

First Approach to Minimally Invasive Surgery for Hip Fracture- Short CommunicationAparicio LM¹, Aparicio LM², Estupiñan LMM³, Carro RD⁴, Pazos CP^{5*} and Plain LD⁶¹Department of 14th year resident of Orthopedics and Traumatology, Provincial General University Hospital “Mártires del 9 de Abril”, Cuba²Department of 23rd year resident of Orthopedics and Traumatology, Provincial General University Hospital “Mártires del 9 de Abril”, Cuba³Department of Doctor in Medical Sciences, II Degree Specialist in Orthopedics and Traumatology, Full Professor, Provincial General University Hospital “Mártires del 9 de Abril”, Cuba⁴Department of I Degree Specialist in Orthopedics and Traumatology Provincial General University Provincial General University Hospital “Mártires del 9 de Abril”, Cuba⁵Department of I and II Degree in Comprehensive General Medicine, Faculty of Medical Sciences of Sagua la Grande, Cuba⁶Department of 3rd year resident of Orthopedics and Traumatology, Provincial General University Hospital “Mártires del 9 de Abril”, Cuba***Corresponding author:**

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1. Introduction

Hip fractures are very common in elderly people. Several epidemiological studies have suggested that the incidence of this type of injury is increasing, because in recent decades the life expectancy of the general population has increased [1]. These fractures are associated with considerable morbidity and mortality, since 15-20% of patients die from this cause.

The main causes of these fractures in elderly patients are usually moderate or mild trauma; however, in young patients the greater frequency is due to high-energy trauma [2]. The elderly patient should not be kept bedridden, which is why surgical treatment, mobilization and early loading are currently advocated, a condition that can be effectively achieved with the Dynamic Hip Screw (DHS). The development of the DHS was a breakthrough in the treatment of hip fractures and even today, it is considered in developed countries as a gold standard in the treatment of these fractures.

Every fracture evolves towards consolidation with pain, inflammation and reflex immobility, which leads to what is known as fracture disease, which if not receiving adequate treatment leads

to muscle atrophy and generates adhesions that, when taken to an extreme, cannot be reversed, determined sequelae that limit functionality [3]. An adequate quality of life is guaranteed by free and painless movement, this is the philosophy that motivates us to select a technique for fixing fractures that allows us to achieve total mobilization and promote rapid revascularization of bone and soft tissue.

The biological principles of osteosynthesis can be summarized in a reduction, realignment and remote manipulation of the fracture site, preservation of the soft tissues (indirect reduction techniques), conserving the blood supply to each fragment and the use of bio-compatible materials, with exposure limited surgery.

Minimally invasive osteosynthesis is a method in which the percutaneous use of blades to remotely fix the fracture site through minimal exposure is an alternative procedure for the treatment of hip fractures and saving blood. The purpose of this article is to delve into the evaluations based on our first results and analysis of current publications on the subject and thereby obtain the foundation to work on the subject.

A prospective study of 31 patients who underwent surgery was

carried out, a minimally invasive technique was used as an approach to place the osteosynthesis, which was performed with a DHS plate nail. The study universe consisted of 228 patients admitted with hip fracture between January 1, 2019 and December 31, 2020, at the Hospital Provincial Universitario Mártires del 9 de Abril.

According to the distribution of hip fractures in the AO classification, we found that most of the cases belong to group 31. A1.1 with 17 patients, however there is no significant difference with respect to the hip affecting either right or left, but with respect to the size of the wound if there is a difference, as well as in the number of holes in the sheet used. The average time minutes depends on the type of fracture. Only four patients were transfused.

Table 1. Distribution of the characteristics and management of hip fractures with minimally invasive surgery with a DHS plate nail.

Type of fracture	Affected limb		Wound size		Number of holes		Surgical time		Transfusions
	Right	left			Pre- Operat	Trans-Operat	Post- Operat		
31.A1.1	9	8	2,8 cm	2	-35	1	-	-	
31.A1.2	6	5	3,4 cm	3	38- 42	-	-	1	
31.B2.1	1	2	4,1 cm	4	40- 46	1	-	1	

Legend.

- Type of fracture
- According to AO classification.
- Average surgical wound size in centimeters.
- Number of holes in the DHS sheet used.
- Average time of surgery.

Minimally invasive surgery with the DHS system is one of the most widespread current systems [4, 5] and shows an advance in the surgical act, this involves the reduction of tissue damage and blood loss of the conventional approach, a shorter surgical time, a smaller wound, more aesthetic and with less risk of infection [5, 6, 7].

You should always try to achieve the best possible anatomical restoration, stable fixation is the most important factor, if we want to achieve a satisfactory bone repair, since excessive instability of the fragments induces osteolysis, delays repair and even failure in the repair process. The Surgical Technique must be as atraumatic as possible, where there is no exaggerated manipulation of the tissues, and very careful irrigation of the fragments and the affected bone is required, all under the best possible conditions. Whenever osteosynthesis allows it, early mobilization of the affected limb should be started, since this is an important stimulus for osteogenesis, the rapid return to activity, notably decreases the negative effects produced by the fracture disease, minimizing; muscle atrophy, adhesions and ankylosis.

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