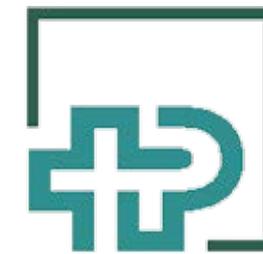


# Joint Denervation to Manage Painful Wrist and Trapezio-Metacarpal Arthritis in Patients with Spinal Cord Injury

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**Introduction:** Patients with spinal cord injury (SCI) have more often pain due to osteoarthritis, mostly in wrist and trapezio-metacarpal joints (Fig. 1) due to increased load during wheelchair propulsion and transfer [1]. However, standard bony procedures for able-bodied patients, e.g. arthroplasty or arthrodesis, require lengthy immobilization and prostheses may therefore be unsuitable for SCI patients.



Fig. 1: Wrist and CMC1 arthrosis in 53-year-old male with tetraplegia (OCu5), pain intensity dropped from preop VAS 7-8 to VAS 1-2 after denervation

**Methods:** - 11 patients (7 para-, 4 tetraplegic) operated between 2012 and 2017  
- 6 wrist denervations according to A. Wilhelm [2] (Fig. 2), 6 thumb CMC joint denervation according to Loréa [3] (1 bilateral), 1 combination of both procedures.  
- Preoperative test blocks using LA reducing the pain level at least by 50% and pain intensity evaluated prior to and 3 months after surgery using VAS (0 = pain free, 10 = worst pain).

**Results:** Pain levels dropped by at least 50% in all cases and results were rated as satisfactory by all patients (average VAS preop 7.2 → postop 2.5). Function did not deteriorate in any case. No conversion to total joint arthrodesis occurred during follow-up time. There were no complications.

**Discussion:** Surgical joint denervations is an underused option to treat painful osteoarthritis. However, compared to more invasive methods, such as bony fusion, arthroplasty or prostheses provides important advantages: 1. Joint integrity is preserved, 2. Muscle function remains unaffected, 3. Postoperative immobilization is not necessary, 4. Operation is possible under local anesthesia, 5. The method is technically simple, inexpensive and with low risks. 6. All alternatives remain possible for future, e. g. arthrodesis or arthroplasty prosthesis. 7. The results can be reliably anticipated by preoperative test nerve blocks.

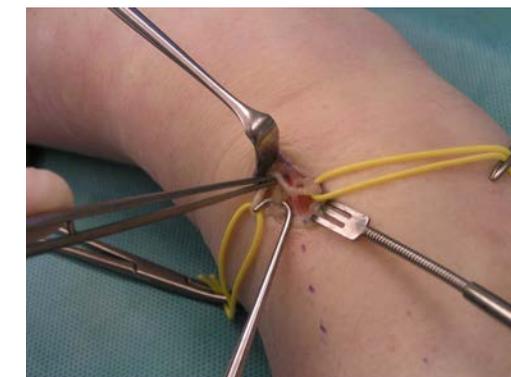


Fig. 2: Technique of total wrist denervation modified after A. Wilhelm with small dorsal, intermetacarpal and radio-palmar incisions

**Conclusion:** Surgical denervation seems a promising alternative to treat osteoarthritis in para- or tetraplegic patients who are often unsuited for standard bony procedures, such as arthroplasty or arthrodesis .

- Pain relief by interrupting impulses from joint to brain through small incisions
- Easily reproducible, straightforward procedure
- Preserves joint function
- Does (almost) not interfere with rehabilitation