

SURGICAL RELEASE WITH LIMITED INCISION IN CARPAL TUNNEL SYNDROME

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ABSTRACT

Background: Carpal tunnel syndrome has typical clinical presentation. There are two types of surgeries either open or endoscopic procedures. The objective of our study was to know the distribution, risk factors and time of return of our patients to their work.

Material & Methods: This case series study was conducted in Department of Orthopedics, Gomal Medical College, D.I.KHAN from June 2013 to June 2015. A sample size of 20 was selected through consecutive sampling technique. Adults of both genders with carpal tunnel syndrome (CTS) in whom conservative treatment has failed were included in the study. Those patients who were medically unfit were excluded. Demographic variable were; gender and age groups. Research variables were; side of the hand, duration of symptoms before surgery, duration of recovery of symptoms and wound healing. All variables being categorical were analyzed by frequency and percentages. Descriptive statistics were done through SPSS Version 19.

Results: Majority of our patients were female (70%) and the common age group was 36-45 years (55%). The most common presenting symptom was pain (100%) in the hand especially in the radially three and a half fingers. The symptoms relieved within the first month after surgery in our 70% patients and all these 70% joined their pre-surgery activities in 6 weeks. Wound complication occurred in only one patient, otherwise in 95% wound healing completed in 20 days.

Conclusion: Carpal tunnel syndrome is common in middle aged females especially right hand. We concluded that this limited incision open surgery give excellent results, regarding early return of patients to their work.

KEYWORDS: Carpal tunnel release, Open surgery, Limited incision.

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INTRODUCTION

Carpal tunnel syndrome was described by Paget in 1854 and it affects 2 to 6 % of population.¹ It refers to compression of the median nerve at wrist. It is the most common nerve compression that is diagnosed in upper extremity.²⁻³ Carpal tunnel syndrome has typical clinical presentation and symptoms including paresthesia or numbness (or both) in radial three and a half fingers. Pain is of deep aching or throbbing type especially occurring at night, which may be severe enough to disturb the patient's sleep. In late

and advanced stages the ulnar muscle wasting and weakness of power and grip may occur.

There are many risk factors which are associated with carpal tunnel syndrome, but the most common are female sex, overweight, cigarette smoking, vibration associated jobs and repetitive forceful work.⁴ Carpal tunnel pressure may be elevated by local or systemic conditions which disturbs nerve function by impeding epidural blood flow. Most common local factors are edema, ganglion, infection or malunited fractures. Systemic factors are rheumatoid arthritis, diabetes, obesity and pregnancy. Diagnosis of carpal tunnel syndrome is mainly clinically.⁵ Typical history and various clinical tests like Phalen test, Durken compression test and Tinel test are sufficient to make diagnosis.⁶ Anyhow its presence may be confirmed with various tests like Nerve conduction study and EMG.¹ These tests are useful to stage the degree of nerve compression and may therefore assist the surgeon and patient in anticipating the time needed for recovery of nerve function.

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Treatment of carpal tunnel syndrome is initially nonoperative and if it fails to relieve the symptoms, then operative treatment is performed. Various conservative treatment options are in use, like NSAIDS, wrist splints, local corticosteroids injections and physical therapy. Multiple Surgical procedures are also in use in different parts of the world, like Open surgery (standard incision and limited incision) and endoscopic procedure (single or two portal technique). All these procedures have their own merits and demerits.^{2,7} Carpal tunnel syndrome may be accompanied with ulnar neuropathy and dupuytren's contracture, the pressure on ulnar nerve is released after Carpal tunnel release and the dupuytren's contracture can be simultaneously operated with Carpal tunnel syndrome ^{7,8}. We performed our study on 20 patients with carpal tunnel syndrome using limited incision open surgical technique. The objective of our study was to know the distribution, risk factors and time of return of our patients to their work.

MATERIAL AND METHODS

This case series study was conducted in Department of Orthopedics, Gomal Medical College, D.I.KHAN from June 2013 to June 2015. A sample size of 20 was selected through consecutive sampling technique. Adults of both genders with carpal tunnel syndrome (CTS) in whom conservative treatment has failed were included in the study. Those patients who were medically unfit were excluded.

Demographic variable were; gender and age groups. Research variables were; side of the hand, duration of symptoms before surgery, duration of recovery of symptoms and wound healing. Gender had attributes of male and female. Age groups had three attributes; 25-35, 36-45 and 46-55 years. Side of the hand had three attributes; right, left and both. Duration of symptoms had three attributes; 2, 2-4 and 4-6 weeks. duration of recovery of symptoms was; less than 1, 1-2, 2-4 and more than 4 weeks.

The patient were operated for carpal tunnel release and discharged the same day. Patients were followed up every weeks, for 2 months and then every month for total of 6 months. All variables being categorical were analyzed by frequency and percentages. Descriptive statistics were done through SPSS Version 19.

RESULTS

Majority of our patients were female (70%) and the common age group was 36-45 years (55%). The most common presenting symptom was pain (100%) in the hand especially in the radially three and a half fingers. The symptoms relieved within the first month

after surgery in our 70% patients and all these 70% joined their pre-surgery activities in 6 weeks. Wound complication occurred in only one patient, otherwise in 95% wound healing completed in 20 days. All these findings are shown in table 1-3 and in figure 1-4.

Table 1: Age groups of the CTS patients having surgical release with limited incision (n=20)

Age groups	Number of patients
25 to 35	5 (25%)
36 to 45	11 (55%)
46 to 55	4 (20%)

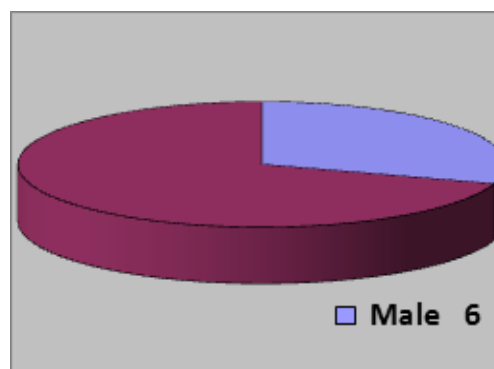


Figure 1: Gender of the CTS patients having surgical release with limited incision (n=20)

Table 2: Duration of symptoms before surgery of CTS patients having surgical release with limited incision (n=20)

Months	Number of patients
2	3
2-4	5
4-6	12

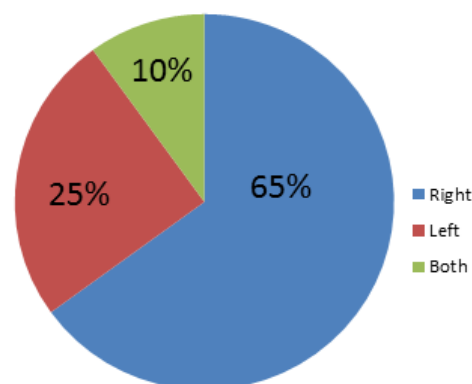


Figure 2: Side of the hand involved of CTS patients

having surgical release with limited incision (n=20)

Table 3: Recovery of symptoms of CTS patients having surgical release with limited incision (n=20)

Duration in Months	% age of patients
Less than one	70
1-2	15
2-4	10
After 4	5

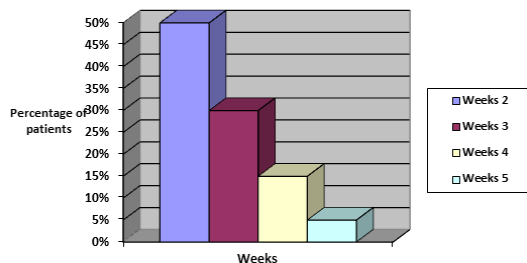


Figure 3: Wound healing of CTS patients having surgical release with limited incision (n=20)

DISCUSSION

Carpal tunnel syndrome is much more common in middle aged females and this parameter in our study favors the other national and international studies. Also the right side which was dominant hand was more commonly involved than the opposite side, due to increased use in forceful and repetitive works. In developed countries there is trend towards endoscopic release of carpal tunnel syndrome, which may decrease post op morbidity.⁹⁻¹¹ Anyhow at the same time there are multiple studies with open standard and mini-incision that also claim early return of patients to their work after surgery and is as safe as endoscopic procedure.¹²⁻¹⁴ But the important thing is that, the operating surgeon should know the proper anatomy in order to avoid injury to adjacent important structures.^{3,15,16} We conducted our study to evaluate the fact of early return to work, and our results are not different from other studies. 20% of our patients joined their original job in the first four weeks and another 50 % returned to work in next two weeks. In our 70 % of patients symptoms recovered within the first month after surgery, and wound healing occurred in four weeks in 95% patients. The residual pain in our 20 % patients was there even after 4 weeks of surgery and need analgesics for that and correlates with other national studies.¹⁷ In one of our patients there was muscle wasting pre-operatively and this persisted even after 6 months as in other international studies.¹⁸ Wound infection occurred

in only one of our patient, which was actually a 53 years old female patient and was on insulin injection already. Her blood sugar was controlled before surgery and even in the whole 6 months follows up period. Multiple dressings were done and the wound recovered in 2.5 months with oral Fucidic acid 250 mg twice daily for 4 weeks. In Shapiro and Scott's study they readmitted their patients in hospital with wound infection after carpal tunnel release for i.v antibiotics.¹⁹

CONCLUSION

Carpal tunnel syndrome is common in middle aged females especially right hand. We concluded that this limited incision open surgery give excellent results, regarding early return of patients to their work.

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CONFLICT OF INTEREST

Authors declare no conflict of interest.

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None declared.

AUTHORS' CONTRIBUTION

Conception and Design:	MS, SA, SR
Data collection, analysis & interpretation:	MS, SA, SR, AR
Manuscript writing:	MS, SA, SR, AR