



ORIGINAL ARTICLE

Lack of correlation between plantar arthrosis of the first metatarsal joint and sesamoids and pain in patients after *hallux valgus* surgery[☆]

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KEYWORDS

Hallux valgus;
Arthrosis;
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Abstract

Objectives: To determine the relationship between osteoarthritis in the plantar region of the first metatarsophalangeal joint of the foot and patient pain after *hallux valgus* surgery.

Material and methods: A total of 28 patients undergoing *hallux valgus* surgery were examined. The patients were examined for pain in the plantar region of the metatarsophalangeal joint (sesamoid bones area), by looking into their medical records and by means of palpation during the physical exam. X-rays were taken to look for metatarsophalangeal arthritis, and PASA and sesamoid displacement were measured. During the surgical procedure, the metatarsal head was macroscopically assessed for arthritis according to the ICRS Score.

Results: Of the 28 patients, 18 had no pain, 7 had mild pain (VAS 1–3) and 3 had moderate pain (VAS 4–6). Macroscopically, all the patients had some degree of plantar osteoarthritis. Only 5 patients had radiological signs of metatarsophalangeal arthritis. There was no correlation ($P=0.44$) between pain and plantar osteoarthritis. There was a mild but non-significant correlation between PASA and osteoarthritis ($P=0.06$). There was a weak but significant correlation between patient age and arthritis ($P=0.04$).

Conclusion: Osteoarthritis in the plantar aspect of the first metatarsal head does not correlate with patient symptoms or with pain intensity in patients undergoing *hallux valgus* surgery.

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PALABRAS CLAVE

Hallux valgus;
Artrosis;
Sesamoideos

Falta de correlación entre artrosis plantar del primer metatarsiano y sesamoideos y dolor en pacientes intervenidos de *hallux valgus*

Resumen

Objetivos: Valorar la aparición de artrosis en la zona plantar de la primera articulación metatarsofalángica (primera MTF) en pacientes operados de *hallux valgus* y correlacionarla con la existencia de dolor preoperatorio.

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Material y métodos: Se valoraron 28 pacientes a intervenir de *hallux valgus* mediante osteotomía en «Scarf». Se observó si presentaban dolor en la zona plantar de la primera MTTF (área de los sesamoideos) en la anamnesis y la exploración. Se buscaron signos radiográficos de artrosis metatarsofalángica y se midieron el PASA preoperatorio y el grado de desplazamiento del metatarsiano respecto al sesamoideo medial. En la intervención se observó el grado de artrosis de la cabeza del primer metatarsiano y se valoró por la escala ICRS.

Resultados: Dieciocho pacientes no tenían dolor, 7 tenían dolor leve (EVA 1–3) y 3 moderado (EVA 4–6). Macroscópicamente todos los pacientes presentaban artrosis en la cara plantar del primer metatarsiano. En las radiografías solo 5 pacientes mostraban signos de artrosis metatarsofalángica. No hubo correlación significativa ($p=0,44$) entre dolor y artrosis plantar del primer metatarsiano. Se observó cierta relación entre aumento del PASA y mayor grado de artrosis, pero no se encontraron diferencias significativas ($p=0,06$). Se encontró una correlación débil, pero significativa ($p=0,04$) entre la edad de los pacientes y la artrosis del primer metatarsiano.

Conclusión: La artrosis en la articulación de la cabeza del primer MTT con los sesamoideos no se corresponde con la existencia de síntomas o la intensidad del dolor en esa zona en pacientes con *hallux valgus*.

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Introduction

Hallux valgus is one of the most common problems in foot pathology, causing pain and function limitation in many patients and often requiring surgery to correct it.^{1–3} The deformity produced in the first metatarsophalangeal joint can only be corrected satisfactorily by an operation and, in fact, there are more than 200 techniques described for correcting it, whether by acting on the bone or on the soft tissues.^{4–6}

Within the physiopathology of *hallux valgus*, several known phenomena have been described, such as the retraction of the hallux flexor and abductor, as well as dislocation with respect to the sesamoid bones caused by the deviation of the first metatarsus. It has been proposed that these mechanisms tend to perpetuate the deformity and can, in the long run, influence the appearance of osteoarthritis in the first metatarsus. Other influential factors in the appearance of osteoarthritis could be caused by increased mobility of the first ray, the relative position of the metatarsals or by their relative position due to the deformity.^{4,7,8} First metatarsus osteoarthritis contributes to the appearance of pain in these patients.

In *hallux valgus* surgery, osteoarthritis normally appears in the joint section of the head of the first metatarsus and in the zone of what is called the ‘‘bunion’’. In our experience, we have also observed various degrees of chondral ulcers in the plantar region of the head, in the area of articulation with the sesamoid bones, during these operations. Various authors have associated the appearance of these chondral lesions to factors as different as what is improperly called sesamoid bone deviation (the bone that is deviated is the first metatarsal) or the change in the distribution of pressure on the first metatarsal head when it shifts in the valgus direction and rotates. Other authors have tried to relate the chondral lesions under the first metatarsal head with different radiological parameters.⁹ Although such chondral lesions are well described in some studies in

the literature,^{9–13} hardly any attention has been given to whether this osteoarthritis is related to patient pain. Consequently, the relation that there could be between the degree of osteoarthritis under the first metatarsal head and the patient’s clinical symptoms and the prognosis of *hallux valgus* surgery is not well known.

Material and methods

We took a transversal sample from 28 patients to be operated on for *hallux valgus* correction in our centre. All of the patients were assessed in consultation before the surgery. The appearance of pain upon palpating under the first metatarsal head during this examination was evaluated, using a visual analogue scale (VAS). All of the patients presented an intermetatarsal angle greater than 15° in the preoperative radiographs.

Immediately after beginning the anaesthetic procedure, the patients were again asked about the appearance of pain under the first metatarsal head, exploring whether pain appeared when this area was palpated. The same surgeons operated on all of the patients, using the same technique. We corrected the deformity in all of the patients by scarf osteotomy stabilised with 2 screws. A medial approach was performed at the first metatarsal. When the first metatarsal head was exposed, we evaluated the state of the cartilage in the plantar and classified it according to the International Cartilage Research Society (ICRS) scale.

In the consultation, we took anteroposterior and lateral preoperative radiographs of the foot to operate in the load position. The type of foot was then determined from these images based on the length of the first metatarsal with respect to the second. We also assessed the proximal articular set angle [PASA]). In 2 cases, we could not recover the perioperative radiographs to calculate the PASA, so 26 patients were analysed. In addition, we evaluated the relative sesamoid position based on the abbreviated classification proposed by Malabar,⁴ which separates 5 degrees

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