

Should we stop oral anticoagulants in the surgical treatment of carpal tunnel syndrome?

K. Naito · T. Lequint · A. Zemirline · S. Gouzou ·
S. Facca · P. Liverneaux

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Abstract

Introduction It is usual to stop the intake of oral anticoagulants (anti-vitamin K) before surgery. Some authors have shown that during minimal surgery, the relay with low molecular weight heparin (LMWH) may lead to more thromboembolic complications. We present a prospective comparative study while evaluating the results of stopping or continuing anticoagulants in the surgery for carpal tunnel syndrome.

Material and methods Our series included 21 patients (24 hands) taking anticoagulants on a long-term basis. For the first nine patients (group I), treatment with anticoagulants was stopped before the surgery. For the following 12 patients (group II), treatment with anticoagulants was not interrupted. The evaluation was based on the measurement of pain (VAS), functional score of the Quick D.A.S.H. and grip strength (Jamar®) and search for a haematoma or thromboembolism). **Results** The pain decreased by 3.5 points in both groups. The Quick D.A.S.H. decreased by 19.9 and 27.7 points in groups I and II, respectively. The average grip strength decreased by 2.5 kg in group I and increased by 3.8 kg in group II. A subcutaneous haematoma that got healed by itself was observed in group II. We did not observe any thromboembolic complications.

Discussion In conclusion, it seems pointless to stop anticoagulants before surgical treatment of carpal tunnel. The first reason is that continuing anticoagulants does not result in a bleeding risk. The second reason is that this approach removes the theoretical risk of thromboembolic complications during a poorly monitored relay.

Keywords Carpal tunnel · Anticoagulant · Postoperative haematoma

Introduction

It is generally accepted that it is appropriate to relay a low molecular weight heparin (LMWH) in patients taking anticoagulant therapy by oral anticoagulants (anti-vitamin K) before surgery to prevent excessive postoperative bleeding. Some authors have shown that during minimal surgery, which can in particular be performed under local anesthesia (LA), the relay with LMWH may lead to more thromboembolic complications than the appearance of a haematoma requiring surgical recovery [2, 3, 6].

We present a continuous prospective comparative study evaluating the results of stopping or continuing oral anticoagulants (anti-vitamin K) in the surgical treatment of carpal tunnel syndrome.

Material and Methods

Our series included 21 patients—nine women (24 cases), mean age 75 years (41–89 years)—operated on for carpal tunnel syndrome between 2007 and 2011. All patients received oral anticoagulant therapy for long-term (Fluidione Préviscan® for 22 cases; Acenocoumarol Sintrom® for two cases). For the first nine

K. Naito · T. Lequint · A. Zemirline · S. Gouzou · S. Facca ·
P. Liverneaux (✉)
Department of Hand Surgery, Strasbourg University Hospitals,
10 Avenue Baumann,
67403 Illkirch, France
e-mail: Philippe.liverneaux@chru-strasbourg.fr

K. Naito
Department of Orthopaedics, Juntendo University,
Tokyo, Japan

T. Lequint
Department of Orthopaedics, Grand Hôpital,
Charleroi, Belgium

patients, 12 cases (group I), the treatment with oral anticoagulants was discontinued before the intervention, relayed by LMWH, then resumed after the procedure. For the following 12 patients, 12 cases (group II), treatment with oral anticoagulants was not interrupted.

Anesthesia was a local anesthetic (LA) in four cases in group I (Table 1) and 11 cases for group II (Table 2) by 1 % xylocaine without adrenaline. The other patients had loco-regional anesthesia (LRA) to the humeral block by 1.5 % Carbocaine. The LA patients had a tourniquet inflated at the forearm and LRA patients at the arm. The surgical technique was always the same: a minimally invasive incision 15 mm in the heel of the hand in the axis of the third interosseous space, section of the flexor retinaculum and carpi volare along its entire length and skin closure by three stitches nylon 4/0. Immediate mobilization was encouraged in all cases.

The evaluation was carried out by measuring quantitative clinical criteria preoperatively and postoperatively during 6 weeks, while searching for postoperative complications (thromboembolic complication, infection, postoperative haematoma, recurrence or persistence of symptoms, complex regional pain syndrome type I, etc). The pain was assessed using a visual analogue scale (VAS) from 0 to 10; the functional score was assessed by the Quick D.A.S.H. from 0 to 100, and the grip strength in kilograms was measured by Jamar® on position 2.

A statistical analysis assessed the homogeneity of the two groups and then compared the evolution of quantitative clinical endpoints using nonparametric tests: the Mann–Whitney and Fisher's exact tests with a level of confidence $p=0.05$.

Results

The compositions of the two groups were homogeneous for sex, operated side and age (73 years old in group I, 76 years old in group II). Local anesthesia was performed more often in group II, with a statistically significant difference ($p<0.05$).

In quantitative data, the mean pain in group I decreased from 5.1 preoperatively to 1.6 postoperatively. The mean pain in group II decreased from 6.9 preoperatively to 3.4 postoperatively. The pain decreased in average by 3.5 points in both groups without statistical difference.

The average functional score of Quick D.A.S.H. in group I decreased from 37.5 preoperatively to 17.6 postoperatively. The average functional score of Quick D.A.S.H. in group II decreased from 58.7 preoperatively to 31.1 postoperatively. The functional score of Quick D.A.S.H. decreased in average by 19.9 points in group I and 27.7 in group II. The difference was statistically significant ($p<0.05$).

The average grip strength in group I decreased from 20.7 kg preoperatively to 18.2 postoperatively. The average grip strength in group II increased from 17.8 kg preoperatively to 21.6 postoperatively. The grip strength in group I decreased by 2.5 kg on average and increased by 3.8 on average in group II. The difference was statistically significant ($p<0.05$).

In qualitative data, one subcutaneous haematoma that healed by itself was observed in group II. This patient observed no aftereffects. We did not observe any thromboembolic complications.

Table 1 Our series included 12 patients operated on for carpal tunnel syndrome with discontinued oral anticoagulants and relayed by LMWH

Patient no.	Side	Sex	OAC	Age (years)	Anesthesia	Follow-up (weeks)	Pain preop (0–10)	Pain postop (0–10)	DASH preop (0–100)	DASH postop (0–100)	Grip preop (kg)	Grip postop (kg)	Complications
1	L	M	P	72	LRA	6	5	0	40.91	20.45	21	26	–
2	R	M	P	82	LRA	6	2	5	27.27	31.82	31	19	–
3	L	M	P	78	LRA	6	0	0	22.73	13.64	32	21	–
4	L	M	P	73	LRA	6	6	4	38.64	2.27	30	25	–
5	R	F	P	74	LRA	6	5	5	47.73	29.55	20	19	–
6	R	F	P	79	LRA	6	4	5	34.09	36.36	12	12	–
7	L	F	P	79	LA	6	5	0	36.36	31.82	14	14	–
8	L	M	P	41	LRA	14	5	0	29.55	0	20	14	–
9	R	M	P	41	LRA	8	5	0	29.55	0	18	12	–
10	L	F	P	73	LA	57	9	0	59.09	22.73	14	20	–
11	R	F	P	74	LA	6	9	0	59.09	22.73	12	12	–
12	L	M	P	88	LA	6	6	0	25	0	24	24	–

R right, L left, M male, F female, OAC oral anticoagulant, P Préviscan®, LRA loco-regional anesthesia, LA local anesthesia

Table 2 Our series included 12 patients operated on for carpal tunnel syndrome without interrupted oral anticoagulants

Patient no.	Side	Sex	OAC	Age (years)	Anesthesia	Follow-up (weeks)	Pain preop (0–10)	Pain postop (0–10)	DASH preop (0–100)	DASH postop (0–100)	Grip preop (kg)	Grip postop (kg)	Complications
1	L	M	P	83	LA	7	5	5	31.82	31.82	35	19	–
2	L	M	P	77	LA	3	10	9	97.73	86.36	9	15	Haematoma
3	R	F	S	64	LA	6	7	1	18.18	27.27	20	20	–
4	R	M	P	53	LA	7	5	0	43.18	9.09	24	46	–
5	L	F	S	79	LA	6	9	7	72.73	68.18	18	30	–
6	R	M	P	89	LA	6	8	0	68.18	31.82	21	21	–
7	R	F	P	82	LA	6	6	5	68.18	18.18	7	5	–
8	R	M	P	79	LA	8	4	8	75	20.45	5	14	–
9	R	M	P	81	LA	6	7	5	59.09	27.27	29	16	–
10	L	F	P	72	LA	7	7	1	65.91	9.09	8	18	–
11	R	M	P	76	LA	6	7	0	47.73	40.91	28	27	–
12	L	M	P	80	LRA	6	8	0	56.82	2.27	10	28	–

R right, L left, M male, F female, OAC oral anticoagulant, P Préviscan®, S Sintrom®, LRA loco-regional anesthesia, LA local anesthesia

Discussion

Many authors have written about the indications for thromboprophylaxis in lower limb prosthetic surgery and about the management of patients taking anticoagulant therapy and undergoing surgery. However, some authors have shown that failures in the relay with LMWH could lead to serious thromboembolic complications [4, 5]. Meanwhile, others have shown a very low risk of postoperative bleeding after minimally invasive surgery [3]. Therefore, we hypothesized that it would be useless or even dangerous to stop oral anticoagulants before surgery for carpal tunnel syndrome.

In the literature, we found only one article that reported an experience of no interruption of oral anticoagulants in surgery of the hand [7]. The authors had made a measurement of international normalized ratio (INR) consistently on the eve of the operation. They considered that arbitrarily an INR less than or equal to 3 authorized the surgery. All patients had been hospitalized two nights, one before and one after surgery. Although this was a retrospective and not comparative study, the authors concluded that due to the security of their protocol, they did not observe any complications after the surgery for carpal tunnel syndrome or Dupuytren's contracture.

The results of our continuous prospective and comparative study confirm the conclusion of Smit and Hooper. Our results suggest that it is unnecessary to check the INR, because we have observed only one subcutaneous haematoma that got healed by itself (patient 2 in group II) without knowing the result of the

INR. This patient came back on the eighth postoperative day, and he was more worried about the haematic appearance of his hand than by the pain or persistent paresthesia. He was not readmitted. Three weeks after surgery, he was reviewed in consultation, and a complete disappearance of the haematoma was observed. Smit and Hooper described a postoperative bleeding in a patient with an INR inferior to 3, requiring hospital readmission. According to the authors, this patient had failed to report and to discontinue an antiplatelet therapy. The measure of INR is anyway inappropriate to evaluate primary haemostasis. We do not know why grip strength increased in group II and decreased in group I. Maybe an assessment later than 6 weeks after surgery would probably show no difference.

It seems possible to operate all these patients in ambulatory surgery. For ambulatory surgery, all patients should be able to come back to hospital in 30 min, if any complication occurs. In our series, no patient needed to come back for a complication in emergency. Our method, i.e. continuing anticoagulants in the surgery for carpal tunnel syndrome, is compatible with “wide-awake approach” anesthesia [1]. This new method has allowed for the performance of simple operative procedures with tourniquet-free pure local anesthesia.

In conclusion, it seems pointless to stop oral anticoagulants (anti-vitamin K) treatment before operating a carpal tunnel in ambulatory surgery. The first reason is that continuing oral anticoagulants does not increase the risk of bleeding complications. The second reason is that this attitude enables us to avoid the theoretical risk of thromboembolic complications during a poorly monitored relay.

Conflict of Interest The authors declare that they have no conflicts of interest, commercial associations or intent of financial gain regarding this research.

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