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Hand Surgery & Rehabilitation
Hand Surgery and Rehabilitation xxx (2016) xxx–xxx

Original article

Proximal row carpectomy on manual workers: 17 patients followed for an average of 6 years

Résection de la rangée proximale du carpe chez les travailleurs manuels : 17 patients revus au recul moyen de six ans

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Received 27 February 2016; received in revised form 18 September 2016; accepted 26 September 2016

Abstract

Proximal row carpectomy (PRC) is indicated for the treatment of SNAC or SLAC wrist with preservation of the midcarpal joint. Our hypothesis was that PRC is not appropriate for treating advanced wrist osteoarthritis in patients who carry out heavy manual work. Twenty-three PRCs were performed on 21 patients, 5 women and 16 men with an average age of 54 years (33–77). All patients performed manual work; 11 of them performed heavy manual work. Etiologies were: SLAC wrist in 14 cases (2 stage III, 11 stage II, and 1 stage I) and SNAC wrist in 9 cases (6 stage IIIB and 3 stage IIB). At an average 75 months' follow-up (24–153), five patients were lost to follow-up. Radiocarpal arthrodesis was performed in one patient 10 years after the PRC. In the 17 remaining patients (18 wrists), pain (VAS) averaged 2.2, with residual pain of 5. Flexion–extension range was similar to preoperative levels (67% of contralateral wrist). Wrist strength was decreased by 34% compared to preoperative. The QuickDASH score averaged 26 points and the PRWE 20 points. Radiocapitate distance decreased by 0.3 mm on average with joint line narrowing in 6 patients. The carpal translation index was 0.33 mm, which was unchanged relative to preoperative values. Three patients had work-related limitations that required retraining and one patient had to be reassigned. PRC preserved the preoperative range of motion and reduced pain levels. However, significant loss of strength was observed, resulting in 23% of manual workers needing retraining or reassignment.
Type of study/level of evidence. – Therapeutic IV.

Keywords: Degenerative; Carpus; SLAC; SNAC; Resection

Résumé

La résection de la rangée proximale du carpe (RRP) est indiquée dans le traitement des poignets dégénératifs de type SNAC ou SLAC pour préserver l'articulation médiocarpienne. Notre hypothèse était que la RRP n'était pas adaptée au traitement des poignets arthrosiques du travailleur manuel. Vingt-trois RRP ont été réalisées chez 21 patients, 5 femmes et 16 hommes de 54 ans d'âge moyen (33–77). Tous les patients étaient travailleurs manuels dont 11 travailleurs lourds. L'étiologie initiale était un SLAC dans 14 cas (2 stades III, 11 stades II, 1 stade I) et un SNAC dans 9 cas (6 stades IIIB et 3 stades IIB). Au recul moyen de 75 mois (24–153), 5 patients avaient été perdus de vue. Une arthrodèse radio-carpienne avait été effectuée chez un autre patient à 10 ans de la RRP. Parmi les 17 autres patients (18 poignets), l'EVA moyenne était de 2,2 ; cinq présentaient des douleurs résiduelles. L'arc de flexion/extension était similaire aux amplitudes préopératoires, soit à 67 % du poignet controlatéral. La force de poigne était réduite de 34 % par rapport aux données préopératoires. Le score QuickDASH moyen était de 26 points avec un score PRWE à 20 points. La distance radio-capitale avait diminué de 0,3 mm en moyenne avec un pincement de l'interligne chez 6 patients. L'index de translation du carpe était de 0,33 mm sans modification par rapport aux valeurs préopératoires. Il y avait eu 3 invalidités professionnelles avec reconversion et un reclassement professionnel. La RRP permet la conservation des mobilités préopératoires du poignet et une diminution des douleurs. Cependant,

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http://dx.doi.org/10.1016/j.hansur.2016.09.014

Please cite this article in press as: Delclaux S, et al. Proximal row carpectomy on manual workers: 17 patients followed for an average of 6 years. Hand Surg Rehab (2016), http://dx.doi.org/10.1016/j.hansur.2016.09.014

cette technique s'accompagne d'une diminution notable de la force de poigne qui a été responsable de 23 % de reclassement et reconversion professionnelle dans notre série.
Type d'étude/niveau d'évidence. – Thérapeutique IV.

Mots clés : Dégénératif ; Carpe ; SLAC ; SNAC ; Résection

1. Introduction

Proximal row carpectomy (PRC) is indicated for the treatment of scapholunate or scaphoid nonunion advanced collapse (SLAC and SNAC, respectively). Involvement of the radioscaphoid joint with preservation of the radiolunate and midcarpal joints is the best indication. Although some authors consider PRC a salvage procedure, pain control with preservation of the functional range of motion can be obtained, theoretically with decreased wrist strength [1–10]. Some studies have reported stable results even after 20 years follow-up [11]. This surgical procedure is usually discussed relative to other treatment alternatives, such carpal denervation [12,13] and midcarpal arthrodesis [14–16]. A patient's occupation can be a criterion for performing PRC. Our hypothesis was that PRC is not appropriate for treating advanced wrist osteoarthritis in patients who are heavy manual laborers because of the significant loss of wrist strength.

A retrospective study was conducted to evaluate the functional and radiological outcomes of a cohort of continuous PRC procedures in manual laborers, and to validate whether this technique is suitable in this patient population.

2. Patients and methods

2.1. Study design

A retrospective study was conducted in our Orthopedics and Traumatology department. Institutional review board approval was not required for this study. Patients were included who were heavy manual laborers and agreed to be part of this study, had SLAC wrist or SNAC wrist, were treated with PRC, and reviewed with 2 years' minimum follow-up. Exclusion criteria were: PRC for SLAC or SNAC wrist in non-manual laborers, PRC on patients for an etiology other than SNAC or SNAC, or less than 2 years' follow-up.

2.2. Patient demographics

Between 1995 and 2009, PRC was performed on 35 patients. Twelve were excluded because they did not meet the inclusion criteria. Twenty-one patients (23 PRC cases) were included in this study. There were 5 women and 16 men with an average age of 54 years (33–77). All performed manual labor; 11 of them performed heavy manual work (Table 1). The dominant side was involved in 11 (48%) cases. The main complaints were pain at rest or with effort. A history of wrist injury was reported for 8 patients. Wrist damage was identified on radiographs as 14 cases of SLAC (1 stage I, 11 stage II, 2 stage III) and 9 cases of SNAC (3 stage IIB, 6 stage IIIB). According to Yazaki et al. [17], all capitate bones had a round shape except one with a "V" shape. Preoperative functional values are reported in Table 2. Preoperative range of motion was 86 degrees of flexion–extension, 23 degrees of ulnar deviation and 6 degrees of radial deviation. Grip strength evaluated with a JAMAR® dynamometer was 30 kg (5 to 40), or 59% of the contralateral normal wrist. The carpal translation index, measured on A/P views, was 0.38 (0.24 to 0.47) [18].

2.3. Surgical technique

All patients were operated using regional anesthesia. A dorsal approach between the third and fourth extensor compartments was performed. After the extensor retinaculum had been open longitudinally, the terminal branch of the posterior interosseous nerve was systematically resected. The dorsal capsule was then opened in a "T" fashion, preserving two capsular flaps, one radial and one ulnar. PRC began with excision of the lunate, then the triquetrum, and finally the scaphoid. No additional incision was needed to complete the scaphoid excision. No interposition or fixation was used in this cohort. In four cases of hypertrophic radial styloid process, a radial styloidectomy was also performed. The dorsal capsule was then closed by suturing the radial flap to the ulnar flap. After repositioning the extensor tendons, the extensor retinaculum was closed. Time for surgery was 45 minutes on average (40–60). Patients were immobilized in a volar splint in

Table 1
Types of manual labor activities for each patient in the study cohort.

Patient	Sex	Age	Type of manual work	Occupation
1	M	40	Heavy	Carpenter
2	M	77	Light	Handyman
3	M	33	Light	Waiter
4	F	58	Light	Sales rep
5	M	68	Heavy	Tradesman
6	M	63	Heavy	Butcher
7	M	65	Heavy	Tradesman
8	M	74	Heavy	Tradesman
9	M	56	Heavy	Mason
10	M	67	Light	Tradesman
11	F	66	Light	Nurse
12	M	65	Heavy	Farmer
13	F	74	Light	Tradesman
14	M	54	Heavy	Telecommunications
15	M	64	Heavy	Baker
16	M	64	Heavy	Tradesman
17	M	55	Heavy	Car mechanic

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