Journal of Clinical and Nursing Research, 2025, Volume 9, Issue 8
http://ojs.bbwpublisher.com/index.php/JCNR
Online ISSN: 2208-3693
Print ISSN: 2208-3685

Efficacy Study of Omega Onychocryptosis Correction in the Treatment of Mild to Moderate Onychocryptosis

Yijian Zhu*

Damazhen Health Center of Tongxiang City, Tongxiang 314514, Zhejiang, China

**Corresponding author: Yijian Zhu, 75882455@qq.com*

Abstract: *Objective*: To investigate the effectiveness of Omega in the correction of onychocryptosis among individuals with mild to moderate cases. *Methods*: Sixty patients with mild to moderate onychocryptosis, treated at our institution from April 1, 2023, to March 31, 2025, were selected as subjects for this study. The participants were randomly assigned into two groups using a random number table: the control group, which received nail groove packing, and the observation group, which underwent Omega onychocryptosis correction, with 30 patients in each group. The relief from inflammation, duration of healing, comfort of the foot, and satisfaction levels of the two groups were assessed and compared. *Results*: The duration of redness and swelling, discomfort, exudate, and healing time in the observation group were all significantly shorter than in the control group ($P < 0.05$). No significant difference in VAS scores was seen between the two groups three days post-treatment ($P > 0.05$); however, one and two weeks post-treatment, the VAS scores in the observation group were significantly lower than those in the control group ($P < 0.05$). The observation group's satisfaction rating was 100.00% (30/30), markedly surpassing the control group's rate of 83.33% (25/30), with statistical significance ($P < 0.05$). *Conclusion*: Omega onychocryptosis correction for individuals with mild to moderate onychocryptosis can yield favorable treatment outcomes, significantly alleviate pain, enhance symptomatology, and elevate patient satisfaction.

Keywords: Onychocryptosis; Omega Onychocryptosis Correction; Therapeutic Efficacy

Online publication: September 8, 2025

1. Introduction

Onychocryptosis, commonly termed "ingrown nail," denotes the encroachment of the nail plate into the periungual soft tissues (including lateral, distal, proximal edges, and nail folds) during its growth, resulting in localized soft tissue inflammation and discomfort. Onychocryptosis can be attributed to various factors, including overly short or deep nail clipping, constrictive footwear and hosiery, and trauma. Moreover, hyperhidrosis, nail malformation, foot deformity, and additional variables may contribute to onychocryptosis. Following the onset of

onychocryptosis, it may manifest with localized erythema and edema, exudation, purulence, and even hyperplasia of granulation tissue, accompanied by varying levels of pain [1]. In mild cases, pain may be the sole symptom, whereas severe cases might impair ambulation [2]. Consequently, prompt and efficient intervention for individuals with onychocryptosis is essential to alleviate discomfort, enhance symptoms, and manage illness advancement.

For mild to severe onychocryptosis, conservative interventions mostly include nail groove packing and nail plate stenting, which attempt to alleviate pain and realign the nail plate [3]. Subungual packing with absorbent cotton is a prevalent conservative treatment for onychocryptosis, effectively alleviating pain and diminishing inflammation. This approach necessitates daily replacement of absorbent cotton, which is inconvenient and may result in low compliance among certain patients, hence impacting efficacy. Nail stenting is an efficacious technique for the treatment of onychocryptosis. It employs a wire corrective brace to progressively alter and reposition the nail plate under micro-dynamic conditions through sustained, gentle elasticity, facilitating toenail growth and eventually elevating the lateral nail margin for therapeutic objectives [4].

The Omega onychocryptosis correction is a novel technique for treating onychocryptosis, primarily utilizing an Omega wire corrector to progressively realign the ingrown nail under sustained micro-dynamic circumstances, facilitated by the synergistic effects of the wire's restorative and spring forces [5]. This study chose 60 patients with mild to moderate onychocryptosis treated at our hospital from April 1, 2023, to March 31, 2025, to investigate the efficacy of Omega in the correction of mild to moderate onychocryptosis, as mentioned below.

2. Materials and methods

2.1.General information

A total of 60 patients with mild to moderate onychocryptosis, treated at our institution from April 1, 2023, to March 31, 2025, were selected as subjects for the study. The participants were randomly allocated into two groups of 30 cases each, utilizing a random number table. Control group: 17 male patients and 13 female patients; aged 23–74 years, with a mean age of (51.23 ± 7.69) years; disease duration of 2-14 months, with a mean duration of (5.76 ± 1.35) months; BMI ranging from 22 to 26 kg/m², with a mean BMI of (23.56 ± 0.57) kg/m². Observation group: 15 male patients and 15 female patients, aged 22–75 years, with a mean age of 50.98 ± 8.37 years; disease duration of 1-12 months, with a mean duration of 5.13 ± 1.67 months; BMI ranging from 22 to 26 kg/m², with a mean BMI of 23.84 ± 0.62 kg/m². No substantial difference existed in baseline data between the two groups ($P > 0.05$).

Criteria for inclusion: (1) The clinical stages of onychocryptosis ranged from stage I (evident tenderness, mild erythema and edema of the nail fold) to stage II (evident tenderness, with nail fold swelling surpassing the lateral margin of the nail plate); (2) The subjects exhibited clear consciousness, normal auditory, visual, and linguistic functions, as well as intact communication abilities; (3) There was no documented history of mental illness; (4) Patients and their families were apprised of the study and provided their informed consent by signing the appropriate forms.

Criteria for exclusion: (1) Complicated by hematological disorders or coagulation dysfunction; (2) Complicated by infectious diseases; (3) Presence of nail plate fissures or toe bone deformities; (4) Complicated by onychomycosis or significant foot injuries.

2.2. Methods

The control group received treatment involving nail groove packing. Following the washing and disinfection of the patient's foot, a slender segment of sterile absorbent cotton was torn, fashioned into a cotton strip, positioned into the

damaged nail groove, and delicately pressed into place using a nail groove spoon. The cotton strip was progressively inserted from the proximal end (toward the heel) to the distal end till it reached the area beneath the nail tip, utilizing the siphon action of the cotton to evacuate purulent secretions from the nail groove. Upon fully packed the cotton strip, the surplus was excised with scissors. Patients were directed to sanitize the nail groove and substitute the medical cotton strip on a regular basis. They were instructed to refrain from vigorous activities, don loose footwear and stockings to avert the affected toe from exposure to humidity, and maintain the foot in a clean and dry condition.

The observation group received treatment for onychocryptosis correction with Omega.

2.2.1. Particular operations

(1) Preoperative preparation: Cleaning and disinfecting the patient's foot, along with the assembly of necessary supplies, including Omega onychocryptosis corrective bracing.

(2) Operation technique: Based on the patient's Omega onychocryptosis correction treatment plan and instrument selection, a toenail model was created for the patient, and the Omega onychocryptosis repair wire was initially produced. During installation, elastic tape was affixed to the lateral nail fold of the afflicted toe and retracted towards the plantar side to completely reveal the lateral nail border; the correction device was precisely inserted and calibrated, with periodic corrections conducted as necessary.

(3) Postoperative care: Patients were instructed to utilize the corrective device properly, maintain foot hygiene, and prevent recurrence of onychocryptosis and paronychia. They were told that they could wash their feet routinely, ensure thorough drying post-wash, and maintain dryness; to wear loose and comfortable footwear and socks while utilizing the corrector; and to conduct regular reviews. Correction treatment was continued based on the condition and treatment efficacy, typically lasting many weeks to months.

2.3. Indicators of observation

The foot conditions of both groups post-treatment were assessed, and the duration of redness and swelling, pain, exudate, and healing time were documented and compared. Assessment of foot comfort: The Visual Analogue Scale (VAS) was employed to assess the pain levels of both groups at 3 days, 1 week, and 2 weeks post-treatment. The VAS score varied from 0 to 10, with greater ratings signifying diminished foot comfort. Assessment of satisfaction: Three months post-treatment, patients' satisfaction with treatment efficacy and comfort was evaluated via follow-up. A scoring system was employed, with a maximum score of 100. Satisfaction levels were categorized as dissatisfied (≤ 60 points), moderately satisfied (61–80 points), and highly satisfied (81-100 points). Satisfaction rate = (number of moderately satisfied + number of highly satisfied) ÷ total number of patients x 100%.

2.4. Statistical analysis

The data processing was conducted using SPSS version 21.0 statistical software. Count indicators were represented as n(%), with data comparison conducted using the chi-square test; measurement indicators were denoted as ($\bar{x}$ ±s), with data comparison executed using the t-test; $P < 0.05$ signified a statistically significant difference.

3. Results

3.1. Comparison of symptom relief time and healing time between the two groups

The duration of redness and swelling, pain, exudate, and healing in the observation group was significantly shorter

than in the control group ($P < 0.05$) (**Table 1**).

Table 1. Comparison of symptom disappearance time and healing time ($\bar{x} \pm s$)

Group	Redness and swelling (d)	Pain (d)	Exudate (d)	Healing time (week)
Control(n=30)	7.85 ± 1.21	7.79 ± 1.34	6.57 ± 1.25	6.42 ± 1.85
Observation(n=30)	6.54 ± 1.14	7.08 ± 1.26	5.68 ± 1.19	4.56 ± 1.35
t	4.316	2.114	2.824	4.448
P	0.000	0.038	0.006	0.000

3.2. Comparison of foot comfort evaluation between the two groups

No significant difference in VAS scores was observed between the observation group and the control group three days post-treatment ($P > 0.05$); however, one week and two weeks after treatment, the VAS scores in the observation group were significantly lower than those in the control group ($P < 0.05$) (**Table 2**).

Table 2. Comparison of VAS scores at different treatment times ($\bar{x} \pm s$)

Group	3 days	1 week	2 weeks
Control(n=30)	4.24 ± 1.02	2.32 ± 0.69$^{(1)}$	1.34 ± 0.26$^{(1)(2)}$
Observation(n=30)	3.86 ± 1.34	1.45 ± 0.32$^{(1)}$	0.65 ± 0.24$^{(1)(2)}$
t	1.235	6.265	10.680
P	0.221	0.000	0.000

Note: In comparison to the score three days post-treatment within the same cohort, (1) $P < 0.05$; in comparison to the score one week post-treatment within the same cohort, (2) $P < 0.05$.

3.3. Comparison of patient satisfaction between the two groups

The satisfaction rate of the observation group (100.00%) was markedly superior to that of the control group (83.33%), demonstrating statistical significance ($P < 0.05$) (**Table 3**).

Table 3. Comparison of patient satisfaction [n(%)]

Group	Highly satisfied	Moderately satisfied	Dissatisfied	Satisfaction rate
Control (n=30)	13 (43.33)	12 (40.00)	5 (16.67)	25 (83.33)
Observation (n=30)	20 (66.67)	10 (33.33)	0 (0.00)	30 (100.00)
x^2	--	--	--	5.454
P	--	--	--	0.019

4. Discussion

Onychocryptosis is a traumatic nail disorder that may affect fingernails or toenails, with a higher prevalence in the hallux. The typical nail unit structure is a coexisting condition in which the nail plate underpins the surrounding nail folds, while the peripheral tissues encircle the nail plate [6]. Human toenails develop perpetually forward, whereas the lateral margins of the nail cease growth to a degree, facilitating a harmonic coexistence between the

nail plate's edges and the surrounding soft tissues of the nail groove. Nevertheless, different causes might cause the lateral edge of the toenail in certain individuals to develop aberrantly and penetrate the soft tissues of the nail groove. The lateral edge of the nail plate can invade the soft tissues of the nail groove, resulting in localized inflammation characterized by pain, redness, swelling, exudation, and hyperplasia of granulation tissue [7]. Onychocryptosis primarily results from prolonged usage of improperly fitting footwear, erroneous nail clipping techniques, trauma, and pressure on the toenail. If onychocryptosis persists, it may lead to paronychia and result in a nail groove abscess [8]. In extreme instances, it can significantly impair ambulation. Consequently, implementing efficient treatment strategies for prompt intervention and restoration of the nail plate is crucial for preserving the integrity of the toenail structure and ambulation function.

Currently, the clinical management of onychocryptosis mostly encompasses conservative and surgical interventions, with treatment tailored to the specific condition of the patient. Onychocryptosis is clinically categorized based on severity. Mild (lateral toe embedded in the soft tissues of the nail groove, exhibiting mild edema and tenderness), moderate (a tough, white, membrane-like substance formed in the soft tissues of the nail groove, closely integrated with the surrounding tissues, accompanied by local erythema and swelling, without suppuration or granulation hyperplasia, and significant pain), and severe (ulceration or erythema and swelling of the nail groove soft tissues, with inflammation extending to the nail root, granulation tissue hyperplasia, exudation, accompanied by odor, intense pain, and impairment of ambulation). For mild to severe onychocryptosis, conservative therapies are typically employed, with subungual packing with absorbent cotton being a prominent method. Subungual cotton packing primarily employs cotton strips to elevate the nail plate and direct its growth over the distal toe for therapeutic objectives [9]. During treatment with subungual absorbent cotton packing, patients must replace the cotton strip daily to maintain foot hygiene. The laborious nature of this approach may lead to poor patient compliance, hence impacting the treatment outcome.

Omega onychocryptosis correction is an innovative non-surgical therapy approach. It alters the growth trajectory of the toenail and ameliorates onychocryptosis with the application of a custom orthopedic frame or wire corrector. By applying consistent moderate pressure, it progressively directs the toenail to grow outward and inhibits the lateral nail from invading the soft tissues of the nail groove [10]. The introduction of Omega for onychocryptosis correction offers a novel approach for the prevention and treatment of this condition. In the prevention and treatment of onychocryptotic paronychia, Omega onychocryptosis correction may serve as an alternative to certain nail resection or extraction procedures. In comparison to conventional therapies like nail extraction, it offers enhanced safety and greater patient acceptance. The utilization of Omega for the repair of onychocryptosis presents several advantages: Exact rectification: The orthopedic frame or wire corrector employed in Omega onychocryptosis repair resembles the application of a "magic hoop" on the toenail. The corrective device, produced via reverse molding, precisely conforms to the curve of the patient's toenail. The corrector employs continuous and minimal elasticity to realign the nail plate, so preventing the lateral nail margin from compressing the soft tissues of the nail groove. Secure and devoid of discomfort: No anesthesia is required for the correction of Omega onychocryptosis; the procedure is straightforward, allowing patients to depart immediately post-treatment, and it is nearly painless, enhancing patient acceptance and comfort. Convenient and efficient: The Omega onychocryptosis correction involves the installation of a corrective device on the afflicted nail, rendering the entire treatment process straightforward and expeditious. Patients can independently don and modify it under medical supervision, ensuring little disruption to their professional and personal lives. Patients can move normally without much discomfort during treatment.

The findings of this study indicated that the duration of redness and swelling, pain, exudate, and healing time in the observation group was consistently shorter than in the control group; the VAS scores for the observation group at 1 week and 2 weeks post-treatment were lower than those of the control group; furthermore, the satisfaction rate in the observation group (100.00%) was markedly higher than that of the control group (83.33%), with statistically significant differences ($P < 0.05$). The findings indicate that Omega onychocryptosis correction for individuals with mild to moderate onychocryptosis can yield favorable treatment outcomes, enhancing symptom relief, alleviating pain, reducing healing duration, and increasing patient satisfaction. The rationale is that while the conventional cotton packing technique is efficient, it necessitates frequent cotton changes, imposes stringent hygiene standards for patients' feet, and entails a comparatively protracted treatment duration. Patients exhibit a tendency towards inadequate compliance, which impacts efficacy. Conversely, Omega onychocryptosis correction can efficiently and rapidly alleviate onychocryptosis symptoms, rectify toenail morphology, and enable patients to lead a normal life while utilizing the Omega onychocryptosis correction device, offering enhanced convenience [11]. Research indicates that the simultaneous use of the Omega wire corrector and nail groove packing facilitates the insertion of absorbent cotton into the nail groove following the application of the Omega corrector, thereby promoting the separation of the lateral nail margin from the surrounding soft tissues and directing the nail plate to advance forward. The application of Omega for the correction of onychocryptosis demonstrates significant therapeutic results, markedly alleviating symptoms and restoring the normal structure of the nail unit in patients with onychocryptosis [12].

5. Conclusion

In conclusion, Omega onychocryptosis correction demonstrates significant therapeutic efficacy in treating individuals with mild to moderate onychocryptosis. It can enhance symptoms, alleviate pain, facilitate the healing of onychocryptosis, and significantly elevate patient happiness, demonstrating substantial application value.

Disclosure statement

The author declares no conflict of interest.

References

[1] Li GG, Ma HQ, 2021, Therapeutic Effect of Nail Groove Reconstruction in 21 Patients with Ingrown Toenail. The Chinese Journal of Dermatovenereology, 35(5): 582–585.

[2] Yu SS, Zhang MH, 2023, Observation on the Curative Effect of 20 Cases of Nail Inlaid Paronychias Treated by Modified Nail Edge Hanging Wire Catheter. Journal of Practical Dermatology, 16(2): 111–113.

[3] Deng YO, Chen YG, 2024, Research Progress on the Treatment and Nursing of Ingrown Toenails Paronychia. Journal of Clinical Nursing in Practice, 10(3): 119–123.

[4] Wang H, Huang Y, 2022, Risk Factors for Poorly Controlled and Recurrence-Prone Ingrown Toenails Treated with Nail Braces: A Retrospective Observational Study of 238 Cases. Indian Journal of Dermatology Venereology and Leprology, 88(5): 636–640.

[5] Yu MT, 2024, Study on the Application of Omega Wire Braces Combined with Nail Filler for the Treatment of Paronychia. Chinese Journal of Experimental Traditional Medical Formulae, 30(4): 280–280.

[6] Chen ML, Zhang BH, Hu MJ, et al., 2022, Clinical Efficacy of Simple Thread-Ligating Therapy for Paronychia Stage I–III. China Journal of Leprosy and Skin Diseases, 38(2): 97–100.

[7] Ban C, Fan S, Li J, et al., 2024, Study on the Improved Vandenbos Surgery for the Treatment of Ingrown Nails. Diagnosis and Therapy Journal of Dermato-Venereology, 31(12): 832–835.

[8] Zhang MH, 2023, Nail Groove Reconstruction Combined with Correction of the Nail Curl Deformity in 48 Cases with Severe Ingrown Toenail. China Journal of Leprosy and Skin Diseases, 39(2): 99–101.

[9] Liu F, Zhang N, Yang JM, et al., 2021, Tampon Tamponade Combined with Wedge Resection of the Nail Folds for the Treatment of Ingrown Toenail-Induced Paronychia: A Clinical Observation. Chinese Journal of Dermatology, 54(10): 898–900.

[10] Qi XX, Chen SH, Chang CL, et al., 2022, Effectiveness of Foot Fixator in the Treatment of Ingrown Toenail Paronychia. China Medical Device Information, 28(2): 1–3.

[11] Mao W, Wang PW, 2024, Comparative Study on the Effectiveness of Modified Ω Nail Brace and Winograd Surgery. Chinese Journal of Plastic Surgery, 40(7): 771–778.

[12] Wang GM, Cao ZA, Du YJ, et al., 2022, Study on the Application of Omega Wire Braces Combined with Nail Filler for the Treatment of Paronychia. Electronic Journal of Foot and Ankle Surgery, 9(3): 14–17.