MedCrave
Step into the World of Research
International Physical Medicine & Rehabilitation Journal

Research Article

Open Access

Techniques for the treatment and reversion of tendon injuries in the ankle complex literature review

Abstract

Drop foot is a clinical condition resulting from the blockage of nerve impulses, causing the inability to dorsiflex the ankle, causing a reduction in functional capacity. There are techniques such as the transfer of the posterior tibial tendon via interosseous transmembrane.

Objective: To evaluate the best technique for foot drop therapy and relate it to clinical practice.

Methodology: literature review by searching the Virtual Health Library databases and the Google Scholar browser, consulting published and indexed journals using the descriptors: "posterior tibial tendon" and "traumatic lesions" and "drop foot" and "tendon transfer" and "tendon transfer techniques".

Results: selected 13 articles published in the period between 2012 and 2021, 6 retrospective studies, 1 cross-sectional, 1 prospective, 2 review and update articles, 2 systematic reviews and a case study.

Conclusion: The clinical evidence favors the use of posterior tibial tendon transfer techniques, or another suitable tendon, via the interosseous membrane, and studies with better quality methodological designs are required. In Brazil, a group of researchers chose their own evaluation material, which reinforces the need for standardization for the practice of the national clinic. There was little production and publication of studies on the subject. It is essential to develop more research, when limitations of more up-to-date studies are seen.

Keywords: drop foot, posterior tibial tendon, tendinous transfer techniques, tendon transfer, traumatic injuries

Volume 8 Issue 2 - 2023

Robson Emiliano José de Freitas,[1] Jaqueline Gleice Aparecida de Freitas,[2] Carolina Pereira Vieira,[1] Daniela Cristina Endres,[3] Esther de Oliveira Santos Gomes,[1] Fernanda Grazielle da Silva Azevedo Nora[4]

[1]Doctor Resident in Orthopedics and Traumatology, IOG – Instituto Ortopédico de Goiânia, Goiânia – GO, Brazil
[2]Professor, UEG – Universidade Estadual de Goiás, Goiânia – GO, Brazil
[3]Doctor in Orthopedics and Traumatology, CRER – Centro Estadual de Reabilitação e Readaptação, Brazil
[4]Associate Professor 2, UFG – Universidade Federal de Goiás - Campus Goiânia / GO, Brazil

Correspondence: Fernanda Grazielle da Silva Azevedo Nora, Associate Professor 2, UFG – Universidade Federal de Goiás - Campus Goiânia / GO, Brazil, Tel (62) 35211105, Email fernanda_nor@ufg.br

Received: August 02, 2023 | **Published:** August 18, 2023

Introduction

Feet are parts of the lower limbs of the human body and are the only ones to maintain direct contact with the ground. The main function is to be the solid and stable base for the body, and they have a unique behavior during walking, acting as a lever for locomotion, when subjected to a successive cycle of loading and unloading.[1,2] The distinct and complex functions, in addition to its location, the foot can suffer injuries ranging from a simple tendon inflammation, called tendinitis, to complete injuries to its structure, which generate pain of greater intensity and even functional limitation as is the case of supination trauma (ankle sprain) often caused by overstretching or complete rupture.[1,2]

There is also drop foot as a clinical condition resulting from the blockage of nerve impulses causing the inability to dorsiflex the ankle. The foot will remain in an equine position, causing a reduction in functional capacity, which makes this comorbidity relevant to public health as it impacts socioeconomic life. The etiological factors of this pathology include unrepaired muscle and nerve injuries, poliomyelitis, drug intoxication, brain disease, Charcot-Marie-Tooth, leprosy and Traumatic Brain Injury.[3,4] Therefore, the present study aimed to evaluate the technique for foot drop therapy and relate it to clinical practice.

Methodology

This literature review was performed using the following descriptors: "posterior tibial tendon" and "traumatic injuries or footdrop" and "tendon transfer" and "tendon transfer techniques". A time frame of 10 years (2012 to 2022) was established, as this study focuses on evaluating the therapeutic technique of drop foot and relating it to clinical practice. The methodological route consisted of investigating the theme through searches of the Virtual Health Library databases and the Google Scholar browser, consulting published and indexed journals using the descriptors already mentioned above. The initial survey allowed defining study stages to facilitate the organization of the work, starting with the formulation of the problem, data collection, evaluation of the collected data, analysis and interpretation of the data and presentation of the results. The period of the bibliographical survey of this research occurred between the months of January 2022, to December, 2022.

This study included experimental articles, case studies, technical and treatment updates and literature review studies, published in Portuguese and English. Abstracts of scientific events, course conclusion works (monographs, dissertations and/or theses) were excluded. The present study is a narrative literature review, where the selection of articles/studies promoted the analysis of the therapeutic technique of drop foot and its application in clinical practice.

Results and discussion

The initial selection promoted a quantitative around 850 publications, first, reading the title and if there was relevance to the theme, starting with the temporal analysis, the type of periodical publication, the technique used and the abstract, resulting in 121 articles, which were distributed by the type of associated technique

such as the use of anchor/biotenodesis, with a total of 35 articles, the interosseous transmembrane technique which resulted in 21 articles and the technique using an external button and interference screw, being selected 65 articles. After selecting these, it was verified if they contained the complete research work, if they were not duplicated and if they contained the controlled descriptors and, carrying out the complete reading of the previously selected material, resulted in the finding of 13 (thirteen) publications that matched with the proposed research.

Table 1 presents the articles selected to compose this review; therefore, it presents information regarding study type, therapeutic technique and the most relevant findings. The studies presented were classified according to the type of study: 6 retrospective studies; a cross-sectional study; one prospective study, 2 review and update articles; 2 systematic reviews; and a case study. The language with the highest incidence was English (n=11), with only 2 studies published in Brazil. The study proposal on the best technique for the reversal of foot drop consisted of proposing to evaluate the most indicated treatments and, through the publication of specific articles on the treatment of this comorbidity, the various possible causes of this condition were found, the most likely being dysfunctions neurological and muscular, or surgical.[5,6]

Table 1 Studies selected to compose the literature review

Authors	Study	Technique	Conclusion
Monteiro et al.[14]	Retrospective	Posterior tibial tendon transfer technique via interosseous membrane, in 12 patients, using multifilament wire. Fixation of the posterior tibial tendon with a 4.5 mm anchor and use of a sterile button and non-absorbable Nylon monofilament threads 3.0 or 4.0.	Transfer of the posterior tibial tendon via the interosseous membrane brings good functional results and improves the quality of life of patients.
Aydin et al.[6]	Retrospective	Tendon transfer for foot drop in 24 patients	The transfer of the posterior tibial tendon from the anteromedial surface of the tibia to the dorsal surface of the foot via the subcutaneous route is a method that allows the patient to walk without an orthosis, and considerably improves the patient's quality of life.
Grauwin et al.[5]	Update	Transfer technique via interosseous membrane	Performed double tendon transfer via interosseous membrane; the tibialis posterior and flexor digitorum longus are sutured to the tibialis anterior, and the extensor hallucis longus and extensor digitorum longus, proximally to the extensor retinaculum using a suture with resorbable thread.
Cho et al.[8]	Retrospective Comparative	Study with 17 patients followed for a minimum period of 3 years after posterior tibial tendon transfer. Protocol controls were used to assess the level of functional restoration. Functional assessments included AOFAS scores, FAOS scores, FAAM scores, and isokinetic muscle strength testing.	Although postoperative dorsiflexion strength restoration was about 33% of the normal ankle, function in daily activities and walking ability were satisfactorily improved.
Vieira et al.[9]	Transversal	Tendon transfer technique using an interference screw and anchorage in 7 patients.	Posterior tibial transfer via interosseous membrane has provided satisfactory results and enabled patients to have a better quality of life, both in terms of rehabilitation and the less harmful effect of post-surgical complications.
Lingaiah et al.[17]	Prospective	30 patients operated on using the tendon transfer technique via interosseous membrane in a short period of time.	The tendon was anchored to the bone with a pullout thread attached with a button to the plantar surface of the foot or with a 3.5 mm cancellous screw with a figure of eight anchorage point around the screw.
Krishnamurthy et al.[17]	Report of The Best Techniques. No Casuistry.	In the technical recommendations, stable fixation to the bone requires a combination of wire sutures, staples, or bone anchor. The tendon is fixed with three or four non-absorbable sutures.	Tendon fixations are much easier to perform than bone fixations and can give excellent results. The bicaudal posterior tibial procedure yields good results.
Agarwal et al.[16]	Retrospective	Technique for transferring the posterior tibial tendon to the dorsum of the foot via a circumtibial interosseous approach in 20 patients operated over a period of 5 years.	Posterior tibial transfer for foot drop gives good results in terms of normal gait, high patient satisfaction with minimal donor site morbidity and low rate of complications.
Wen et al.[11]	Retrospective	Posterior tibial tendon transfer in twenty-one (21) patients.	Transposition of the posterior tibial tendon through the interosseous membrane approach indicated that ankle joint function recovered well.
Stevoska et al.[12]	Systematic review	Analysis of 37 studies on the posterior tibial tendon transfer technique via interosseous membrane	Tendon transfer increases mobility and self-independence leading to patient satisfaction. A prospective collection of patient data and standardized outcome measures will be important to further analyze the effectiveness of tendon transfer techniques.

Citation: de Freitas REJ, de Freitas JGA, Vieira CP, et al. Techniques for the treatment and reversion of tendon injuries in the ankle complex literature review. *Int Phys Med Rehab J.* 2023;8(2):161–165. DOI: 10.15406/ipmrj.2023.08.00353

Table 1 Continued...

Authors	Study	Technique	Conclusion
Marsland et al.[10]	Systematic review	21 studies were included for final review and quantitative analysis. And, in three studies, the transfer of the TP tendon for foot drop was described	The overall rates of wound infection and dehiscence were low. However, the researchers reported a lack of evidence of protocol analysis, occurring only in one. In the majority, there was no information on the material used, seen only in one study reporting that it was an oversized 6.25 mm screw describing the use of a 5 mm bone tunnel.
Khan et al.[15]	Retrospective	32 patients chosen based on the medical records because they suffered foot drop and became permanent after injury to the peroneal nerve without soft injury, tissue loss or concomitant tendon or bone injury of the same limb treated with transfer of the posterior tibial tendon to the dorsum of the foot via interosseous.	The results of the surgeries, six months after the operation, confirmed that the majority of patients in both groups were classified as excellent to good.
Nguyen[13]	Case report	Patient with dysfunction of all leg tendons. The tendon transfer technique via interosseous membrane was used with the Pulvertaft suture method	The tendon transfer procedure allowed for the reconstruction of a stable, painless plantigrade foot.

Basically, for researchers Krishnamurthy & Ibrahim [7] and Cho et al.,[8] foot drop is a disorder that, in addition to impairing gait, causes the patient to stumble and fall and is defined as a loss of active dorsiflexion in the tibiotalar joint, which is compensated by hyperflexion in the hip and knee joints. Tendon transfer is the surgical transplantation of a normal muscle-tendon unit (MTU) to a new location to restore function to a non-functional MTU, and the donor tendon remains connected to its native muscle and is a differentiating tendon grafting technique tendon.[9,10] Researchers Wen et al.,[11] reported, in their research, that there are two main forms of transposition of the posterior tibial tendon: one is around the medial face of the tibia called the subcutaneous approach, and the other is through the interosseous membrane of the tibia and fibula in around the posterior aspect of the tibia known as the interosseous approach. The subcutaneous approach is simple and requires less incision, being indicated for patients with calcification and sclerosis of the interosseous membrane of the leg. Stevoska et al.,[12] presented the precursors of the posterior tibial tendon transfer technique, which was initially reported by Ober, in 1933, when he described performing it via the tibia and subcutaneously around the ankle to the dorsum of the foot (circumtibial route). Wen et al.,[11] said that the technique had been performed since 1914 and Vieira et al.,[9] attributed to Putti, in that year, the starting point of this technique.

Krishnamurthy & Ibrahim[7] cited Codivilla, in 1899; Putti, in 1937; Watkins et al in 1954, as pioneers in performing the transfer through the interosseous membrane to the dorsum of the foot, and Carayon et al. in 1967, described a double transfer when they used the posterior tibial tendon transferred via interosseous and sutured to the tibial tendon previous; and the flexor digitorum longus tendon sutured to the extensor hallucis longus and extensor digitorum longus tendons. Another condition reported by Nguyen[13] more recently, in his case study, was due to paralysis of the sciatic nerve as an atypical neurological lesion, which caused the symptom of foot drop in his 33-year-old patient, which reached the various muscles of the leg, becoming absent or weak, for the most part, and there was a dysfunction of all the tendons of the leg, except the Achilles tendon and the plantar tendon.

In this case, the researcher elected a new treatment performing the unusual tendon transfer using the medial gastrocnemius tendon and the plantar tendon for transfer to the anterior tibial tendon. To perform the tendon transfer technique via interosseous membrane, the researcher adopted the Pulvertaft suture method for tendon fixation. And the researcher concluded that the tendon transfer technique has been considered the treatment of excellence for foot and ankle tendon injuries. In their study, it was possible to conclude that the tendon transfer procedure performed allowed the reconstruction of a stable, painless and plantigrade foot.[13]

Grauwin et al.,[5] say that fixing the tendon distally in the capsule or intraosseously is difficult to perform because the transferred tendons tend to get stuck in narrow passages or channels, and they noted that it is of paramount importance to observe that, in this technique, the transfer should be as direct as possible and should not pass through narrow areas. Wen et al.,[11] performed the transfer procedure of the posterior tibial tendon in twenty-one (21) patients with foot drop secondary to peroneal nerve paralysis and stated, in their studies, that there were controversies about the final closure of the result on this technique if it is possible to have iatrogenic footdrop deformity after transposition of the posterior tibial tendon, if it can compensate the dorsiflexion function of the foot and if the patient can restore the foot plantar and daily activities. In the study by Monteiro et al.,[14] Surgical techniques were performed on twelve patients who underwent surgical treatment of foot drop due to trauma using the technique of transferring the posterior tibial tendon via the interosseous membrane to the dorsolateral region of the foot. In that study, the researchers secured the end of the tendon with resistant multifilament wire, type Ethibond 2. Continuing with the technique, in this one, the anchoring method was used and the button was used for additional fixation of the tendon with non-absorbable wire. The results showed little or almost no intercurrence unfavorable to the patients and the researchers reported that ten patients returned to daily activities and four returned to the practice of physical activity without using the orthosis.[14]

In the study carried out by Khan et al.,[15] the researchers also stated, as seen in Wen et al.,[11] regarding the existence of controversies regarding the transfer procedure (circumtibial versus interosseous) and location of fixation on the dorsum of the foot (tendon-bone or tendon-tendon), but it agrees with the favorable authors, seen in this review, on the choice of the dynamic tendon transfer technique being considered the gold standard for restoring foot dorsiflexion and allowing almost normal functional activity, in addition to preventing equinovarus deformity caused by the posterior tibial tendon. Their research was based on the technique described by Carayon et al., and on a modification of the classic Barr procedure, when they used two different fixation sites on the foot, one with tendon-bone fixation, that is, rolling the posterior tibial tendon around the second

metatarsal and, the second, to the anterior tibial tendon.[15] The target audience consisted of analyzing the medical records of thirty-two (32) patients who had undergone peroneal nerve surgery due to a foot drop secondary to a foot drop injury and the posterior tibial tendon being transferred to the dorsum of the foot and who, after a certain time, were unable to recover their movements. The posterior tibial tendon was harvested and taken subcutaneously to the dorsum of the foot after passing through an interosseous tunnel.[15]

For tendon-to-tendon transfer, the posterior tibial tendon was fixed to the anterior tibial tendon by the Pulvertaft method with non-absorbable suture while for tendon-to-bone transfer, when the posterior tibial tendon was brought to the lateral face of the leg after passing through the interosseous membrane, an "L" lengthening of the posterior tibial tendon was performed to overcome the insufficient length. The patients were divided into two groups according to the type of surgical technique for fixing the posterior tibial tendon to the dorsum of the foot (tibial posterior to the 2nd metatarsal, n=17), in group 1, and group 2 (n=15), in the posterior tibial tendon for transferring the anterior tibial tendon.[15] No significant postoperative complications were observed in either group, only one patient had a surgical site infection adequately treated with antibacterial prophylaxis. The results of the surgeries, six months after the operation, confirmed that the majority of patients in both groups were classified as excellent to good, according to the scale described by Carayon et al. And the researchers were able to confirm statistically that, in this sample, the insertion in the second metatarsal presents more favorable results in relation to the insertion in the tibialis anterior.[15]

Another essential recommendation, seen in Krishnamurthy & Ibrahim[7] is to assess the strength of the peroneal muscles before considering tendon transfer, because, as seen in the study by Khan et al.,[15] in the transfer, do not incur the problems addressed in this study. In the recommendations on the technique, the authors clarify that stable fixation to the bone requires wire sutures, staples or bone anchors and this combination of bone anchorage with tendon suture was suggested by Vigasio et al. and presented in this research. The tendon is secured with three or four nonabsorbable 2/0 sutures. The experiments for transferring the tibialis posterior to drop foot in leprosy stand out, a technique credited to Paul Brand, in 1955, while Leclère et al., in 2015, reported the anterior transposition of the lateral gastrocnemius muscle together with neurotization of the peroneal nerve. In the circumtibial route described by Ober, in 1933, and on Barr, he originally inserted the tendon in the intermediate or lateral cuneiform bone or in the base of the second or third metatarsal, bringing the tendon through the interosseous route.[15] In their conclusions, dynamic transfers present very good results. There is not much difference between the circumtibial and interosseous pathways. Tendon fixations are much easier to perform than bone fixations and can give excellent results. The bicaudal posterior tibial procedure presents good results.[15]

In the study presented by Vieira et al.,[9] when performing the transfer procedure in seven patients, used the Stanmore questionnaire, pre- and postoperatively, considering the factors pain, need for orthosis, ability to wear shoes, daily activities, muscle strength, degree of foot dorsiflexion and foot position. The surgical technique comprised the steps of a 3-cm incision on the medial face of the foot at the insertion site of the posterior tibial tendon in the navicular bone, enabling identification, isolation and tenotomy, and a krakov-type suture with vicryl 1 thread was performed on the its extremity, serving as an anchor point for its mobilization. Then, an incision was made on the lateral face of the leg to allow the passage of the posterior tibial tendon through the transmembrane after the blunt dissection.[9] Another incision was made in the dorsal region of the foot, exposing the lateral cuneiform, and a hole was made with a number 5 bur. a 5mm interference screw and this fixation should be performed with the ankle flexed at around 90º. If necessary, the tendon should be stretched to prevent the foot from leaving the surgery in dorsiflexion.[9] Another incision was made in the dorsal region of the foot, exposing the lateral cuneiform, and a hole was made with a number 5 bur. a 5mm interference screw and this fixation should be performed with the ankle flexed at around 90º. If necessary, the tendon should be stretched to prevent the foot from leaving the surgery in dorsiflexion.[9]

The researchers concluded that posterior tibial transfer via the interosseous membrane has provided satisfactory results and enabled patients to have a better quality of life, both in rehabilitation and in the less harmful effect of post-surgical complications according to the score presented by the choice questionnaire.[9] In retrospective studies reviewed by Marsland et al.,[10] it was possible to observe the lack of those that present satisfactory results or scientific evidence, because, due to the lack of this evidence, there was still a high risk of bias and no study comparing different postoperative protocols, thus, rehabilitation Early rehabilitation could not be recommended over standard rehabilitation. However, early rehabilitation appears to be safe when selected tendon transfers are performed in the fixed foot and ankle using interference screws. In addition, through the research carried out, the authors concluded that the analyzes investigated in the works on the transfer of the posterior tibial tendon for foot drop also showed an effective treatment for the various possible techniques. The tendon failure rate was zero for some protocols addressed for other techniques. No study reported the same outcome measure and, therefore, it was not possible to compare functional outcomes.[10]

Agarwal et al.,[16] performed a retrospective study on twenty (20) patients operated on for foot drop with events over one year over a period of five (5) years. In their procedures, they performed preoperative assessment of muscle power in all three compartments of the leg. They discussed that the most common tendon used to correct foot drop is the posterior tibial tendon, in agreement with what was already exposed and found in the literature. When both extensors and evertors are involved; the ideal is to use the tibialis posterior as the motor that eliminates the unopposed inversion force and restores dorsiflexion. If more power than tibialis posterior is needed, it can be supplemented with flexor digitorum longus to feed the extensor digitorum and hallux tendons as a double transfer.[5,13,16] They also mentioned other nerves that can be used, such as the anterior transposition of the lateral gastrocnemius muscle, a technique also mentioned by Nguyen[13] and presented in this research. Regarding the transfer via interosseous or circum-tibial route, the researchers say that both do not present a difference in the result, except that there is a slight increase in ankle dorsiflexion in the circum-tibial route, but it can produce more inversion deformity.[16]

Agarwal et al.,[16] performed the procedure of dividing the posterior tibial tendon into two glides that produce uniform traction across the forefoot, leading to a more balanced foot. The posterior tibial tendon was attached to the tibialis anterior and the other slip to the extensor digitorum longus and peroneus third tendons. They concluded that posterior tibial transfer for foot drop gives good results in terms of normal gait, high patient satisfaction with minimal donor site morbidity and low rate of complications. Lingaiah et al.,[17] performed early tendon transfer in all cases. This included exploration of common peroneal palsy with posterior tibial tendon repair and transfer via interosseous membrane performed in all cases. There was a significant improvement in the surgical outcome of 22 patients who had neurological recovery at around one year, early tendon transfer

significantly shortened the external splint period in these cases. The researchers are unanimous in strongly supporting the performance of early tendon transfer for all cases of foot drop. These results seen in the study by Lingaiah et al.,[17] differ from those seen in and other studies of this research, when the average duration of the surgical procedure ranged from 5.6 years, needing to ascertain whether it is possible to reduce the surgery time and facilitate the event that occurred without bringing complications to the patients. patients and, therefore, a future study with a very significant sample and a control group should be proposed.

Conclusion

It was possible to infer that, despite the positive results of the treatment being mandatory in the series employed, the diversity of cases and the lack of limiting prospective protocols between the series and a prospective evaluation with better statistical value and consequent significance prevent suggesting or choosing the best technique. The real effectiveness of the best technique used for fixing this tendon is far from being defined and requires studies with clinical methodological designs, as some researchers also took a position in their findings on the difficulty of choosing the best technique and having studies that did this distinction.

Acknowledgments

None.

Conflicts of interest

The authors declares that there is no conflict of interest.

References

1. Hillstrom HJ, Song J, Kraszewski AP, et al. Foot type biomechanics part 1: structure and function of the asymptomatic foot. *Gait Posture*. 2013;37(3):445–451.
2. Franklin S, Grey MJ, Heneghan N, et al. Barefoot vs common footwear: A systematic review of the kinematic, kinetic and muscle activity differences during walking. *Gait Posture*. 2015;42(3):230–239.
3. Stevoska S, Pisecky L, Stadler C, et al. Tendon transfer in foot drop: a systematic review. *Arch Orthop Trauma Surg*. 2023;143(2):773–784.
4. Carolus AE, Becker M, Cuny J, et al. The Interdisciplinary Management of Foot Drop. *Dtsch Arztebl Int*. 2019;116(20):347–354.
5. Grauwin MY, Wavreille G, Fontaine C. Double tendon transfer for correction of drop-foot. *Orthop Traumatol Surg Res*. 2015;101(1):115–118.
6. Aydin A, Topal M, Tuncer K, et al. Extramembranous transfer of the tibialis posterior tendon for the treatment of drop foot deformity in children. *Arch Iran Med*. 2013;16(11):647–651.
7. Krishnamurthy S, Ibrahim M. Tendon Transfers in Foot Drop. *Indian J Plast Surg*. 2019;52(1):100–108.
8. Cho BK, Park KJ, Choi SM, et al. Functional Outcomes Following Anterior Transfer of the Tibialis Posterior Tendon for Foot Drop Secondary to Peroneal Nerve Palsy. *Foot & Ankle International*. 2017;38(6):627– 633.
9. Vieira LMX, Fleury RBC, Nunes BS, et al. Análise pós-cirúrgica da transferência do tendão tibial posterior: uma alternativa para casos de pé caído. *Sci J Foot Ankle*. 2018;12(2):145–149.
10. Marsland D, Morrisc AM, Gouldd AER, et al. Systematic review of tendon transfers in the foot and ankle using interference screw fixation: Outcomes and safety of early versus standard postoperative rehabilitation. *Foot and Ankle Surgery*. 2022;28(2):166–175.
11. Wen X, Zhao H, Lu J, et al. Effectiveness of tibialis posterior tendon transfer for foot drop secondary to peroneal nerve palsy. *Chinese Journal of Restorative and Reconstructive Surgery*. 2020;34(5):591–595.
12. Stevoska S, Pisecky L, Stadler C. et al. Tendon transfer in foot drop: a systematic review. *Arch Orthop Trauma Surg*. 2023;143(2):773–784.
13. Nguyen LV. Tendon transfer for dysfunction of all tendons in leg excepting Achilles tendon and plantaris tendon following irreparable sciatic nerve palsy - A case report. *International Journal of Surgery Case Reports*. 2021;86(10):106348.
14. Monteiro TA, Zaddani E, Silva Júnio MRL, et al. Correção do "pé caído" por paralisia do nervo fibular, pela transferência do tendão tibial posterior para o dorso do pé via membrana interóssea. *Rev ABTPé*. 2012;6(1):3–10.
15. Khan MI, Ahmed O, Yasmeen S, et al. Tibialis Posterior Transfer for Foot Drop: The Difference in Outcome for Two Different Attachment Sites. *Cureu*. 2021;13(10):e1846.
16. Agarwal P, Gupta M, Kukrele R, et al. Tibialis posterior (TP) tendon transfer for foot drop: A single center experience. *J Clin Orthop Trauma*. 2020;11(3):457–461.
17. Lingaiah P, Jaykumar K, Sural S, et al. Functional evaluation of early tendon transfer for foot drop. *Journal of Orthopaedic Surgery*. 2018;26(3):1–7.