

# Asymptomatic Massive Cerebral Abscess Following Malignant Cerebral Infarct—Aggressive Surgery—Ray of Hope

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Indian J Neurosurg 2018;7:269–271

## Abstract

The aim of this article was to present a rare and potentially life-threatening complication of malignant cerebral infarct turning into a massive cerebral abscess. Cerebral abscess complicating cerebral infarction is rare. Only 13 cases have been reported. Unexplained fever is the presenting symptom. The case presented here is unique, as the patient was totally asymptomatic and the abscess was detected incidentally during surgery. A 42-year-old man with malignant left anterior cerebral artery and middle cerebral artery territory infarct underwent decompressive craniotomy 5 weeks before presenting to the authors' institution. The patient had features of sunken skin flap syndrome. Therefore, cranioplasty was planned. During surgery, false dura was inadvertently opened due to adherence with pia and pus started coming out. On exploration, approximately 150 mL of pus was evacuated. The whole infarcted brain was seen to be converted into a cavity full of pus. Adequate drainage and debridement were done. Cranioplasty was deferred. The patient was treated with broad-spectrum antibiotics postoperatively, and he recovered well. Cerebrovascular accident (CVA) is one among the common causes for mortality and morbidity worldwide. The infarcted or ischemic brain acts like a fertile ground for the pathogens to grow. Disruption of blood–brain barrier and lack of normal blood flow by the vascular event facilitate microbial seeding and formation of cerebral abscess. Abscess formation following stroke is rare. It could prove to be fatal if misdiagnosed or not properly treated. Uncontrolled fever in a stroke patient should raise the suspicion of this rare complication. A routine contrast computed tomography of the brain prior to cranioplasty may pick up this complication in asymptomatic patients. Conservative treatment alone proves fatal in almost all cases.

## Keywords

- ▶ cerebral abscess
- ▶ cerebral infarct
- ▶ meningitis

## Introduction

Cerebral abscess complicating cerebral infarction is rare. Only 13 cases have been reported in the literature so far.<sup>1</sup>

## Case Report

A 42-year-old man, nonhypertensive, nondiabetic, diagnosed with malignant cerebral infarct of the left anterior cerebral artery (ACA) and middle cerebral artery (MCA) (▶Fig. 1)

underwent decompressive craniotomy for raised intracranial pressure (ICP). He also underwent tracheostomy in view of low Glasgow coma scale (GCS) and severe lower respiratory infection (LRI). With aggressive treatment and a tracheostomy, he regained consciousness, obeying simple commands. After 5 weeks, his craniotomy flap became very much lax with features of sunken skin flap syndrome. Follow-up computed tomography (CT) of the brain (▶Fig. 1) showed large gliotic area with sunken flap. Therefore,

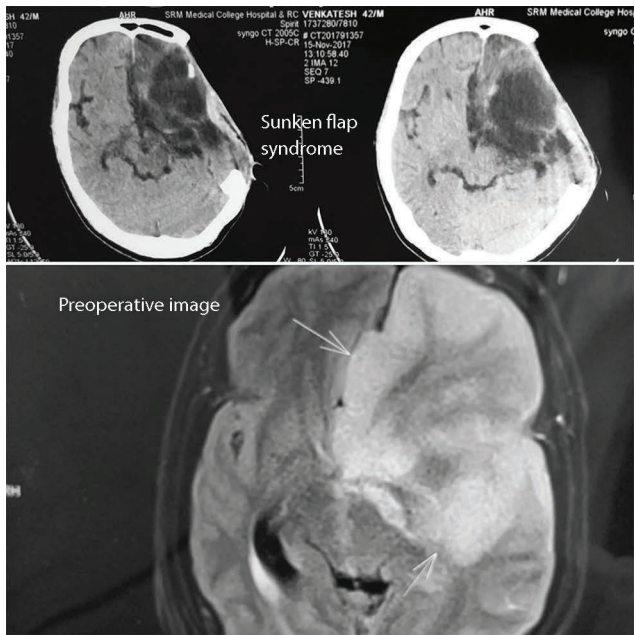
**received**  
February 21, 2018  
**accepted**  
March 23, 2018  
**published online**  
August 24, 2018

**DOI** <https://doi.org/10.1055/s-0038-1667283>.  
**ISSN** 2277-954X.

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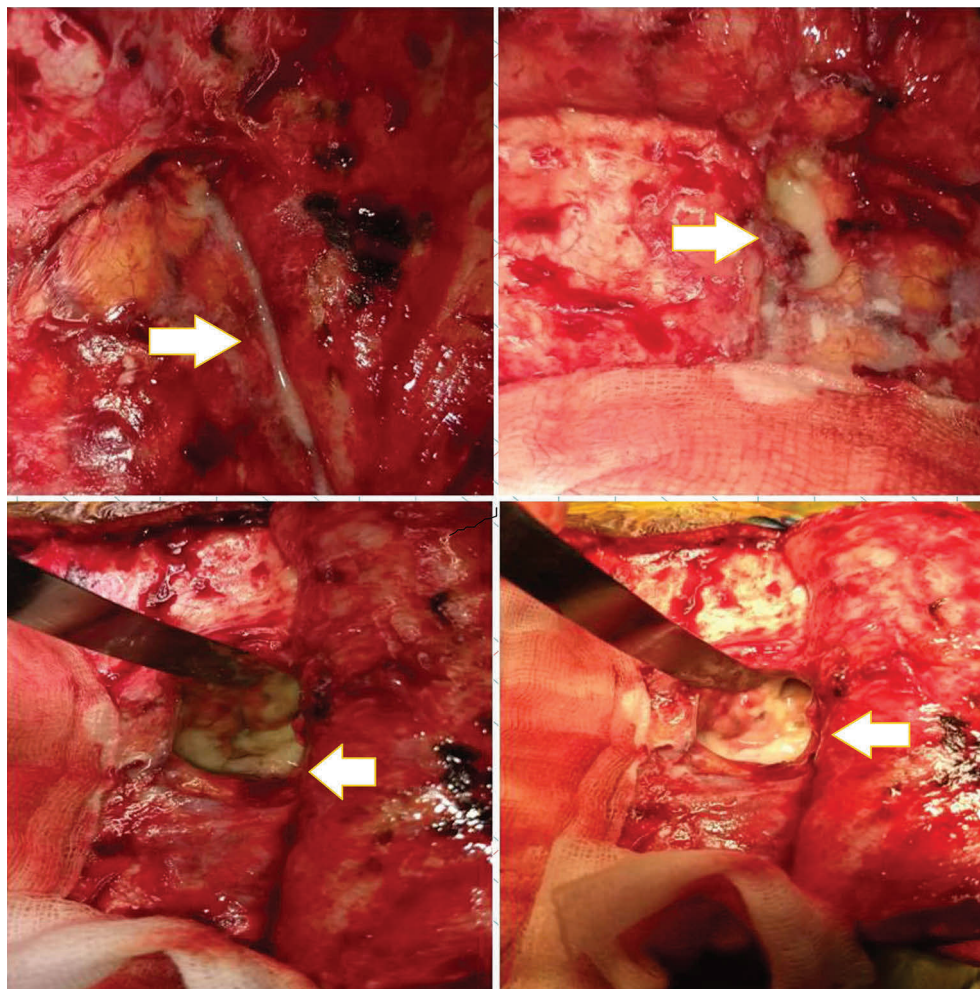


**Fig. 1** Preoperative MRI showing anterior cerebral artery and middle cerebral artery infarct. CT brain prior to planned cranioplasty shows features of sunken skin flap syndrome.

cranioplasty was planned. During surgery, false dura was inadvertently torn and pus started coming out. The false dura tear widened, liberal corticotomy was done, and 150 mL of pus was evacuated. Capsule was de-roofed. Whole infarcted brain had converted into a cavity full of pus (► **Fig. 2**). The abscess cavity was thoroughly washed with saline and Metrogyl. Cranioplasty was deferred. No signs of infection were noted in the cranial wound. Gram stain, acid-fast Bacilli (AFB) stain, and fungal staining of pus were negative. Histopathology examination (HPE) revealed acute-on-chronic nonspecific inflammation with suppuration and foamy histiocytes. Pus culture was negative. The patient had meningitis in the post-operative period but recovered well.

### Discussion

Cerebrovascular accident (CVA) complications are enormous owing to the associated comorbidities, extent of brain damage, and old age.<sup>2</sup> The infarcted brain acts like a fertile ground for the pathogens to grow.<sup>3</sup> Abscess following infarction is reported as early as 12 days to 14 months after stroke.<sup>4,5</sup> Antibiotic treatment alone proves fatal. Aggressive surgical resection is the only hope. Disruption of blood-brain



**Fig. 2** Solid arrows in intraoperative images showing pus and abscess cavity in various stages of surgery.

barrier by the vascular event facilitates microbial seeding in the event of bacteremia, leading to abscess formation.<sup>6</sup> Ischemia further limits the immune system to combat invading pathogens. Surgical treatment of stroke does not seem to be a causative factor for abscess.<sup>1</sup> The main presenting symptom is fever, bulging skin flap in postsurgical patients, and the most common offending organisms are *Streptococcus* and *Staphylococcus*. Our case is unique, as the patient had neither fever nor bulging skin flap and incidental intraoperative detection of abscess with negative pus culture.

## Conclusion

Uncontrolled fever in a stroke patient should raise the suspicion of this rare complication. A routine contrast CT of the brain prior to cranioplasty may pick up this complication in asymptomatic patients. Conservative treatment alone proves fatal in almost all cases. Extensive surgical debridement of the abscess with postoperative antibiotics cover offers the best outcome for these patients.

## Conflict of Interest

None.

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