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Morton's Neuroma in Physically Active Individuals: Etiology, Clinical Presentation, and Therapeutic Strategies

Patrycja Nowaczek
ORCID: https://orcid.org/0009-0005-0683-0288
E-mail: patrycja.mlynarczykk@gmail.com
[1] Military Clinical Hospital with Outpatient Clinic, Lublin, Poland
Bartosz Minik
ORCID: https://orcid.org/0009-0009-8315-9087
E-mail: bartoszminik2000@gmail.com
[1] Military Clinical Hospital with Outpatient Clinic, Lublin, Poland
Kacper Częczek
ORCID: https://orcid.org/0009-0004-3062-7717
E-mail: kacperczeczek02@gmail.com
[2] Medical University of Lublin, Poland
Karolina Cieślewicz
ORCID: https://orcid.org/0009-0003-0984-5413
E-mail: karolinacieslewicz47@gmail.com
[2] Medical University of Lublin, Poland
Kinga Szymańska-Zdyb
ORCID: https://orcid.org/0009-0007-5263-5947
E-mail: kingasz21@gmail.com
[1] Military Clinical Hospital with Outpatient Clinic, Lublin, Poland
Barbara Braksal
ORCID: https://orcid.org/0009-0005-0217-5108
E-mail: barbara.braksal@gmail.com
[2] Medical University of Lublin, Poland

Krzysztof Mirkowski
ORCID: https://orcid.org/0009-0009-6976-0810
E-mail: k.mirkowski2@gmail.com
[3] University Clinical Hospital No. 1 in Lublin, Poland
Zuzanna Wanda Szurek
ORCID: https://orcid.org/0009-0000-0630-8469
E-mail: z.szurek@gmail.com
[2] Medical University of Lublin, Poland
Zofia Julia Chyła
ORCID: https://orcid.org/0009-0006-0519-6163
E-mail: chyla.zofia14@gmail.com
[2] Medical University of Lublin, Poland
Adam Miroński
ORCID: https://orcid.org/0009-0006-1543-3126
E-mail: adammironski1337@gmail.com
[3] University Clinical Hospital No. 1 in Lublin, Poland
Corresponding Author
Patrycja Nowaczek
E-mail: patrycja.mlynarczykk@gmail.com

Abstract
Background. Morton's neuroma is one of the most common causes of forefoot pain, particularly among physically active individuals. This condition is a compressive neuropathy of the interdigital nerve and significantly affects both the ability to participate in sports activities and patients' quality of life.
Aim. The aim of this review article is to summarize current knowledge regarding the pathophysiology, diagnosis, and treatment methods of Morton's neuroma, with particular emphasis on physically active populations and return-to-sport outcomes.
Material and methods. A review of scientific literature available in the PubMed database was conducted, including clinical studies, systematic reviews, and meta-analyses published in recent years. Publications addressing etiology, clinical presentation, diagnosis, and both conservative and surgical treatment options were analyzed.
Results. Morton's neuroma is most commonly located in the third intermetatarsal space and presents with burning or stabbing pain accompanied by paresthesia, typically exacerbated during weight-bearing activities. Diagnosis is primarily based on clinical examination supported by imaging modalities such as ultrasonography and magnetic resonance imaging. Conservative treatment, including footwear modification, orthotic insoles, and corticosteroid injections, is considered first-line therapy and may provide significant pain relief. In refractory cases, interventional methods such as radiofrequency ablation or surgical treatment are employed, both of which demonstrate high effectiveness, although they carry a risk of complications.
Conclusions. Morton's neuroma represents a significant issue in sports medicine and requires a comprehensive diagnostic and therapeutic approach. Early diagnosis and appropriately selected treatment can effectively reduce symptoms and enable return to physical activity. Further studies are needed to optimize treatment strategies and evaluate long-term therapeutic outcomes.
Key words: Morton's neuroma, forefoot pain, metatarsalgia, interdigital neuropathy, diagnosis, treatment, return to sport

1. Introduction

Morton's neuroma is a painful compressive neuropathy of the common plantar digital nerve, most commonly located in the third intermetatarsal space and less frequently in the second. Despite its name, it is not a true neoplasm, but rather a degenerative condition characterized by perineural fibrosis and nerve enlargement resulting from chronic irritation and mechanical compression. The disorder typically presents with burning or stabbing forefoot pain, radiating discomfort into the toes, paresthesia, and the characteristic sensation of "walking on a pebble," especially during weight-bearing activity (1,2).

In clinical practice, Morton's neuroma is recognized as one of the most common causes of metatarsalgia and chronic forefoot pain. It remains a significant diagnostic and therapeutic challenge because diagnosis is primarily clinical, imaging serves mainly as a supportive tool, and considerable controversy persists regarding both pathophysiology and optimal treatment strategies (2,3). Ultrasound and magnetic resonance imaging are widely used to confirm diagnosis, but correlation between imaging findings and symptoms is not always straightforward (4,5).

From the perspective of sports medicine, Morton's neuroma is particularly relevant because symptoms are aggravated by repetitive forefoot loading, running, jumping, and footwear-related compression, all of which are common in athletic populations. Persistent pain may substantially impair training capacity, athletic performance, and return-to-sport potential. Current literature emphasizes that treatment goals should extend beyond pain reduction and include restoration of foot function and safe return to physical activity (6,7).

Regarding prevalence, the reviewed studies confirm that Morton's neuroma is a frequent condition in orthopedic and podiatric practice and has historically been reported more often in women, particularly in middle age. However, recent retrospective MRI-based analyses suggest that some traditional epidemiological assumptions may require reassessment, as no significant

sex-related differences were found in lesion distribution, laterality, or age at presentation in large patient cohorts (5). Precise epidemiological data for athletes remain limited, and robust sport-specific prevalence rates are still lacking.

The rationale for undertaking this review arises from several factors. First, Morton's neuroma is a common and functionally disabling source of forefoot pain. Second, the literature demonstrates substantial heterogeneity in management approaches, including footwear modification, orthotics, corticosteroid injections, alcohol injections, radiofrequency ablation, cryoablation, decompression techniques, and neurectomy. Third, recent systematic reviews indicate that although many treatment modalities are available, the quality of evidence supporting several interventions remains limited, and no universally accepted treatment algorithm has yet been established (3,8,9).

Therefore, the aim of this review is to summarize current evidence regarding the definition, pathophysiology, clinical presentation, diagnosis, and treatment of Morton's neuroma, with particular emphasis on its significance in physically active individuals and its implications for return-to-sport outcomes.

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2. Material and methods

This study was conducted as a narrative review aimed at synthesizing current evidence on the diagnosis, treatment, and functional outcomes of Morton's neuroma, particularly in physically active individuals.

The primary source used for literature identification was the PubMed database, from which 21 peer-reviewed articles were selected for analysis. These publications constituted the predefined evidence base for this review and included studies addressing diagnostic imaging, conservative management, injection therapies, minimally invasive techniques, surgical interventions, and post-treatment functional outcomes in patients with Morton's neuroma (1–21).

The search strategy was based on combinations of the following keywords: “Morton’s neuroma,” “interdigital neuroma,” “Morton neuroma diagnosis,” “Morton neuroma treatment,” “Morton neuroma surgery,” “Morton neuroma injection,” “forefoot pain,” and “metatarsalgia.” These terms were selected because they correspond directly to the terminology used in the analyzed studies and reflect the principal clinical dimensions of the condition (2,5,12).

The inclusion criteria were as follows:

(1) articles indexed in PubMed and included in the predefined bibliography for this review;

(2) peer-reviewed original research articles, retrospective studies, prospective clinical studies, systematic reviews, and meta-analyses;

(3) studies directly related to Morton’s neuroma pathophysiology, diagnosis, imaging, conservative treatment, minimally invasive procedures, or surgical management;

(4) English-language publications;

(5) studies involving adult human participants.

The exclusion criteria included:

(1) articles unrelated specifically to Morton’s neuroma;

(2) studies lacking sufficient clinical relevance;

(3) case reports with limited sample size;

(4) duplicate publications.

The publication time frame covered studies published between 2017 and 2025. This period was selected to ensure inclusion of the most recent and clinically relevant evidence reflecting contemporary diagnostic standards and evolving treatment strategies for Morton’s neuroma, including newer modalities such as radiofrequency ablation, cryoablation, and image-guided interventional therapies (6,8,10,14).

3. Epidemiology

Morton's neuroma is a common cause of forefoot pain in orthopedic, podiatric, and sports medicine practice. It is most frequently diagnosed in middle-aged adults and has traditionally been reported more often in women, although recent MRI-based studies suggest that sex differences may be less pronounced than previously assumed (3,5,11).

The third intermetatarsal space is the most commonly affected site, while the second space is involved less frequently (3,5,12). Although Morton's neuroma is considered a frequent clinical condition, precise incidence and prevalence rates remain unclear because most available studies focus on diagnosis and treatment rather than population-based epidemiology (1,10,11).

In physically active individuals, the condition is particularly relevant due to its negative impact on weight-bearing activity and sports participation; however, reliable sport-specific prevalence data are still lacking in the current literature (9,13,15).

4. Anatomy and Pathophysiology

The forefoot is a structurally complex region composed of the metatarsal bones, proximal phalanges, intermetatarsal ligaments, joint capsules, plantar plates, and surrounding soft tissues, all of which contribute to load distribution, stability, shock absorption, and propulsion during gait. The metatarsal heads constitute the primary weight-bearing area of the forefoot, where repetitive mechanical stress accumulates during walking, running, and jumping. Due to this biomechanical function, the forefoot is particularly susceptible to overload-related disorders, including Morton's neuroma (1,2,22).

The common plantar digital nerves originate from the medial and lateral plantar nerves and course distally through the intermetatarsal spaces beneath the deep transverse intermetatarsal ligament. Distally, they divide into proper digital branches that provide sensory innervation to adjacent sides of the toes. Morton's neuroma most frequently develops in the third

intermetatarsal space, where the third common digital nerve is anatomically thicker because it receives communicating branches from both plantar nerve trunks, making it more vulnerable to chronic irritation and compression (2,4,5).

The pathophysiology of Morton's neuroma is primarily associated with chronic repetitive compression, traction, and irritation of the interdigital nerve. These mechanical stresses lead to perineural fibrosis, endoneural edema, demyelination, and progressive nerve degeneration rather than true neoplastic growth. Histopathological evidence described in the reviewed studies confirms that Morton's neuroma is a fibrotic entrapment neuropathy rather than a genuine tumor, which is why the term "neuroma" is considered inaccurate by many authors (1,3). Repeated compression beneath the transverse intermetatarsal ligament during forefoot loading is regarded as the principal pathogenic mechanism (6,9).

Several biomechanical factors contribute to the development of this condition. Excessive forefoot loading, repetitive microtrauma, abnormal metatarsal alignment, pes planus, pes cavus, hallux valgus deformity, and narrowing of the intermetatarsal spaces all increase local nerve compression. Footwear is a major extrinsic factor: narrow toe-box shoes and high-heeled footwear elevate plantar forefoot pressure and reduce interdigital space, thereby exacerbating nerve entrapment. In physically active individuals and athletes, repetitive running, jumping, rapid directional changes, and sport-specific footwear further intensify mechanical stress on the interdigital nerves, increasing the likelihood of symptomatic irritation (7,8,13).

Current evidence indicates that Morton's neuroma should be understood as a multifactorial entrapment neuropathy resulting from the interaction between anatomical predisposition and chronic biomechanical overload. This multifactorial model explains both the high prevalence of the condition in active populations and the wide variability in clinical symptom severity observed among patients (10,12,15).

5. Risk Factors

Several intrinsic and extrinsic factors contribute to the development of Morton's neuroma, primarily by increasing chronic compression and irritation of the interdigital nerves.

One of the most important risk factors is repetitive mechanical overload of the forefoot. Activities involving repeated running, jumping, rapid directional changes, or prolonged forefoot loading—such as running, court sports, dancing, and other high-impact disciplines—significantly increase pressure in the intermetatarsal spaces and may promote chronic nerve entrapment (7,9,13,22).

Footwear is another major modifiable factor. Narrow toe-box shoes and high-heeled footwear reduce interdigital space and increase plantar pressure on the metatarsal heads, thereby exacerbating nerve compression. This mechanism is particularly relevant in individuals who regularly wear restrictive footwear, including athletes using tight sport-specific shoes (2,6,8).

Structural foot abnormalities also play a central role in disease development. Conditions such as pes planus, pes cavus, hallux valgus, toe deformities, and abnormal metatarsal alignment may alter forefoot biomechanics and create uneven pressure distribution, increasing the likelihood of repetitive irritation of the common plantar digital nerves (3,10,12).

In addition, demographic predispositions such as middle age and female sex are commonly associated with Morton's neuroma, although these factors are better understood as susceptibility modifiers rather than direct causes. Current evidence supports a multifactorial model in which anatomical predisposition interacts with chronic biomechanical stress to trigger symptomatic nerve entrapment.

6. Clinical Presentation

Morton's neuroma typically presents as neuropathic forefoot pain described as burning, sharp, or stabbing, frequently accompanied by numbness, tingling, or paresthesia radiating into the

adjacent toes. Many patients also report the characteristic sensation of “walking on a pebble” or feeling as though a foreign body is trapped inside the shoe (1).

The discomfort is most commonly localized in the third intermetatarsal space, although the second intermetatarsal space may also be involved. Pain is usually centered in the plantar aspect of the forefoot and may radiate distally along the affected interdigital nerve distribution (4,5).

Clinical manifestations are typically aggravated by weight-bearing activities such as prolonged standing, walking, running, or wearing narrow, tight-fitting shoes, especially those with a constrictive toe box. Symptoms are often relieved by rest, removal of footwear, forefoot massage, or reduction of mechanical load on the metatarsal region (1,2).

The condition may significantly impair daily functioning and physical performance. In active individuals and athletes, Morton’s neuroma can reduce walking tolerance, limit footwear choice, decrease training capacity, and restrict participation in sports that involve repetitive forefoot loading, such as running, jumping, and court-based activities. Recent studies emphasize that, in addition to pain relief, preservation of function and restoration of activity level are key treatment goals in this patient population (4,13,15).

7. Diagnosis

The diagnosis of Morton’s neuroma is primarily clinical and is based on a detailed patient history and physical examination. Patients typically report localized forefoot pain, most commonly in the third intermetatarsal space, described as burning, sharp, or stabbing, often accompanied by numbness or paresthesia radiating to adjacent toes. Symptoms are usually aggravated by weight-bearing activities and tight footwear and relieved by rest or removal of shoes (1,2,4).

Clinical examination focuses on identifying tenderness within the affected intermetatarsal space and reproducing the patient’s symptoms. Direct palpation may elicit radiating pain along the

distribution of the interdigital nerve. Forefoot compression can further provoke symptoms by narrowing the intermetatarsal space and increasing mechanical pressure on the nerve (1,4).

Among functional tests, Mulder's sign is the most widely used. It is performed by compressing the forefoot mediolaterally while applying pressure to the intermetatarsal space. A positive test reproduces pain and may be associated with a palpable or audible click. Although commonly used in clinical practice, its diagnostic value increases when combined with patient history and other clinical findings rather than used in isolation (1,2,4).

Imaging plays a supportive role in confirming the diagnosis and excluding other causes of forefoot pain. Ultrasonography (USG) is considered a first-line imaging modality due to its accessibility, cost-effectiveness, and ability to provide dynamic assessment. It enables visualization of the neuroma and is particularly useful for guiding diagnostic and therapeutic injections (3,5,12).

Magnetic resonance imaging (MRI) is recommended in cases of diagnostic uncertainty or atypical presentation. It provides detailed anatomical visualization of soft tissues, intermetatarsal spaces, and adjacent structures, allowing differentiation between Morton's neuroma and other pathologies. However, several studies emphasize that imaging findings do not always correlate with clinical symptoms, and asymptomatic neuromas may be detected incidentally (4,5).

The differential diagnosis of Morton's neuroma includes other causes of forefoot pain such as metatarsalgia, intermetatarsal bursitis, metatarsophalangeal joint synovitis, stress fractures, degenerative or inflammatory arthritis, and other soft tissue or nerve-related disorders. Accurate diagnosis therefore requires integration of clinical findings with imaging when necessary, in order to distinguish symptomatic neuroma from other conditions (1,4,9).

Recent studies and systematic reviews also highlight the importance of a stepwise diagnostic approach, combining clinical assessment, functional testing, and selective imaging, particularly in patients considered for interventional or surgical treatment (19–21).

Table 1. Comparison of ultrasound and MRI in the diagnosis of Morton's neuroma

Feature	**Ultrasound (USG)**	**Magnetic Resonance Imaging (MRI)**
Availability	High	Limited
Cost	Low	High
Examination type	Dynamic	Static
Accuracy	High (operator-dependent)	High
Visualization	Good	Very good
Operator dependence	High	Low
Injection guidance	Yes	No
Clinical use	First-line	Second-line

8. Conservative Treatment

Conservative management is considered the first-line approach in the treatment of Morton's neuroma and is recommended before considering invasive procedures. The primary goal is to reduce mechanical stress on the interdigital nerve, alleviate pain, and restore functional activity (1,2,12).

One of the most important components of conservative treatment is footwear modification. Patients are advised to avoid narrow, tight-fitting shoes and high-heeled footwear, as these increase forefoot pressure and exacerbate nerve compression. Shoes with a wide toe box, adequate cushioning, and low heels help reduce mechanical load on the metatarsal heads and may significantly improve symptoms (2,6,8).

Orthotic insoles are commonly used to redistribute plantar pressure and offload the affected intermetatarsal space. Metatarsal pads or bars are particularly effective in reducing pressure on the forefoot and improving patient comfort during weight-bearing activities. Several studies indicate that properly fitted orthoses may provide symptom relief, especially in early or mild cases (3,12).

Physiotherapy plays a supportive role in conservative management. Manual therapy techniques may help improve joint mobility and reduce soft tissue tension in the forefoot region, while targeted exercises aim to strengthen intrinsic foot muscles and improve biomechanical function. Although evidence for physiotherapy interventions is limited, they are frequently recommended as part of a multimodal treatment strategy (7,9).

Pharmacological treatment is mainly symptomatic and includes nonsteroidal anti-inflammatory drugs (NSAIDs), which may reduce pain and inflammation in the acute phase. However, pharmacotherapy alone is usually insufficient for long-term symptom control and is typically combined with other conservative measures (1,2).

Injection therapies, particularly corticosteroid injections, are widely used when initial conservative treatment fails. These injections aim to reduce inflammation and pain around the affected nerve and may provide short- to medium-term symptom relief. Image-guided injections (especially ultrasound-guided) improve accuracy and treatment effectiveness. Other injection-based approaches, such as alcohol sclerosing therapy, have also been described, although their long-term efficacy remains variable (10,12,21).

Overall, current evidence supports a stepwise conservative approach combining footwear modification, orthotic support, physiotherapy, pharmacological management, and, when necessary, injection therapy. While these methods can be effective in many patients, their success depends on symptom severity, duration of the condition, and adherence to treatment recommendations (12,19).

9. Surgical Treatment

Surgical treatment of Morton's neuroma is indicated in patients who do not respond to adequate conservative management. Typical indications include persistent forefoot pain despite footwear modification, orthotic use, pharmacological treatment, and injection therapy, as well as significant functional limitation affecting daily activities or sports participation. Patients with a clear clinical diagnosis and long-standing symptoms tend to achieve better surgical outcomes (1,9,12).

The most commonly performed procedure is neurectomy, which involves excision of the affected interdigital nerve. This technique can be performed through either a dorsal or plantar approach. The dorsal approach is generally preferred because it allows earlier postoperative weight-bearing, faster recovery, and fewer wound complications. In contrast, the plantar approach provides direct access to the neuroma but may be associated with painful scar formation and delayed return to activity (3,8,19).

An alternative surgical option is nerve decompression, which consists of releasing the deep transverse intermetatarsal ligament to reduce pressure on the nerve without removing it. This technique aims to preserve nerve continuity and avoid sensory loss. Some studies report favorable outcomes, particularly in early-stage disease, although its long-term effectiveness remains less predictable compared to neurectomy (7,9).

In recent years, minimally invasive and percutaneous techniques have gained increasing attention. These include limited-incision neurectomy and image-guided procedures designed to reduce tissue trauma, postoperative pain, and recovery time. Preliminary evidence suggests that these approaches may be effective, especially in physically active patients, but current data are still limited and further high-quality studies are needed to confirm their long-term outcomes (20,21).

As with all surgical procedures, complications may occur. The most frequently reported complication is the development of a stump neuroma, which can lead to persistent or recurrent pain. Other potential complications include wound healing disturbances, infection, hematoma, and sensory disturbances such as numbness or hypoesthesia in the distribution of the excised nerve. The incidence of complications varies depending on surgical technique, approach, and patient-specific factors (9,10,14).

The overall effectiveness of surgical treatment is generally high. Most studies report good to excellent outcomes in approximately 70–90% of patients, particularly following neurectomy. Significant pain reduction and improvement in function are commonly observed, although complete symptom resolution is not always achieved. Some patients may experience residual discomfort or altered sensation postoperatively (19,21).

From a functional perspective, surgical treatment often allows patients to return to normal daily activities and, in many cases, to sports participation. However, the time required for recovery and return to activity varies depending on the surgical technique, extent of the procedure, and individual healing response. Recent studies emphasize that patient selection, duration of symptoms prior to surgery, and appropriate postoperative management are key factors influencing treatment success and functional outcomes (19–21).

Table 2. Summary of treatment options for Morton's neuroma

Treatment	Key effect	Clinical use
Footwear modification	Reduces forefoot pressure	First-line
Orthotic insoles	Offloads metatarsals	Early/moderate cases
Physiotherapy	Improves biomechanics	Supportive
NSAIDs	Pain relief	Short-term
Steroid injections	Anti-inflammatory	Second-line
Minimally invasive methods	Reduces nerve irritation	Selected cases
Surgery (neurectomy)	Removes affected nerve	Refractory cases

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10. Importance in Sports

Morton's neuroma is highly relevant in sports medicine because it causes forefoot pain that limits weight-bearing activity, reduces footwear tolerance, and negatively affects training capacity and athletic performance. In addition to pain, recent studies emphasize that functional limitations and quality of life are important outcome measures in physically active individuals (11,13,15).

From a performance perspective, the condition most significantly affects sports that involve repetitive forefoot loading, propulsion, and rapid directional changes. Activities such as running, court sports, and other high-impact disciplines are particularly associated with symptom exacerbation due to repetitive mechanical stress on the intermetatarsal spaces (7,9,13).

The disciplines most commonly affected include long-distance running, indoor court sports, and other activities requiring repetitive push-off from the forefoot. These sports increase plantar

pressure and contribute to chronic irritation of the interdigital nerves, which may lead to symptom development or progression (7,9).

Prevention strategies in athletes focus primarily on reducing mechanical overload and optimizing footwear. The literature supports the use of appropriately fitted shoes with a wide toe box, avoidance of tight or restrictive footwear, and early recognition of symptoms. Adjustments in training load and the use of orthotic support may also help reduce the risk of developing symptomatic neuroma (2,6,8).

Return to sport depends on symptom severity, treatment method, and individual recovery. Conservative management may allow continued participation with modifications, although persistent symptoms often limit performance. Surgical treatment is generally associated with good functional outcomes, and many patients are able to return to physical activity. However, no standardized return-to-play protocol exists, and progression should be individualized based on pain resolution, functional recovery, and sport-specific demands (19–21).

11. Discussion

The reviewed literature confirms that Morton's neuroma remains a clinically important yet methodologically challenging condition. Across the available studies, the most consistent findings concern the typical clinical presentation, the predominantly clinical nature of diagnosis, and the broad spectrum of available treatment options. At the same time, the literature shows considerable heterogeneity in study design, outcome measures, follow-up duration, and patient selection, which makes direct comparison between studies difficult and limits the strength of current conclusions (1,4,12,19,21).

A major conclusion from the reviewed evidence is that treatment should generally follow a stepwise approach. Conservative management remains the first-line strategy and usually includes footwear modification, orthotic support, physiotherapy, analgesic or anti-

inflammatory medication, and corticosteroid injections. Among non-surgical interventions, corticosteroid injections appear to have the strongest support for short- to medium-term symptom relief, whereas other conservative modalities, including physical therapy and orthotic treatment, are widely used but supported by less uniform evidence (2,10,12). Image-guided injections may improve precision and clinical effect, but long-term outcomes remain variable (10,12).

When conservative treatment fails, minimally invasive or surgical options are considered. The literature suggests that surgical treatment—especially neurectomy—generally provides good to excellent outcomes in a substantial proportion of patients. However, surgery is not without limitations, as persistent pain, sensory disturbance, scar-related problems, and stump neuroma formation remain clinically relevant complications (9,14,19). Comparative evidence indicates that both dorsal and plantar surgical approaches can be effective, although the plantar approach may be associated with a lower rate of amputation neuroma, while the dorsal approach is often preferred because of faster recovery and earlier mobilization (19).

Recent publications also highlight growing interest in minimally invasive procedures such as radiofrequency ablation, cryoablation, and limited-incision neurectomy. These methods appear promising because they may reduce tissue trauma and recovery time, which is particularly relevant in physically active individuals. Nevertheless, the current evidence base is still limited by small sample sizes, non-randomized study designs, and inconsistent outcome reporting. Systematic reviews of radiofrequency ablation suggest encouraging results, but the available data are still insufficient to establish this technique as a universally preferred option (21).

An important issue emerging from the reviewed literature is the lack of standardization in both diagnosis and outcome assessment. Imaging findings do not always correlate with symptoms, and some radiologically detected neuromas may be asymptomatic. Likewise, studies evaluating treatment success use different endpoints, including pain reduction, patient satisfaction,

footwear tolerance, activity level, and quality of life, which complicates pooled interpretation and evidence synthesis (4,5). This methodological diversity is one of the main reasons why no single gold-standard treatment algorithm has yet been universally accepted.

Another important gap concerns sport-specific evidence. Although Morton's neuroma is clearly relevant in sports medicine because it affects weight-bearing performance, footwear tolerance, and return to training, robust data regarding prevalence in athletes, discipline-specific risk, rehabilitation protocols, and return-to-play timelines remain limited. Most published studies focus on general clinical populations rather than competitive athletes, which reduces the applicability of findings to sports settings (13,15,21).

Future research should therefore focus on several key areas. First, there is a need for high-quality prospective trials directly comparing conservative, minimally invasive, and surgical interventions using standardized outcome measures. Second, more research is needed on long-term results, especially in relation to recurrence, functional recovery, and patient-reported quality of life. Third, sports-specific studies should evaluate discipline-related risk factors, rehabilitation strategies, and criteria for safe return to play. Finally, greater consistency in diagnostic criteria and reporting standards would improve comparability between studies and help develop more evidence-based treatment algorithms for Morton's neuroma (12,19,21).

The discussion above reflects the main patterns emphasized in recent reviews and meta-analyses: strong heterogeneity of evidence, comparatively better support for corticosteroid injections among non-surgical treatments, generally favorable but not complication-free surgical outcomes, and promising yet still limited evidence for radiofrequency ablation.

12. Conclusions

Morton's neuroma is a common and clinically relevant cause of forefoot pain that should be considered in both general musculoskeletal practice and sports medicine. The reviewed

literature confirms that the condition is best understood as an entrapment neuropathy associated with chronic mechanical overload, most commonly affecting the third intermetatarsal space. Its diagnosis remains primarily clinical, supported when necessary by ultrasonography or magnetic resonance imaging.

The findings of this review indicate that treatment should follow a stepwise strategy. Conservative management—including footwear modification, orthotic support, physiotherapy, pharmacological treatment, and corticosteroid injections—remains the first-line approach and may provide satisfactory symptom relief in many patients. In cases resistant to non-operative treatment, minimally invasive procedures and surgical intervention, especially neurectomy, offer generally good clinical outcomes, although the risk of persistent symptoms and postoperative complications should be taken into account.

From a practical perspective, Morton's neuroma is particularly important in physically active individuals because it may reduce training capacity, impair sports performance, and delay return to activity. For this reason, early diagnosis, appropriate footwear selection, load modification, and individualized treatment planning are essential both in clinical practice and in sports settings.

Overall, the available evidence supports a comprehensive and individualized approach to management. At the same time, further high-quality studies are needed to standardize diagnostic pathways, compare treatment options more precisely, and better define return-to-sport criteria in athletic populations.

Disclosure

The author declares no conflicts of interest.

Supplementary Materials

No supplementary materials are available.

Author Contributions

Conceptualization – Patrycja Nowaczek, Bartosz Jakub Minik, Adam Miroński, Krzysztof Mirkowski, Zuzanna Wanda Szurek

Methodology – Patrycja Nowaczek, Kacper Częczka, Karolina Cieślewicz, Kinga Szymańska-Zdyb, Zofia Julia Chyła, Kinga Braksal

Literature review – Patrycja Nowaczek, Zuzanna Wanda Szurek, Bartosz Jakub Minik, Adam Miroński, Krzysztof Mirkowski, Kacper Częczka, Karolina Cieślewicz, Kinga Szymańska-Zdyb, Zofia Julia Chyła, Kinga Braksal

Writing - original draft – Patrycja Nowaczek, Bartosz Jakub Minik, Adam Miroński, Krzysztof Mirkowski, Zuzanna Wanda Szurek

Writing - review & editing – Kacper Częczka, Karolina Cieślewicz, Kinga Szymańska-Zdyb, Zofia Julia Chyła, Barbara Braksal

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Conflicts of Interest

The author declares no conflict of interest. All authors have read and agreed with the published version of the manuscript.

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