

Research Article

The Comparison of Transverse Versus Longitudinal Skin Incisions in First Extensor Compartment Release for Radial Styloid Tenosynovitis: A Retrospective Analysis

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Abstract

Objectives: The present study aimed to address this gap in the literature by comparing the effects of longitudinal and transverse incisions on clinical and functional outcomes.

Methods: Between 2018 and 2023, 44 patients (six males and 38 females) who underwent surgical release for DQV were included in the study. A transverse incision (TI) was performed in 16 patients, and a longitudinal incision (LI) was performed in 28 patients. Patients completed the Quick Disabilities of the Arm, Shoulder and Hand (QuickDASH), Visual Analog Scale (VAS), and Patient-Rated Wrist Evaluation (PRWE) questionnaires. Patients were divided into two groups: the LI group and the TI group. The groups were compared in terms of VAS, QuickDASH, PRWE specific function (PRWE-SF), PRWE usual function (PRWE-UF), PRWE function (PRWE-F), PRWE pain (PRWE-P), and PRWE total (PRWE-T) scores and complications.

Results: No statistically significant differences were identified between the groups in terms of VAS, QuickDASH, PRWE-SF, PRWE-UF, PRWE-F, PRWE-P, and PRWE-T scores.

Conclusion: Both incision techniques provided satisfactory clinical and functional outcomes. No statistically significant differences were identified between the groups; however, larger prospective studies are required to determine whether clinically meaningful differences exist between incision orientations.

Keywords: De Quervain, tenosynovitis, surgery

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De Quervain tenosynovitis (DQV) is characterized by stenosing tenosynovitis of the extensor pollicis brevis (EPB) and abductor pollicis longus (APL) tendons within the first dorsal compartment, resulting in pain and functional limitation around the radial styloid.^[1] The diagnosis is primarily established through clinical examination, with the Finkelstein and Eichhoff tests frequently employed as diagnostic tools.^[2]

A significant proportion of tenosynovitis cases respond positively to conservative treatment modalities, including rest, splinting, anti-inflammatory medications, and steroid injections, resulting in complete pain relief in 70% of cases. In cases in which symptoms persist, surgical intervention is regarded as the optimal treatment option.^[3,4]

The primary objective of surgical intervention is to meticulously release the first dorsal compartment and safely address any anatomical variations that may be present. Although the overall success rates of surgical decompression are high, complications are not uncommon.^[5] The existing literature reports a range of issues associated with this condition. These include paresthesia and neuroma formation associated with the superficial radial nerve branches, persistent pain due to inadequate decompression, tendon subluxation, scar sensitivity, and cosmetic problems. It has been hypothesized that some of these complications may be associated with the surgical technique, soft-tissue dissection, and the location of the skin incision.^[6,7] Consequently, the intricacies of the surgical approach, particularly the orientation of the skin incision, are of paramount clinical importance.

In DQV surgery, two primary skin incision techniques are employed: longitudinal (vertical) and transverse incisions. The longitudinal incision extends along the first dorsal compartment, thereby providing a wider surgical field of view and facilitating the identification of septations and anatomical variations. It has also been hypothesized that this approach may reduce the risk of nerve injury, given its alignment with the proximodistal trajectory of the superficial radial nerve branches.^[6] Conversely, the transverse incision is considered more aesthetically preferable because of its alignment with skin tension lines, which may result in a less conspicuous scar.^[7]

A review of the existing literature reveals a paucity of studies directly comparing longitudinal and transverse incision techniques. The aim of the present study was to compare the clinical, functional, and complication profiles of longitudinal and transverse skin incisions used in the surgical treatment of DQV.

Methods

The study was conducted in accordance with the principles of the Declaration of Helsinki. The study protocol

was approved by the Haydarpaşa Numune Training and Research Hospital Clinical Research Ethic Committee (No: KK/2026/39. Date: 17.02.2026). Between 2018 and 2023, 44 patients (six males and 38 females) who underwent surgical release for DQV were included in the study. In 19 cases, the operated wrist was on the left side, and in 25 cases, it was on the right side. A transverse incision (TI) was performed in 16 patients, and a longitudinal incision (LI) was performed in 28 patients. Patients completed the QuickDASH (Quick Disabilities of the Arm, Shoulder and Hand), VAS (Visual Analog Scale), and PRWE (Patient-Rated Wrist Evaluation) questionnaires. Grip strength was measured using a Jamar dynamometer (Sammons Preston Rolyan, Chicago, USA). Grip and pinch strength measurements were available for 31 patients. In the remaining 13 patients, objective measurements could not be obtained because they were unable to attend the final outpatient follow-up visit. These patients were contacted by telephone and completed the patient-reported outcome measures; however, objective grip and pinch strength measurements could not be performed remotely.

Patients were divided into two groups: the longitudinal incision (LI) group and the transverse incision (TI) group. The choice of incision type was based on the surgeon's preference. Two experienced hand surgeons performed the procedures during the study period. One surgeon routinely preferred a longitudinal incision, whereas the other routinely preferred a transverse incision. No randomization was performed. The groups were compared in terms of VAS, QuickDASH, PRWE-SF (specific function), PRWE-UF (usual function), PRWE-F (function), PRWE-P (pain), and PRWE-T (total score) scores and complications.

Statistical Analysis

Statistical analyses were performed using IBM SPSS Statistics version 25.0 (IBM Corp., Armonk, NY, USA). The normality of continuous variables was assessed using the Shapiro-Wilk test and visual inspection of histograms. Continuous variables with a normal distribution were expressed as the mean±standard deviation and compared using the independent-samples *t*-test. Non-normally distributed variables were compared using the Mann-Whitney U test. Categorical variables were compared using the chi-square test or Fisher's exact test, as appropriate. A two-sided *p* value of less than 0.05 was considered statistically significant.

Results

The mean age was 46.35±12.67 years in the LI group and 50.81±12.76 years in the TI group (*p*=0.269). There were no significant differences between the groups regarding sex distribution, operated side, dominant-hand involve-

ment, or follow-up duration. Functional outcome scores, including VAS, QuickDASH, PRWE-SF, PRWE-UF, PRWE-F, PRWE-P, and PRWE-T, did not differ significantly between the groups (Table 1). Grip strength reached $87.9 \pm 23.1\%$ of that of the contralateral side in the LI group and $89.4 \pm 21.3\%$ in the TI group ($p=0.864$), whereas pinch strength reached $86.9 \pm 29.4\%$ and $81.9 \pm 24.6\%$, respectively ($p=0.648$). No infections, wound-healing problems, tendon subluxation, neuroma formation, or persistent superficial radial nerve symptoms were observed in either group during follow-up.

Discussion

The efficacy of surgical intervention for DQV is contingent upon adequate decompression of the first dorsal compartment. Nevertheless, the optimal orientation of the skin incision used in the surgical approach remains a subject of debate. The use of both longitudinal (vertical) and transverse incision techniques has been documented in numerous studies; however, the existing literature offers limited and heterogeneous data concerning the comparative efficacy of these approaches in terms of postoperative pain, functional outcomes, scar quality, and complication rates. Recent studies have focused on evaluating the effect of incision orientation on clinical outcomes using more objective criteria.^[8–10]

In a recently published prospective randomized controlled

trial, transverse and longitudinal skin incisions were directly compared. The study found no significant difference between the two techniques in terms of functional outcomes (PRWE) and scar quality (POSAS), demonstrating that both approaches were similar in terms of short-term functional improvement and cosmetic results. However, a more pronounced decrease in pain scores was reported in patients who underwent longitudinal incisions during the early postoperative period (at 2 and 6 weeks), but this difference disappeared at 12 weeks. These findings suggest that the direction of the incision may have a limited effect on early postoperative pain control rather than on long-term clinical outcomes.^[8] In the aforementioned study, no significant difference was observed between the two groups with regard to complication rates. Although no infections were reported, the incidence of transient paresthesia associated with the superficial radial nerve branches was low and similar between the groups. The findings of this study suggest that both incision types can be performed safely, provided that the surgical technique and soft-tissue dissection are appropriate. Consequently, it can be posited that the incision approach alone is not a determining factor in the risk of major complications.^[8]

In a recent comparative clinical study, longitudinal and transverse incisions were retrospectively evaluated, and both techniques were reported to provide a high degree

Table 1. Comparison of demographic characteristics, clinical outcome scores, and grip strength parameters between the LI and TI groups

	LI (n=28)	TI (n=16)	p
Age	46.35±12.67	50.81±12.76	0.269
Gender	5 male 23 female	1 male 15 female	0.280
Side	17 right 11 left	8 right 8 left	0.490
Dominant side?	17 dominant 11 non-dominant	6 dominant 10 non-dominant	0.138
Follow-up time (months)	16.6±14.21	26.31±21.69	0.153
VAS	3.46±3.23	2.81±3.44	0.315
QuickDASH	32.72±32.02	23.73±25.17	0.405
PRWE-SF	15.57±18.01	9.62±13.50	0.230
PRWE-UF	12.46±12.41	8.18±9.88	0.174
PRWE-F	27.32±28.27	17.18±21.17	0.137
PRWE-P	20.21±16.60	13.43±16.36	0.052
PRWE-T	31.62±29.50	22.09±26.07	0.094
	LI (n=21)	TI (n=10)	
Grip* (%)	87.90±23.14	89.4±21.32	0.864
Pinch* (%)	86.85±29.39	81.9±24.60	0.648

*compared to contralateral unaffected side; LI: Longitudinal incision; TI: Transverse incision; VAS: Visual analog scale; QuickDASH: Quick Disabilities of the Arm, Shoulder and Hand; PRWE-SF: Patient-rated wrist evaluation specific function; PRWE-UF: Patient-rated wrist evaluation usual function; PRWE-F: Patient-rated wrist evaluation function; PRWE-P: Patient-rated wrist evaluation pain; PRWE-T: Patient-rated wrist evaluation total.

of pain control. The study revealed that the overwhelming majority of patients experienced complete pain relief during the postoperative period, and no substantial differences were observed between the two approaches in terms of overall clinical outcomes. However, the authors emphasized that a longitudinal incision provides the surgeon with a wider field of view, facilitating the identification of anatomical variations and septations. They further highlighted that this could be particularly advantageous from a technical standpoint. Additionally, it was stated that transverse incisions may be more advantageous cosmetically, with more limited scar formation. In contrast, complications related to the superficial radial nerve were noted to occur less frequently in the longitudinal incision group. These findings suggest that the direction of the incision should be evaluated based on surgical priorities, including cosmetic expectations, anatomical safety, and the surgeon's experience, rather than clinical outcomes.^[10]

Systematic reviews and meta-analyses evaluating incision types have been conducted, and these have emphasized that the current evidence is limited. Although there is evidence to suggest that longitudinal incisions may be associated with a lower risk of complications, such as superficial radial nerve injury, venous injury, and hypertrophic scarring, it should be noted that the results of these studies are based on a small number of heterogeneous studies. The present study failed to demonstrate any significant superiority with regard to functional scores and pain. This situation indicates a need for higher-quality, standardized prospective studies to make strong recommendations regarding incision orientation.^[9]

A review of the existing literature reveals a paucity of studies evaluating the effect of incision orientation in De Quervain surgery.^[8-13] Furthermore, the outcome measures and follow-up periods used in such studies are heterogeneous. Moreover, there is a paucity of studies with adequate sample sizes that comprehensively evaluate early-stage pain, functional recovery, and cosmetic outcomes. The present study aimed to address this gap in the literature by comparing the effects of longitudinal and transverse incisions on clinical and functional outcomes.

In this study, no complications were observed in either group, and no cosmetic complaints related to the incisions were reported by the patients. The comparison of the two groups demonstrated that both incisions were effective in alleviating patients' pain from both clinical and functional standpoints, yielding favorable functional outcomes (Table 1). Furthermore, no statistically significant differences were observed between the two incision techniques. Although statistical significance was not reached, all patient-report-

ed outcome measures numerically favored the transverse incision group. In particular, the PRWE pain subscale approached statistical significance ($p=0.052$). This consistent trend may suggest a potential clinical advantage of transverse incisions. However, given the limited sample size and retrospective design, this observation should be interpreted cautiously and warrants further investigation in larger prospective studies.

This study has several limitations. First, its retrospective design introduces the possibility of selection bias and unmeasured confounding factors. Second, no a priori sample size calculation was performed; therefore, the possibility of a type II error cannot be excluded. Third, the follow-up duration was longer in the transverse incision group, which may have influenced patient-reported outcomes. Fourth, cosmetic outcomes and scar quality were not assessed using a validated scar evaluation instrument; therefore, no conclusions can be drawn regarding cosmetic superiority. Finally, grip and pinch strength measurements were unavailable for a subset of patients because they were unable to attend the final outpatient follow-up visit.

Conclusion

The findings of this study suggest that both incision techniques provide satisfactory clinical and functional outcomes following the surgical treatment of De Quervain tenosynovitis. However, the present study was not designed as an equivalence trial, and the possibility of a type II error cannot be excluded. Therefore, the results should be interpreted as demonstrating comparable outcomes within the limitations of the study rather than proving equivalence between the techniques. The final choice of incision may depend on the surgeon's preference and individual clinical circumstances.

Disclosure

Ethical Committee Approval: The study protocol was approved by the Haydarpaşa Numune Training and Research Hospital Clinical Research Ethic Committee (No: KK/2026/39. Date: 17.02.2026).

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