. A retrospective analysis of a remifentanil/propofol general anesthetic for craniotomy before awake function- al brain mapping. Anesth Analg. 2005;101:502–8.

[8]. Tobias JD, Jimenez DF. Anaesthetic management during awake craniotomy in a 12-year-old boy. Paediatr Anaesth. 1997;7:341–4.

[9]. Herrick IA, Craen RA, McLacklan RS, Girvin JP, Parrent AG, Eliasziw M, et al. Propofol sedation during awake craniotomy for seizures: Patient controlled administration versus neurolept analgesia. Anesth Analg. 1997;84:1285–91.

[10]. Sarang A, Dinsmore J. Anesthesia for awake craniotomy evolution of a technique that facilitates awake neurological testing. Br J Anaesth. 2003;90:161–5.

[11]. Tijero T, Ingelmo I, García-Trapero J, Puig A. Usefulness of monitoring brain tissue oxygen pressure during awake craniotomy for tumor resection. J Neurosurg Anesthesiol. 2002;14:149–52.

[12]. Whittle IR, Midgley S, Georges H, Pringle AM, Taylor R. Patient perceptions of awake brain tumour surgery. Acta Neurochir (Wien) 2005;147:275–7.

[13]. Schulz U, Keh D, Fritz G, Barner C, Kerner T, Schneider GH, et al. Schlaf-Wach-Schlaf technik zur wachkraniotomie. Anaesthetist. 2006;55:585–98.

[14]. American Society of Anesthesiology House of Delegates. Position on Monitored Anesthesia Care. ASA Standards, guidelines and statements. 2005.

[15]. Hans P, Bonhomme V. Why we still use intravenous drugs as the basic regimen for neurosurgical anesthesia. Curr Opin Anaesthesiol. 2006;19:498–503.

[16]. Bekker A, Sturaitis MK. Dexmedetomidine for neurological surgery. Neurosurgery. 2005;57:1–10.

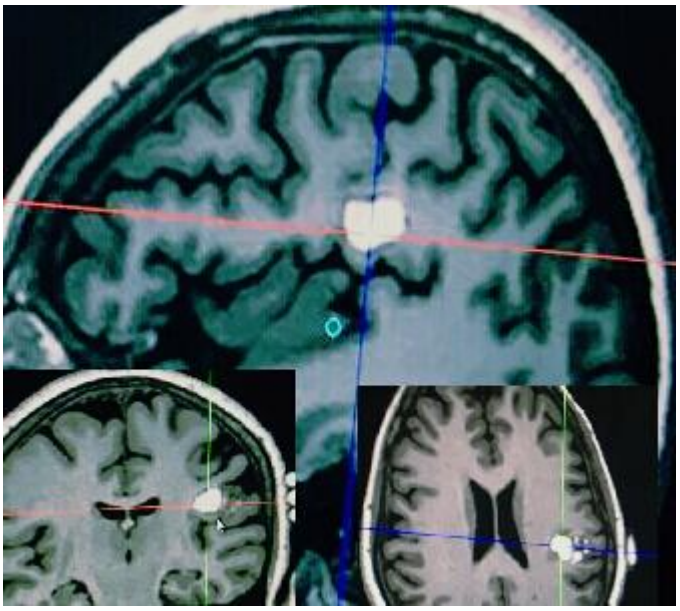
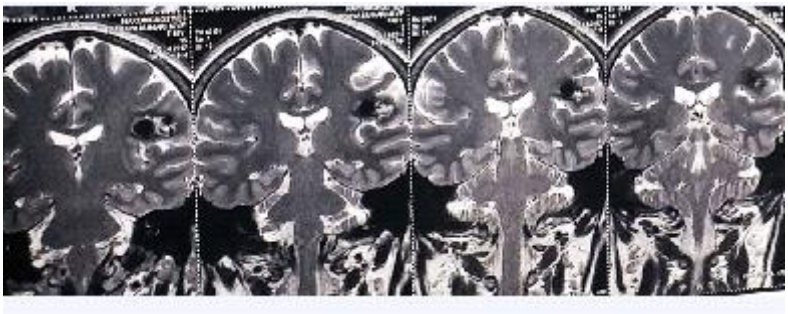


Figure 1. MRI



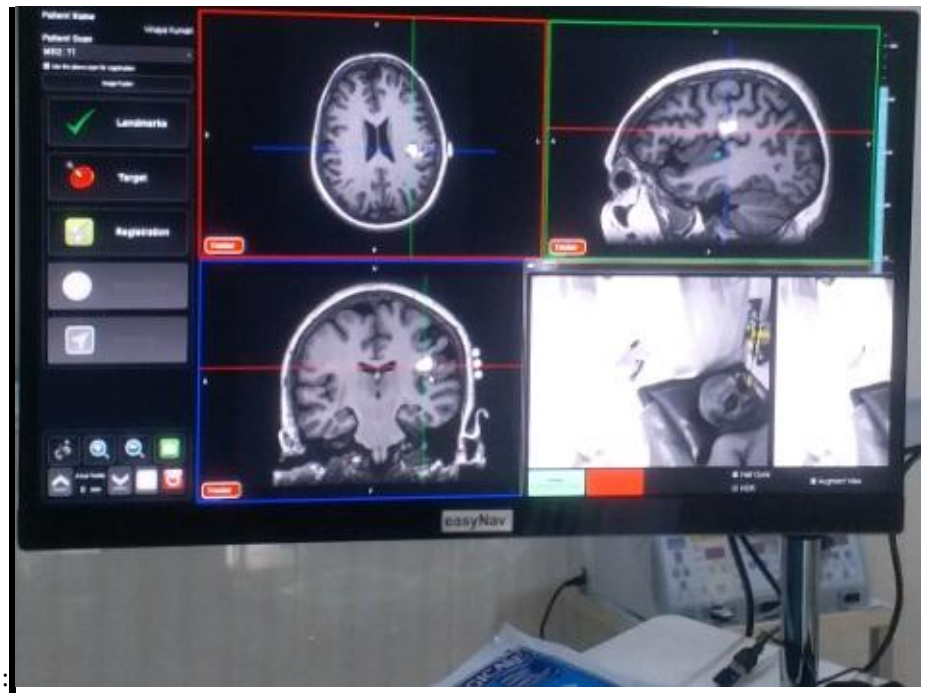


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Figure 2

Figure3:

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