

# Digital Artery Perforator Adiposal Flaps to Cover Scarred Digital Nerves: a Preliminary Report

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COI Disclosure

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In connection with this presentation  
there is no COI to be disclosed with any companies.

# Background

After a digital nerve injury repair, some patients complain of persistent numbness, pain, and severe Tinel's sign-like symptoms.

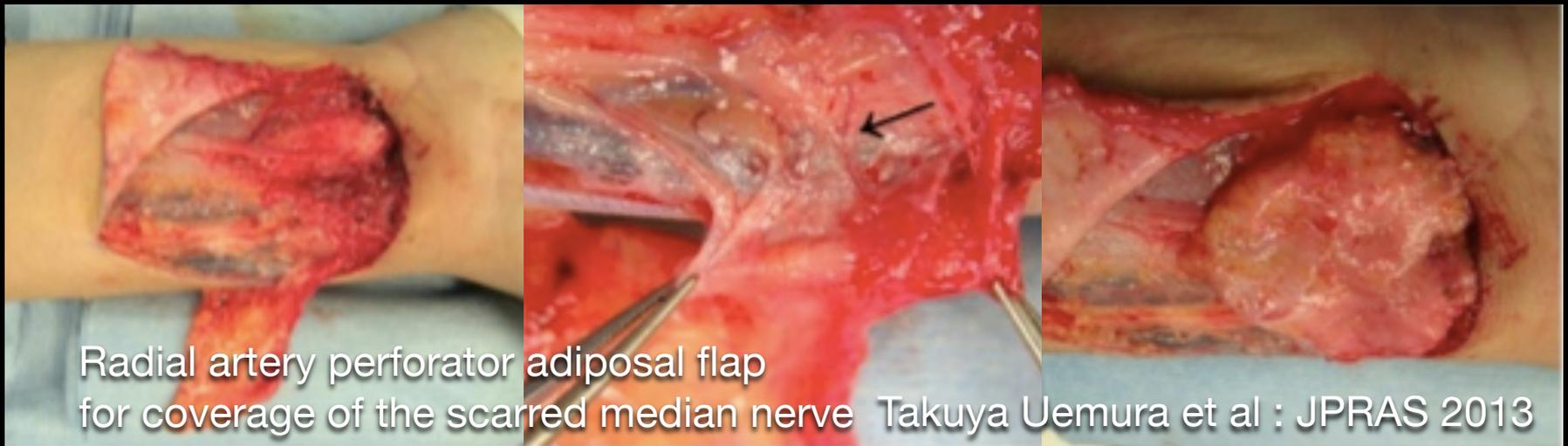
Unfortunately, few of these patients require neurolysis to correct these symptoms.

However after the operation of the neurolysis, the possibilities of the re-adhesion of the affected nerve remain.

Regarding the median nerve, for decades the conventional adipofascial or muscle flaps have been used to treat a scarred median nerve after either a median nerve injury or distal radius fracture.

# Background

Recently, the feasibility of radial artery perforator adiposal flaps for covering a scarred median nerve was reported.



In the past, the only surgical procedure for scarred digital nerves was neurolysis; however, re-entrapment or re-adhesion of the digital nerve is possible even after neurolysis because there are not commonly accepted interventions, such as using radial artery perforator adipose flaps, to prevent these complications.

# Purpose

To determine a therapeutic strategy using neurolysis and digital artery perforator (DAP) adiposal flaps to cover scarred or injured digital nerves.

# Subjects

Patients (n = 4):

digital nerve adhesion post nerve repair (2 females)

unilateral digital nerve in the ring or long f.

digital nerve rupture (2 males)

bilateral digital nerves in the long f.

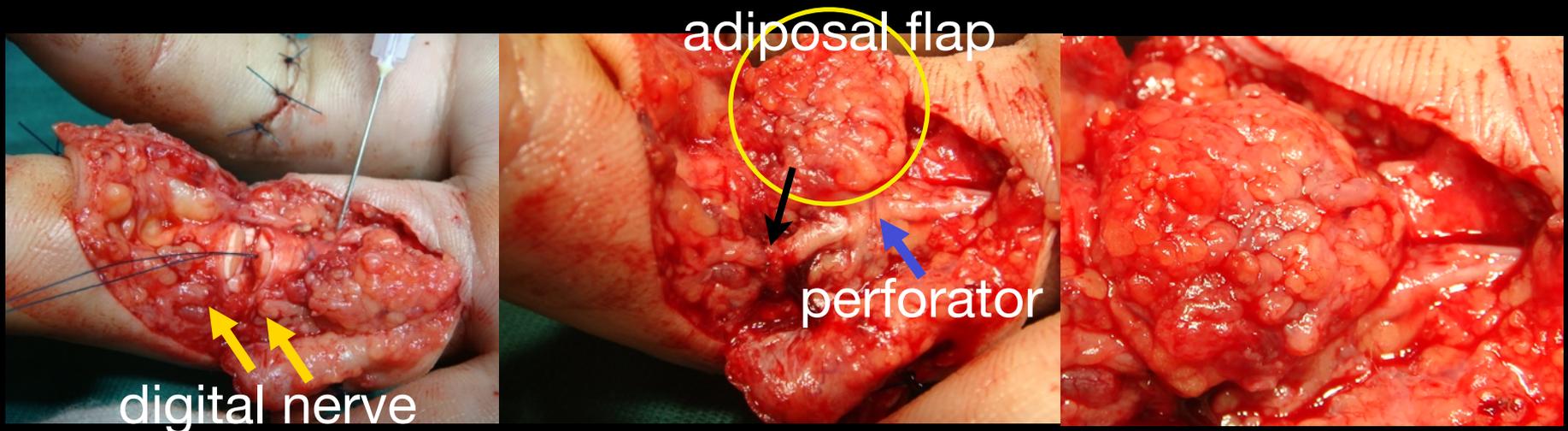
unilateral digital nerve in the index and small f.

Age: Averaged 32 years old (range, 24 –42)

# Methods

In all patients with digital nerve adhesion, neurolysis was performed, and the digital nerves were repaired in those with digital nerve rupture.

Following these procedures, to prevent re-entrapment and re-adhesion, DAP adiposal flaps were elevated and transferred to cover the digital nerve lesion.



# Methods

In all patients with digital nerve adhesion, neurolysis was performed, and the digital nerves were repaired in those with digital nerve rupture.

Following these procedures, to prevent re-entrapment and re-adhesion, DAP adiposal flaps were elevated and transferred to cover the digital nerve lesion.

After the operations, the tenderness/pain and Tinel's like signs on the operative site were reviewed.

# Results

At the final follow-up all patients showed no obvious numbness or tenderness to indicate re-adhesion or re-entrapment around nerves on the operative sites, where the affected nerves were covered by DAP adiposal flaps.

Particularly in patients with digital nerve repair, the Tinel's sign-like symptoms considerably reduced at the repaired sites.

# Case 1

26years old female

Diagnosis: digital nerve adhesion post nerve repair

Six months after surgery of the digital nerve repair, she had complained of severe Tinel's sign on the sutured site of her long finger.

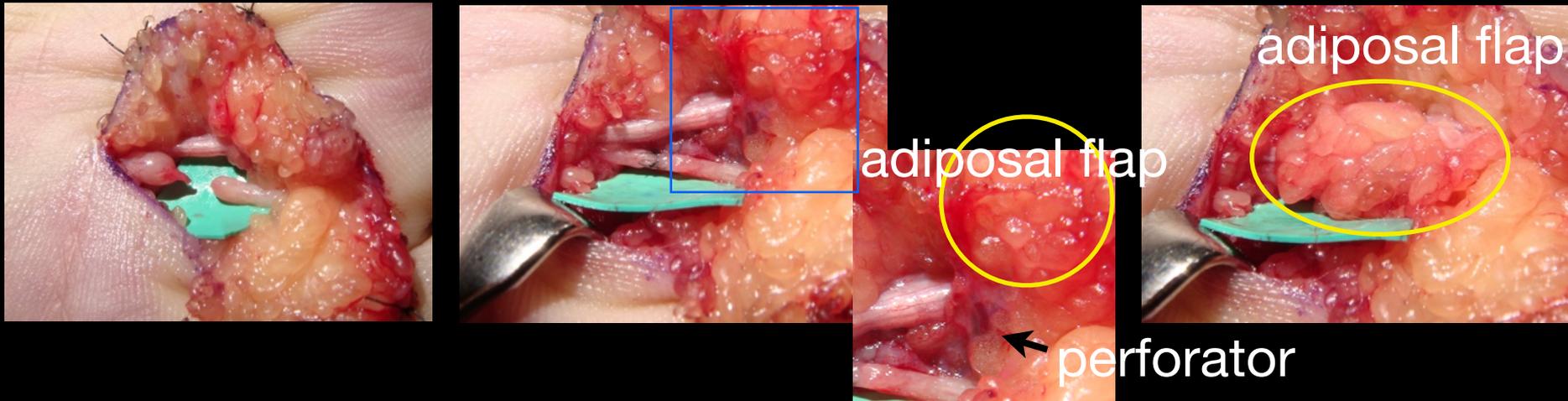


In the operation the neurolysis was performed, and her digital nerve was wrapped by DAP adiposal flap. The Tinel's sign on the sutured site went out after the operation in the third month.

# Case 2

42years old male, Diagnosis:digital nerve rupture

He was injured for the cut wound of the left palm with a knife. At the initial visit the sensory of ulnar side of his small finger disappeared.



In the operation his digital nerve was sutured and covered by DAP adiposal flap. The tenderness on the sutured site went out after the operation in the first month.

# Discussion

In 2003, Koshima reported treatment of meralgia paresthetica using a deep inferior epigastric perforator adiposal flap to cover the affected cutaneous nerve.

And in 2010, Mitsunaga used a DAP flap to reconstruct the fingertip and finger stump.

However, there are no reports on the use of DAP adiposal flaps to cover the repaired digital nerves.

Treatment of meralgia paresthetica with a deep inferior epigastric perforator adiposal flap: case report.

Koshima I et al. J Reconstr Microsurg. 2003

Digital artery perforator (DAP) flaps: modifications for fingertip and fingerstump reconstruction.

Mitsunaga N et al. J Plast Reconstr Aesthet Surg. 2010

# Discussion

This is the first report, to the best of our knowledge, on the application of a DAP adiposal flap to cover the repaired digital nerves so that re-entrapment and re-adhesion do not occur.

The results of the present study are similar to that of the report by Koshima, indicating that our procedures were successful.

In our opinion, the adiposal flap was suspected to prevent re-adhesion around the affected nerve and to work as a cushioning material between the skin and the nerve.

# Conclusions

The DAP adiposal flap is useful for repairing scarred digital nerves so that adhesions do not recur after digital nerve neurolysis or repair.