



ORIGINAL PAPER

[Translated article] Position statement relating ankle fractures in major outpatient surgery

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Major outpatient surgery;
Outpatient ankle surgery;
Ankle fracture;
Arthroscopic ankle surgery;
Expert consensus

Abstract

Introduction: The increase in the prevalence of osteoporosis associated with ageing, and sports and traffic accidents, are responsible for the increase in ankle fractures. This fact emphasises the need to protocolise their care in order to provide greater clinical benefit to patients, and better cost–benefit ratios to the health system.

Aim and method: At present, there is no common framework for implementation of protocols and internal circuits of the Spanish centres for ankle fractures by means of major outpatient surgery (MOS), which is the final objective of this position paper. For this, the clinical and economic evidence of MOS, the local environment and the strategies for its implementation are reviewed, related to ankle fractures.

Clinical and economic evidence: The results showed a better cost–benefit ratio in outpatients compared to traditional hospitalisation, with lower complications and readmission rates and therefore significant cost savings.

Barriers and strategies: General and specific barriers are reviewed, as well as strategies and circuits for proper implementation.

Results: The results show lower complication and readmission rates together with significant cost savings. It entails a better cost–benefit ratio in outpatient care compared to traditional hospitalisation.

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Position statement: The implementation of MOS contributes to improve the quality of care, and the satisfaction of both, patient and health care team, while optimising the utilisation of resources. Ankle fractures in patients selected for both the underlying pathology, anaesthetic risk, and the type of fracture can be operated satisfactorily under the MOS.

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PALABRAS CLAVE

Cirugía mayor ambulatoria;
Fractura de tobillo;
Cirugía ortopédica;
Cirugía artroscópica de tobillo;
Consenso de expertos

Documento de posicionamiento respecto a las fracturas de tobillo en cirugía mayor ambulatoria

Resumen

Introducción: El aumento de la prevalencia de osteoporosis asociado al envejecimiento y a los accidentes deportivos y de tráfico son los responsables del incremento de las fracturas de tobillo. Este hecho pone de manifiesto la necesidad de protocolizar su asistencia para proporcionar un mayor beneficio clínico al paciente y una disminución de costes al sistema.

Objetivo y métodos: En la actualidad, no existe un marco común para la implantación de protocolos y circuitos internos en los centros españoles para la realización de fracturas de tobillo por la vía de la cirugía mayor ambulatoria (CMA), objetivo que persigue el presente documento de posicionamiento. Para ello se revisa la evidencia clínica y económica de la CMA, el entorno local y las estrategias para su implementación, haciendo referencia a las fracturas de tobillo.

Evidencia clínica y económica: Los resultados mostraron una mejor relación coste-beneficio en pacientes ambulatorios respecto a la tradicional hospitalización, con complicaciones y tasas de reingreso menores y, por tanto, ahorro de costes significativos.

Barreras y estrategias: Se revisan las barreras generales y específicas, así como las estrategias y los circuitos para la correcta implementación.

Resultados: Los resultados muestran una reducción de las tasas de complicaciones y reingresos, así como un ahorro de costes. Supone una mejor relación coste-beneficio en la atención ambulatoria en comparación con la hospitalización tradicional.

Posicionamiento: La implantación de la CMA contribuye a mejorar la calidad asistencial, la satisfacción del paciente y del equipo asistencial, así como la optimización de recursos. Las fracturas de tobillo en pacientes seleccionados tanto por la patología de base, riesgo anestésico y tipo de fractura pueden intervenir de manera satisfactoria en régimen de CMA.

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Introduction

The general context of major outpatient surgery

Healthcare systems are currently operating in limited resource settings, with the need for appropriate administration of them rising. It is increasingly required for all healthcare professionals to be involved in management, so as to achieve excellence in the quality of service with an acceptable financial cost. Major outpatient surgery (MOS) falls within the National Health System Quality as a model of care which includes (Royal Decree 1277/2003) therapeutic or diagnostic procedures performed under general, loco-regional or local anaesthesia, with or without sedation, which require short-term postoperative care, and for which patients therefore do not require hospitalisation. Outpatient surgery is used extensively due to the improvement in minimally invasive surgical techniques, the development of loco and regional anaesthetic techniques, easily administered pain control treatment and new communication techniques, which have all exponentially fostered its use.^{2,3} Appropriate

functioning of this unit essentially requires the creation of protocols with clear inclusion criteria, sufficient information to the patient and family members, and a joint interdisciplinary team working with the anaesthesiologist and nursing services to solve possible problems or any doubts. As a result of this, the Ministry of Health created an MOS guide in 1993, which was open to further reviews and updating and was of a guiding but not legally binding nature. The MOS had to be understood as a structured model which worked as a result of clinical care protocols.⁴

Major outpatient surgery in orthopaedic ankle surgery

In the field of orthopaedic surgery, MOS was first performed in hand and forefoot pathology, and later extended to shoulder reconstruction and knee ligament surgery, mainly in arthroscopic surgery. Arthroscopic ankle techniques are also suitable for outpatient surgery. Anaesthetic techniques with peripheral nerve blocks are the best analgesic for the immediate postoperative period, avoiding the side effects of using

opioids for pain control. The development of these anaesthetic techniques has advanced with the use of ultrasound applied to loco-regional anaesthesia which, together with the increased training and knowledge of anaesthesiologists, has allowed the expansion of indications in our speciality. Home analgesic protocols have also been established, in keeping with the surgical process performed. It is evident that the transformation of surgical procedures performed on an outpatient basis in orthopaedic ankle surgery (OAS) has been associated with significant cost savings without a greater number of complications,⁵ in addition to being characterised by an excellent perception of the perioperative process by the patient.

Major outpatient surgery in ankle fractures

The concept of this paper is to consider the possibility of managing ankle fractures on an outpatient basis. These fractures account for approximately 10% of all fractures, and more than half of all foot and ankle fractures.^{5,6} The prevalence of osteoporosis increased by increased longevity and accidents are the reasons for the increase in such injuries. There are studies that endorse MOS treatment of ankle fractures because of the potentially lower number of complications and lower economic costs, compared to inpatient surgery, and associated with a high level of patient satisfaction.^{3,7–9} They also describe lower rates of readmission and emergency department visits at 90-day follow-up if performed on an outpatient basis.⁵

Creation of the group and rationale for the document

For the medical and economic reasons mentioned above, it was decided, through the Spanish Society of Foot and Ankle Medicine and Surgery (SEMPT for its initials in Spanish) and the Spanish Society of Orthopaedic Surgery and Traumatology (SECOT for its initials in Spanish), to create a study group to protocolise and attempt to include MOS in ankle fractures in the service portfolio of different hospitals. All of this was based on cost reduction, improved safety and increased patient satisfaction. Scientific societies share a clear commitment to the sustainability of the health system, and are aligned with all those measures that, without reducing the quality of care, are aimed at ensuring and improving its continuity over time. Thus, this position statement regarding outpatient treatment of ankle fractures was created with the intention of protocolising the fractures.

Clinical and financial evidence regarding major outpatient surgery for ankle fracture

Major outpatient surgery evidence in big figures

The percentage of MOS in orthopaedic surgery and traumatology has been growing significantly from the 1990s to the present day, but Spain is still far removed from countries such as Canada and the USA, where approximately 90% of surgical procedures are performed as MOS. In these countries, clinical-economic studies have been conducted on

some ambulatory procedures such as ankle fractures. These studies, which are presented below, show a very high safety and significant cost-effectiveness.

Clinical evidence

Several studies have examined the increased risk of complications after outpatient ankle fracture surgery compared to inpatient surgery. Shen et al.⁹ showed, in a sample of more than 7000 cases, that hospital admitted patients had more complications (surgical wound infections, pulmonary embolism, urinary tract infection and pneumonia) than non-admitted patients. Weckbach et al.⁷ studied 810 patients, of which 256 cases were outpatients. Treatment in the MOS was effective and did not show a higher number of complications than the inpatient group. They pointed out that the conditions at discharge should be studied so that the patient could be included as a candidate for MOS. Malik et al.⁵ studied an insurance company's database of 5317 ankle fractures operated on as inpatients and 6941 treated as outpatients between 2007 and 2014. At 90 days after surgery, all recorded complications – pneumonia, acute myocardial infarction, acute renal failure, urinary tract infections, pressure ulcers – were significantly lower in the outpatient surgery group. The number of postoperative emergency department visits, and readmissions were lower in the MOS group. Other studies^{3,8,10,11} demonstrate the lower number of complications associated with MOS patients and restrict the selection of potential outpatients after ankle fracture surgery to closed fractures and patients without associated pathologies. Bullock et al.¹¹ studied the appropriateness of outpatient surgery during the COVID-19 pandemic and also found comparable results to conventional surgery, with only one patient out of 262 requiring admission for deep infection. Wolfstad et al.¹² also found similar results between admitted and non-admitted patients, with much greater cost efficiency and time management gains in patients undergoing MOS surgery. In their paper they present a clinical guideline for ambulatory ankle fracture which they claim contributed significantly to institutionally providing a comprehensive improvement in the process.

Financial evidence

Several authors have quantified the savings associated with MOS in ankle fractures. Malik et al.⁵⁰ studied the costs per process in a database of over 12,000 ankle fractures (with approximately half in MOS and half inpatient). The mean cost was \$9000 cheaper in the outpatient group (\$12,923 vs. \$21,866, $p < .001$). In the same study, the safety of outpatient treatment of ankle fractures was established. Stull et al.¹³ also quantified the savings between groups for surgery of a simple fibula fracture, depending on whether the patient was reimbursed by Medicare (\$4125 for MOS versus \$12,920 for 3-day global admission) or reimbursed by private insurance (\$11,459 versus \$18,613). They also published the annual cost in reimbursement nationally (US) and it was, for the same type of ankle fracture, \$419,327.612 for MOS and \$796,033.050 for inpatients, with \$367 million in savings. Even with an adjustment for potential readmissions by 25% of cases, they still estimated an annual national

savings of \$282 million. Bettin et al.¹⁴ studied 148 patients with ankle fractures (61 admitted and 87 non-admitted) and found a 31.6% saving in the MOS group, with no difference in complications or readmissions. Khakha et al.¹⁵ also demonstrated cost savings, which they estimated at over £1300, in a study between admitted and non-admitted patients. They particularly emphasised preoperative management without admission to optimise costs, in case of phlyctens or health problems that precluded immediate surgery. In turn, Varacallo et al.¹⁶ demonstrated significant savings with little difference in complications and readmissions between admitted and non-admitted patients and proposed that ankle fractures should be a preferred target for inclusion in cost containment protocols.

Overall identification of the advantages of major outpatient surgery

Ankle fractures are one of the most frequent surgical emergencies in orthopaedic surgery and traumatology, and their incidence will increase as the life expectancy of the population increases. Its complications are costly. The overall advantages of MOS are well known and, in the case of ankle fractures, there are some aspects that can be optimised to make the ambulatory process optimal, resulting in greater clinical benefit for the patient, cost reduction for the health system, and improved management for the hospital. The entire surgical team must also be part of the benefits of this equation, and not only of the implementation and development commitments. In this regard, in order to achieve the greatest benefits, and following a thorough review of the available literature on ankle fractures, it is essential to identify which fractures may be amenable to outpatient surgery. There must be a clinical guide that formalises the process and provides medical-legal support to the surgical team, the manager and the patient on a procedure with proven evidence of safety and efficiency. After analysis of the scientific evidence published in the literature, most of the studies are retrospective. However, there are already prospective studies with level II evidence that will be the guide for adopting, from a medical and social point of view, the convenience of the outpatient procedure for ankle fractures which should be considered by all parties involved as preferential implementation.

Major outpatient surgery in ankle fractures in the local environment

One of the most important indicators of MOS care quality is the percentage of admissions after an intervention, whether it be immediate or deferred, with appropriate patient selection and pathology being the most relevant aspects to take into account.¹⁷ The development of Wide-Awake Local Anaesthesia No Tourniquet (WALANT) techniques in recent years has made outpatient care generalised in trauma processes, initially those relating to hand and wrist.^{18,19} Advances in anaesthetic techniques and postoperative pain control techniques would allow the spectrum of trauma pathologies treated with MOS to expand. These would include ankle fractures, which are currently not included in

official guidelines of recommendation.^{20,21} At present, MOS in ankle fractures in Spain is limited to use in centres which have independently included this procedure in their protocols and internal mechanisms. This absence of a common framework is the main justification for publishing this paper of consensus.

Barriers and strategies for implementation

In today's COVID 19 pandemic setting, the care pressure in hospital centres has led to hospital bed occupancy above normal rates, resulting in the suspension of programmed surgery. The use of major outpatient surgery is the most appropriate option for this surgical activity, in a safe environment, without the need to occupy hospital beds, that may therefore remain available for other patients. With regard to foot and ankle conditions, many different types of surgery have been incorporated into the use of MOS, including Achilles' tendon rupture or forefoot surgery. Ankle fracture is an acute pathology which in certain cases may be operated on using MOS. To do so requires the establishment of appropriate inclusion criteria and the consideration that any implementation must overcome general and specific barriers and use clear specific strategies.

Barriers

The use of MOS involves both general and specific barriers, with regards to the potentially treatable pathology using this procedure, as described below:

- **Legal:** National legislation and norms may impede the changes required for outpatient surgery, compared with traditional hospital inpatient surgery. This barrier no longer exists in our environment.
- **Financial:** The available scientific evidence shows there is a better cost-effective benefit in favour of MOS compared with the same procedures performed in the traditional hospitalisation regime. However, no occasions, it could be the case that it would be more financially beneficial for the hospitals or surgeons for the patient to remain in the hospital for at least 24 h, should the stipulated reimbursement for surgery require hospital admission.
- **Educational or cultural:** Both healthcare professionals and patients could be reluctant to make changes. The absence of educational programmes, seminars or publications on outpatient surgery reduces awareness of its benefits.
- **Facility design:** MOS requires specific units (MOSU or ICUs) with clearly defined criteria and appropriate organisational channels. Constructing and equipping an MOS unit requires material and human resources. A major limitation for MOS procedure implementation occurs when the hospital installations are not appropriately designed or adapted to facilitate outpatient surgery, both internally (facilitating patient flow) or externally (patient accessibility).
- **Home-based and community support:** The lack of community services, and suitable home-based support, could hinder the outpatient surgery process for a certain number of patients who require it.

- **Organisational barriers from the procedure:** Since ankle fracture is an acute pathology, encompassing different types (open, closed, bimalleolar, trimalleolar, etc.) and, in many cases, is associated with the involvement or compromise of soft tissue, optimum coordination in preoperative planning is essential between the multidisciplinary team members (surgeon, anaesthesiologist), in addition to correct prior control, in the case where surgery is scheduled as a deferred emergency in MOS regimes.

Strategies

Major outpatient surgery creates an innovative focus for surgical care and like all innovative processes, initial resistance to change may occur. Consequently, awareness and communication regarding MOS procedure benefits are essential for overcoming barriers associated with fear or resistance to change. With this aim in mind, precise and appropriate information on the procedure is to be given, with the focus on both patient and healthcare professionals and nursing staff, in the areas of primary and specialised care, thus establishing the necessary bases for its acceptance and development. From a financial viewpoint, as previously stated, although evidence is in place that MOS is cost-effective, the reimbursements must be compatible, particularly when the costs of outpatient procedures are lower than procedures involving hospital admission. The problems during implementation of major outpatient surgery may arise in all phases of the process, from insufficient preparation or supply of equipment and installations or an inappropriate selection of patients for the procedures, or a lack of training in the staff assigned to the said MOS units. Suitable investment in installations and personnel training is essential. The key factor for success in surgical procedures is determined by meticulous selection of the patient by the surgeon, considering the medical, surgical, anaesthesiologic criteria and those relating to pain control, as well as the impact of the said patient's personal and social characteristics. At present there are complex surgical techniques which can be performed using minimally invasive surgery, and also anaesthesiologic and analgesic techniques which are particularly suited to outpatient surgery. Following initial patient selection by the surgeon and once the malleolar fracture had been stabilised, if it complies with MOS criteria, the procedure established for it would follow (preoperative study, evaluation by the anaesthesiology department and scheduling of the outpatient surgery). Patients with significant oedema of the ankle should be deferred and reviewed by the outpatient department in keeping with the stipulated time periods. Patients would be contacted by phone prior to surgery with 24 h notice, to confirm surgery and remind them of preoperative instructions. Postoperative follow-up would also be made 24 and 48 h after surgery through telephone contact with the patient by the unit's nursing staff. Usually, the highest number of postoperative consultations are for pain or insufficient information regarding discharge. Therefore, the appropriate pain management linked to complete information on the procedure and coordination of the multidisciplinary team involved (surgeon, anaesthetist, nurse, physiotherapist) are essential on discharge, to minimise complications,

the demand for emergency service consultation, and possible postoperative admissions attributable to controllable factors.

Group of experts positioning. Key messages for the local medical society

- MOS activity should be enhanced in the OAS setting.
- The advances in anaesthetic and postoperative pain control techniques would mean that the spectrum of trauma pathologies such as ankle fractures MOS could be used on would increase.
- Ankle fractures in *patients selected* both due to underlying pathology, anaesthetic risk (ASA 1 or 2) and fracture type could be satisfactorily operated on by MOS.
- Open fractures, irreducible dislocation fractures, unstable fractures (comminuted, losses of reduction, etc.) should preferably be treated in inpatient surgery.
- It is highly important to create a *structured mechanism* with involvement of medical staff (anaesthetists and surgeons) in addition to nursing and administrative staff.
- It is essential for *appropriate patient information* to be available, together with strict follow-up of the immediate postoperative period, to improve pain control and avoid the need to use hospital emergency services.
- The surgical treatment of ankle fractures in MOS signifies a major gain in efficiency and a reduction of hospital resources.
- Recent studies endorse the MOS treatment of ankle fractures, reporting a lower rate of complications and an increase in the perceived quality of perioperative patient care.

Level of evidence

Level of evidence IV.

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Conflict of interests

Collaboration in training activities with Johnson & Johnson and Smith & Nephew, without these activities having had any impact on the creation of this paper.

Uncited reference

1.

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