The British Association of Plastic Surgeons (2005) **58**, 116–119

BJPS
An International Journal of Surgical Reconstruction
www.bjps.com

SHORT REPORTS AND CORRESPONDENCE

Carpal tunnel decompression. The impact of tourniquet, anaesthesia type, and operating team on patient satisfaction scores

A. Gulati[a], I.S. Whitaker[b,*], M. Jaggard[c], B.N. Arch[d], J. Hopkinson-Woolley[e]

[a]*Department of Emergency Medicine, Addenbrooke's Hospital NHS Trust, Cambridge, UK*
[b]*University of Cambridge, Cambridge, UK*
[c]*Queen's Medical Centre, Nottingham, UK*
[d]*Department of Medical Statistics, University of Cambridge, Cambridge, UK*
[e]*Ipswich Hospital, Ipswich, UK*

Received 5 May 2004; accepted 10 June 2004

Carpal tunnel syndrome is a frequently encountered cause of upper extremity discomfort and disability, with an annual incidence of 0.1% in the general population[1] and over 2% in high-risk occupations.[2] A large proportion of patients fail to respond to conservative treatment with wrist splints, analgesics, lifestyle modification and corticosteroid injection.[3] In this group of patients, surgical release of the flexor retinaculum is indicated in order to decompress the carpal tunnel, as first described by Learmonth in 1933.[4] Surgical decompression of the carpal tunnel can be performed under local or general anaesthetic and with or without a tourniquet. A variety of techniques have been described, each with its individual merits and drawbacks. The increasing role of clinical governance in modem day practice places an even greater emphasis on the need to establish whether specific interventions meet patients' expectations. Previous studies have evaluated outcome following surgical decompression of the carpal tunnel using physical findings, disease specific questionnaires, and electromyography, with reported success rates ranging from 70 to 90%.[5]

We used a validated patient completed questionnaire[6] to assess patient satisfaction following unilateral and bilateral carpal tunnel decompression in a large sample of patients in a district general hospital setting. We also investigated the impact of anaesthesia type, tourniquet usage and operating team on the clinical outcome. All patients in the study group were diagnosed by a consultant hand surgeon, using a mixture of clinical history, clinical tests and EMG recordings.

Patients and methods

Two hundred and eighty nine consecutive patients who underwent carpal tunnel release between February 2000 and June 2001 were posted the PEM (Patient Evaluation Measure) questionnaire.[3] All patients were at least 6 months post-operative. The response rate was high with an 86% response rate (249). Two hundred and thirty, one sets of notes were reviewed and the following operative

*Corresponding author.
E-mail address: iain_whitaker@yahoo.com

doi:10.1016/j.bjps.2004.06.023

variables were noted: operating team (hand team vs other), operating site (unilateral vs bilateral), anaesthetic type (general vs local) and tourniquet usage (tourniquet present vs absent). The results were statistically analysed using the Mann–Whitney *U* Test.

The questionnaire

The PEM questionnaire was devised in 1995[7] and has since been shown to be a reliable, valid and responsive tool for assessing outcomes of disorders of the hand.[6] It uses a simple layout with the questions asked in a visual analogue form. Patients are required to circle a number from one to seven to determine the magnitude of each answer, with a low score signifying a higher level of satisfaction in each case.

Results

The sample consisted of 231 patients of which 160 (69.3%) were female. The mean age was 57.2 (SD 15.7). Most patients were operated on by a hand team (63.6%), were given a local anaesthetic (84.0%), were operated on at the unilateral site (72.7%) and had a tourniquet used (79.2%). The median (IQR) PEM score was 26 (17.0,44.5). The frequency distribution of the total PEM score was negatively skewed with patients tending to have low scores indicating a high level of satisfaction. Neither age nor gender was associated with total PEM score.

None of the four operative variables tested were associated with the total PEM score (Table 1). Thus there were no significant differences between the median scores for the different operating team ($p = 0.68$, Fig. 1), operating site ($p = 0.63$, Fig. 2), anaesthetic type ($p = 0.32$, Fig. 3) or tourniquet usage ($p = 0.70$, Fig. 4). Patients who were not operated on by the hand team (Fig. 1) or who had a local anaesthetic (Fig. 3) were noted to be more variable in their scores.

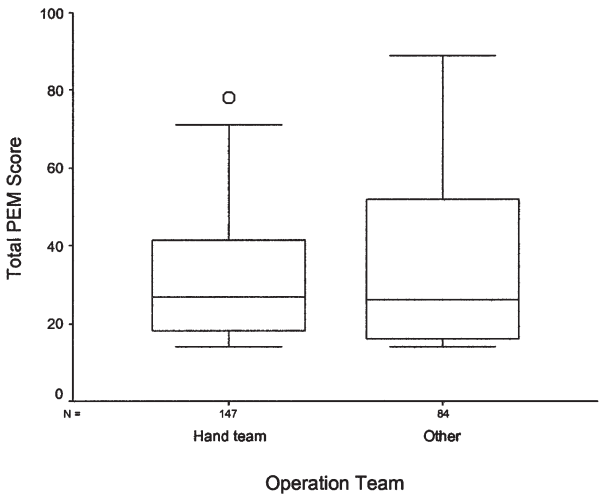

Figure 1 Boxplot showing distribution of total score by operation team.

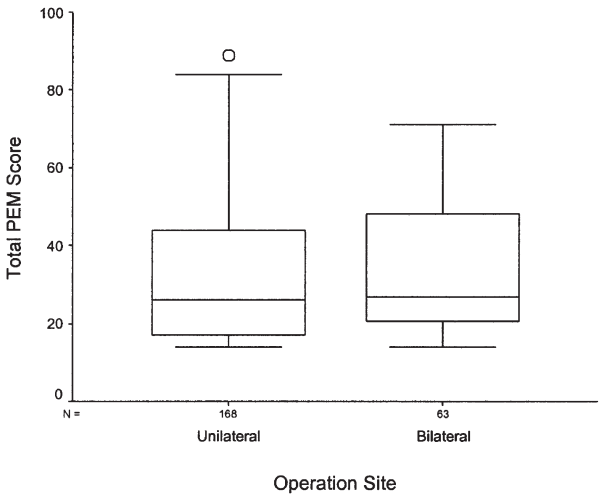

Figure 2 Boxplot showing distribution of total score by operation site.

Discussion

The low median PEM score (26) and negatively skewed PEM score distribution both correlate with a high level of patient satisfaction following carpal tunnel decompression. This observation is consistent with the findings of several other studies, which have used patient administered questionnaires to assess the results of carpal tunnel releases.[5,8,9]

Table 1 Median (interquartile range) PEM scores for different operative variables and corresponding *p*-values (Mann–Whitney *U* Test)

Variable	Median PEM Score		*p*-value
Hand team/other	27(18,41.5)	26(16,52)	0.68
Unilateral/bilateral	26(17,44)	27(20.5,48)	0.63
Local/general anaesthetic	27(18,47)	25(16,38)	0.32
Tourniquet used/not used	26(18.5,45)	26.5(16.5,42.5)	0.70