

Time-Resolved Imaging of Contrast Kinetics (TRICKS)

TRICKS provides reliable accuracy in capturing of ideal arterial phase of contrast passage for dynamic depiction of flow physiology. Multiple high-temporal-rate data sets are acquired in rapid succession after administration of contrast agent, yielding snapshots of the vascular system at multiple time points.

It helps to achieve high temporal resolution without compromising spatial information. It also improves the calculation of contrast bolus arrival and improves the characterization, detection and diagnosis of arterio-venous malformations.

TRICKS overcomes the drawbacks associated with single phase high resolution (SPHR) such as missing or obscured information in cases of reduced flow due to stenosis, vascular occlusion or collateral flow.

Both morphologic and kinetic information can be obtained. Combining TRICKS with parallel imaging doubles temporal resolution and significantly reduces acquisition time.

Vascular MRI: Utility of TRICKS in picking of Slow Flow Vascular Malformation

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“TRICKS MR Angiogram is a useful tool in the diagnosis of slow flow vascular malformation”

Patient history

A 40-year-old man presented with history of gradually increasing painless swelling in forearm. He had sustained trauma to the forearm in a road traffic accident and had undergone surgery 4 years back. No neurologic symptoms were reported at presentation.

Physical examination

- Compressible soft tissue mass associated with bluish discoloration
- Bilateral distal pulses felt
- No neurological deficit
- No limb-length discrepancy noted

Provisional diagnosis

- Vascular malformation

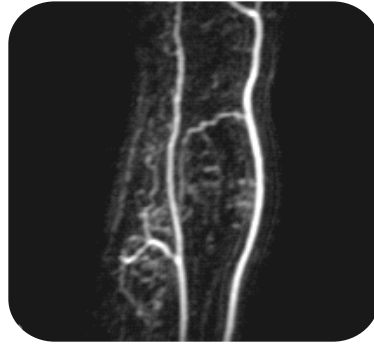
MRI technique and Findings

- Contrast enhanced TRICKS MR Angiogram was obtained to look for feeding vessels. Multiple high-temporal-rate data sets were acquired in rapid succession after administration of contrast agent, yielding snapshots at multiple time points.
- Routine forearm MRI protocol with axial T2, T1, sagittal T1, T1FS, T2 and coronal PDFS was carried out.
- Post-contrast T1FS axial, sagittal and coronal PDFS showed ill-defined, irregular lobulated space occupying lesion suggestive of cavernous angioma supplied by radial and ulnar arteries.

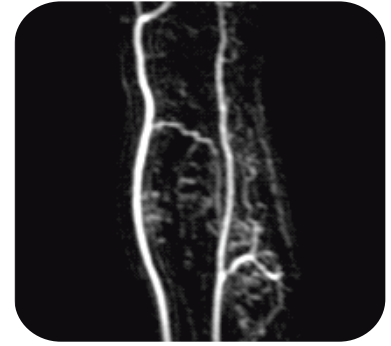




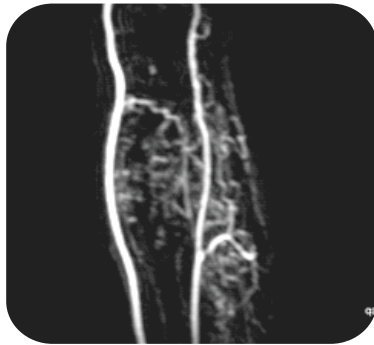
Phase – 4



Phase – 5



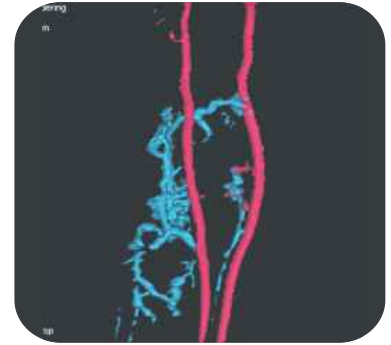
Phase – 6



Phase – 7



Phase – 8



Volume Rendering

TRICKS – Cavernous angioma Showing feeding vessels from distal radial and ulnar arteries

Images courtesy of Lucid Medical Diagnostics, Bangalore

Treatment

Subtotal excision of tumor with muscle reconstruction was performed to preserve hand function. The diagnosis with TRICKS MR Angiogram was confirmed by histological study of tissue taken intraoperatively. In a follow-up after one year, no clinical or MRI signs of recurrence were reported.

Conclusion

TRICKS MR Angiogram can help to increase diagnostic accuracy in slow flow vascular malformations.

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imagination at work