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Original article

Bilateral simultaneous endoscopic carpal tunnel release: Mean time to resume activities of daily living and return to work

Libération bilatérale et simultanée du nerf médian au canal carpien sous endoscopie : délai moyen de retour aux activités quotidiennes et professionnelles

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ABSTRACT

The purpose of this study was to determine the time needed to return to personal and professional activities after bilateral simultaneous endoscopic carpal tunnel release. During a retrospective, single-center study, we included a cohort of 30 patients (60 wrists). Patients were evaluated clinically (pain, paresthesia) and functionally (QuickDASH score) pre- and postoperatively. At the last follow-up, patients completed a questionnaire regarding the time needed to resume personal activities using the ADL scale (feeding, personal hygiene and dressing) and return to work. We also evaluated procedure satisfaction and willingness to undergo the surgery again. The average patient age was 60.5 years (range 39–86). At the last follow-up, average time to resume personal activities was 2.2 days (0–14) for feeding, 4.4 days (0–15) for personal hygiene and 3.9 days (0–14) for dressing. Average time to return to recreational activities was 11.7 days (1–60). Average time to return to work was 36.6 days (15–60). Overall, 97% of patients were satisfied or very satisfied with the outcome. All patients would have the bilateral simultaneous surgery again. Bilateral simultaneous endoscopic carpal tunnel release is rarely performed. For mild conditions, contralateral symptom improvement is common after unilateral surgery. Bilateral simultaneous endoscopic carpal tunnel release appears to be disabling right after surgery, but clinical and functional scores are similar after the third postoperative day. These data can be used for patient education and decision making when considering surgery bilateral carpal tunnel syndrome. Bilateral simultaneous endoscopic carpal tunnel release is a feasible and safe procedure.

Level of evidence: Level IV, case series.

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R É S U M É

L'objectif de notre travail était d'évaluer les délais de retour aux activités quotidiennes et professionnelles après libération bilatérale simultanée du nerf médian au canal carpien sous endoscopie. Lors d'une étude rétrospective et monocentrique, un total de 30 patients (60 poignets) a été inclus. Les patients étaient évalués en pré- et postopératoire de manière clinique (douleur, paresthésies) et fonctionnelle (score QuickDASH). Au dernier recul, les patients renseignaient un questionnaire sur les délais de retour aux activités de la vie quotidienne (repas, hygiène personnelle et habillage), les délais de retour aux activités professionnelles, et un questionnaire de satisfaction. L'âge moyen des patients était de 60,5 années (39–86). À la révision, la douleur moyenne avait diminué de 5,6/10. Les délais moyens de retour aux activités quotidiennes étaient de 2,2 jours (0–14) pour les repas, 4,4 jours (0–15) pour l'hygiène personnelle et 3,9 jours pour l'habillage. Le délai moyen de retour aux activités de loisir était de 11,7 jours (1–60) et pour les activités professionnelles de 36,6 jours (15–60). Les patients étaient satisfaits ou très satisfait dans 97 % des cas. Tous les patients se referaient opérer de manière bilatérale. La

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chirurgie de libération bilatérale simultanée du nerf médian au canal carpien est peu pratiquée. La chirurgie bilatérale simultanée apparaît comme handicapante dans la période postopératoire immédiate, mais les scores cliniques et fonctionnels sont similaires à ceux de la chirurgie unilatérale après le troisième jour postopératoire. Elle est plus économique, mais doit être réalisée dans un cadre adapté. Niveau de l'étude. – Niveau 4, étude de cas.

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1. Introduction

Carpal tunnel syndrome is the most frequent upper limb compressive neuropathy with a prevalence of 4 to 5% in the general population [1,2]. In 60 to 87% of cases, symptomatology appears immediately on both sides [3,4].

For professional or convenience reasons, some patients wish to have their symptoms resolved quickly, notably pain. Simultaneous bilateral carpal tunnel release seems compatible with these objectives, although it can cause immediate postoperative disability [5,6]. In a 2014 observational study led by the American Society for Surgery of the Hand, 85% of practicing hand surgeons said they rarely or do not perform bilateral surgery in symptomatic forms of bilateral carpal tunnel [7]. To date, no European survey has addressed this subject.

No study has evaluated the time needed to resume activities of daily living after simultaneous bilateral endoscopic surgery. Our hypothesis was that bilateral simultaneous endoscopic surgery provides a fast, functional recovery that is compatible with an early return to activities of daily living. The objective of this study was to evaluate the time needed to return to daily living activities, recreational activities and work after bilateral simultaneous endoscopic carpal tunnel release.

2. Patients and methods

2.1. Patients

A total of 30 patients (19 women and 11 men) corresponding to 60 operated wrists were included continuously from February 2013 to November 2015. Inclusion criteria were:

- a diagnosis of carpal tunnel syndrome based on clinical examination [3,9];
- presence of bilateral syndrome;
- confirmed by electromyogram; and
- failed medical treatment for more than 3 months.

Carpal tunnel syndrome was rated as class 2 or 3 according to Lundborg's scale in all patients [10]. Electromyography (EMG) revealed an increase in sensory and motor distal latency in all patients, evidence of severe damage to the median nerve [11], which is classified as "moderate" to "severe" according to Stevens [12]. All patients had failed initial treatment by splinting of the wrist at night as well as injections of corticosteroids into the carpal tunnel.

Patients were excluded if they did not agree to undergo with bilateral simultaneous surgery after receiving clear information, or were non-autonomous patients living on their own.

2.2. Surgical procedure

All patients were operated by the same senior surgeon in an ambulatory surgery setting. The procedure consisted in bilateral simultaneous endoscopic carpal tunnel release as described by

Agee et al. [8]. Patients underwent regional bilateral anesthesia using an axillary block and inflatable tourniquet. Wound closure was performed using DERMABOND ADVANCED[®] Topical Skin Adhesive (Ethicon[®], Johnson and Johnson, Issy-lès-Moulineaux, France).

2.3. Postoperative protocol

No immobilization was prescribed. No nursing care was needed. During the first postoperative month, early mobilization of the hand was allowed, but movements requiring force production were not allowed. Patients were systematically examined again after 1 and 3 postoperative months.

2.4. Clinical and functional evaluation

A clinical evaluation was performed preoperatively and at the last follow-up visit. The evaluation included a quantification of pain using a visual analog scale (VAS), a search for paresthesias, thenar atrophy and the QuickDASH score (Disabilities of the Arm, Shoulder and Hand) [13].

Functional evaluation was performed during the follow-up visits and at the review. Time needed to resume activities of daily living was evaluated using the ADL scale (Activities of Daily Living) [14] on the following items: "eating", "personal hygiene", "dressing" and "recreational activities". For patients with professional activities, time to return to work was also evaluated.

Postoperative satisfaction was ranked on a 4-level analog scale: "highly satisfied", "satisfied", "moderately satisfied" and "not satisfied". Patients were asked about their reasons for undergoing bilateral simultaneous surgery, and were asked to answer the question "If you were to undergo carpal tunnel surgery on both hands, would you undergo bilateral simultaneous surgery?" Postoperative complications were investigated throughout the entire follow-up period.

2.5. Statistical analysis

The study population was split in two groups:

- patients with permanent jobs, the so-called "Workers" group;
- and unemployed, disabled or retired patients, corresponding to the "Non-working" group.

Within the "Workers" group, we made two subgroups: the heavy workers (carrying of heavy loads > 10 Kg) and sedentary workers (work in an office or carrying light loads < 10 Kg). Statistical analyses were performed on both the overall cohort and on the two study groups.

Statistical analyses were performed using SPSS[®] (IBM, Armonk, New York, USA). Qualitative variables corresponded to the effective size and the percentages were compared using Fisher's exact test. Normally distributed continuous data were represented by their mean and standard deviations and compared using Student's *t* test. Statistical significance was set for a threshold of $P < 0.05$.

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