

# P-83 Ulnar Neuropathy with ischemic monomelic feature after Brachial-Cephalic AVF Creation: a Case Report

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## Introduction

The arteriovenous fistula (AVF) has been preferred as vascular access in patients on hemodialysis because of the high patency. Common complications are usually mechanical, including pseudo-aneurysm, which may develop from a puncture hematoma, degeneration of the wall, or infection. We report a case of ischemic monomelic neuropathy (IMN), diagnosed by electromyography (EMG), a rare complication that can develop after hemodynamic alteration of vascular access.

## Case Report

A 55-year-old diabetic man with end-stage renal disease complained of weakness of the left fifth finger immediately after AVF creation for dialysis. After 3 months of observation, the patient was referred to our department. The patient had diabetic retinopathy and a history of percutaneous coronary intervention for myocardial infarction. The AVF was created by the side-to-end anastomosis of the median cephalic vein and the brachial artery after a 5cm skin incision around the cubital fossa. Thrill and bruit were good right after the procedure. On physical examination, the strength of the adductor and abductor muscles of the left 5th finger was grade 2 by medical research council's scale, while the proximal muscle power was normal. Patient complained paresthesia in all feet and hands, however only the dorsal and the palmar side of the left 5th finger showed hypesthesia. Patient showed positive Froment's sign and Wartenberg sign, and atrophy of the first dorsal interosseous, thenar and hypothenar muscles was observed. (Fig 1.)



**Fig 1.** Clinical photography of the patient's hands showing left claw hand and the atrophy of the left dorsal interosseous, thenar and hypothenar muscles.

**Table 1. Nerve conduction study**

Study	Nerve	Latency (*R/L, ms)	Amplitude (*R/L, mV/ $\mu$ V)	Velocity (*R/L, m/s)	
SNAP	Ulnar	2.8/2.8	5.8/2.4 <sup>†</sup>		
	DUCN	1.4/2.6	4.1/3.1 <sup>†</sup>		
	Median	5.1/4.8	4.8/3.7		
	Radial	2.7/2.9	4.8/3.5		
CMAP	Ulnar	Wrist- BE	3.4/3.8	2.4/0.7 <sup>†</sup>	42/41
	(ADM)	BE-AE	8.4/9.0	2.2/0.5 <sup>†</sup>	48/42
	Ulnar	Wrist- BE	5.1/4.7	1.8/0.8 <sup>†</sup>	49/40
	(FDI)	BE- AE	9.6/9.6	1.4/0.6 <sup>†</sup>	53/40
	Median	Wrist-Elbow	3.9/4.0	3.4/5.0	43/43

The findings of motor nerve conduction studies were markedly reduced amplitude of compound motor action potentials (CMAPs) in the left ulnar nerve without focal conduction delay at the elbow, while needle EMG demonstrated denervation potentials in the intrinsic muscles of the left hand. (Table 1&2.) We could confirm left ulnar neuropathy, showing axonal loss with ongoing denervation, accompanied by distal symmetric sensorimotor peripheral polyneuropathy involving both upper and lower extremities. Upper extremity artery computed tomography (CT) image performed after EMG showed mild stenosis at the juxta-arterial anastomosis and median cephalic vein. (Fig 2.) Accordingly, the patient underwent percutaneous transluminal angioplasty twice.

\*R/L: right/left, CMAP: Compound muscle action potential (mV), SNAP: Sensory nerve action potential ( $\mu$ V)  
<sup>†</sup> decreased amplitudes of action potentials compared to right side

**Table 2. Needle EMG**

Side	Muscle	Spontaneous activities	MUAP	Recruitment	Interference
Left	BB	N	N	N	N
Left	FCR	N	N	N	N
Left	Triceps	N	N	N	N
Left	FCU	N	N	N	N
Left	FDP	N	N	reduced	discrete
Left	(4 <sup>th</sup> , 5 <sup>th</sup> digit)				
Left	FDI	Fib 2+, Psw 3+	N	reduced	discrete
Left	EIP	N	N	N	reduced
Left	ADM	Fib 1+, Psw 2+	N	reduced	discrete
Left	APB	N	N	N	reduced

## Conclusion

IMN can be mistaken for postoperative pain or nerve damage caused by the patient's posture during surgery, thus it is necessary to differentiate through EMG. The principle of IMN treatment is to perform angioplasty before irreversible nerve damage occurs, and above all, early diagnosis and treatment are important. Therefore, attention should be paid to the possibility of IMN in patients with pain and muscle weakness after AVF, and electromyography should be performed if suspected.



**Fig 2.** Left upper extremity artery CT image showing stenosis at the juxta-arterial anastomosis and median cephalic vein.