Limited access inferior temporal gyrus approach to mesial basal temporal lobe tumors

Clinical article

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Object. In this retrospective review, the authors examine the clinical characteristics, diagnosis, and outcome of surgery in 25 consecutive patients with mesial basal temporal lobe (MBTL) tumors. A limited access approach to the inferior temporal gyrus (ITG) was used.

Methods. Patients with MBTL tumors were identified from the epilepsy and tumor surgery database at the authors’ institution. Intraaxial tumors localized to the mesial basal structures, and without involvement of the cortical surface of the temporal lobe, temporal stem, and basal ganglia were included. Preoperative and postoperative MR images were obtained in all patients. The mean follow-up period was 24 months (range 9–36 months). Preoperative symptoms, neurological deficits, outcomes, surgical complications, and a technical description of the approach are discussed.

Results. Intraaxial MBTL tumors in 25 patients (mean age 44 years, range 8–76 years) were resected using a limited access approach via the ITG. The largest groups of tumors were high-grade gliomas and dysembryoblastic neuroepithelial tumors (8 in each group), followed by oligodendrogliomas, cerebral metastases, and gangliogliomas. Seizures, headaches, and disorientation were the most common preoperative symptoms. Postoperative MR images demonstrated gross-total resection in all cases. There were 2 surgical complications (a superficial wound infection and a transient frontalis branch palsy). There were no permanent neurological complications or significant new hemianoptic defects.

Conclusions. A limited access ITG approach performed with intraoperative image guidance offers an alternative corridor for resection of MBTL tumors (Schramm Type A). This approach may be technically less demanding than the transsylvian or subtemporal approach. Gross-total resection is feasible utilizing this approach and compares favorably with other, more classical approaches. (DOI: 10.3171/2008.4.17508)

Key Words • glioma • inferior temporal gyrus • mesial temporal lobe tumor • temporal lobectomy • transcortical tumor resection

Surgical approaches to the MBTL have evolved over the past 20 years. The optimal surgical approach and corridor remain controversial and should be tailored individually to prevent neurological complications. The approaches described in the literature reflect advances in the understanding of temporal lobe epilepsy, temporal lobe anatomy, surgical navigation systems, and recently, diffusion tensor imaging. Most studies of MBTL tumor series have focused on the surgical management of epilepsy and the use of other treatment options after epilepsy surgery has failed. There are limited published series describing operative experience with MBTL tumors.

Although many surgical approaches to MBTL tumors are well known, transcortical approaches have not been frequently described. Due to the difficult mesiobasal location of these tumors and the goal of preserving vision, memory, and language, transcortical temporal approaches have not been advocated in the past few decades. In reality, each approach has its own advantages and pitfalls. The descriptions and names of these surgical approaches can be confusing as some of them may be similar, minor variations of another approach or a combination of approaches. Some approaches are technically challenging and have a steep learning curve.

The transsylvian route can be technically demanding and is associated with an increased risk of vascular injury or vasospasm. Lateral approaches through the superior temporal sulcus or MTG require resection of “potential” eloquent temporal neocortex. Subtemporal approaches have limited working space with considerable temporal lobe retraction and potential injury to the vein of Labbé. Regardless of their chosen approach, most authors have discussed large craniotomies exposing the majority of the temporal lobe, sylvian fissure, and frontal lobe. These
craniotomies are inherently associated with large scalp incisions and extensive dissection of the temporalis muscle; the cosmetic implications of such openings are well known.

In recent years, the use of surgical navigational systems has sparked renewed interest in limited access trajectories. Over the past decade, we have continued to refine our procedure for selective mesial basal temporal resection of temporal lobe lesions. We perform a selective exposure using a small cranial opening with a trajectory through the ITG. The surgical technique, symptoms, lesions, and outcomes are presented. To our knowledge this is the largest reported series of mesial temporal lobe tumor resections performed using only a limited access ITG approach.

Methods

Between 1999 and 2006, 132 patients with temporal lobe tumors were identified and received treatment at our institution. All surgeries were performed by the senior author (F.L.V.). Patient information was obtained retrospectively from the operative, tumor, and epilepsy surgery databases. Twenty-five patients were identified to have tumors in the most mesial basal location (uncus, amygdala, hippocampus, and parahippocampus) of the temporal lobe (Schramm Type A tumors33). Extraaxial tumors and intraaxial tumors with extension into the brainstem, temporal stem, lateral basal ganglia, insular cortex, and superior or medial temporal gyrus were excluded. A single surgical approach was used in all patients: transcortical access through the inferior temporal gyrus. Preoperative and postoperative MR images were obtained with a 1.5-T system with T1-weighted (with and without contrast) and T2-weighted sequences in all patients. Patient data obtained from the epilepsy surgery database were studied additionally in accordance with our published protocol.2 Complications were divided into surgical, neurological, and medical categories. Gross confrontational visual field defects were recorded pre- and postoperatively, but formal visual field examinations were not routinely used.

Operative Technique

The surgical technique is similar to the approach we developed for use in patients with mesial temporal lobe epilepsy, and has been refined over the past decade by the senior author (F.L.V.). There have been minor modifications tailored to the size and location of the lesions. The surgical intent is GTR of the tumors; this includes removal of the hippocampus and part of the amygdala in patients with long-standing epilepsy.

Patients are placed in the supine position with placement of a roll under the ipsilateral shoulder. A standard 3-pin head holder is used and the head is turned almost 90° while extending the neck until the root of the zygoma is the most superior anatomical feature (Fig. 1A). The hair is shaved or spared depending on the patient’s preference. A vertical linear incision is marked starting 5–10 mm in front of the inferior aspect of the tragus, and extending superiorly ~ 6–8 cm. This produces an incision that is centered at the superior attachment of the auricle. The skin is incised, with care taken to preserve the superficial temporal artery, and the superficial temporalis fascia is exposed. A vertical incision is made in the superficial and deep fascia, and a muscle-splitting temporalis muscle dissection allows exposure of the squamous temporal bone. An oval 2 × 3–cm craniotomy is then created. The craniotomy should be centered at the root of the zygoma to maximize the exposure. Care must be taken to place the craniotomy flush with the floor of the middle fossa by guiding the craniotome inferiorly until it contacts the petrous temporal bone. Frequently a small amount of additional bone is removed to ensure that the inferior aspect of the craniotomy is flush with the floor of the middle fossa. Once the bone flap is removed and hemostasis obtained, the dura mater is opened in a curvilinear fashion based on the floor of the middle fossa. The dural opening is limited to the inferior and lateral aspect of the temporal fossa. Brain relaxation techniques, including hyperventilation and the optional mannitol use (0.5–1.0 g/kg body weight), allow access to the inferior temporal sulcus and ITG without brain retraction (Fig. 1B). Intraoperative image guidance helps to maintain precise spatial and anatomical orientation and delineate the margin between the tumor and the surrounding neural tissue. The intracranial dissection is then divided into 2 basic steps.

Step 1 involves resection of a portion of the ITG to provide a corridor to the mesial temporal lobe. Care is taken to stay within the ITG without disturbing the MTG. This effort is facilitated by the use of intraoperative image guidance. The cortisectomy begins at the level of the zygomatic root and the anterior extension is tailored accordingly. The temporal pole can be resected via this corridor if necessary. Landmarks encountered laterally to medially include the occipitotemporal sulcus, fusiform gyrus, and collateral sulcus (Fig. 2). Step 1 is finished when the tip of the temporal horn of the lateral ventricle is identified. The collateral sulcus is a helpful landmark for locating the temporal horn as it is at the level of the temporal horn in the axial plane. Dissection of the white matter fibers at this level will expose the ependyma of the ventricle. The temporal horn is opened at the most basal and anterior aspect of the ventricle to minimize disruption of the optic radiation. At the same time, drainage of cerebrospinal fluid from the ventricle allows further brain relaxation. At this phase of the procedure the table is placed in the Trendelenburg position to allow better visualization of the basal temporal lobe structures.

Step 2 entails the isolation and resection of the lesion (using an ultrasonic aspirator) including a large portion of the amygdala, parahippocampal gyrus, hippocampus, and the uncus, if necessary. The identification of the temporal horn structures, which include the choroid plexi and choroidal fissure, are useful anatomical landmarks for spatial orientation. Great care is taken to dissect the structures in a subpial fashion when dealing with the mesial temporal lobe. This provides protection for the underlying brainstem and associated perimesencephalic vasculature, including the posterior cerebral artery and its perforating branches. The use of a microscope is highly recommended for this stage of the procedure.
Once hemostasis is achieved, Surgicel (Johnson & Johnson) is applied to the surgical bed. The dura is closed with interrupted sutures, and a dural sealant is used if necessary. The bone flap is replaced with titanium miniplates. The temporalis muscle is closed in 1 or 2 layers using interrupted absorbable sutures. The scalp is closed inferiorly with deep dermal and superiorly with galeal inverted absorbable sutures. Lastly, the skin is closed with staples or sutures (3-0 nylon) to achieve a watertight and cosmetic closure.

Results

Twenty-five consecutive patients met the inclusion criteria (Schramm Type A tumors). The mean patient age was 44 years (range 8–76 years), and there were 13 male and 12 female patients. The mean follow-up period was 24 months (range 9–36 months). The left-to-right tumor localization was 13:12, and the most common presentation was seizure (15 patients). Nonspecific symptoms such as headache and vertigo were present in 17 patients, transient inattention and disorientation were seen in 8 patients, and 3 patients presented with dysnomia and mild dysphasia. An improvement in the clinical presentation was noted with preoperative steroid treatment. No gross visual field loss was identified preoperatively on confrontation testing. No patient had previously undergone surgery or radiation therapy. All lesions included in this series were mesiobasal, and there was no inferior, medial, or STG involvement. Four of the 25 tumors were \( \leq 2 \) cm, 13 were 2.1–3.5 cm, and 8 were 3.6–5 cm in size. Patients with smaller tumors more commonly presented with seizures, while patients with larger tumors presented with nonspecific symptoms such as headaches and focal deficits (for example, dysnomia and dysphasia). The distribution of histopathological diagnoses is shown in Table 1. In all cases the goal was GTR.

The length of hospitalization ranged from 36 hours to 4 days postoperatively (mean 2.5 days). Postoperative MR imaging was performed in all patients within 24 hours of surgery. Imaging findings demonstrated GTR in all cases with no abnormal signal in nonenhancing (benign) tumors (Fig. 3) and no enhancement in high-grade gliomas and cerebral metastases (Fig. 4). Clinical improvement

![Fig. 1. A: Schematic illustration of the position. B: Drawing of the temporal craniotomy. Ant. = anterior; Post. = posterior.](image1)

![Fig. 2. Schematic illustration of the transcortical corridor through the ITG. F = fusiform gyrus.](image2)
of preoperative symptoms was noted in all patients at 6 weeks postoperatively. Gross confrontation visual field test results remained unchanged at the 6-week evaluation, but 1 patient with a large lesion (4.0 × 4.5 cm) underwent formal visual field testing after complaining of blurred vision. Humphrey 30–2 perimetry testing in this patient was compatible with a minimal loss of superior homonymous peripheral defect; this finding was not detectable in the clinical evaluation.

Two patients had surgical complications. One patient had a superficial wound infection that required local wound care and intravenous antibiotic therapy. The other complication was a transient frontalis palsy of the facial nerve that resolved within 8 weeks and had no long-term sequelae. Subtle neuropsychological deterioration is detectable only after extensive testing, which was not performed in these patients. Such testing is not usually performed in the typical oncology patient due to the nature of the disease. There were no major permanent neurological deficits, medical complications, or deaths.

Complete seizure control, Engel Class I\(^1\) in 12 of the 15 patients who presented with a seizure disorder, was 80% (mean follow-up 26 months, range 12–36 months). No tumor recurrence has been identified in the 14 patients with low-grade tumors (dysembryoblastic neuroepithelial tumors, oligodendrogliomas, and gangliogliomas). The mean follow-up period was 24 months (range 9–36 months).

In the 2 patients with metastatic tumors, local control (with adjuvant radiotherapy) was achieved at the last follow-up (mean follow-up 12 months, range 10–14 months). Both patients have since died due to disseminated systemic disease. Unfortunately, high-grade gliomas continue to be a challenge for the oncology team. Six patients presented with the pathological diagnosis of glioblastoma multiforme and 2 patients with anaplastic astrocytoma. Long-term survivors are limited to 4 patients (mean follow-up 22 months, range 18–32 months). Another 3 patients have died of disease progression (mean survival 15 months), and 1 patient was lost to follow-up after 9 months.

**Discussion**

The surgical management of MBTL tumors is not infrequently associated with temporary or permanent neurological impairment. Only ~ 10 years ago, resection of tumors in this anatomical area was avoided and tumor
biopsy sampling with adjuvant radio- and chemotherapy was advocated by even the most experienced neurosurgeons.49,51,52 Over the past decade there have been significant advancements in epilepsy surgery techniques. These new surgical approaches have recently been adapted and modified for use in tumor surgery.27,33,41,46,47 Although a lateral transcortical approach is probably the most common and standard trajectory used in clinical practice for temporal lobe tumors, there seems to be a limited number of reports in the literature. Instead, the most commonly described approach is either a transsylvian or subtemporal access route.

Over the past 10 years, several publications have been devoted to various forms of subtemporal25,28–31 and posterosilateral approaches, including resections of the petrous bone,16,31,36,40,41 and posterior midline approaches.28,37,42,44,51 Many authors have described these approach variants for aneurysm clipping of large vessels circumventing the brainstem or for arteriovenous malformations.10,15,39,47 There are few published series dedicated to surgical approaches and strategies for MBTL tumors. Most such series have focused more on the epilepsy surgery aspect and less on surgical technique. Only the studies by Yaşargil et al.,51 Russell and Kelly,31 and, more recently, Schramm and colleagues33,34 have focused significantly on the technique for resection in this location. Several surgical techniques have been described in the literature, but only a few are transcortical approaches, reflecting the “difficult medio-basal location of most of these tumors and the intention to preserve the optic pathway.”53 Yaşargil and associates49,51 are strong proponents of the transsylvian approach. In their series, almost all 306 gliomas located in the temporal me-

Fig. 3. Preoperative axial (A) and coronal (B) T2-weighted MR imaging scan showing an oligodendroglioma at the basal surface of the right temporal lobe. Postoperative axial (C) and coronal (D) MR images obtained 14 months later showing no tumor regrowth.
siobasal or multicompartmental areas were removed via the pterional anterior transsylvian approach (95.6%). A second operation via a posterior interhemispheric approach was used for the residual tumor that extended posteriorly into the dorsal mesencephalon, posterior cingulate gyrus, and the inferior part of the precuneus. In their chapter on limbic and paralimbic tumors, Yaşargil et al. proposed that “these tumors can be approached and extirpated via the transsylvian approach without recourse to cortical incision in superficial layers or temporal lobectomy.” Yaşargil et al. are not strong proponents of anterior two-thirds temporal lobectomy, or transcortical and subtemporal approaches to resection of MBTL gliomas. Many surgeons believe that the transsylvian route is technically more demanding and puts the anterior circulation vasculature at risk for injury or vaso-

**Fig. 4.** Preoperative axial (A) and coronal (B) T1-weighted MR images with Gd enhancement demonstrating a glioblastoma in the MBTL. Postoperative Gd-enhanced axial (C), coronal (D), and sagittal (E) MR images showing the extent of tumor removal.
spasm. Alternatively, subtemporal approaches offer limited working space and are associated with varying degrees of temporal lobe retraction and injury to the vein of Labbé. In their series, Schramm and Aliashkevich\(^\text{1}\) reported that 28% of patients who underwent tumor resection via a subtemporal approach developed a new quadrantanopia.

In their study of 235 patients with tumors in the temporal lobe and the insular cortex, Schramm and Aliashkevich\(^\text{2}\) reported that 106 lesions (45.1%) were true MBTL/Type A tumors, and 65.2% were small or moderately sized tumors (≥ 5 cm). The authors used the transsylvian approach in 28% of patients, and the rest of the tumors were resected via an anterior two-thirds temporal lobectomy (23.0%), temporal pole resection (≤ 3.5 cm, 15.3%), subtemporal approach either with or without narrow and partial gyral resection (19%), and a transcortical approach (6.0%). The classical approaches (anterior two-thirds resection, < 3.5-cm pole resection, and the transsylvanian approach) were used in 66% of the patients. In 3 patients the subtemporal approach was used in combination with a transsylvanian route. In the Schramm and Aliashkevich series, 14 of 235 patients underwent a transcortical lateral approach via the STG (in 5 patients), the MTG (in 6), or a combination of the STG and MTG (in 1 patient). The transcortical approach went through the MTG and ITG in only 2 patients (0.9%). No patient underwent a corticectomy through the ITG alone. The MTG approach\(^\text{7,45}\) is well known, but entails the risk of Wernicke aphasia in the dominant hemisphere or a superior homonymous quadrantanopia caused by an injury to the Meyer loop. Ikeda and associates\(^\text{7}\) described in a small series of 3 patients with vascular lesions who underwent a transcortical (inferior temporal gyrus), transventricular, and transchoroidal fissure approach to lesions in and around the ambient cistern. All 3 patients experienced good postoperative results, and their visual fields and memory function were not compromised.

As reflected by the number of surgical approaches described in the literature, the choice of the corridor to this region remains controversial.\(^\text{1,4-6,22,23}\) When only MBTL tumors (Schramm Type A) were considered, the transsylvian route was the most frequent approach described in the literature. The approach is usually dictated by the location of the tumor, the surgeon's preferred surgical approach, the surgical intention (only to excise the tumor or to treat the epilepsy simultaneously), preoperative differential diagnosis, patient age, and neurological status. This is also reflected in the continuing controversy regarding the optimal selective resection among epilepsy neurosurgeons.\(^\text{7,38}\) Regardless of the approach used, the long, narrow operative field and complex anatomy causes spatial disorientation and difficulty in locating intraparenchymal lesions. The advent of intraoperative image guidance systems has helped to circumvent some of these difficulties, and promoted the inception of a limited access exposure to the MBTL.\(^\text{34,27,46,48}\)

Over the past decade, we have refined a surgical approach for resection of MBTL lesions. We prefer a small cranial opening and a limited access exposure through the ITG. We have adapted this technique when dealing with tumors that are truly isolated to the MBTL as defined above (Schramm Type A\(^\text{3}\)). Unlike the more classical approaches (transsylvian, subtemporal, and anterior temporal lobectomies) in which the cranial opening is large with extensive dissection of the temporalis muscle,\(^\text{1,5,50}\) our technique is limited to a 2 × 3-cm trephine opening. Although this trephine opening has been described previously in the context of epilepsy surgery,\(^\text{24,27}\) we believe that this is the largest published series to date concerning the resection of MBTL tumors. The shorter linear incision and opening enhances healing and is beneficial in patients harboring malignant tumors and in whom adjuvant chemotherapy and radiotherapy is usually recommended. Also, the limited facial swelling and early mobilization with this technique seems beneficial in this group of patients.

In using this technique, care must be taken to prevent damage to the frontalis branch of the facial nerve. This nerve usually lies 2.0-cm anterior to the tragus.\(^\text{9}\) If the incision is placed 5–10 mm anterior to the tragus and a limited subgaleal dissection is performed, the potential for injury to the nerve is minimized.\(^\text{9}\) In the present study postoperative transient palsy developed in only 1 patient; this was most likely secondary to aggressive retraction during the dissection of the temporalis muscle and fascia.

A review of other series of MBTL tumors is necessary for understanding the full spectrum of neurological complications caused by tumors in this location.\(^\text{4-7,13,14,31,46,51}\) Unfortunately, most surgical series include tumors with extensive involvement of the temporal stem and neocortex. Patients with tumors involving the temporal stem can present with significant visual deficits. Neocortical involvement can potentially result in speech and neurocognitive deficits. Thus, we understand that complications can be similar but not equal due to the extensive involvement of the temporal lobe structures.

The surgical mortality rate with temporal lobe tumors is extremely low, and there were no reported deaths in the series of Fried et al.,\(^\text{14}\) Weiner and Kelly,\(^\text{46}\) Clusmann and colleagues\(^\text{7}\), or Yaşargil and colleagues.\(^\text{51}\) There was only 1 death among 40 patients (2.5%) in the series by Russell and Kelly,\(^\text{31}\) and 1 (0.4%) of 235 patients in the series by Schramm and Aliashkevich.\(^\text{33}\) Hemiparesis has been reported between 2.5 and 5% in other tumor studies.\(^\text{31,31,32}\) We believe that this type of complication usually occurs when there is damage to the choroidal artery or perforating branches of the brainstem. Early identification of the vascular tree and subpial dissection of the tumor and surrounding mesial structures, if possible, will decrease the risk of injury to the vascular supply of the brainstem and white matter tracts.

Because resection of temporal lobe lesions carries a significant risk of compromise of the visual pathways, it may be acceptable to consider these issues separately from other neurological complications. Only the authors of 3 previous MBTL tumor series mentioned preoperative visual field defects: Russell and Kelly\(^\text{31}\) (17.5%), Yaşargil and Reeves\(^\text{50}\) (19.5%), and Schramm and Aliashkevich\(^\text{33}\) (12%). Postoperative increases in visual field defects has been reported from 4.5 to 36% using both classical ways (transsylvian and subtemporal) and in more recently described series.\(^\text{31}\) In Ikeda and colleagues’ series\(^\text{7}\) using the transchoroidal fissure approach, no visual field defect was detected postoperatively in any patient. Some authors
make the cortical incision in the middle temporal gyrus or a combination of the MTG and ITG, which entails the risk of upper quadrantanopia caused by injury to the Meyer loop. The Meyer loop is located deep to the STG and MTG, beginning at the level of the lateral geniculate body. Access routes that involve the lateral corridor can cause a significant visual field defect. A recent study in formalin-fixed normal human brain tissue using the Klinger fiber dissection method demonstrated the relationship of the optic radiation fibers and the temporal horn. Briefly, the optic radiation is divided in 3 bundles (anterior, middle, and posterior) after leaving the cells of the lateral geniculate body. The anterior bundle, known as the Meyer loop, carries the optic fibers of the superior visual quadrant. This fiber bundle has a close relationship to the temporal horn. In the axial plane, at the level of the tip of the temporal horn, only the anterior bundle of the optic radiation covered the lateral half of the temporal horn. At the midsection of the temporal horn, the anterior and medial (central) bundles covered the roof and the lateral wall. Unfortunately, the anterior extent of the optic radiations remains controversial. According to Ebeling and Reulen, the average anterior edge of the Meyer loop is located ~ 27 mm (range 22–37 mm) anterior to the tip of the temporal horn. More recently, using the method of dissection tractography, it was noted that the tip of the temporal horn was not capped by optic radiation fibers. Nevertheless, quadrant defects often result when the tip of the temporal horn is opened and damage to the roof and lateral wall of the temporal horn has occurred. Only the inferior wall and floor of the temporal horn are free of optic radiation fibers anterior to the level of the lateral geniculate body. Thus, to minimize the potential for a major postoperative visual deficit, when the lesion is not invading or significantly disturbing the normal anatomy, we make our ventricular opening along the inferior wall and floor of the temporal horn. We realize that visual field defects may be common with this approach, especially with posterior extension of the temporal lobe tumors, but major clinical deficits are rare. In the present study we found no major visual field deficit on confrontation testing. The only patient who underwent a formal visual field test was found to have a clinically nondebilitating visual defect. Nevertheless, we understand that subtle abnormalities will only be detected on formal visual field testing.

Extensive cortical resection in the temporal lobe has been associated with decreased functioning on neuropsychological testing in the epilepsy nonlesional group. Due to the nature of the disease in oncology patients, formal neuropsychological testing was not performed either pre- or postoperatively. Neuropsychological outcome after selective amygdalohippocampectomy with a transsylvian versus a transcortical approach in the epilepsy population has failed to demonstrate a significant neurocognitive deficit with either technique. Nevertheless, to decrease potential deleterious cognitive effects, a limited cortical resection has been recommended. This technique offers a corridor with minimal cortical resection that allows enough space for resection of large and complex tumors of the mesial and basal temporal lobe. However, we understand that by not performing standard neuropsychological tests, subtle language or memory changes may not be discovered in routine neurological evaluation.

It is noteworthy that increased survival rates have been documented in patients with high-grade gliomas after GTR of the lesion. Control of epilepsy is also known to improve after complete removal of the radiographic abnormality. The goal in our patients was GTR of the tumor and, in cases of intractable epilepsy, resection of the mesial temporal structures. Postoperative Gd-enhanced MR images confirmed GTR in all cases. Visualization was not hindered by the exposure we used. Although this exposure requires a transcortical entry into the temporal horn, minimal damage to the temporal lobe will occur if microdissecting techniques, neuronavigation, and limited brain retraction are used. Our approach also entails a disconnection of the pathways connecting the uncus to the amygdala and hippocampus, which is useful for epilepsy control. Fortunately, these surgical steps had no major negative clinical impact in our group of patients. We believe that the surgery can be conducted relatively safely while achieving adequate tumor resection with a minimal access transcortical ITG approach. Most significantly, perhaps, is the close similarity in the frequency of unwanted side effects when the transsylvian approach and the classic anterior two-thirds lobe resection were compared with our results. Obviously a detailed knowledge of the microsurgical anatomy, as outlined by Wen et al., and surgical experience play an important role in successful MBTL tumor surgery.

Conclusions

Surgical approaches to the mesial temporal lobe have been redefined over the years as we begin to understand this complex area so intricately associated with language, speech, memory, and vision. All surgical techniques have their own merits and pitfalls, and the approach is usually chosen according to the surgeon’s preference and level of experience. We believe that a limited access approach to tumors of the MBTL utilizing a transcortical corridor via the ITG provides adequate exposure for GTR of MBTL tumors without an increase in the incidence of complications.

Disclaimer

The authors report no conflict of interest concerning the materials or methods used in this study or the findings specified in this paper.

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