Editorial: Minimally invasive surgery options in managing shoulder osteoarthritis

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Over the past 30 years, highly refined techniques leading to innovative approaches and major advances in Orthopaedic Surgery have occurred, resulting in different so-called minimally invasive procedures.

The evolution of surgical capabilities with the introduction of minimally invasive techniques recently begins to take shape claiming undiscussed advantages such as limited exposure, limited damage to surrounding tissue, reduction of post-operative pain, reduction in the length of stay in the hospital, in time to return to work, and in overall cost [1].

Although minimally invasive surgery have become widespread for hip or knee arthroplasty procedures, this approach is still not commonly undertaken for shoulder joint replacement [2].

Shoulder resurfacing technique has recently gained popularity as a minimal invasive alternative to conventional shoulder arthroplasty for the treatment of glenohumeral arthritis [3, 4].

Understandably, patients affected by shoulder osteoarthritis who read or hear about the advantages of smaller incisions and a speedier recovery are eager to opt for the aforementioned technique. On the other side orthopaedic surgeons have in their hands different minimally invasive surgical options to adopt in order to effectively manage shoulder gleno-humeral joint arthritis.

Over the years standard shoulder arthroplasty was demonstrated to be a reliable procedure, after conservative attempts failure, both to relieve pain and restore function in well-selected patients [4].

Recently resurfacing technique offers a new minimally invasive surgical option with respect of conventional arthroplasty. While conventional shoulder arthroplasty involves removal of the entire humeral head followed by placement of an intramedullary stem into the proximal aspect of the humerus, resurfacing technique consists of reaming the proximal portion of the humeral head and fitting a metal-alloy cap over the remainder of the head [4, 5]. As the standard procedure the humeral component may or may not be associated to a glenoid component [4]. Another recent minimally invasive attempt is represented by partial resurfacing prosthesis, consisting of a tapered post and cobalt-chromium surface component that screw together [6, 7].

The latter combined with biologic resurfacing, also known as interpositional arthroplasty, seems to obtain great consent especially when treating young active patients, but further investigations are required [8].

Some authors proposed arthroscopic glenoid resurfacing as a surgical treatment for glenohumeral arthritis in the young patients reporting optimal mid term results [9].

Ultimately there is very little in the literature of arthroscopic joint debridement for osteoarthritis unless it is confined to early stages in which the humeral head remains spherical and concentrically reduced within the normal glenoid. On the contrary, the lonely debridement performed for degenerative process involving both sides of the joint was demonstrated to lead to unsatisfactory results [10].

Considering the potential advantages of surface replacement and its reliability, confirmed analyzing both

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early and long-term follow-up demonstrating similar clinical results of those for stemmed implants at the same intervals, some fundamental aspects should be considered [4].

First of all the concept of the resurfacing procedure is to mimic the normal anatomy as closely as possible replacing only the damaged surface of the joint, thus preserving the bone stock whenever possible. Completely preserving the neck and more than 50% of the humeral head is beneficial with regard to restoration of shoulder biomechanics in terms of retroversion/inclination of the humeral head, off-set, and radius of humeral head curvature [11–13].

Secondly proper surgical approach and technique, allow to keep the skin incision to a minimum, but sufficient to allow clear exposure, proper positioning of components, and appropriate soft tissue balancing. For this reason concealed axillary incision is preferred instead of the standard deltopectoral approach [14].

While many patients are candidates for minimally invasive arthroplasty procedures, minimally invasive surgery should probably not be used in obese or very muscular individuals. Also, revision surgery through a minimally invasive approach may prove problematic. The ideal patient should be young, of normal build, healthy, motivated, with a preserved bone stock and aware of the possible disadvantages of this type of surgery.

The term minimally invasive surgery is somewhat misleading: even though the technique offers advantages, possible disadvantages have to be considered: superficial nerve injury in shoulder surgery with the anterior incision, fracture of the humerus during implant insertion, limited implant choices, incorrect implant positioning, can occur.

The orthopaedic surgeon must be experienced in appropriate patient selection. Minimal disruption of soft tissue and the potential for faster recovery are attractive benefits. However, minimally invasive surgical procedures must meet the same standards and offer the same successful outcomes as traditional, larger-incision operations technique.

Acknowledgments The author thanks Dr. Francesco Pegreffì for his support in this paper.

Conflict of interest None.

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