



## Case Report

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# Management of Two Unusual Patients With Vascular Anomalies



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**ABSTRACT**

Vascular anomalies form a significant portion of congenital defects and venous malformations are the most prevalent type among adults. Multiple imaging modalities have been proposed for pre-operation assessments. Although some studies have reported Magnetic Resonance Imaging (MRI) as the most valuable modality, in many situations, CT scan remains the equipment of choice due to its availability.

In each case, a precise assessment of the malformation is needed. In two cases mentioned in our study, prior to the operations, only a monophasic CT scan was performed that resulted in missing evidence of severity and extent of venous malformation.

One of the imaging procedures is a three-phase CT scan. Although in the monophasic CT scans, a delay of 65 seconds is applied, in three-phase CT, both filling in and washing out are notable, which gives three-phase CT a more predictive value about flow pattern over monophasic CT.

**Introduction**

Vascular anomalies form a significant portion of congenital defects and venous malformations are the most prevalent type among adults [1]. Although venous malformations are classified as low-flow vascular malformations [2], precise study of these le-

sions is crucial for surgical operation planning and patients management as they often cause complications during surgery.

Multiple imaging modalities have been proposed for pre-operation assessments, including conventional x-ray, ultrasonography, Magnetic Resonance Imaging (MRI), and Computed Tomography (CT) scan. Although

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some studies have reported MRI as the most valuable modality [2], in many situations, CT scan remains the equipment of choice due to its availability.

Three-phase CT uses Intravenous (IV) contrast media and captures the image of the mass (in this case venous malformation) at three phases: 1. pre-contrast phase, 2. vascular (early) phase, and 3. equilibrium (late) phase [3].

## Case Presentation

### Case 1

A 31-year-old man suffering from venous malformation in his neck area was referred to the hospital, complaining of enlargement of the mass. This patient was diagnosed with hemangioma in the mandible and the left buccal area and reported four surgical operations and several Fibrovein injections. Except for occasional bleeding in his mouth, he was healthy and had no underlying diseases and his physical examination and vital signs were within normal ranges.

He underwent a CT scan with IV contrast, which only revealed a transplant mass without enhancement and also multiple phleboliths (Figure 1). Therefore, he was admitted for transcervical resection of the mass. During the operation, despite the findings of the CT scan, the patient started to bleed massively, which forced him to receive 2 units of packed cell and the operation to be terminated. After the surgery, the patient became anuric and his creatinine level increased. Ultimately, he expired as a result of Disseminated Intravascular Coagulation (DIC).

### Case 2

A 52-year-old man was referred to the emergency department with a swollen buccula following a minor trauma (Figures 2 and 3).

The patient was taking warfarin at the time due to his previous valve replacement surgery, he had diabetes, and his International Normalized Ratio (INR) was 2.5 at the time of admission. He was admitted with a diagnosis of hematoma as a result of the trauma and simultaneous warfarin intake. However, 24 hours after discontinuing warfarin, the buccal mass enlarged, and then the patient suffered from dyspnea. Considering his diabetes and the presence of gas in the buccal tissue, he was rushed to the operation room and underwent fiber-optic-aided intubation followed by tracheostomy due to the expansion of the hematoma to under the clavicle. In the operation room, upon incision of the buccal mu-

cosa, intense and uncontrollable bleeding occurred. Bleeding was reduced by closing the buccal branch of the facial artery. Then, the buccal mucosa was packed and sutured with gauze and SurgiPack.

Three days later, a CT scan was performed to determine the removal of the pack (Figure 4). In the operation room, the pack was removed, but because the bleeding continued, the mucus was packed for an additional 24 hours.

Later, while revising the patient's CT, venous malformation and phleboliths were discerned. Also, a three-phase CT scan was then performed and indicated venous malformation in the early phase.

## Discussion

Venous malformations are congenital defects with an incidence of 1 in 2000 to 5000 population. In the classification of vascular anomalies, venous malformations are categorized as low-flow vascular malformations. They not only often represent disfiguring abnormalities but also in some cases, result in morbidities and life-threatening complications. With a 40% occurrence in the head and neck area, this problem is a considerable concern for both the patient and the physician [2].

Current management varies considering the size, localization, depth, and the involvement of surrounding soft tissues and may consist of laser therapy, sclerotherapy, surgery, etc. [4].

In each case, a precise assessment of the malformation is needed. One of the imaging procedures is a three-phase CT scan. In this method, an IV contrast is injected and three consecutive images are taken before the injection and 20-35 and 3-5 minutes after the injection [3]. However, in the monophasic CT scans, a delay of 65 seconds is applied. Therefore, in a three-phase CT scan, both filling in and washing out are notable, which gives three-phase CT a more predictive value about flow pattern over monophasic CT scan.

## Conclusion

In the cases mentioned above, prior to the operations, only a monophasic CT scan was performed that resulted in missing evidence of the severity and extent of venous malformation.

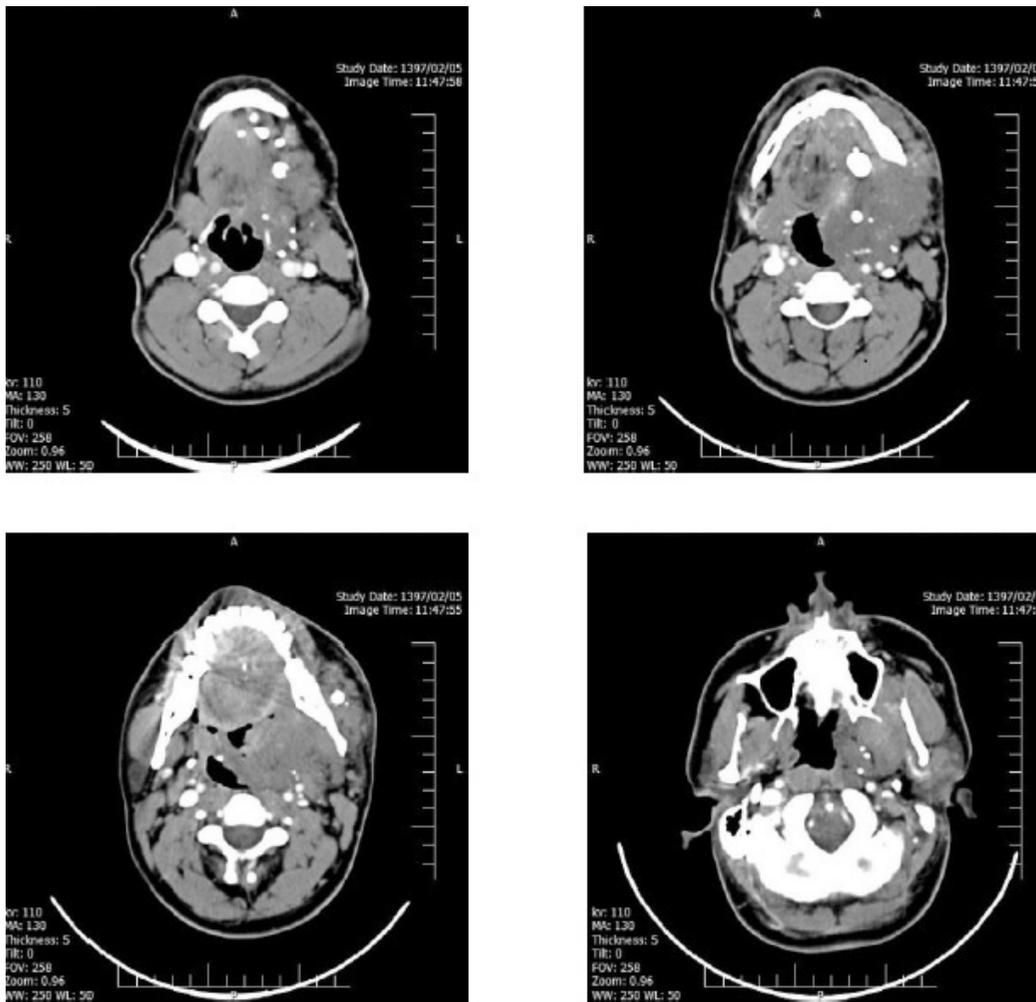
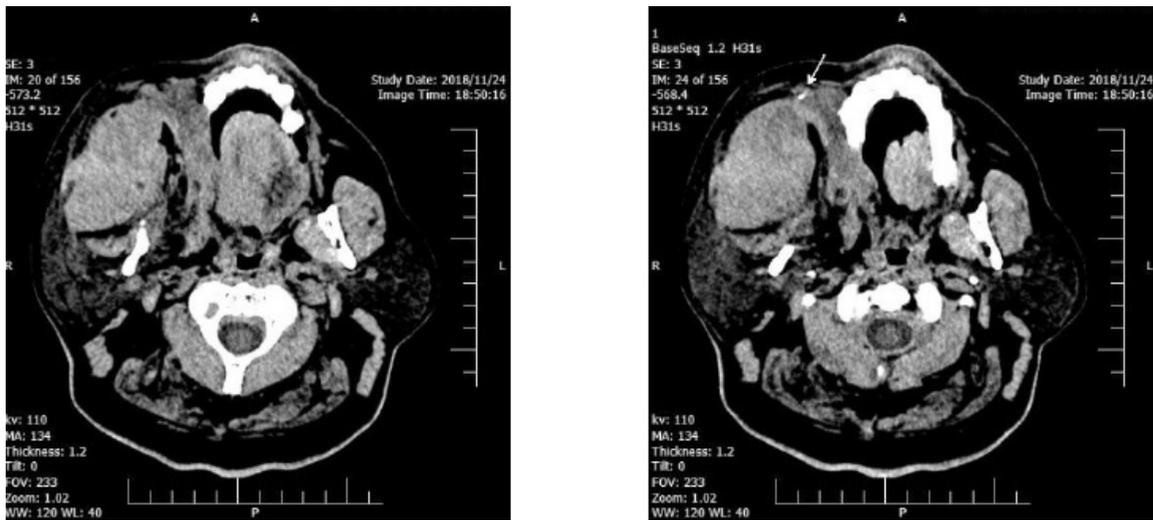


Figure 1. CT scan with intravenous contrast revealed a transplant mass without enhancement and multiple phleboliths

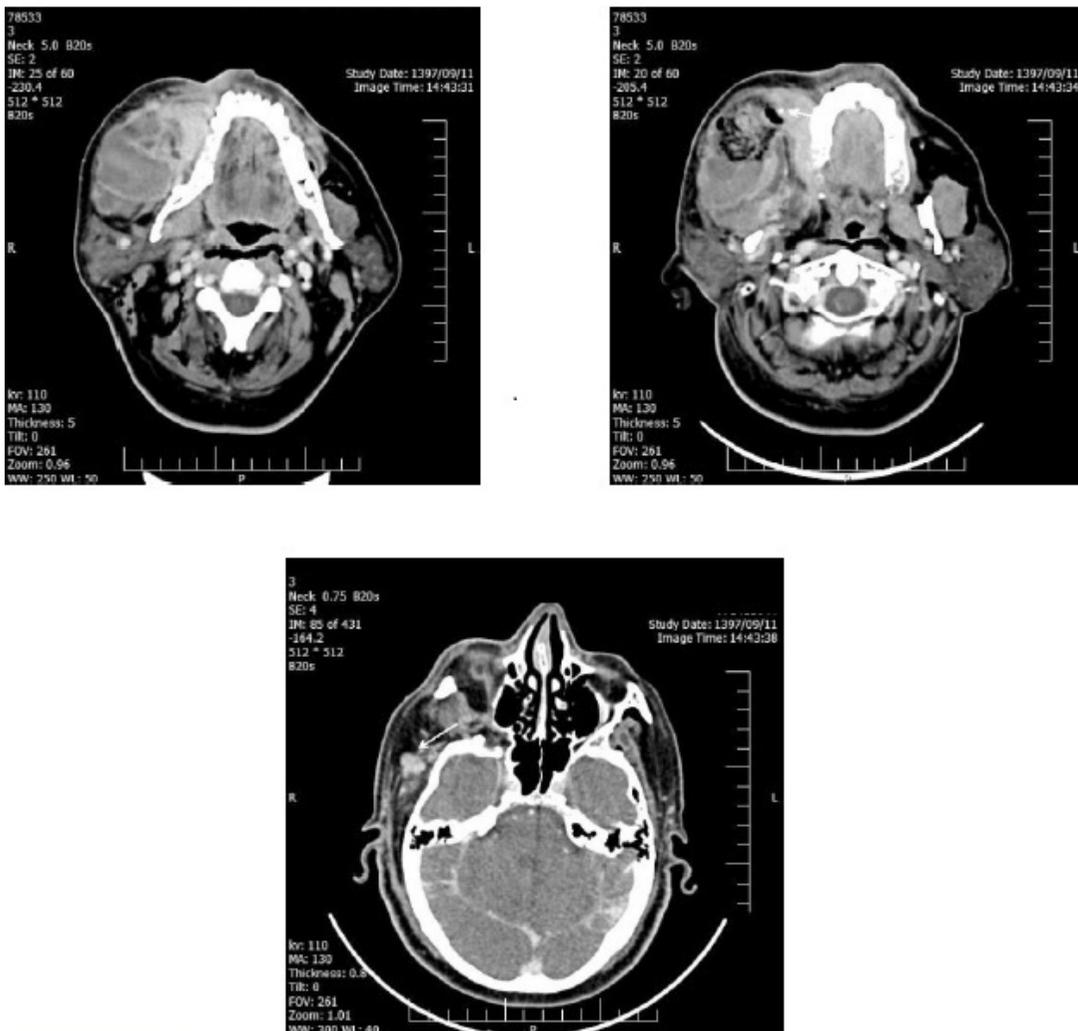


Figure 2. A 52 years-old man was referred to the emergency department with a swollen buccula following minor trauma.





**Figure 3.** CT scan of the patient with suspected buccal hematoma



**Figure 4.** Three-phase CT scan indicated venous malformation and phleboliths in the early phase.



## Ethical Considerations

### Compliance with ethical guidelines

All ethical principles are considered in this article. The participants were informed about the purpose of the research and its implementation stages. They were also assured about the confidentiality of their information and were free to leave the study whenever they wished, and if desired, the research results would be available to them.

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### Conflict of interest

The authors declared no conflict of interest.

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