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Original Article

Non-surgical treatment of hallux valgus: practices of Brazilian foot and ankle specialists

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Abstract

Objective: This study aims to analyze how foot and ankle specialists in Brazil approach hallux valgus conservatively.

Methods: An online questionnaire on conservative treatment of hallux valgus was used to evaluate the practices adopted. Results were analyzed, and proportions were calculated to determine if there is a common treatment pattern or variations among specialists.

Results: There is a clear preference among Brazilian foot and ankle specialists regarding conservative treatment. Primary emphasis is placed on footwear adjustment and lifestyle modification, followed by the use of silicone protectors. The utilization of custom-made and prefabricated orthoses is less common compared to the preference for these methods among specialists worldwide. The literature tends to indicate that non-surgical methods primarily provide symptomatic relief to patients, with a negligible delay in the comorbidity progression.

Conclusion: For those opting for conservative treatment, there is a consensus in Brazil regarding the change of footwear and lifestyle, aligning with the preference of experts worldwide.

Level of Evidence III; Retrospective comparative study.

Keywords: Foot Deformities; Hallux Valgus; Conservative Treatment; Orthopedics.

Introduction

Hallux valgus (HV) is a complex, three-dimensional deformity that affects the general population and has a high prevalence in adults over 65 years old, affecting about 33% of these individuals. This deformity can cause pain and functional limitations, affecting the patient's gait[1-4]. Due to the deformity and alterations in gait, there is a predisposition to falls, loss of stability, and muscle weakness, with a decrease in quality of life. This negatively impacts various areas and may potentially trigger other injuries due to the increased risk of falls[5-8].

The number of HV surgeries performed in the United States increased by approximately 70% between 1994 and 2010, reaching over 400,000 procedures per year. This figure may be even higher, as there are no recent data available[7].

Treatment of HV can be carried out through surgical or conservative means, and often both techniques are used together to optimize patient recovery. When managing HV conservatively, foot and ankle specialists have a wide range of options to conduct treatment, ranging from wearing appropriate footwear to treatments with ultrasound. However, there is a limitation regarding scientific evidence to guide the

Study performed at the Hospital Felicio Rocho, Belo Horizonte, MG, Brazil.

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conservative treatment of HV, mainly due to a lack of strong evidence-based studies about it.

Certain scholars rationalize the dearth of studies with robust evidence by attributing it to the inherent difficulty in ascertaining whether patients genuinely adhered appropriately to the guidelines in the conservative treatment of HV[1,3,5,6,8,9].

Several studies assessed the preferences of specialists regarding conservative treatment of HV[1-5]. However, there is no data in the literature pointing to the most adopted choices among specialists in Brazil. Additionally, there is a lack of robust evidence on the most effective approaches to address HV. For these reasons, the aim of this study was to investigate how HV is non-surgically treated in Brazil.

Methods

This is a cross-sectional survey study done through an online questionnaire completed in February of 2023. All foot and ankle specialists affiliated with the Brazilian Association of Medicine and Surgery of the Ankle and Foot (ABTPé) received a link to answer the questionnaire either by email and/or WhatsApp. All participants signed an informed consent form prior to getting to the questions. The questionnaire completion was voluntary and did not result in any benefit or harm to respondents. Ethical approval was granted by our institution ethical committee.

Survey instrument

The questionnaire was prepared based on an Australian study and adapted to the Brazilian reality[1]. It was completed anonymously by respondents on the Google Forms© platform. Collected data were then exported to Microsoft Excel and converted into graphics for better explanation.

The questionnaire comprised 16 questions, wherein participants were queried about their age and years of experience in the field of foot and ankle specialization. Additionally, it sought insights into the average annual volume of HV cases operated upon by participants and the predominant surgical techniques employed. It encompassed questions related to preferences for conservative treatment modalities and others into the personal success rates associated with the techniques applied. The full questionnaire is available in Appendix 1 – Questionnaire.

Statistical analysis

Research results were entered into an Excel spreadsheet, where corresponding graphs and their respective percentages were generated. For questions where it was possible to select more than one choice, responses were separated individually to make it clear how many specialists out of the total number of respondents marked a specific alternative.

Results

The questionnaire was dispatched to 733 members of ABTPé. A total of 90 participants engaged in the survey, wherein 89 conscientiously addressed all questions, while one participant refrained from completing the questionnaire in its entirety. Most experts who participated in the study fell within the age range of 30 to 51 years.

More than two-thirds (67%) of participants prescribe some form of non-surgical treatment for HV. Among those who choose not to pursue any conservative treatment, the primary justifications are the lack of solid evidence supporting the effectiveness of conservative treatment for HV (37.5%) and the personal perception of inefficacy of non-surgical treatments (37.5%).

As shown in Figure 1, 18.8% of participants argued that HV is inherently a surgically treated condition and that they do not achieve favorable results with conservative treatment. Only 9.4% of participants cited patient refusal of non-surgical treatments for this comorbidity as justification.

For those specialists who opt for conservative treatment, this research demonstrates that 56.7% of them do not achieve satisfactory results. The questionnaire also indicates that the most common rationale for prescribing conservative treatment is the belief that non-surgical treatment can benefit the patient (50.8%), followed by direct patient requests to try something before surgery (49.2%). In this group, most professionals (54.1%) choose to recommend non-surgical treatment 30 to 90 days before surgery, while 34.4% of them opt for it 90 to 180 days before surgery.

Sixty-eight specialists answered the questions regarding their preferred methods for preoperative conservative treatment of HV. Among the most frequently utilized methods, footwear modification stands out as the primary choice (66,97%). This is followed by lifestyle adjustments (54.4%). Additionally, only 2.9% of participants prescribe injectable medications, and none recommended custom-made foot orthoses (Figure 2).

In the postoperative period, 85.6% of specialists recommend some form of physical therapy. Those who do not follow justify their decision by either not perceiving the benefits of

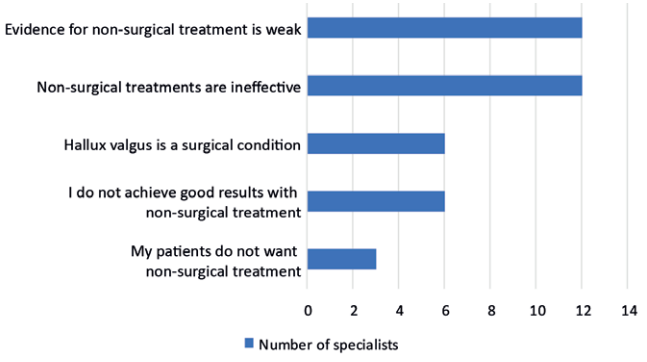

Figure 1. Reasons for not recommending conservative treatment for hallux valgus.

physical therapy after surgical treatment (66%) or expressing concern that physical therapy might negatively impact surgical outcomes (33.3%).

Among the 85.6% of participants who recommend postoperative physical therapy, 71.8% claim to achieve better results with the assistance of a physical therapist, and 61.5% of them report always prescribing physical therapy after all surgical procedures. The research suggests that 32.1% of participants opt to indicate physical therapy after the fourth postoperative week, while 25.6% of them start it after the second postoperative week.

The majority (55.1%) of participants continue physical therapy for four to eight weeks in the postoperative period. Ninety-eight percent of study participants reported positive outcomes with the physical therapist's routine follow-up after surgical treatment for HV.

Regarding preferences for postoperative physical therapy for HV, 58% of specialists recommend specific "foot core" strengthening, 74% advise scar tissue release and overall muscle strengthening of the patient's foot, 70.1% endorse stretching sessions, and 55.8% suggest lymphatic drainage. Only 5.2% of participants prescribe treatment with bandages (Figure 3).

Out of the 89 respondents who completed the questionnaire appropriately, 42.7% perform 10 to 30 surgical procedures for HV per year, followed by 36% who handle 30 to 50 cases annually (Figure 4).

The present survey of Brazilian specialists highlights the varied approaches to the surgical and conservative management of HV, as demonstrated in Figure 5. While preferences for conservative and postoperative treatments are well-documented in this study, further research is needed to understand how the complexity and severity of cases influence the choice of surgical techniques.

Discussion

This study is the first to investigate the practice of Brazilian foot and ankle specialists regarding HV conservative treatment. The most commonly employed surgical technique among Brazilian specialists is the chevron procedure, followed by percutaneous techniques. These results align with the general preference among Swiss orthopedists[10,11].

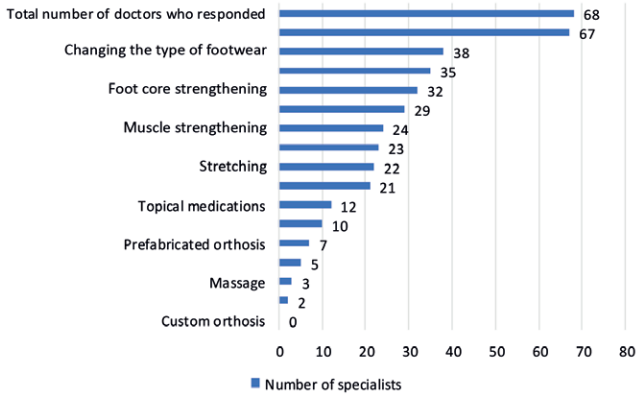

Figure 2. Personal preferences in conservative treatment.

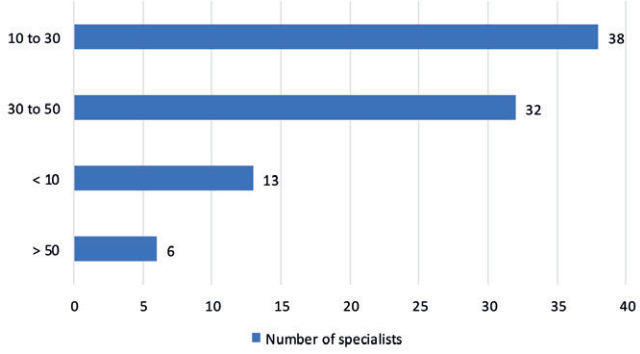

Figure 4. Number of hallux valgus surgeries per year.

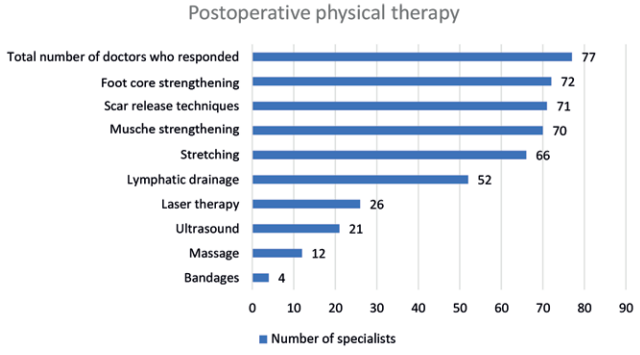

Figure 3. Personal preferences in postoperative physical therapy.

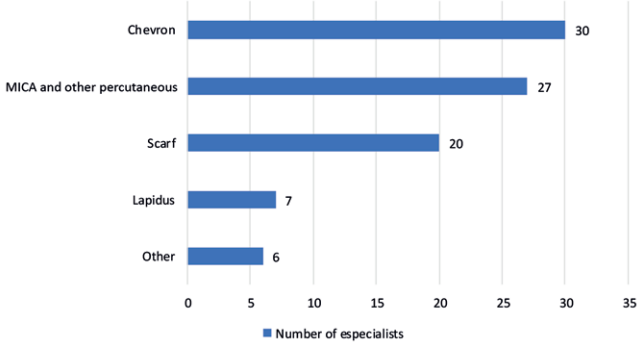

Figure 5. Surgical techniques used by Brazilian specialists.

The most recommended type of conservative treatment is a change in footwear, recommended by 97% of specialists who participated in the research; followed by lifestyle changes, ranging from physical activity to the time spent in an upright position. This aligns with findings emanating from global research endeavors[9-12].

Stretching exercises are often suggested (32%), while massages are rarely prescribed by the Brazilian community (4.4%). The use of silicone protectors (42%) and the strengthening of the foot core (47%) are also frequently prescribed by Brazilian specialists. German orthopedic practitioners extensively employ silicone protectors and toe separators[11]. The use of oral medication such as nonsteroidal anti-inflammatory drugs has a significant prevalence in the Brazilian community (33%). In contrast, the utilization of injectable medications is minimal (2.9%), despite this treatment modality being widely embraced in other nations[9,11,12]. The use of prefabricated orthoses (10%) and custom orthoses (0%) is not very common in Brazil, as well as the prescription of night orthoses (14%)[13].

A noticeable discrepancy in the use of orthoses for the non-surgical treatment of HV can be observed between Australian and Brazilian specialists. Hurn et al.[1] demonstrated a high recommendation for customized and prefabricated orthoses. The study also highlighted the high prevalence of lifestyle changes recommended for conservative HV treatment. This difference may be explained by the fact that many Brazilian foot and ankle specialists do not perceive substantial efficacy in non-surgical treatment. Despite a high prescription rate of conservative treatment (67%), most professionals do not report good results (56%)[1,14-16].

Several studies suggest that the use of rigid orthoses, such as toe separators, may provide swift relief for HV symptoms but does not improve pre-existing deformities significantly, exerting limited influence on the comorbidity progression. Conversely, physical therapy emphasizing foot core strengthening demonstrates more promising indications in delaying disease progression, albeit with a slower onset of symptom relief. The study concludes that combining orthoses with foot core strengthening offers superior prospects for retarding deformity progression and provides more rapid relief for HV symptoms[9,11,12,15].

The study conducted by Reina, in 2013, demonstrates there were no significant structural changes observed in the condition in patients using orthoses compared to those who did not use them. This finding corroborates the hypothesis proposed by other authors. This information may be utilized to justify the lesser prescription of non-surgical treatment as the primary therapeutic approach for HV[17].

The questionnaire also reveals a high (85%) prescription of physical therapy in the postoperative period. This is justified by the fact that the majority (71%) of professionals note better postoperative outcomes with the assistance of a physical therapist. The research showed that the Brazilian profile is to prescribe physical therapy between the second and fourth postoperative weeks, continuing for four to eight weeks, with a satisfactory result in 98% of cases. which is aligned with existing studies on HV management. A consensus can be observed in the type of treatment prescribed in the postoperative period, where strengthening the foot core and scar tissue release are part of most postoperative physical therapy guidelines[13,15].

The strengths of this study include its innovative approach as the first investigation of Brazilian specialists' practices for HV and the participation of a substantial number of board-certified foot and ankle specialists. However, the study has limitations. These include the inability to ensure responses from all eligible specialists, the potential for response bias given the voluntary nature of participation, and the lack of stratification by case complexity or severity. Furthermore, as a cross-sectional study, it does not allow for longitudinal analysis or direct intervention comparisons, which limits the depth of causal inferences that can be drawn. Future studies addressing these limitations, such as incorporating case-specific data or comparative designs, could provide a more comprehensive understanding of treatment practices.

Conclusion

For those opting for conservative treatment, there is a consensus in Brazil regarding the change of footwear and lifestyle, aligning with the preference of experts worldwide.

Authors' contributions: Each author contributed individually and significantly to the development of this article: TSB *(https://orcid.org/0000-0001-9244-5194) Conceived and planned the activities that led to the study, participated in the review process, approved the final version; CCC *(https://orcid.org/0009-0005-1849-3880) Interpreted the results of the study, participated in the review process, data collection, wrote the article; RZAP *(https://orcid.org/0000-0001-9692-5283) Assisted in the formulation and wide dissemination of the questionnaire. Participated in the final revision of the manuscript; DSB *(https://orcid.org/0000-0001-5404-2132) Statistical analysis, participated in the review process; GAN *(https://orcid.org/0000-0002-1994-5333) Formatting of the article, bibliographic review; ALGS *(https://orcid.org/0000-0002-6672-1869) Participated in the review process, data collection. All authors read and approved the final manuscript. *ORCID (Open Researcher and Contributor ID).

References

1. Hurn S, Vicenzino B, Smith MD. Nonsurgical treatment of hallux valgus: a current practice survey of Australian podiatrists. J Foot Ankle Res. 2014;1(1):1-7.
2. Kakwani M, Kakwani R. Current concepts review of hallux valgus. J Arthroscopy Joint Sur. 2021;3(8):190-7.
3. Oliveira RR, Leite RVB, Schneider CC. Conservative treatment for hallux valgus: systematic review. Rev Bras Ortop. 2021;56(1):44-9.
4. Nery CAS. Hálux valgo. Rev Bras Ortop. 2001;6(36):229-34.
5. Camargo LRS, Santos LS, Pereira MT. Halux valgo: atualização do tratamento cirúrgico. Rev Bras Ortop. 2019:4(54):359-64.
6. Salomão O. Hálux valgo: etiologia e tratamento. Rev Bras Ortop. 2005;4(40):147-54.
7. Hecht PJ, Lin TJ. Hallux valgus. Med Clin North Am. 2014;2(98):227-32.
8. Oliveira TL, Santos CM, De Paula Miranda L, Nery MLF, Caldeira AP. Fatores associados ao custo das internações hospitalares por doenças sensíveis à Atenção Primária no Sistema Único de Saúde. Cienc Saúde Col. 2021;26(10):4541-52.
9. Perera AM, Mason L, Stephens MM. The pathogenesis of hallux valgus. J Bone Joint Surg Am. 2011;93(17):1650-61.
10. Menz HB, Lim PQX, Hurn SE, Mickle KJ, Buldt AK, Cotchett MP et al. Nonsurgical management of hallux valgus: findings of a randomised pilot and feasibility trial. J Foot Ankle Res. 2023;16(1):78.
11. Iselin LD, Klammer G, Espinoza N, Symeonidis PD, Iselin D, Stavrou P. Surgical management of hallux valgus and hallux rigidus: an email survey among Swiss orthopaedic surgeons regarding their current practice. BMC Musculoskeletal Dis. 2015;16:292.
12. Glasoe WM. Treatment of progressive first metatarsophalangeal hallux valgus deformity: a biomechanically based muscle-strengthening approach. J Ortho Sports Phys Therapy; 2016;46(7): 596-605.
13. Ferrari J, Higgins JPT, Prior TD. Interventions for treating hallux valgus (abductovalgus) and bunions. Cochrane Database Syst Rev. 2009;2009(2).CD000964.
14. Reina M, Lafuente G, Munuera PV. Effect of custom-made foot orthoses in female hallux valgus after one-year follow-up. Prosthetics and Orthotics International. 2013;37(2):113-9.
15. Massachusetts General Hospital [Internet]. Physical Therapy Guidelines for Hallux Valgus Correction (Bunion Reconstruction). [cited 2024 Oct 3]. Available from: https://www.massgeneral.org/assets/mgh/pdf/orthopaedics/foot-ankle/pt-guidelines-hallux-valgus-correction-final.pdf
16. Kilmartin TE, Barrington RL, Wallace WA. A controlled prospective trial of a foot orthosis for juvenile hallux valgus. J Bone Joint Surg Br. 1994;76(20:210-4.
17. Mortka K, & Lisiński P. Hallux valgus—a case for a physiotherapist or only for a surgeon? Literature review. J Phys Therapy Scien. 2015 [cited 2024;27(10):3303-7.

Appendix 1. Questionnaire

1 – How old are you?

2 – How many hallux valgus surgeries do you perform per year?

☐ Less than 10 ☐ 10 to 30 ☐ 30 to 50 ☐ Over 50

3 – Which surgical technique do you use the most?

☐ Chevron ☐ Scarf ☐ MICA and other percutaneous ☐ Lapidus ☐ Other

4 – Do you offer any type of non-surgical treatment for hallux valgus?

☐ Yes ☐ No

5 – If not, what motivates you not to recommend it? (select more than one option if necessary)

☐ Hallux valgus is a surgical condition

☐ Non-surgical treatments are ineffective

☐ Evidence for non-surgical treatment is weak

☐ I do not achieve good results with non-surgical treatment

☐ My patients do not want non-surgical treatment

6 – If yes, do you achieve good results?

☐ Yes ☐ No

7 – If yes, what motivates you to recommend it? (select more than one option if necessary)

☐ Patient's age ☐ Patient's request

☐ I do not operate without first trying a conservative treatment ☐ I believe non-surgical treatment can benefit some patients

8 – If yes, Se sim, por quanto tempo antes de indicar a cirurgia?

☐ Less than 30 days ☐ 30 to 90 days ☐ 90 to 180 days ☐ Over 180 days

9 – If yes, what do you recommend to your patient? (select more than one option if necessary)

☐ Changing the type of footwear

☐ Prefabricated orthosis

☐ Custom orthosis

☐ Night orthoses

☐ Insoles

☐ Silicone protectors

☐ Bandages

☐ Physical therapy

☐ Stretching

☐ Muscle strengthening

☐ Foot core strengthening

☐ Massage

☐ Changing lifestyle habits

☐ Oral medications

☐ Injectable medications

☐ Topical medications

☐ From this point, the questions will be asked after the surgical procedure.

10 – Do you prescribe physical therapy after the surgical procedure?

☐ Yes ☐ No

11 - If no, what motivates you not to recommend it? (select more than one option if necessary)

☐ I don't see the benefit of physical therapy after surgery

☐ My patients don't want to do physical therapy

☐ I am afraid the physical therapist might "lose" the results of the surgery

12 - If yes, what motivates you to recommend it? (elect more than one option if necessary)

☐ Patient's age ☐ Patient's request

☐ I always prescribe physical therapy after surgical procedures ☐ I have better results with the help of the physical therapist

13 - If yes, how long after the surgical procedure do you recommend physical therapy?

- Immediately
- After the first week
- After the second week
- After the third week
- After the fourth week
- After the fifth week
- After the sixth week

14 - If yes, for how long do you maintain physical therapy?

☐ Less than 4 weeks ☐ 4 to 8 weeks ☐ 8 to 12 weeks ☐ More than 12 weeks ☐ Until the physical therapist discharges the patient

15 - If yes, do you achieve good results?

☐ Yes ☐ No

16 - If yes, do you ask the physical therapist to focus on specific aspects? (select more than one option if necessary)

- Bandages
- Stretching
- Muscle strengthening
- Foot core strengthening
- Massage
- Lymphatic drainage
- Scar release techniques
- Laser therapy
- Ultrasound