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CORR INSIGHTS®

CORR Insights®: Foreign Body Reaction to Acellular Dermal Matrix Allograft in Biologic Glenoid Resurfacing

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Where Are We Now?

Glenohumeral joint arthritis in young patients poses a challenging problem for the orthopaedic surgeon. Ten-year survivorship for total shoulder implants in young patients has been reported as low as 62.5%. Glenoid failure [1] is the most common cause for revision. Revision of a loose glenoid is technically challenging due to glenoid bone loss and polyethylene induced osteolysis. Unfortunately, hemiarthroplasty for patients less than 60 years old has a 4.5-times higher risk of revision surgery in early followup compared with total shoulder arthroplasty [2]. In attempting to bypass the glenoid component failure and improve the results of hemiarthroplasty, surgeons search for biologic options to address an arthritic glenoid. Multiple tissues have been used to resurface the glenoid, including autologous joint capsule and fascia lata, allograft Achilles or meniscus and acellular matrix-based scaffolds. These acellular grafts should provide a substrate allowing for the possibility of repopulation of the tissue with host cells [4]. Results for these techniques, however, have not been promising, demonstrating a 26% reoperation rate at just 2-years followup [3].

Where Do We Need to Go?

Namdari et al. should be commended for analyzing the potential causes of failure when biologically resurfacing the glenoid in young patients with osteoarthritis. In the study, Namdari and colleagues describe two cases of a foreign body reaction to GraftJacket® (Kinetic Concepts Inc., San Antonio, TX, USA), with histologic evidence for a monocyte and multinucleated giant cell response. The authors exclude infection as a cause of failure through bone scan and cultures held for 14 days to exclude low-grade infection by organisms such as *Propionbacterium acnes*. *The improvement in pain* after implanting a glenoid component supports the suspicion that the foreign body reaction was the pain generator, although the authors do not state whether the humeral implant was revised. This study highlights the unpredictable reaction to what is believed to be hypo-immunogenic tissue. Since no study has demonstrated superiority of hemiarthroplasty with biologic resurfacing over hemiarthroplasty alone, the addition of a material that could incite such a reaction does not appear to be clinically indicated.

How Do We Get There?

The cause of the foreign body reactions may be more complex than presented. Confounding factors include the

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complex process of chondrolysis in one patient, and the unknown make up of the surface film and metallic particles that develop between a metal humeral head and the soft tissue of the glenoid (implanted acellular dermal graft, cartilage, glenoid labrum). The problem of extending the longevity of the glenoid component in the surgical treatment of glenohumeral arthritis in the young, active patient has not been solved. The study authors should be commended for the critical examination and reporting of their failures, which helps other surgeons avoid similar problems, and provides insight for future investigators. It is not clear whether biologic resurfacing of the glenoid will have future indications for this population, as it appears neither as effective nor as cost-effective as glenoid reconstruction with cemented, all-polyethelene components. The elevated early failure rate of biologic resurfacing of the glenoid suggests the primary effort at improving outcomes in this patient population should be directed towards improved long-term fixation of the glenoid component. Research into developing non-reactive materials that provide scaffolding for biologic growth is ongoing, but I doubt whether further inquiry in this direction is likely to produce a cost-effective intervention that will help patients.

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