Hospital readmission rates following primary total hip arthroplasty: present and future in sight

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The number of total hip arthroplasties has been rising last decades, and it's going to be more for futures decades. Coxarthrosis is the most common diagnosis that led this procedure and it is well known that it is growing in prevalence with the progressive aging population. In 2020 it was estimated that 18.2% of US Americans will be diagnosed with arthritis (1). About 10% of patients, who were undergoing total hip arthroplasty, will require the same procedure in the contralateral hip the following year. This percentage rises to 20% in the next 5 years, making a total of 42% of the patients who were undergone bilateral total hip arthroplasty (2). In view of the data, we are faced with a common procedure with growing interest. The readmission rate published to date is around 3.65% (3).

Economic difficulties of nowadays, give more value to efficient interventions, and a frequent procedure such as total hip replacement should not be excluded from that aim. Since the first total hip replacement was performed, some things have progressed in the development of the technique, which have resulted in a small risk derived from intervention. Early mobilization to 24 h after surgery, the recent use of tranexamic acid for bleeding control (4), and standardization of the procedure (5) are involved in the successful global results. Furthermore, the fact that it has become a relatively common procedure in many hospitals, even in those considered secondary ones, has made surgeons experience could be high (6).

Thanks to set up National Registers of knee and hip replacements, we can better assess these procedures and their complications. But few are the studies in the field of orthopedics that we can considered as level one of evidence, and conclusions are hardly generalizable. In addition, certain limitations are inherent to the national registers database such as the hospitals included, the no evaluated conditions and they may suggest various confounding factors. Therefore, if we think of national records as diagnostic tests, we can say that the records have high sensitivity, but require more specific studies to reach valid conclusions.

The mean age of hip prothesis replacement, is between 68 and 79 years (7). An elderly age makes the number of comorbidities presumably be higher, and therefore we should not treat the patient only as a part, if not as a whole. In an interesting article recently published by Mednick *et al.*, regarding prognostic factors of hospital readmission in patients with total hip replacement, the greatest number of readmissions were secondary to comorbidities of these patients and not just for the complications of the own intervention (3). Mednick *et al.* uses the current procedural terminology (CPT) to include the patients in study. Despite not taking into account the previous diagnosis that led to the intervention, which affects the number of complications and hospital readmissions (8,9), confirms that a high percentage of readmissions after hip arthroplasty due problems, are not directly related to the surgery itself. Therefore it is on that topic where it seems we have to improve and focus the vision near future. For an orthopedic surgeon, the management of these comorbidities is, in many cases, a challenge that is difficult to handle, and where the evaluation of a multidisciplinary team seems necessary. The group of hospitalists professionals (geriatricians, internists or general practitioner doctors) seems increasingly in importance in recent years. Berend reported after 1992 no mortality after the inclusion of internal medicine team in the perioperative time of bilateral single time hip arthroplasty (10). One of the

main differences between the two moments was the decline in morbidity and mortality of its first patients compared to the second ones. This difference may be related with the multidisciplinary hospitalist team in the perioperative team. In a sample published of 339,319 total hip replacements, the orthopedic surgeon requested in 63% of cases medical consultation, being much higher in patients with more than two comorbidities, which as it is known are the more frequent situation in total hip arthroplasty (11). These results agree essentially with the statement made by Manning in his series of subsequent readmissions. Therefore, the idea of controlling perioperative morbidities, seem more important than we could think in a first time and it does not mean a greater number of days of hospitalization (11). In our institution since year 2011, perioperative medical care is assumed by internal medicine team in selected patient (elderly patient with more than two comorbidities), whose presence has been shown to improve the comorbidities control, adjust up to 62% of cases, the oral medication of previous diagnoses, and increase patient satisfaction. It may be tempting to think that treating patients is cheaper than prevent complications. In modern medicine is well known that to make a good prevention is more efficient than complication treatment.

The obesity epidemic continues increasing. It is estimated that the risk of requiring a total hip replacement is 8.5 times higher in patients with a BMI of 40 or more (12). One of the reasons we could give, following this fact, is that obesity has been associated as a risk factor for developing osteoarthritis (13). The reality is that the majority of patients with coxarthrosis are obese, and therefore, these are the kind of patients more common in these interventions. His influence on the outcome and complications of the surgery, has been the subject of several studies last decade. Although for years, some authors found no major problem in intervention of obese patient (14,15), the current tendency is to think that actually, it is. Haverkamp in 2011 published a meta-analysis showing a greater tendency to postoperative complications in obese patients (16), however, it was not clear that these complications, were following a greater number of hospital readmissions. The new concept reported by Mednick *et al.* associate obesity as an independent prognostic factor for hospital readmission, objectified by a high BMI (greater than 40), with twice risk of readmissions in obese patients than in those with normal weight (3). We should note that technically, the procedure of total hip arthroplasty in a patient with a BMI above 40, is more demanding for the surgeon, with more difficulties to avoid soft tissue damage, more surgical time and bleeding and increased risk of thromboembolism (17-19). Besides this, we must add the higher frequency of diabetes and cardiovascular disease in obese patients. Therefore, the attentions to obese patients are particularly important in our procedures and the multidisciplinary approach is essential, and should be taken into account from the preoperative.

Thinking that primary hip replacement is an elective surgery, whose successful results are compromised in patients with a BMI greater than 40, or those called "super obese" by Schwarzkopf *et al.* (20), and considering that as load joint, a lower weight can lead to symptomatic improvement, the obesity surgery should be a first choice in obese patients (BMI over 40), especially if a poly articular load joint pain is present. If we are in front of a young patient with these characteristic, with more reason we should start focusing on that side. It is difficult to determine the value of BMI in which we must think of a previous surgical or medical treatment of obesity. But the cited ideas should aid us to make the best option.

To determine the risk factors for hospital readmission is an important task, and should be a challenge for the future. Efforts to improve the technique and technology of implants help us improve a part of the process. We must to ensure comprehensive care of the patient in his globality, to improve hospital readmission rates.

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