[CLINICIAN’S LETTERHEAD]

[DATE]

Re: [Child’s Name]

[D.O.B.]

To whom it may concern:

[Patient] is a young [boy/girl] with a history of drug-resistant seizures. [S/He] underwent a [left/right] [partial/complete] temporal lobectomy [including resection of the left/right amygdala/hippocampus] to stop seizures caused by [cortical dysplasia/hippocampal sclerosis/tuberous sclerosis/etc].

[Child] is [now/not] seizure-free, [but/and] there may be permanent, unavoidable side effects from the surgery. These include:

**Visual Impairment**

[Child] may have a permanent visual field impairment in the upper quadrant of the opposite visual field from the removed temporal lobe. This is known as superior quadrantonopia and may include loss of up to ¼ of the foveal vision as well. This visual field loss affects both eyes and is a result of possible disconnection of Meyer’s loop in the brain.[[1]](#footnote-0) Assessment to determine this condition should be made using perimetry test (not confrontation examination alone) as patients often report no visual field issues but perimetry test confirms a visual field loss despite unremarkable confrontation examination.

Please note that this vision loss is not correctable using glasses because it is unrelated to focusing of the lens of the eye. Superior quadrantonopia can affect the [child’s] orientation and mobility in school in various static and dynamic environments, as well as [his/her] ability to view text and reading materials. In languages read from left to right, right quadrantonopia may affect a child’s ability to read/learn to read.

Additionally, because the surgery disrupted both the dorsal and ventral visual streams of the brain, the child may have visual processing challenges.[[2]](#footnote-1) A comprehensive visual assessment, including for cortical vision impairment and orientation and mobility, should be performed to determine if the child is identified as having a visual impairment..

**Hearing Impairment**

Cortical auditory impairment (also referred to as central hearing loss or central auditory processing disorder/CAPD) is a known challenge after temporal lobectomy.[[3]](#footnote-2) This is because one auditory cortex - the part of the brain that processes sound - has been removed.

The extent and severity of the impairment can vary from child to child, but typically results in mild-to-severe dichotic listening deficits, poor sound lateralization, difficulty understanding speech in the presence of noise, and sound localization challenges. Research shows that the probability of a decreased performance in a non-dominant-side dichotic test after surgery was 7.5-fold greater in patients who underwent surgery on the dominant temporal lobe compared with the nondominant temporal lobe.[[4]](#footnote-3)

Please note that cortical auditory impairment *cannot* be detected by a pure-tone hearing test which mainly assesses detection of sounds as a peripheral hearing function. A comprehensive auditory assessment, including pure tone hearing test as well as central auditory processing evaluation, should be performed to determine if the child is identified as having a hearing impairment.

**Speech** **and Communication**

The temporal lobe holds the primary auditory cortex, which is important for the processing of semantics of speech and plays a key role in speech comprehension.[[5]](#footnote-4) [Child] may have receptive or expressive speech and communication challenges, related either to the epilepsy or temporal lobe resection, or both. A comprehensive speech evaluation is thus recommended to determine if the child is identified as having a speech and/or communication impairment.

**Other Health Impairments**

**Fatigue** [Child] may have general fatigue, as well as decreased cognitive and physical stamina as a result of the surgery.

**Seizures** [Child] may have have a return of seizures at any time. [S/He] should have a seizure action plan and a complex care plan in place.

**Hydrocephalus** [Child] is at a small risk of hydrocephalus [or presently has shunt and concerns about shunt failure].[[6]](#footnote-5) The warning signs of hydrocephalus [or shunt failure] include, but are not limited to, headache, vomiting, sleepiness, cognitive decline, blurry vision, seizures, and/or behavioral changes.

**ADHD** [Child] may have challenges with higher executive function skills, We often see heightened auditory distractibility, attention concerns, or attention deficit hyperactivity or inattentive disorder (ADHD/ADID) post-operatively. Child may have hyperkinesis, perseverate, and/or self-stimulate. If parents are concerned, a comprehensive evaluation to determine whether child is identified as having ADHD should be performed.

**Specific Learning Disability or Intellectual Disability**

Children with temporal lobe epilepsy are at risk of reading difficulties involving accuracy and comprehension.[[7]](#footnote-6) Verbal memory, semantic memory, naming, emotional perception can be impacted as well.

Please note that temporal lobe surgery and removing anti-epileptic drug use is known to increase intellectual quotient over time in most children. [Child] may experience a drop in intellectual quotient immediately following surgery, followed by a slow upward trend as far as six years after or more, with a possible significant jump in IQ eight years or more after surgery.[[8]](#footnote-7)

If parents are concerned about specific learning disability or intellectual disability, a neuropsychological evaluation is recommended annually to fully understand these challenges as well as IQ trajectory as respects [Child], and to see if he/she is a child identified as having specific learning disability or intellectual disability requiring intensive instructional interventions.

**Autism**

Autism and epilepsy, even if seizures are controlled, often occur together.[[9]](#footnote-8) If parents are concerned, [Child] should be evaluated to see if he/she is a child identified as having autism.

**Behavior**

Children with epilepsy often have behavior challenges, even after surgery, or if medications are weaned. Surgery, however, often improves behaviors in most children.[[10]](#footnote-9) If parents are concerned, proper evaluations should be conducted to determine if the child’s behaviors affect [his/her] ability to access the educational environment or present safety concerns.

If you have any questions, please do not hesitate to contact me.

 Very truly yours,

 /s/

 Neurologist or Neurosurgeon

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3. Nagle S, Musiek FE, Kossoff EH Auditory processing following consecutive right temporal lobe resections: a prospective case study. J Am Acad Audiol. 2013 Jul-Aug;24(7):535- 43. [↑](#footnote-ref-2)
4. Han SH, Lee EM, Choi EJ, Ryu HU, Kang JK, Chung JW. Changes in Central Auditory Processing in Patients with Mesial Temporal Lobe Epilepsy after Anterior Temporal Lobectomy with Amygdalohippocampectomy. J Clin Neurol. 2016 Apr;12(2):151-159. [↑](#footnote-ref-3)
5. Hickok, Gregory; Poeppel, David (May 2007). "The Cortical Organization of Speech Processing". *Nature Reviews Neuroscience*. 8(5): 393–402. [↑](#footnote-ref-4)
6. Jutila L, Immonen A, Mervaala E, et al. Long term outcome of temporal lobe epilepsy surgery: analyses of 140 consecutive patients. Journal of Neurology, Neurosurgery & Psychiatry 2002;73:486-494. [↑](#footnote-ref-5)
7. Lah S, Castles A, Smith ML. Reading in children with temporal lobe epilepsy: A systematic review. Epilepsy Behav. 2017 Mar;68:84-94. [↑](#footnote-ref-6)
8. Skirrow C, Cross JH, Cormack F, Harkness W, Vargha-Khadem F, Baldeweg T. Long-term intellectual outcome after temporal lobe surgery in childhood. Neurology. 2011 Apr 12;76(15):1330-7. [↑](#footnote-ref-7)
9. Roberto Tuchman (2015) Autism and Cognition Within Epilepsy: Social Matters. Epilepsy Currents: July/August, Vol. 15, No. 4, pp. 202-205. [↑](#footnote-ref-8)
10. Lendt M, Helmstaedter C, Kuczaty S*, et al* Behavioural disorders in children with epilepsy: early improvement after surgery

*Journal of Neurology, Neurosurgery & Psychiatry* 2000;69:739-744. [↑](#footnote-ref-9)