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## *Case Report*

# INTRACTABLE TEMPORAL LOBE EPILEPSY (TLE) FROM TUBERCULOMA; MICRONEUROSURGICAL MANAGEMENT OF BY AMYGDALOHIPPOCAMPECTOMY WITH LESIONECTOMY PLUS STANDARD ANTERIOR TEMPORAL LOBECTOMY: A CASE REPORT AND SHORT REVIEW OF LITERATURE

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**Abstract:**

**Patient presenting as a case of Temporal Lobe Epilepsy (TLE) are usually resistant to antiepileptic drugs and surgery is the treatment of choice. This type of epilepsy may be due to Mesial Temporal Sclerosis (MTS), tumors [i.e. low grade glioma, Arterio-venous Malformation (AVM) etc], trauma, infection (Tuberculosis) etc. Here we report a case of surgically treated TLE that was due to a large tuberculoma in medial temporal lobe. Intractable epilepsy caused by tuberculoma is rare. The only presenting symptoms was Complex partial seizure (Psychomotor epilepsy) for which the patient underwent scalp EEG (Electro Encephalography) and MRI (Magnetic resonance imaging) of brain. The patient was managed by amygdalohippocampectomy with lesionectomy plus standard anterior lobectomy. Postoperatively she was on anti-tubercular therapy and on carbamazepine. The case was seizure and disease free till last follow up.**

**Key Word: Tuberculoma, Temporal lobe epilepsy, Amygdalohippocampectomy, Anterior temporal lobectomy, Lesionectomy.**

## Introduction:

The frequency of CNS involvement of tuberculosis ranges from 0.5% to 5.0% in the literature[1,2] and is seen most commonly in the developing countries. Tuberculoma is encountered in only 15% to 30% cases of CNS tuberculosis[2] and are mostly hemispheric[3,4]. The other rare locations are the sellar area, cerebellopontine angle, Meckel's cave, suprasellar cistern, hypothalamic region[5,6]. Patient with CNS tuberculosis can present with seizure with other focal signs & signs and symptom of raised intra cranial pressure. Epilepsy the only presenting feature in CNS tuberculoma is rare. Tuberculoma with only intractable epilepsy is further rare. About 20% epilepsies are drug resistant and intractable[7]. In this group of patient some form of surgery is usually needed either to cure epilepsy or to improve living standard by better control of epilepsy with drugs. The idea of surgical treatment for epilepsy is not new. However, widespread use and general acceptance of this treatment has only been achieved during the past three decades. Improvements in imaging resulted in an increased ability for preoperative identification of intracerebral and potentially epileptogenic lesions. High resolution magnetic resonance imaging plays a major role in structural imaging. EEG (Especially video), MRI and other functional imaging usually help in identification

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of epileptogenic zone or foci. Today, epilepsy surgery is more effective and conveys a better seizure control rate. It may be curative when associated with a benign lesion. It has become safer and less invasive, with lower morbidity and mortality rates.[8]

Here we report a case intractable temporal lobe epilepsy from tuberculoma that was managed by amygdalohippocampectomy with lesionectomy plus standard anterior temporal lobectomy. So far our knowledge it is the first reported case of intractable temporal lobe epilepsy surgery from large tuberculoma.

**Case presentation:**

Patient KS of 26 years old right handed house wife presented with epigastric discomfort with feeling of hungry followed by loss of awareness of surroundings with lip smacking for a period 90-120 sec for last 05 months. Initially these event of attack was less frequent (1-2 attack/week).She was taking AEDs(Carbamazepine+Phenoytoin) for last 4 months. But recently frequency of seizure increased 4-5 attack/ day. Her general, systemic and neurological examination including mental functions were normal. Her haematological examination and chest x-ray were within normal limit. Scalp EEG showed epileptogenic foci in left temporal region. MRI of brain showed left antero-inferio-medial temporal (i.e amygdala and hippocampal area) hyperintense lesion of 2x2x1.5 cm mass effacing left temporal horn (Figure1). She underwent amygdalohippocampectomy with lesionectomy plus standard anterior temporal lobectomy. Histopathology revealed tuberculosis (Figure2A&B). Postoperatively she recovered uneventfully and anti-tubercular therapy started and continued for 18 months. She was put on carbamazepine 300mg tablet thrice daily that was tapered and 4 months after operation dose was reduced to 300mg 12 hourly. Eight months after operation carbamazepine dose was further reduced to 300mg tablet daily. Carbamazepine was stopped 01 year after operation. She was seizure free for last eight months. Post operative MRI of brain at the end of 4th months after operation showed no residual or recurrent lesion (Figure2C&D) and there was no visual field defect, nominal dysphasia or memory disturbance.

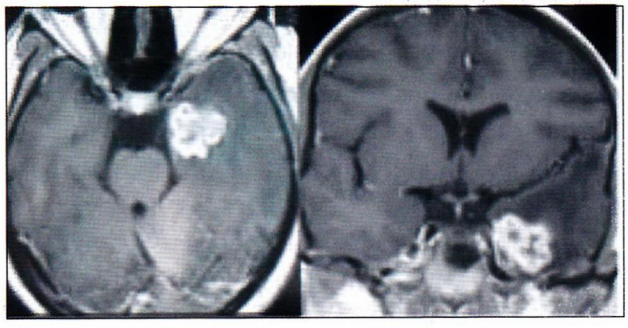

**Figure1:** *MRI of brain T1 weighted images A-axial view and B-coronal view showing hyperintense left anterior medial temporal lobe lesion causing TLE.*

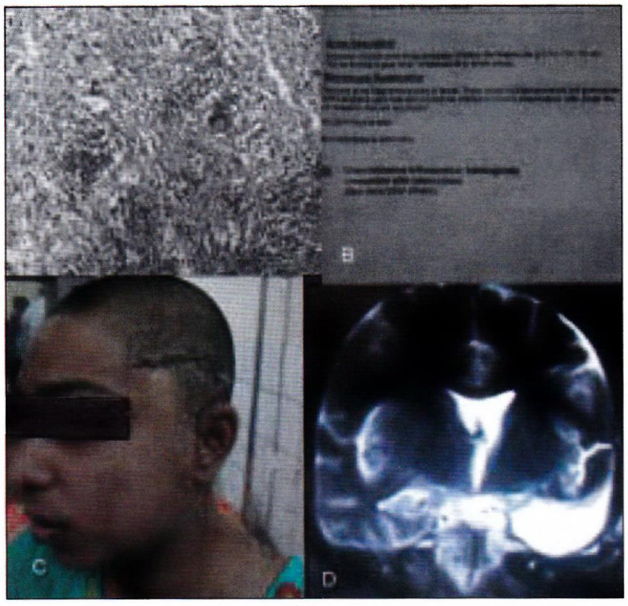

**Figure2:** *A- Histopathology (Microphotograph showing tuberculosis), B-Histopathology report, C-post operative picture of patient, D-MRI of brain T2 weighted coronal image after left sided lesionectomy plus amygdalohippocampectomy and standard anterior temporal lobectomy.*

**Discussion:**

In the early 20th century, central nervous system (CNS) tuberculoma constituted 34% of all intracranial mass lesions identified at autopsy[9]. This ratio was found to be 0.2% in all biopsied brain tumours between the years 1955 and 1980 at a neurological institute in a developed country[10]. Although large series from developing countries continue to be reported[3] and incidence has increased for the last 20 years due to human immunodeficiency virus (HIV) infection. Large tuberculoma in temporal lobe causing only intractable TLE that needed epilepsy surgery is very rare. William MacEwen (1848–1924) and Victor Horsley (1857–1916) in London were the first to localize and remove epileptogenic lesions, as identified by their symptomatogenic zone, according to the pioneering

work of John Hughlings Jackson (1835–1911)[8]. After a long dormant stage epilepsy surgery developed tremendously in last three decades[8]. Among the drug resistant intractable epilepsy, temporal lobe epilepsy is the commonest epilepsy (about 80%) and it responds beautifully to surgery[7,8] Like obstructive jaundice (which is called surgical jaundice) temporal lobe epilepsy is called the surgical epilepsy. Common causes of intractable surgical epilepsy is cortical dysplasia, MTS, Temporal lobe and other lobe tumors (DNET, ganglioglioma and other),cortical atrophy, stroke, trauma, vascular lesion (AVM, cavernoma )etc[7,8,11].

We went for amygdalohippocampectomy with or without lesionectomy plus standard anterior temporal lobectomy in all cases but selective amygdalo-hippocampectomy with lesionectomy could be another surgical option to these lesions[8]. Size of the lesion, possibility of different pathology, narrow space through trans-sylvian rout and possibility of manipulation and damage of critical vessel and neural structures and most importantly less familiarity of the approach along with less success rate of amygdalohippocampectomy in controlling epilepsy helped us to take decision in favor of trans middle temporal gyrus approach amygdalohippocampectomy with lesionectomy plus standard anterior temporal lobectomy instead of selective amygdalohipp-ocampectomy in the hope to cure epilepsy as well as the lesion. It has been suggested that the amount of tissue resected in mesiotemporal operations is crucial for surgical success in mesial TLE[1]. In a randomized, prospective study comparing the transsylvian with the transcortical approach, seizure outcome was similar[12,13]. Middle temporal gyrus approach does not usually damage the optic radiation (Meyer loop) unless excessive backward and upward retraction or misdirection of transcortical incision[4]. In our case we found no visual field defect both clinically and in perimetry.

Generally, complication rates of epilepsy surgery are relatively low and thought to be acceptable, with approximately 1 to 2% permanent morbidity[15]. The rate of minor complications was 3.6%, and the rate of major complications was 1.26% in the Zürich series of 478 amygdalohippocampectomies. Persisting hemiparesis occurred in 0.84% as a result of choroidal infarcts of the internal capsule[16]. Typical neurological complications after surgery for TLE include temporary dysphasia or hemiparesis as caused by manipulation-induced brain swelling or brain contusion, small vessel infarction, and hemorrhage. There are the classic surgical problems such as infection, thrombosis, etc., in the range of 2 to 4%, which rarely cause permanent damage[1,15]. The mortality rate is clearly below 1% in most series.

Seizure control rate in MTS after surgery is excellent[8,11]. In certain developmental tumors, e.g., gangliogliomas and dysembryoplastic neuroepithelial tumors, which can be treated with excellent seizure-control rates in most patients[12]. Also, certain types of low-grade gliomas (e.g., isomorphic subtype of low-grade astrocytoma, pilocytic astrocytoma) can be operated on with excellent results[18]. In a series limited to preoperatively tailored resections for lesional (nonsclerotic) mesial TLE, satisfactory seizure control was obtained in 86% of patients [6]. Outcome with lesionectomy and corticectomy was excellent, especially when a tumor was present (95% satisfactory seizure control)[19]. But result of excision of tuberculoma with AH and standard ATL for intractable epilepsy is not known. In our case the short term result is encouraging and more follow up period is needed for 'Engel grading' of epilepsy surgery. Although it depends more on patient selection than surgery, it should be noted that operating on children and adolescents with epilepsy is extraordinarily promising with respect to seizure control and neuropsychological and psychosocial outcomes[20,21]. Epilepsy surgery today is more effective with better seizure control rates; it is safer and less invasive with lower morbidity and mortality rates .In 'epilepsy surgery program' the team should be formed of epileptologist, neuropathologist, neurophysiologist, neuroradiologist and neurosurgeon with the facilities of video EEG, MRI and other imaging that are very essential for successful development and upgradation of epilepsy surgery[8]. Though rare a lesion in temporal lobe presenting with TLE one should not forget the possibility of tuberculoma.

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