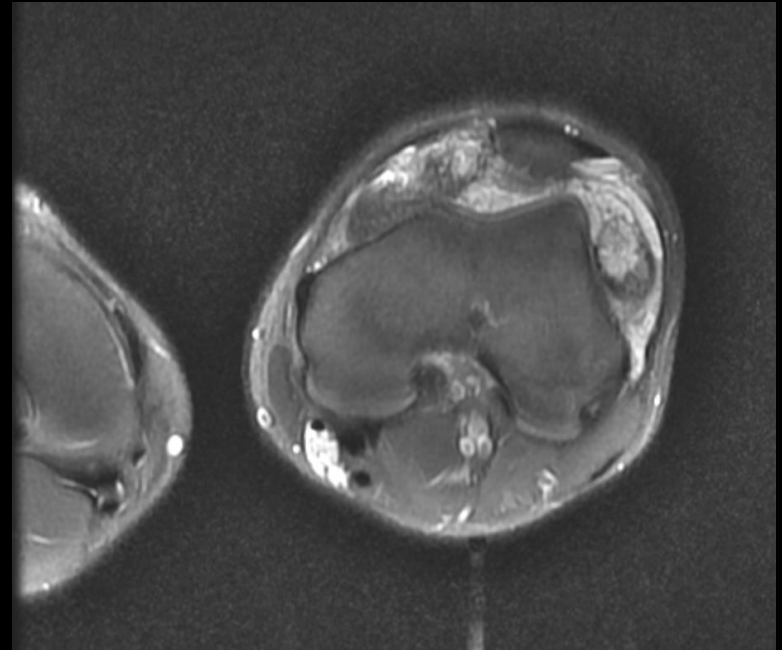
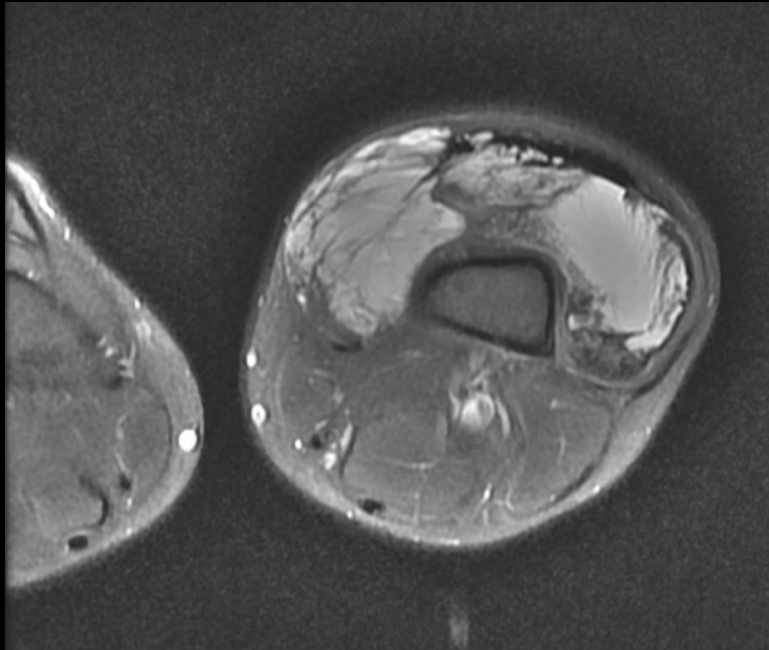
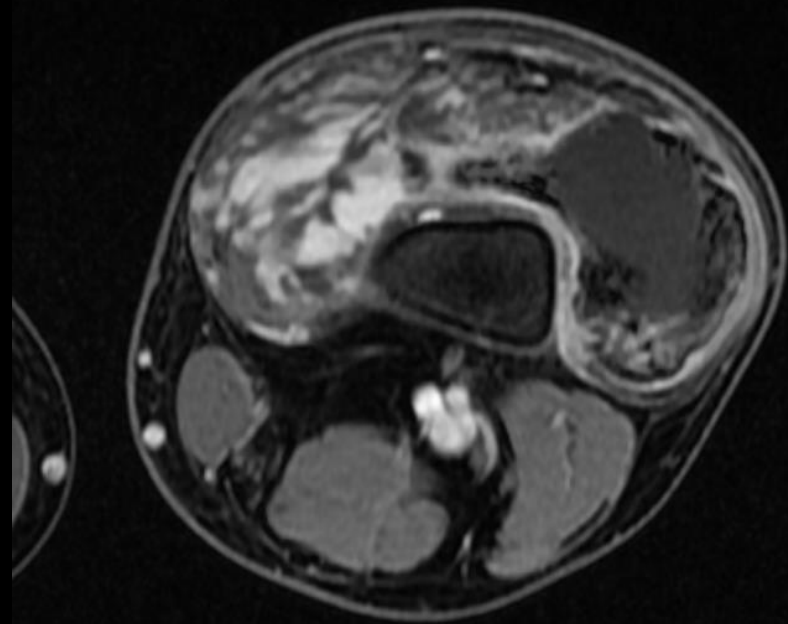
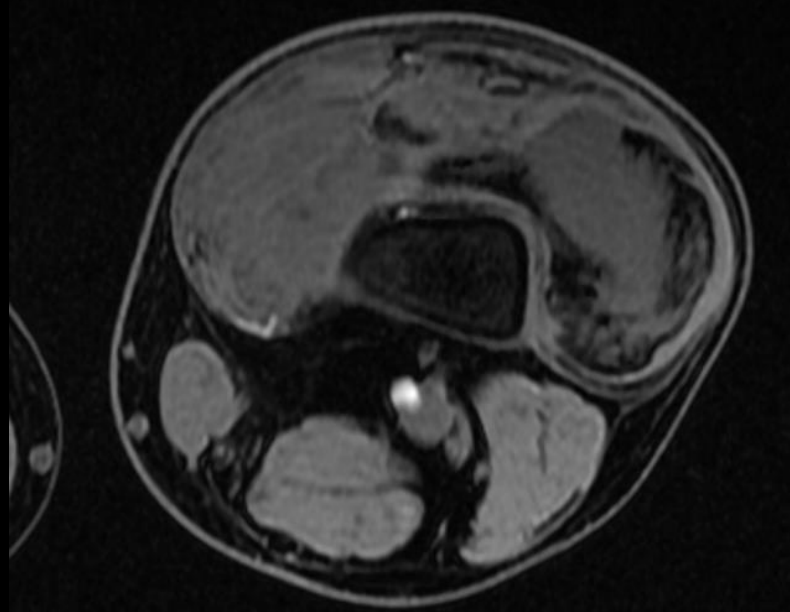




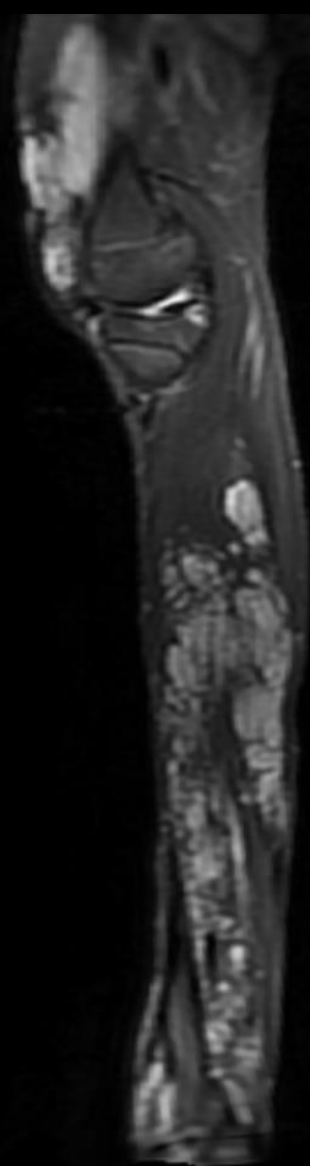
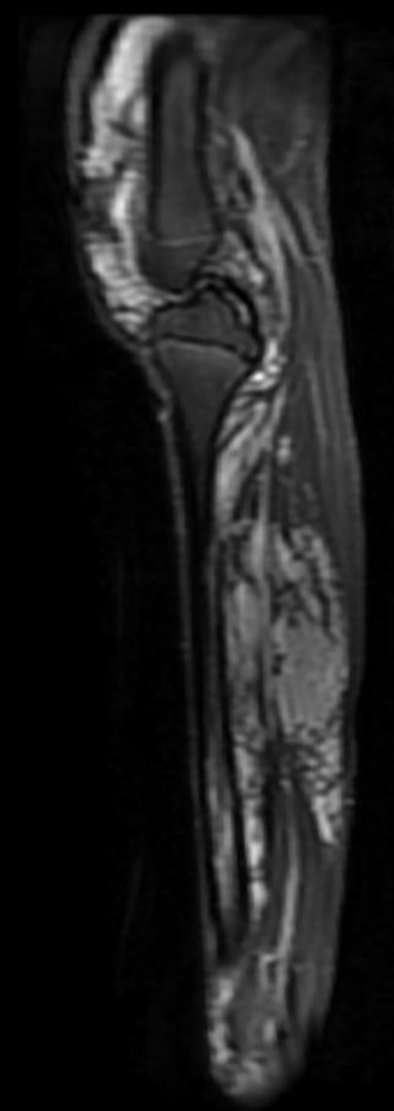
13 year old male presents with
pain and limited ROM

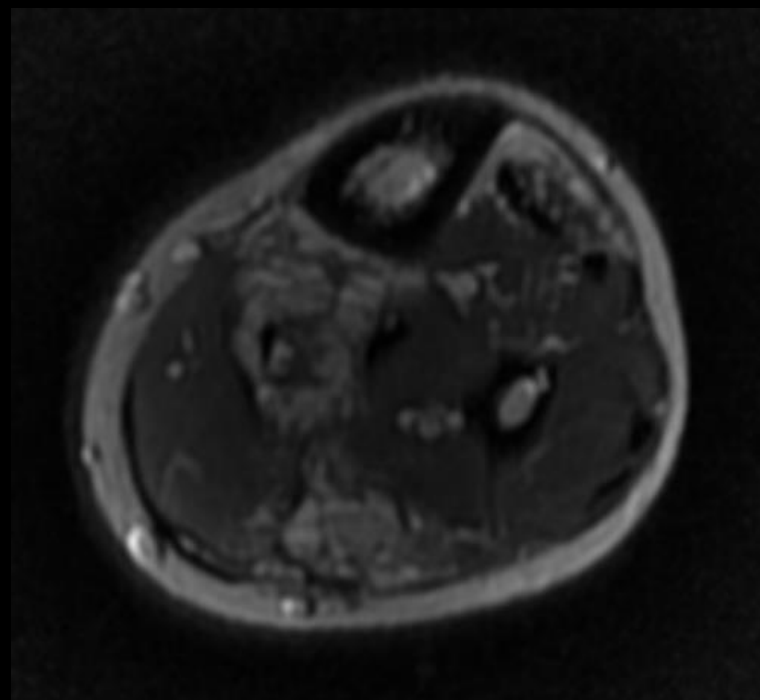
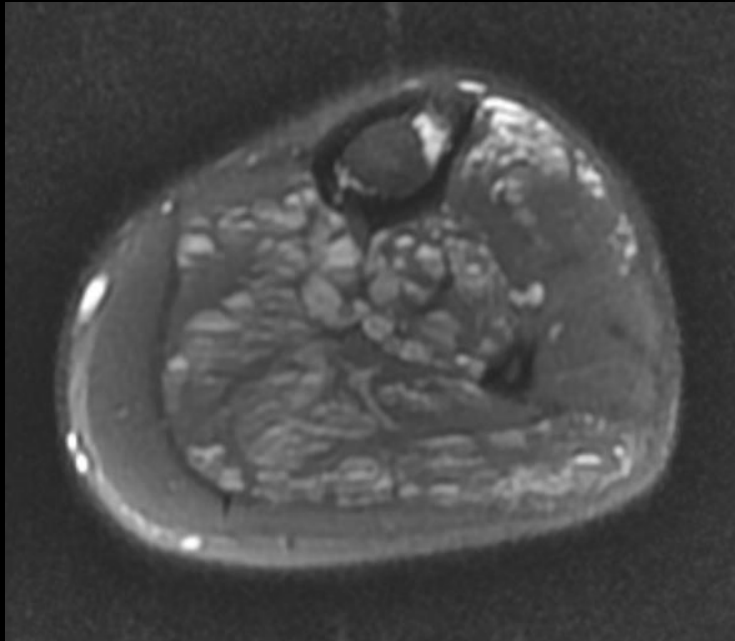


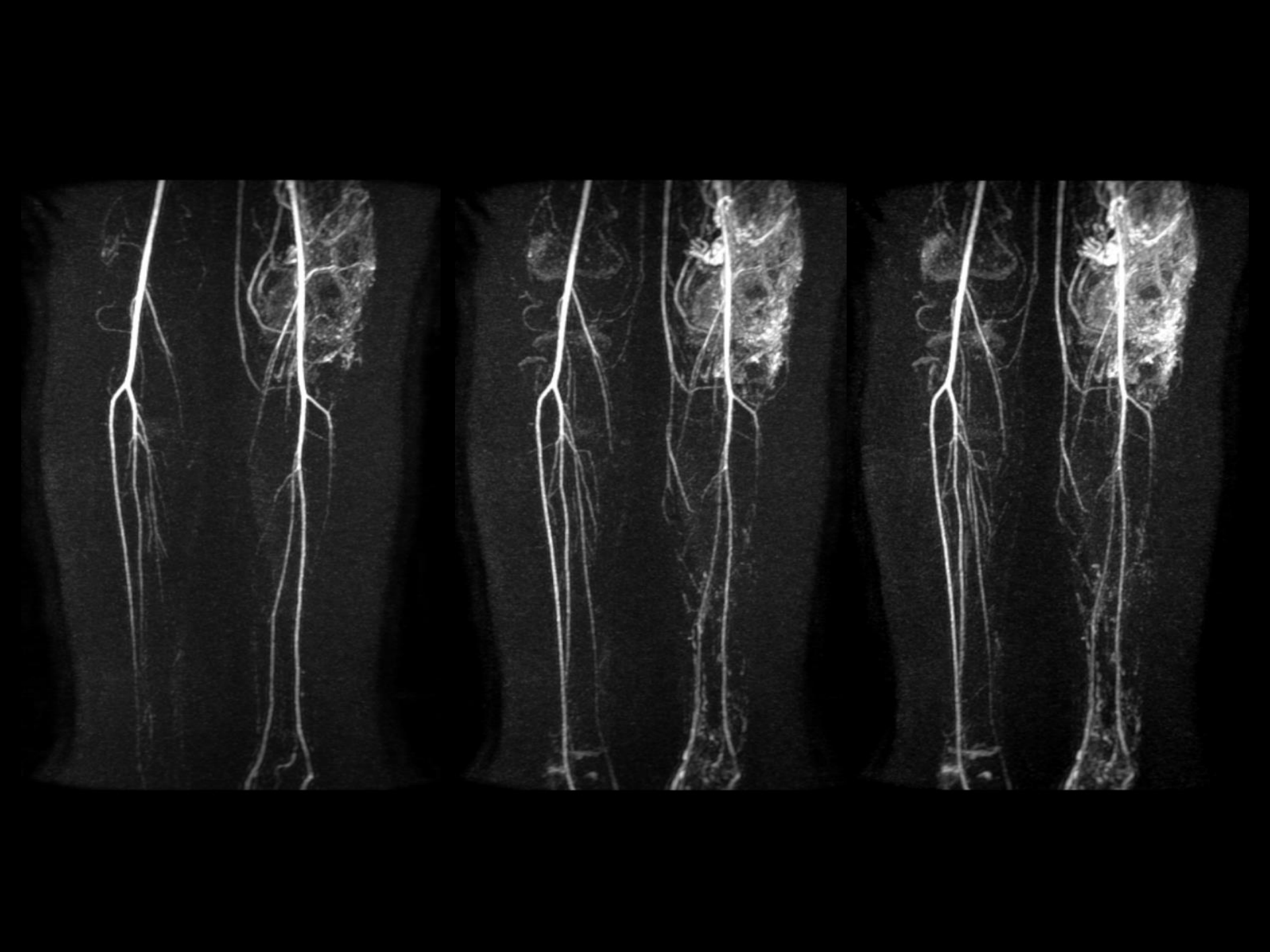


DDX

- PVNS
- Hemophilia
- Septic arthritis
- Inflammatory arthritis
- Intra-articular venous malformation (synovial hemangioma)







ISSVA Classification of Vascular Anomalies

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ISSVA classification for vascular anomalies [©]
 (Approved at the 20th ISSVA Workshop, Melbourne, April 2014)

Overview table

Vascular anomalies				
Vascular tumors	Vascular malformations			
	Simple	Combined ^o	of major named vessels	associated with other anomalies
Benign	Capillary malformations	CVM, CLM	See details	See list
Locally aggressive or borderline	Lymphatic malformations	LVM, CLVM		
	Venous malformations	CAVM*		
	Arteriovenous malformations*	CLAVM*		
Malignant	Arteriovenous fistula*	others		

^o defined as two or more vascular malformations found in one lesion

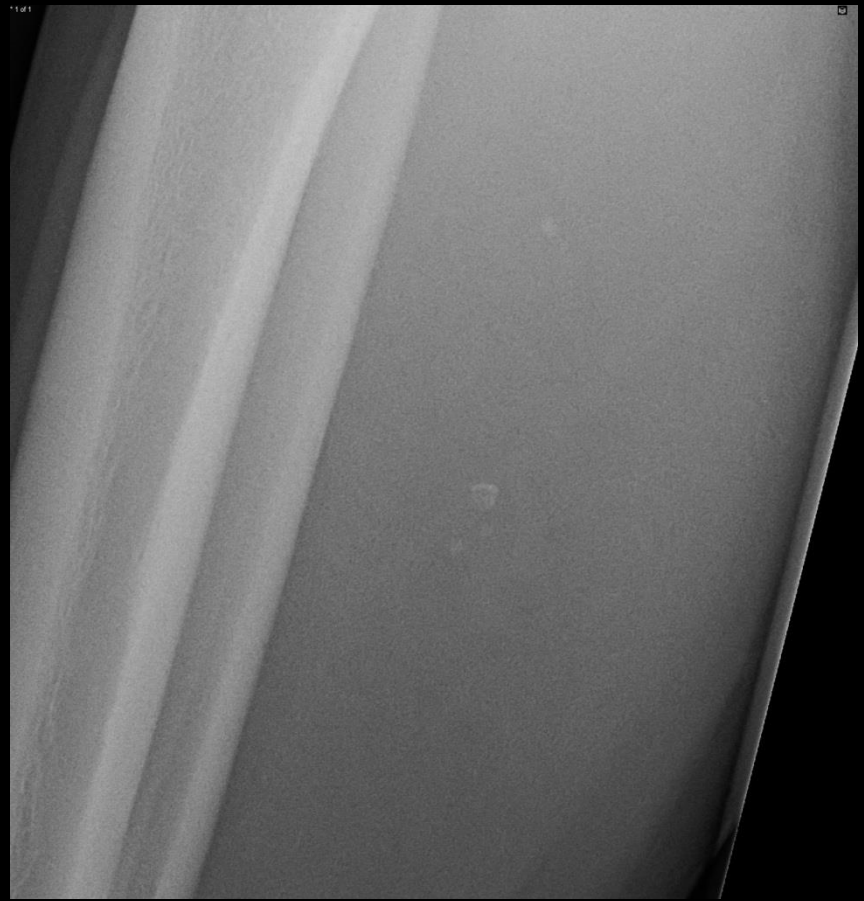
* high-flow lesions

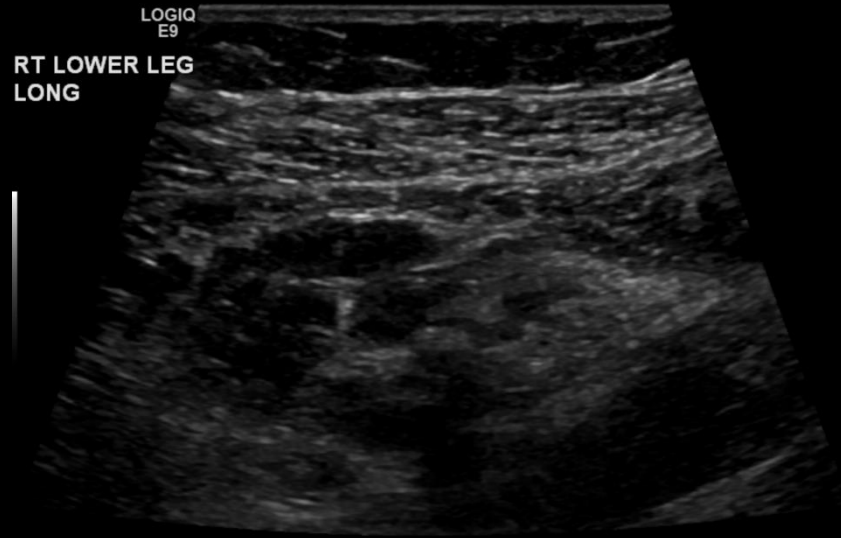
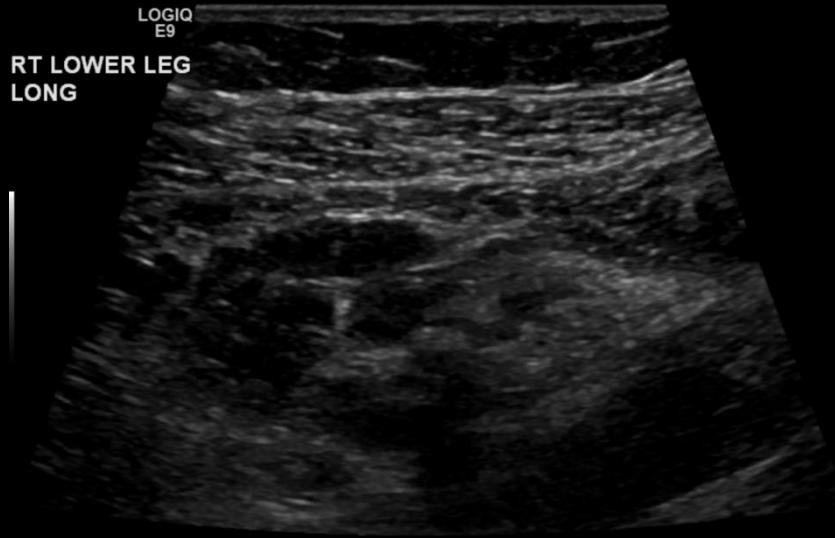
Features of low-flow vascular malformations

TABLE 2: Key Ultrasound and MRI Features of the Most Common Pediatric Vascular Anomalies

Anomaly	Gray-Scale Ultrasound	Doppler Ultrasound	MRI
Vascular tumors Infantile and congenital hemangiomas	Well-defined, solid; variable echotexture	Intralesional arterial and venous waveforms	T1-weighted intermediate intensity; T2-weighted hyperintense; vigorously enhancing; intralesional flow voids
Vascular malformations—slow flow Venous	Multispatial, solid; echogenic; phleboliths	Intralesional venous waveforms or pattern of no flow	T1-weighted heterogeneous, intermediate intensity; T2-weighted hyperintense, enhancing solid areas
Lymphatic	Multispatial, multicystic, with or without fluid-fluid levels	No vascular flow except in septa	T1-weighted intermediate intensity; T2-weighted hyperintense; nonenhancing except septa, with or without fluid levels
Venolymphatic	Combined venolymphatic features		
Vascular malformations—fast flow Arteriovenous malformation Arteriovenous fistulas	Cluster of vessels with no solid intervening mass	Intralesional arterial and venous waveforms with arterialization of venous waveforms	T1-weighted and T2-weighted sequences show serpiginous flow voids without intervening solid tissue

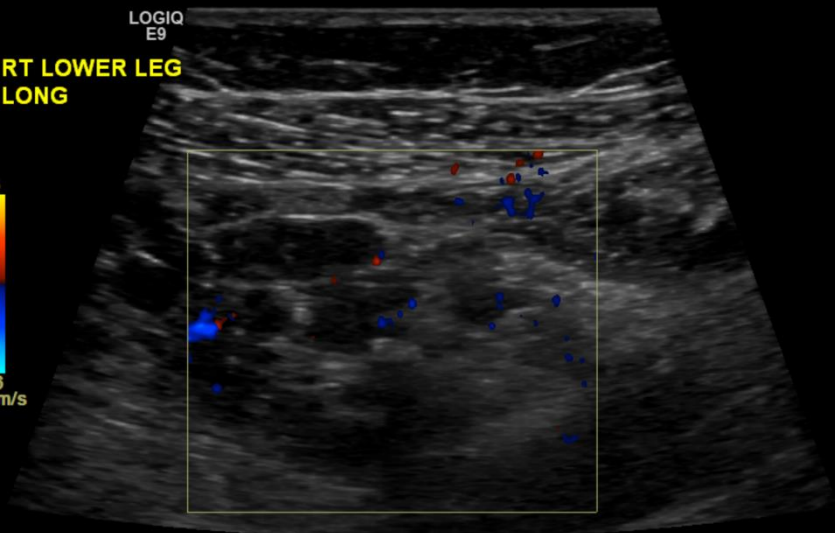
Corollary case: 17 year old F with calf pain x1 month





LOGIQ
E9
RT LOWER LEG
LONG

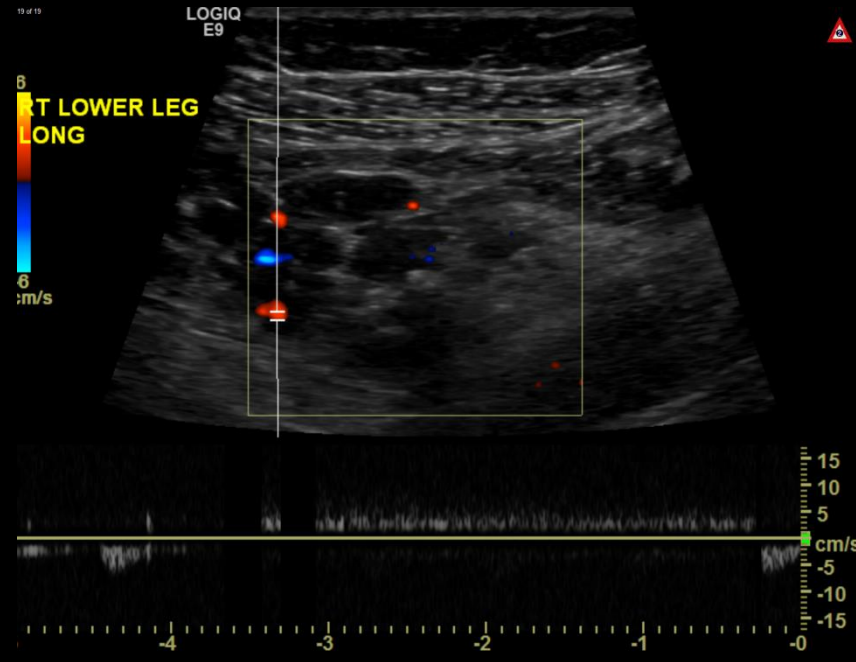
6
m/s



LOGIQ
E9

RT LOWER LEG
LONG

6
m/s



Treatment

- Small lesions may be managed conservatively.
- Treatment is indicated if symptomatic or if their location may lead to morbidity.
- Sclerotherapy is the initial therapy for slow-flow malformations.
- Surgical excision for solid or incompletely sclerosed lesions.

References

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- Bavikar RR, Deshmukh SD, Khadilkar M. Knee: an unusual site for arteriovenous malformation. *Current Orthopaedic Practice*. 2013;24(3):353–354.
- Kollipara R, Dinneen L, Rentas KE, Saettele MR, Patel SA, Rivard DC, Lowe LH. Current Classification and Terminology of Pediatric Vascular Anomalies. *American Journal of Roentgenology*. 2013;201(5):1124-1135.