

5<sup>th</sup> International Conference of

# Orthopedic Surgeons and Rheumatology

June 16-17, 2016 Alicante, Spain

## Ultrasound-guided ultraminimally invasive carpal tunnel release

Manuel Villanueva, Alvaro Iborra, Guillermo Rodríguez Homid Fahandezh-Saddi and Pablo Sanz  
Avanfi Institute, Spain

**Introduction:** Carpal tunnel syndrome is the most surgically treated entrapment neuropathy. It affects 1 million adults in the United States annually. Several studies suggest smaller incisions related to lower rates of scar tenderness, pillar pain rates and earlier return to work. Ultrasound-guided ultraminimally invasive release is performed with 1 mm incision, in an ambulant regimen, with local anesthesia, without the need for ischemia. Simultaneous bilateral release is possible even in patients with diseases considered contraindications for classic techniques.

**Material and methods:** The instrument set included long needles (a 16-gauge, 1.7-mm diameter Abbocath, USA), a V-shaped straight curette, a blunt dissector, a hook knife (Aesculap 2,3 mm), and an ultrasound device (Alpinion ECube15) with a 10-17-MHz linear transducer and the Needle Vision Plus™ software package. The patient is placed supine, with the hand on a table and the palm up. We do not use ischemia. We delineate the midpoint between the nerve and the ulnar vessels, trying to define Nakamichi zone's midpoint. At the selected midpoint at the forearm, we insert a large spinal needle with local anesthesia and check we pierce the deepest fibers and are beneath the transverse carpal ligament. Color-doppler function may help us to safely determine the superficial palmar arch and guide the distal limit of our instruments. We insert the small and medium V-shaped straight curette guided by the needle. The release starts 2-3 mm proximal to the superficial palmar arch and proximally we extend the release proximal to the pisiform. We remove the hook knife following the curve of the blade so as not to enlarge the incision. The mobility of fingers is immediately checked. No stitches are required. We use adhesive-strips and a padded dressing. The procedure takes 10 minutes.

**Results:** In 20 cadavers we have checked this procedure to be safe, preserving the nerve and vessels and effective. We have operated on 31 hands in 20 patients (11 bilateral cases), 16 women and 4 men. The age ranged from 39 to 74 years. One case was a recurrence of open surgery. Patients required "pain killers" for 1-2 days and returned to activities of daily living or work after 3 days (1-15 days). The Phalen test, Tinel test, reverse Phalen test, carpal compression test, and grip strength significantly improved. Quick DASH score improved from 57 pre-op (25-89) to 4 post-op (0-9). There were no infections nor nerve damage. Minor superficial hematomas were common. Two patients had residual numbness and thenar atrophy despite clinical improvement.

**Discussion:** Better outcomes (in terms of pain, strength, function, and cosmetic aspects) have been reported as dissection was reduced from classic to endoscopic to mini or ultra-minimally invasive approaches. Ultrasound-guided surgery seems to be safe, helpful and successful for carpal tunnel release. It gives the surgeon direct control of the main structures. Since they can be performed on an outpatient basis under local anesthesia and without a tourniquet, complications and contraindications are minimized. As it causes minimal pain and swelling, recovery is quicker.

### Biography

Manuel Villanueva MD, PhD, is Medical Director of Avanfi Institute in Madrid, President of AECE (Spanish Association of Ecoguided Surgery) and Director of Unit for Ultrasound-guided surgery of Hospital Beata Maria, Madrid. Dr. Villanueva is the first Spanish orthopedic surgeon awarded by the AAOS (American Association of Orthopedic Surgeons) for surgical techniques (currently awarded in four times, including several Certificate of Merit). Author of eight surgical techniques included in the Educational Media Program of the AAOS, the most prestigious institution in the field of orthopedics and many international conferences and publications. Dr. Villanueva is the first surgeon in the world awarded by the AAOS for Ultrasound-guided ultraminimally invasive surgery. He is involved in research and teaching of these techniques and currently performs more than 20 surgical procedures guided by ultrasound.

[mwillanuevam@yahoo.com](mailto:mwillanuevam@yahoo.com)

### Notes: