

Closed ended structured questionnaire in fast track familiarization of nurses to conduct telephone follow-up after open carpal tunnel release

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ABSTRACT

Background: Open carpal tunnel release (OCTR) due to chronic carpal tunnel syndrome (CTS) is the most common procedure in hand surgery. CTS is often bilateral. A follow-up is required to detect any complications and confirm successful recovery before contralateral procedure is booked.

Objectives: The purpose of this study is to evaluate a closed ended questionnaire to assist nurses when starting routine follow-up telephone interviews after carpal tunnel surgery.

Methods: In our hospital routine follow-up phone calls to the patients 3 months after OCTR were allocated to nurse practitioners instead of surgeons. Once the practice was started a structured face validated closed ended questionnaire was used to collect data from a total of 61 consecutive patients.

Results: Nurse practitioners performed the follow-up independently in 97 % (59/61) of the cases. Ten per cent (6/61) of the patients were assigned further appointments to a surgeon and one patient was referred to an occupational therapist. 2 patients contacted the hospital after the telephone interview because of minor complaints. Patient charts were reviewed 18 months after the phone calls. No missed complications were detected.

Conclusions: We conclude that a structured closed ended questionnaire is useful assist in fast track familiarization of nurse practitioners for the follow-up contact after OCTR.

Key words: Carpal tunnel release, carpal tunnel syndrome, hand surgery

Introduction

Open carpal tunnel release (OCTR) due to chronic carpal tunnel syndrome is (CTS) is the most common surgical procedure of the hand [1]. After surgery a follow-up is required to detect complications such as nerve injuries, wound dehiscence, wound infection or complex regional pain syndrome, and to document

overall patient satisfaction [2]. CTS is often bilateral. Even though possible, bilateral OCTR is seldom performed [3]. Instead of a fixed interval it may be preferable to confirm recovery of the operated side before booking the second surgery. Experience of the first surgery such as any minor or major complications, discussion with fellow patients and verbal and non-verbal

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communication with the surgeon or other staff may affect the patients decision to have the second surgery. It is also necessary to contact the patient before the surgery of the contralateral side because some patients may opt to cancel if the contralateral side has improved.

The follow-up may include an out-patient visit to a surgeon, a routine telephone call from a secretary or a nurse, a structured SMS or a web-based questionnaire [4]. Nursing follow-up (telephone or nurse led clinic) is standard in many units, but to our knowledge there is a paucity of published data regarding this practice. The structured closed ended questionnaire method uses closed ended questions only. In this study we analyze using a closed ended questionnaire in familiarizing nurse practitioners to perform the follow-up of OCTR. The purpose of this study is to pilot a closed ended questionnaire that aids a nurse practitioner in performing the follow-up phone calls.

Patients and Methods

In our institution the conventional routine protocol after OCTR was to have the surgeon call the patients in bilateral cases 3 months after surgery to discuss the operation of the contralateral hand. In our hospital CTS is operated by hand surgery consultants or residents in training. In bilateral cases the same surgeon who performed the first surgery will usually also operate the contralateral side. Because of the difficulty for the patients to meet their daily needs after bilateral hand surgery a bilateral OCTR is seldom performed in one go. In unilateral cases follow-up phone calls are only done on demand. There are no routine in person follow-ups since the suture removals are done in health-care centers. In our hospital OCTR of primary CTS is most often performed in the outpatient clinic using the WALANT technique. Patients with proliferative rheumatoid tenosynovitis, bleeding disorders or severe underlying cardiorespiratory illnesses are not candidates for outpatient surgery. All patients undergo preoperative electroneuromyography (ENMG), and only patients with a positive finding in ENMG are

considered candidates for surgery. Before undergoing OCTR the patient is examined by the attending surgeon at the clinic. In case of bilateral complaint both hands are examined.

After OCTR the patient is instructed to hold the hand high to avoid postoperative swelling. Patients are routinely prescribed NSAIDs and acetaminophen and are instructed to contact the clinic in case of problems with severe pain. Before discharge an occupational therapist counsels the patient regarding wound care and patients receive written instructions regarding wound care and postoperative hand exercises including contact information of the operating unit in case of postoperative emergencies. Sutures are removed two weeks postoperatively by a nurse at the local Health Center as is customary in our setting.

Due to shortage of hand surgeons and residents, and in an effort to improve efficiency we opted to modify this protocol to such, that at 3 months a nurse practitioner phoned the patients using a routine questionnaire (Appendix I, translated in English). To assist nurses starting to perform routine follow-up after carpal tunnel surgery we designed a structured closed ended questionnaire, which was face validated by a hand surgeon, a registered nurse and a hand surgery resident. We applied and received the institutional approval of the participating institution to document and analyze the results (Institutional permit for the study was granted by Turku University Hospital, Turku, Finland, permit number T 291/2018). Data collection was based on the structured questionnaire used consecutively in all routine telephone calls done by nurse practitioners. Two nurse practitioners were assigned to the task. Our hospital policy is not to record phone calls to patients. Patients unable to comprehend Finnish language were excluded from the study.

In the questionnaire, we collected information regarding patients' name and identity number, time from OCTR operation, date of the telephone call and name of the nurse practitioner who phoned the patient, lo-

cation (left or right hand), wound healing, pain and numbness in the wrist, the desire of the patient for an outpatient visit with a surgeon and overall satisfaction with the procedure. Questions about the non-operated hand were: Does the patient have continuous symptoms on the non-operated hand or wrist? Does he/she choose to undergo an OCTR operation on the non-operated hand? We also collected data about the patients that attended the additional outpatient visit, had an OCTR of the contralateral side scheduled and finally yet importantly, did the nurse practitioner have to consult a surgeon. All patient charts were reviewed 6 months and 18 months after the telephone contact to check if the patients had contacted the hospital after the telephone interview. Oral consent given by the patient during the interview was considered sufficient for this non-randomized, chart review of a prospectively collected patient cohort. In our setting having the nurses perform the calls does not cause medico-legal or ethical problems since clinic nurses are an integral part of the clinical care team.

Results

We included patients who had symptoms of CTS in both of their hands and underwent OCTR from October, 2018 through March, 2019. There were no cases of bilateral OCTR in the series. The phone calls were done from November 28th, 2018 through May 27th, 2019. A permission for data collection was asked from patients during the phone call.

One patient had had their contralateral side already operated previously so their information concerning the non-operated side was excluded. There were 61 patients who underwent OCTR operation and were phoned after it during the research conducted between November 28th, 2018 and May 27th, 2019. 2 patients underwent simultaneous release of a trigger digit. CTS was mild in 5 cases, moderate in 33 cases and severe in 23 cases. In bilateral cases the severity of the CTS contralateral side was mild, moderate and difficult in 14, 33 and 11 cases, respectively. In addition 2

patients had symptoms indicating a possible early CTS on the contralateral side but ENMG showed no nerve compression. All patients allowed to include information concerning them in the data collection. The results are shown in Table 1.

No patient contacted our unit during the first postoperative days. However, difficulties with post-operative pain forced one patient to contact our clinic before the scheduled follow-up at 3 months, one patient contacted the clinic after observing a small painless bump at the thenar region and one patient had also experienced significant pain and had sought a second opinion from a hand surgeon before the scheduled phone call.

Two thirds (41/61) of patients were called by the first nurse practitioner and one third (20/61) of patients were called by the second nurse practitioner.

Nurse practitioners assigned further appointments for 11 % (7/61) of patients (95 % CI 6–22 %). Of these, six patients had further appointment to a surgeon assigned and one patient had an appointment to an occupational therapist. Of the six patients who had an appointment to a surgeon, for two out of three the reason for the appointment was symptoms/problems in the operated hand caused by other conditions. Two of the six patients with assigned appointments to a surgeon had residual symptoms which lead to clinical follow-up and no procedures. Only one patient had residual numbness which relieved on its own before the assigned appointment. Nurse practitioners consulted a surgeon in three per cent (2/61) of cases (95 % CI 0.9–11 %). Thirty-seven patients had symptoms on their contralateral side at the time of the phone call. Twenty-six of them (70 %) had the second surgery booked during the telephone interview.

The charts were reviewed at 6 months to check if the patients had contacted the hospital after the telephone interview due to complications e.g. One patient had seen a surgeon due to pain in the area of the scar from OCTR. The pain was found to be normal

Table 1. Patient characteristics (N 61).	
Age, Median (Range)	61 (28-93) years
Operated wrist	
Left	17
Right	44
Neurophysiological grading on the operated hand	
Mild	5
Moderate	33
Severe	23
Time from surgery, months, mean \pm SD	2.4 \pm 0.54
Pain in the operated wrist	
None	24
Mild	34
Significant	2
Complaints	
None	26
Residual numbness	31
Wound dehiscence	4
Referred to surgery for contralateral OCTR	
No	34
Yes	26
Further appointment with surgeon assigned	
No	55
Yes, reason	6
Major residual numbness	3
Major pain	1
Pain and numbness	1
Discussion of the contralateral side	1
Further appointment with occupational therapist assigned	
No	60
Yes	1
Nurse practitioner had consult a surgeon	
No	59
Yes	2
Patient contact to a hand surgeon before 3 months*	
No	59
Yes	2
Additional patient contact after nurse follow-up**	
18-month follow-up	
No	59
Yes	2***
Late undetected complications**	
18-month follow-up	
No	61
Yes	0

*One contact due to a palpable small bump in thenar region; one patient sought second opinion from a hand surgeon due to post-operative pain. **Retrospective chart review. ***One contact due to scar tenderness; one contact due to recidive numbness with normal postoperative ENMG and MRI.

post-operative pain. In addition two patients had contacted a surgeon. One had residual numbness which relieved with no further procedures and the other had had a relief of symptoms after the operation but similar symptoms recurred 6 months after the surgery. Despite the symptoms ENMG showed that the median nerve conduction had improved. MRI was programmed for further investigation. MRI showed unspecific postoperative changes and no further procedures were undertaken. The final review of the patient charts at 18 months did not reveal any undetected complications.

Nurse practitioner had to immediately consult a surgeon in two out of the 61 cases (3%). In one of these two cases the operating surgeon had already discussed with the patient that she might benefit from discussing with a surgeon whether to operate the contralateral side. In this case the operating surgeon had not been fully aware of the protocol of the telephone control done by nurse. The surgeon contacted the patient ten days after the first operation and the contralateral side was decided to be operated. In the other case surgeon was consulted since the patient had trigger finger (TF) problem in their thumb on the unoperated side and the patient wanted it to be operated at the same time with the OCTR.

Discussion

We found a structured questionnaire to be useful for nurse providers when starting follow-up after OCTR. Nowadays, telephoning, text messages or even social media platforms are increasingly used in patient care [5,6]. Although follow-up by nurse practitioners is already common in many centers, to our knowledge no study has specifically evaluated the use of closed-ended questionnaires in the follow-up of carpal tunnel syndrome. Multiple choice closed ended questionnaires such as Boston Carpal Tunnel Questionnaire (BCTQ) and Michigan Hand Questionnaire (MHQ) are commonly used pre- and postoperatively to measure the patient rated outcome measures (PROM). PROMs are designed to measure treatment success from the

patient's perspective, but do not function as screening tools for patient care [7,8]. Several tools already exist for assessing the immediate recovery process after discharge from day surgery. These measure postoperative pain, nausea, vomiting, nutrition and activities of daily living [9]. Our aim was to develop a screening tool with high sensitivity that would help the provider to recognize all patients with late complications or complaints in need of further consultation with a surgeon.

There are studies that show the economic benefit of substituting doctors by nurses [10,11] even though the economic benefit varies [12]. The cost of treatment can be reduced by having a nurse phone the patients instead of a surgeon. In pursuance of substitution of doctors by nurses the former's workload is reduced, but the downside to this practice is the risk of additional complications that may increase costs and the workload of surgeons. In our setting as a Nordic country the access to low-cost health care services is readily available and we did not observe any additional complications in this study. The situation may be different among underprivileged patients in low-income regions, where a more rigorous follow-up may be needed to detect all complications.

After OCTR it is common for patients to have minor residual symptoms which relieve with time. There is only limited and low quality evidence regarding optimal rehabilitation after OCTR [13]. It has been shown that one postoperative visit to a hand therapist is sufficient [14]. We prefer the therapist to counsel the patient immediately after the procedure; another option is to have the visit after 1-2 weeks. It is known from literature that at 1 month post-operatively one in five patients has residual pain, but the corresponding figure is only three per cent at 6 months [15]. Our decision to perform follow-up phone calls 3 months after the operation meant that some residual pain was expected to be present. Regarding pain-killers for postoperative and residual pain we routinely opt to prescribe NSAIDs but avoid routine administration of opioid medication due

to addiction potential [16–18].

There are many reasons why all patients with symptoms in the contralateral hand do not have a second surgery booked, e.g. patient not desiring it due to improvement of the symptoms or poor satisfaction with the result of the first surgery. In this study we did not book a second surgery during the phone call for those who had a further appointment assigned. One patient requested consultation with a surgeon because of a trigger thumb in the unoperated side. Since the incidence of trigger digits is known to increase after OCTR, we think a specific question regarding triggering of the digits could be added to the questionnaire [19,20].

The benefit of a closed ended structured questionnaire is that a response choice clarifies the question for the respondent, responses are consistent and it is easy to compare and analyze questionnaires. We believe that there is no specific reason why the questionnaire could not be applicable to be used also by other health care providers than nurses or surgeons, but we did not research this since in our setting doctors and nurses are usually in charge of patient contacts.

Limitations of this study were that the analysis were made retrospectively although the data was collected prospectively. We cannot rule out whether more of our patients did consult hand surgeons of other hospitals due to residual symptoms in the operated hand. After the OCTR patients were routinely informed to contact our facility in case of any concerns. We are the only public hospital within a 160 km radius with a hand surgery unit, and as a public health facility the cost of an outpatient visit is minimal to the patient. We are confident that no major complications were left undetected. Our hospital policy is not to record patient phone calls, so we could not analyze if the interaction of the nurse and the patient affected the answer given by the patient. The population of Finland is a very homogenous population with high education and literacy rate. In a more multicultural setting the sociocultural factors affect the reliability of a telephone follow-up.

In conclusion, a structured questionnaire is useful in the follow-up of OCTR. The majority of patients that did request an outpatient visit to a surgeon did so because of hand symptoms and conditions unrelated to CTS, but which still may require treatment to further patient satisfaction. We find it important to offer all patients an option for an outpatient visit should they so wish.

Conflict of interest statement

The authors have no conflicts of interest to declare.

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