

# An Alternative Mechanism for the Instant Removal of Hypervascular Anaplastic Meningioma with Recovery of Mentality with NaCl + KCl

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## Abstract

**Background:** There is limited information regarding adjuvant treatment for malignant meningiomas. Although external whole-brain irradiation is recommended, the patient's family in our case rejected this modality. Notably, traditional chemotherapy was ineffective. **Aim:** I speculated if the exfoliation of graphene could disassemble the three-dimensional (3D) structures of the graphene because the tumor mass or the blood clots including the graphene consisted of inhomogeneous materials. Therefore, I aimed to explore another possible mechanism for the instant removal of inhomogeneous materials. **Method:** Herein, I report a case of anaplastic papillary meningioma. A 59-year-old man presented with partial complex seizures and recurrent headaches following craniotomy for the removal of a mass with a right frontotemporal convexity 10 years ago. Computed tomography (CT) and magnetic resonance imaging demonstrated a right frontotemporal mass with diffuse contrast enhancement and extensive surrounding edema. A right frontotemporal flap was performed. The tumor and the infiltrated dura were removed, but massive intraoperative bleeding occurred and the right middle cerebral artery was clipped at the M2 territory. Postoperatively, the follow-up CT scan revealed hydrocephalus. Accordingly, a ventriculoperitoneal shunt was placed. The patient suffered from left hemiplegia as a sequela of intraoperative bleeding. Four months later, the follow-up CT scan showed chronic epidural hematoma in the right frontotemporoparietal region. The patient also had an altered level of consciousness. **Results:** The patient's level of consciousness was restored after infusion of a NaCl + KCl solution with instant disappearance of the mass. **Conclusion:** There may be another mechanism for disassembling the inhomogeneous graphene-containing complex, such as

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quantum fluctuation of the graphene exfoliation with pair annihilation or relation to tissue engineering by the graphene.

## Keywords

Malignant Meningioma, Colloid Gold, Camostat Mesylate, No Radiotherapy, No Recurrence

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## 1. Introduction

Hypervascular meningiomas often cause massive intraoperative hemorrhage during resection. They are most commonly supplied by the branch of the external carotid artery, which is frequently embolized preoperatively.

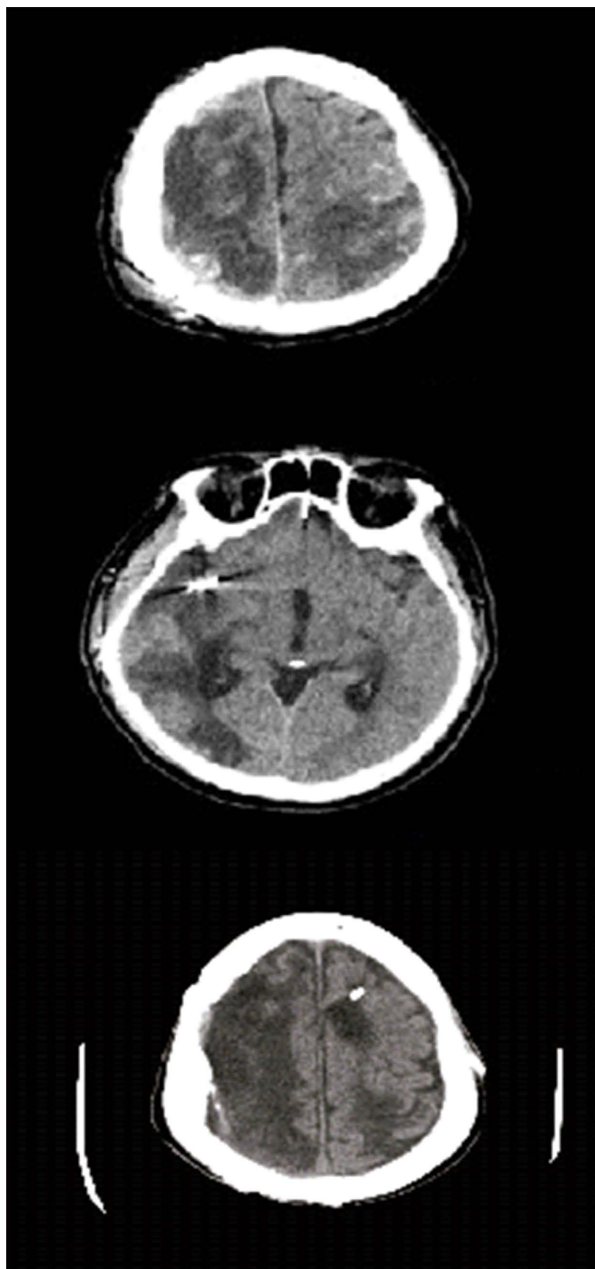
Multilayer graphene-hydrogel engineered blood vessels can build blood vessel-like perfusable structures to feed hypervascular tumors such as meningiomas or hepatocellular carcinomas. This tissue-engineered artificial blood vessel causes hypervascular tumor formation [1]. Exfoliation of this microfluidic platform with multilayer graphene walls can block the vascular endothelium feeding the hypervascular tumors.

Herein, I report a case in which I performed embolization using the graphene-hydrogel exfoliator NaCl + KCl solution in a hypervascular meningeal tumor after intraoperative massive bleeding.

## 2. Case Description

The patient was a 59-year-old man who presented with severe headaches, behavioral changes, and vomiting for 2 months before presentation. A neurological examination revealed mild mental confusion. There were no motor or sensory signs or symptoms. A computed tomography (CT) scan of the head with contrast demonstrated a right frontotemporal mass, diffuse contrast enhancement, and some small hypodense areas located at areas of convexity. A magnetic resonance image obtained with and without contrast showed an enhancing lesion in the right frontotemporal lobe with extensive surrounding edema and a transtentorial herniation. The right falx and the dura adjacent to the lesion were strongly enhanced. A right frontotemporal flap was created. The tumor was strongly vascularized. When the dura infiltrated by the tumor was removed, a massive hematoma formed. Thus, clip ligation of the M2 territory of the middle cerebral artery was performed, and the hematoma was simultaneously evacuated. Postoperatively, the patient suffered left hemiplegia with episodes of partial complex seizures. Hydrocephalus was also found on CT imaging, and a V-P shunt was subsequently placed. The patient was referred to the radiotherapy unit to receive complementary treatment with external whole-brain radiation, but the patient's family rejected this treatment modality and opted for close observation only. Four months later, the patient's level of consciousness deteriorated from alert to

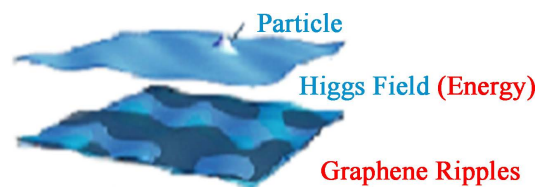
semicomatose. A chronic epidural hematoma was seen on a follow-up CT scan, and the patient subsequently received 250 mL of normal saline with 5 cc of potassium chloride (KCl) intravenously over 6 h, after which his level of consciousness improved (**Figure 1**). The histopathologic exam revealed a malignant meningioma with vascular channels surrounded by neoplastic meningothelial cells and highly cellular areas with mitoses. This histological classification system revealed an anaplastic-type meningioma with a World Health Organization classification of 3. The Ki67 index was 36.4%. Using by Sanger sequencing, the occurrence of telomerase reverse transcriptase (TERT) promotor mutations was



**Figure 1.** Clipping the vessel after intraoperative bleeding due to mass removal with V-P shunt placement. Chronic epidural hematoma seen on follow-up CT scan.

observed in the promotor region of c146C>T and C250T, respectively. Methylthioadenosine phosphorylase immunohistochemistry (IHC) showed no loss of the surrogate marker for the CDKN2A/2B homozygous deletion. On phosphohistone H3 IHC, the mitosis count amounted to 20 mitosis per 10 high-power fields [2]-[7].

On a follow-up CT scan, a chronic epidural hematoma was seen, but the tumor mass had disappeared. As shown in **Figure 2**, breaking the symmetry converts the energy by weak force and gluon to the particle for pair annihilation: Graphene rippling can induce the quantum fluctuation at adjacent Higgs fields, which cause pair annihilation of Higgs mechanism with disappearance of tumor mass.



**Figure 2.** Breaking the symmetry by graphene ripples of the exfoliation, converts the energy of Higgs field by quantum fluctuation, to the particles for pair annihilation.

### 3. Discussion

A 59-year-old man with signs of increased intracranial pressure and decreased level of consciousness was admitted to our university hospital. A diagnosis of anaplastic meningioma in the right frontotemporal area was made, but mass removal was unsuccessful due to massive intraoperative bleeding. The patient refused radiation therapy and presented to our hospital for rehabilitation. Four months later, a CT scan was performed due to a decreased level of consciousness, and a chronic epidural hematoma was found. Following intravenous injection of a NaCl + KCl solution, the patient's level of consciousness improved and he was alert with the disappearance of the tumor mass on a follow-up CT scan.

Unique molecular interactions between graphene derivatives enable the fabrication of various functional graphene-based hydrogels (GBH).

Tissue engineering of thick, complex 3D structures by multilayer graphene constructs vascular structures and can directionally migrate to the adjacent tumor tissue under controlled microenvironments. Angiogenesis-based approaches generate blood capillaries that penetrate the hypervascular tumor mass to supply it. Vascular tube-like structures can form endothelial cells (EC) with fibroblast cells in a microfluidic-based approach to guide migration of the EC into a hydrogel resulting in the blood capillary vessel being formed.

### Study Limitations

The Higgs mechanism of paired annihilation has not been definitively revealed yet; however, many related phenomena have been observed in nature. Cases similar to that of the 64-year-old female patient described in our case with lung

cancer metastasis to the brain have been described, and there was also a decrease in the size of the metastatic tumor with the use of a NaCl + KCl solution. However, this benefit was not seen on repeated injection of NaCl + KCl solution at 1-week intervals. This comparison case suggests the possibility of engaging the Higgs boson to remove the mass, but more detailed cases are needed to evaluate the efficacy of this technique.

#### 4. Conclusion

There may be another mechanism for instant removal of the tumor mass or blood clots by using NaCl + KCl. One of these mechanisms is called the Higgs mechanism of pair annihilation [8] [9]. Formation of the tissue-engineered artificial blood vessel by graphene-hydrogel can help hypervascular tumors that are fed by these artificial structures develop. Exfoliation by NaCl + KCl solution of the graphene-hydrogel embolizes the tumor supplied by the artificial structures.

#### Ethical Agreement

Our institute does not require ethical approval for reporting individual case or case series.

#### Conflicts of Interest

The author declares no conflicts of interest regarding the publication of this paper.

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