

A Study of carpal tunnel release by endoscopic method at tertiary health care center

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Abstract

Background: Open carpal tunnel release (OCTR) remains standard practice in many centres in Europe. Endoscopic carpal tunnel release (ECTR) is presently the main competitor to the open technique; its major benefits are claimed to be earlier return to work or activities of daily living. **Aims and Objective:** to Study of carpal tunnel release by endoscopic method at tertiary health care center. **Methodology:** This was a cross-sectional study in the patients with clinical features of Carpal tunnel syndrome at tertiary health care center during the year December 2018 to December 2019. The patients closely clinically examined and investigated; those who fulfilled all clinical parameters were classified as patients with carpal tunnel syndrome. After written explained consent explaining about both the procedures; the patients were randomly divided into the Open and Endoscopic surgery group. The parameters related to operation like Mean Operation Duration (minutes), Mean Scar Length (millimeters), Mean time until return to daily activity (days), Pain at 4th Wk. of Post-operative by (Visual Analog Scale/ mean score) was noted. The statistical analysis done by the unpaired t-test calculated by SPSS software version 19. **Result:** The majority of the patients were female i.e. 60% followed by Male i.e. 40%. The parameters like Mean Operation Duration (minutes) were 24 ± 9.87 and 8.54 ± 5.12 ($P < 0.001$); Mean Scar Length (millimeters)- 51.23 ± 5.83 and 15.64 ± 6.53 ($P < 0.05$); Mean time until return to daily activity (days) - 56.43 ± 23.19 and 31.16 ± 17.43 ($P < 0.01$); Pain at 4th Wk. of Post-operative -(Visual Analog Scale)- 4.87 ± 3.45 and 2.12 ± 0.98 ($P < 0.01$) significantly differed in Open Surgery group as compared to Endoscopic Surgery respectively. **Conclusion:** It can be concluded from our study that endoscopic approach found to be superior to traditional open approach with respect to less Mean Operation Duration, less Mean Scar Length Less Mean time until return to daily activity Pain etc. respectively so, this approach should be used if facilities are available.

Key words: carpal tunnel release, carpal tunnel syndrome, VAS-score.

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INTRODUCTION

Open carpal tunnel release (OCTR) remains standard practice in many centres in Europe. Endoscopic carpal tunnel release (ECTR) is presently the main competitor to the open technique; its major benefits are claimed to be earlier return to work or activities of daily living^{1,2}. Others

report variable success with ECTR with no significant difference between ECTR and OCTR. However, there is consensus that both techniques are effective in short and long-term effects on various types of carpal tunnel syndrome (CTS) symptoms, and overall complication rates seem to be similar for OCTR and ECTR, although the risk of transient neurological problems is higher for ECTR^{3,4,5}. Since the introduction of ECTR a modification of the classic incision for OCTR, extending from the mid-palm angulated over the flexion crease of the wrist, has been introduced to try to reduce surgical trauma and hence recovery time, but no randomized controlled trial comparing ECTR versus OCTR with a modified incision has, to our knowledge, addressed return to work, and only two studies in various they have examined the time to return to work by comparing OCTR versus OCTR with a modified incision^{6,7,8,9,10}. We have done study with objective of whether carpal tunnel release by endoscopic

method is effective as compared to open method at tertiary health care center

METHODOLOGY

This was a cross-sectional study in the patients with clinical features of Carpel tunnel syndrome at tertiary health care center during the year December 2018 to December 2019. The patients closely clinically examined and investigated; those who fulfilled all clinical parameters

were classified as patients with carpal tunnel syndrome, After written explained consent explaining about both the procedures ; the patients were randomly divided into the Open and Endoscopic surgery group . The parameters related to operation like Mean Operation Duration (minutes), Mean Scar Length (millimeters), Mean time until return to daily activity (days), Pain at 4th Wk. of Post-operative by (Visual Analog Scale/ mean score) was noted. The statistical analysis done by the unpaired t-test calculated by SPSS software version 19.

RESULT

Table 1: Distribution of the patients as per the Age

Age	No.	Percentage (%)
15-30	10	20
30-45	13	26
45-60	23	46
>60	4	8
Total	50	100

The majority of the patients were from the age group of 45-60 were 46 %, followed by 30-45 -26%, 15-30 -20%, >60 - 8s%.

Table 2: Distribution of the patients as per the sex

Sex	No.	Percentage (%)
Female	30	60
Male	20	40
Total	42	100

The majority of the patients were female i.e. 60 % followed by Male i.e. 40%

Table 3: Distribution of the Open Surgery and Endoscopic Surgery patients as per the various parameters

Parameters	Open Surgery (n=25) (Mean ±SD)	Endoscopic Surgery (n=25) (Mean ±SD)	P-value
Mean Operation Duration (minutes)	24 ± 9.87	8.54 ± 5.12	P<0.001
Mean Scar Length (millimeters)	51.23 ± 5.83	15.64 ± 6.53	P<0.05
Mean time until return to daily activity (days)	56.43 ± 23.19	31.16± 17.43	P<0.01
Pain at 4 th Wk. of Post-operative (Visual Analog Scale)	4.87± 3.45	2.12 ± 0.98	P<0.01

The parameters like Mean Operation Duration (minutes) were 24 ± 9.87 and 8.54 ± 5.12 (P<0.001); Mean Scar Length (millimeters)-51.23 ± 5.83 and 15.64 ± 6.53 (P<0.05) Mean time until return to daily activity (days) -56.43 ± 23.19 and 31.16± 17.43 (P<0.01); Pain at 4th Wk. of Post-operative -(Visual Analog Scale)- 4.87± 3.45 and 2.12 ± 0.98 (P<0.01) significantly differed in Open Surgery group as compared to Endoscopic Surgery respectively.

DISCUSSION

Endoscopic carpal tunnel release has yet to be as widely adopted as open release ⁷ but offers the theoretical advantages of reduced postoperative pain, faster recovery of grip strength, earlier return to work and activities of daily living, and fewer wound-related complications associated with open release such as scar tenderness and pillar pain in the thenar and hypothenar eminences ^{11, 14}. These putative benefits are achieved, in part, by avoiding the traditional midpalmar incision used in the open approach. However, pragmatic concerns relating to

endoscopic release include its relative technical difficulty ^{13,14,15}, cost-effectiveness ¹⁶, time requirement ¹⁹, and potential risk of iatrogenic injury to neurovascular structures ¹⁸. Although endoscopic carpal tunnel release has been practiced for more than two decades, controversy persists regarding its safety and overall patient outcomes relative to open release. In our study we have seen The majority of the patients were from the age group of 45-60 were 46 %, followed by 30-45 -26%, 15-30 -20%, >60 - 8s%. The majority of the patients were female i.e. 60 % followed by Male i.e. 40% The parameters like Mean

Operation Duration (minutes) were 24 ± 9.87 and 8.54 ± 5.12 ($P < 0.001$); Mean Scar Length (millimeters)- 51.23 ± 5.83 and 15.64 ± 6.53 ($P < 0.05$) Mean time until return to daily activity (days) - 56.43 ± 23.19 and 31.16 ± 17.43 ($P < 0.01$); Pain at 4th Wk. of Post-operative -(Visual Analog Scale)- 4.87 ± 3.45 and 2.12 ± 0.98 ($P < 0.01$) significantly differed in Open Surgery group as compared to Endoscopic Surgery respectively. These findings are similar to Rajkumar Suryawanshi *et al.*¹⁹ they found average age Yrs. of Endoscopic Surgery Group was 45 ± 3.54 and Open Surgery Group was 46 ± 4.32 Yrs. and no of Male and Female were comparable in both the groups ($t = 1.21, df = 58, p > 0.05$) and ($\chi^2 = 0.277, df = 1, p > 0.05$) respectively. The Pain measured by VAS score was significantly higher in the open surgery group as compared to Endoscopic Surgery Group i.e. 3.42 ± 2.1 and 6.13 ± 3.42 ($t = 3.69, df = 58, p < 0.005$); 2.1 ± 3.12 and 5.23 ± 2.92 ($t = 4.92, df = 58, p < 0.001$); 1.92 ± 2.23 and 3.76 ± 2.61 ($t = 5.21, df = 58, p < 0.001$); 1.32 ± 1.98 and 3.52 ± 1.39 ($t = 3.12, df = 58, p < 0.01$); 1.12 ± 1.62 and 2.92 ± 2.54 ($t = 5.97, df = 58, p < 0.001$); 0.92 ± 0.43 and 2.12 ± 1.73 ($t = 4.47, df = 58, p < 0.001$) respectively in Endoscopic Surgery Group and Open Surgery Group.

CONCLUSION

It can be concluded from our study that endoscopic approach found to be superior to traditional open approach with respect to less Mean Operation Duration, less Mean Scar Length Less Mean time until return to daily activity Pain at 4th Wk. respectively so, this approach should be used if facilities are available.

REFERENCES

- Agee JM, McCarroll HR Jr., Tortosa RD, Berry DA, Szabo RM, Peimer CA. Endoscopic release of the carpal tunnel: a randomized prospective multicenter study. *J Hand Surg Am.* 1992, 17: 987–95.
- Armitage P, Berry G, Matthews JNS. *Statistical methods in medical research*, 4th Edn. Oxford, Blackwell Science, 2002: 575.
- Atroshi I, Hofer M, Larsson GU, Ornstein E, Johnsson R, Ranstam J. Open compared with 2-portal endoscopic carpal tunnel release: a 5-year follow-up of a randomized controlled trial. *J Hand Surg Am.* 2009, 34: 266–72.
- Boeckstyns ME, Sorensen AI. Does endoscopic carpal tunnel release have a higher rate of complications than open carpal tunnel release? An analysis of published series. *J Hand Surg Br.* 1999, 24: 9–15.
- Bromley GS. Minimal-incision open carpal tunnel decompression. *J Hand Surg Am.* 1994, 19: 119–20.
- Brown RA, Gelberman RH, Seiler JG III *et al.* Carpal tunnel release. A prospective, randomized assessment of open and endoscopic methods. *J Bone Joint Surg Am.* 1993, 75: 1265–75.
- Chung KC, Walters MR, Greenfield ML, Charnow ME. Endoscopic versus open carpal tunnel release: a cost-effectiveness analysis. *Plast Reconstr Surg.* 1998, 102: 1089–99.
- Ferdinand RD, MacLean JG. Endoscopic versus open carpal tunnel release in bilateral carpal tunnel syndrome. A prospective, randomised, blinded assessment. *J Bone Joint Surg Br.* 2002, 84: 375–9.
- Jacobsen MB, Rahme H. A prospective, randomized study with an independent observer comparing open carpal tunnel release with endoscopic carpal tunnel release. *J Hand Surg Br.* 1996, 21: 202–4.
- Jugovac I, Burgic N, Micovic V, Radolovic-Prenc L, Uravic M, Golubovic V, Stancic MF. Carpal tunnel release by limited palmar incision vs traditional open technique: randomized controlled trial. *Croat Med J.* 2002, 43: 33–6.
- MacDermid JC, Richards RS, Roth JH, Ross DC, King GJ. Seradge H, Seradge E. Pisto-triquetral pain syndrome after carpal tunnel release. *J Hand Surg Am.* 1989;14:858–862
- Brown RA, Gelberman RH, Seiler JG 3rd, Abrahamsson SO, Weiland AJ, Urbaniak JR, Schoenfeld DA, Furcolo D. Carpal tunnel release: a prospective, randomized assessment of open and endoscopic methods. *J Bone Joint Surg Am.* 1993;75:1265–1275.
- Cobb TK, Knudson GA, Cooney WP. The use of topographical landmarks to improve the outcome of Argee endoscopic carpal tunnel release. *Arthroscopy.* 1995;11:165–172.
- Ferdinand RD, MacLean JG. Endoscopic versus open carpal tunnel release in bilateral carpal tunnel syndrome: a prospective, randomised, blinded assessment. *J Bone Joint Surg Br.* 2002; 84:375–379
- Chung KC, Walters MR, Greenfield ML, Charnow ME. Endoscopic versus open carpal tunnel release: a cost-effectiveness analysis. *Plast Reconstr Surg.* 1998;102:1089–1099.
- Erhard L, Ozalp T, Citron N, Foucher G. Carpal tunnel release by the Argee endoscopic technique: results at 4 year follow-up. *J Hand Surg Br.* 1999;24:583–585.
- Kelly CP, Pulisetti D, Jamieson AM. Early experience with endoscopic carpal tunnel release. *J Hand Surg Br.* 1994;19:18–21
- Murphy RX Jr, Jennings JF, Wukich DK. Major neurovascular complications of endoscopic carpal tunnel release. *J Hand Surg Am.* 1994;19:114–118.
- Rajkumar Indrasen Suryawanshi. A Comparative study of postoperative pain after open versus endoscopic carpal tunnel release at tertiary health care centre. Volume 7 Issue 3 - September 2018. Available at : https://medpulse.in/Orthopedies/html_7_3_2.php accessed online on [Feb 2020]

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