Original Research

Endoscopic Carpal Tunnel Release Using Wide-Awake Anesthesia

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A R T I C L E  I N F O

Purpose: We report on patient and surgeon experience after single-port endoscopic carpal tunnel release (CTR) using wide-awake local anesthesia no tourniquet (WALANT) technique.

Methods: From July to November 2018, patients undergoing endoscopic CTR with WALANT were prospectively included. Follow-up was 3 months. Patient ratings before, during, and after the operation were collected. We recorded the surgeon’s experience during surgery compared with the endoscopic CTR under local anesthesia with exsanguination and tourniquet. Complications were defined as nerve injury, infection, or the need for revision surgery.

Results: The cohort consisted of 20 patients (24 wrists). All patients except one reported a complete or substantial decrease of symptoms. The 2 surgeons involved judged the procedure to be technically more demanding owing to impaired visualization (33%) caused by increased bleeding and edema in the operative field. There was one conversion from endoscopic to open surgery.

Conclusions: We recommend starting single-port endoscopic CTR using WALANT with a noninflated tourniquet in place for use when necessary.

Type of study/level of evidence: Therapeutic IV.

Currently, an increasing number of hand surgery procedures can be performed under local anesthesia with the adjunct of a vasoconstrictive agent, avoiding the need for a tourniquet.1–3 This has become known as the wide-awake local anesthesia no tourniquet technique (WALANT).

Kerrigan et al described WALANT for single-port endoscopic carpal tunnel release (CTR) in detail and reported good results in a series of 80 patients with no disadvantages for either the patient or the surgeon.4 However, to the authors’ knowledge, there is no systematic analysis specifically deals with endoscopic CTR with WALANT, although numerous studies assessed WALANT for open CTR with good results.5,6

We report a prospective case series assessing the patient and surgeon experience, as well as complications with WALANT for single-port endoscopic CTR.

Materials and Methods

Between July and November 2018, we prospectively included all patients with confirmed carpal tunnel syndrome by electrodiagnostic testing who were aged greater than 18 years and were undergoing endoscopic CTR. We obtained written informed consent during the routine consultation for procedure planning. Exclusion criteria were unwillingness to participate (n = 0), pregnancy (n = 1), contraindications for the application of local anesthesia (n = 2), contraindications for surgery (n = 0), and potential lack of follow-up (eg, noncompliance, language barrier, unexcused absence) (n = 0).

Patients were enrolled during routine consultation for operation planning. The 2 consulting and operating senior surgeons collected data in a standardized form, which included basic demographic data, general medical information, disease-specific information, and the patient’s rating of the procedure before, during, and after the operation at 3, 6, and 12 weeks. Patients reported pain using the visual analog scale (VAS) from 0 to 10 for the application of the anesthetic and the operation itself; they rated the whole procedure.

Declaration of interests: No benefits in any form have been received or will be received by the authors related directly or indirectly to the subject of this article.

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https://doi.org/10.1016/j.jhsg.2019.10.005

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substantially or completely or had no change. Patients who underwent sequential operations for both wrists were recorded as 2 separate cases.

The surgeon’s perceptions about this type of surgery compared with endoscopic CTR under local anesthesia with a tourniquet were recorded, relating specifically to intraoperative visualization and bleeding. Complications were defined as nerve injury, infection, or the need for revision surgery.

All procedures were performed by the same 2 senior surgeons with more than 5 years of clinical practice (level 3 specialists) in the WALANT approach, as well as in more than 100 single-port endoscopic CTRs under local anesthesia with exsanguination and tourniquet.

Operative technique

Application of the local anesthetic and the operation were performed according to a standardized protocol 30 minutes before initial incision. As described by Lalonde, a field block was applied to the skin overlying the carpal tunnel. We used 1% lidocaine with the adjunct of epinephrine diluted at a factor of 1:100 to the skin overlying the carpal tunnel. We used 1% lidocaine with epinephrine diluted 1:100, which was injected into the carpal tunnel and a dull dilator was passed distally under the exor retinaculum. As described by Lalonde,1 a first incision was performed according to a standardized protocol 30 minutes before the operation (mean, 1.2). Overall, the global rating for the procedure was substantially or completely or had no change. Patients who underwent sequential operations for both wrists were recorded as 2 separate cases.

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we tried to respect the same dosage (mean, 18.3 mL; range, 15–20 mL) and relative concentration of the local anesthetic and epinephrine as described by Lalonde.\textsuperscript{11} We also followed the suggested interval of 30 minutes between application of the local anesthesia and surgery. In one case, a proximal upper arm tourniquet had to be applied during surgery because of the inadequate effect of the vasoconstrictive epinephrine. Alternative methods of employing the tourniquet distal to the elbow would also be an option, but they might cause technical difficulties with the use of the endoscope.

We did not note higher complication rates for this procedure. This is in line with a systematic meta-analysis comparing open and endoscopic CTR that found a low complication rate for both techniques.\textsuperscript{12} Endoscopic CTR is technically more demanding than the open technique and thus mandates a longer learning curve.\textsuperscript{13,14} An anatomically narrow carpal tunnel can be especially challenging. This was the case in one patient in the current study, in whom conversion to the open technique was necessary. This particular patient, who was given the diagnosis of a severe carpal tunnel syndrome (EMG) before surgery, described the procedure as very uncomfortable for patients. However, surgeons found the operation to be more challenging than anticipated. Although this is a small series, we believe other surgeons might face the same problems, especially early in the learning process. We had impaired visualization with WALANT in a third of cases. We therefore recommend applying a noninflated tourniquet for use when necessary. The current series is only a preliminary report; technical difficulties that were encountered may be resolved over time as further experience is accumulated. In our institution, we perform endoscopic CTR with WALANT in selected cases, especially for patients reporting pain or discomfort caused by a previous experience with tourniquets.

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