

STUDY OF OPEN CARPAL TUNNEL DECOMPRESSION UNDER LOCAL ANAESTHESIA WITHOUT TOURNIQUET

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ABSTRACT

BACKGROUND

Carpal tunnel syndrome is the entrapment neuropathy of the median nerve. It is more common in females than males, surgery is indicated when conservative treatment fails.

AIM OF THE STUDY

To assess the effectiveness of local anaesthesia and patient tolerance to the procedure to release the carpal tunnel completely.

PATIENTS AND METHODS

All cases of carpal tunnel syndrome with failed conservative treatment were included in the study over a period of 2 years. All cases were done under local anaesthesia using 1% lignocaine with adrenaline 1:100000. Local anaesthesia was infiltrated subcutaneously as well as into the carpal tunnel. No tourniquet was used. All the patients were discharged on the same day.

RESULTS

Total number of cases included in the study were 30. There were 24 females and 6 males with 5 patients with bilateral affection with total of 35 wrists of 30 patients. Ninety percent (90%, n=27) of patients had no pain during surgery, Ninety three percent (93.3%, n=28) patients were satisfied with the procedure. No adverse events noted.

CONCLUSION

Open decompression of carpal tunnel under local anaesthesia with adrenaline without tourniquet is effective, safe, day care surgery and well tolerated by the patient with overall satisfaction rate of 93%.

KEYWORDS

Carpal tunnel, no tourniquet.

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INTRODUCTION: Carpal tunnel syndrome is the most common compression neuropathy of the upper extremity.¹ Surgery is indicated when the symptoms are persistent and progressive. Surgical release of carpal tunnel by open approach is commonly used method. Surgery can be performed under general or local anaesthesia. Use of local anaesthesia has many advantages. Previous studies have reported significant pain and intolerance to the tourniquet under local anaesthesia.²

The purpose of this study is to assess the effectiveness of local anaesthesia with adrenaline, patient tolerance to the technique of open release of the carpal tunnel without the use of tourniquet.

PATIENTS AND METHODS: This is prospective study of 30 patients over a period of 2 years (from June 2013 to June 2015). All the cases of carpal tunnel syndrome with failed conservative treatment were included in the study. Out of the 30 patients recruited, 5 had bilateral affection with a total of 35 wrists of 30 patients.

There were 24 females and 6 male patients, the mean age of the patients was 41 years with a range from 26 to 58 years. The diagnosis of carpal tunnel syndrome is based on clinical examination and confirmed by electrodiagnostic studies, nerve conduction velocity studies. In bilateral cases more symptomatic hand was operated first, followed by other side 10-12 weeks later. Intra-operative pain was assessed using visual analog scale (VAS).

The procedure of giving local anaesthesia and surgery has been explained to all patients. Around 15-20ml of 1% lidocaine with 1:100000 epinephrine was infiltrated slowly along the line of the proposed incision subcutaneously using insulin syringe with 30 G needle initially followed by use of 27 G needle. Local anaesthesia was also injected into the carpal tunnel while taking care not to injure the median nerve. Curved incision made ulnar to the thenar crease,

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retracted with a self-retaining retractor. Flexor retinaculum (Transverse Carpal Ligament) was identified and divided completely. Median nerve was examined for any injury. Any bleeding was controlled with bipolar cautery. Skin closed with interrupted sutures. Patient was discharged on the same day.

RESULTS: Patients experienced very little discomfort while injecting local anaesthesia. With the use of adrenaline containing local anaesthesia, minimal bleeding occurred and any residual oozing was controlled with bipolar diathermy. Twenty-seven (n=27, 90%) patients had no pain (VAS 0-2), 1 patient had mild pain (VAS 8) but tolerated the procedure, 2 patients had mild pain (VAS 18 and 23) but required further anaesthesia in the form of additional local anaesthesia and intravenous sedation. Duration of analgesia was 4-5 hours. There was no pain due to tourniquet as it was not used. There was no iatrogenic injury to the median nerve. No adverse events noted during or after surgery. Twenty eight (n=28, 93.3%) patients were satisfied with the procedure. All the patients were relieved of pre-operative hand symptoms at 3 months follow up. No surgical site infection noted. Scar tenderness was found in 3 patients.

DISCUSSION: There are several advantages of local anaesthesia over other types of anaesthesia. Local anaesthesia with adrenaline has been proved to be safe in finger and hand injections.³ With the addition of vasoconstrictor adrenaline to local anaesthesia (pre-mixed) provides more bloodless field during surgery, thus eliminating the need for tourniquet and pain or intolerance associated with its use. It also increases the duration of the post-operative analgesia.⁴ It avoids the complications of supraclavicular blocks and adverse effects of GA or intravenous sedation.

In a study by Patil S et al, compared the efficacy of local anaesthesia by two different techniques. Only subcutaneous infiltration (Gale technique) and injection of local anaesthesia into the carpal tunnel in addition to the subcutaneous infiltration (The Altissimi and Mancini technique) and concluded that the later technique gives complete analgesia during surgery, as it produces median nerve block in the carpal tunnel.⁵ This is also true in our study, the analgesia was complete and lasted for 4-5 hours.

All the patients except two tolerated the procedure well, so local anaesthesia is effective. No finger necrosis or any other adverse reactions noted, so it is safer. All the patients were discharged on the same day (day care surgery), so the cost has reduced. Local anaesthesia with adrenaline provided a dry field during surgery, thus replacing the tourniquet for haemostasis.

Dillon JP et al studied on carpal tunnel release under local anaesthesia with adrenaline without the use of tourniquet in 80 patients, found that 87% were comfortable during surgery and 96% had overall satisfaction with the procedure. This rate in our study was 90% and 93.3% respectively and comparable to this study.⁶

CONCLUSION: In conclusion, open carpal tunnel decompression under local anaesthesia in combination with adrenaline without the use of tourniquet is very effective, well tolerated by the patients, safer and cost effective.

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