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Radial Nerve Palsy after Magnetic Resonance Shooting: A Case Report about Latarjet Procedure

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Abstract: Transfer of coracoid to the anterior glenoid became more popular with various successful results. This case is about the failure of the fixation with MRI (Magnetic Resonance Imaging) shooting and a temporary radial nerve injury due to the screw head. The patient was a 42 years old man presented with radial nerve motor and sensorial injury after shooting of cervical MRI. During a cervical MRI shooting a sudden pain in the shoulder region was started. Lost of radial nerve motor and sensitive innervation entirely, was noted. The plains and CT slices were showing a bony defect in anterior glenoid and hematoma near the brachial plexus. Screw head was pressing on the plexus. Under the clavipectoral fascia, brachial plexus was dissected. The screw had come back and pushed on the radial nerve root, but there was not a complete axonal injury (Figure 2). After 20 cc hematoma aspiration screw pulled out easily while protecting the roots. Coracoid bone autograft was entirely lytic, but there was no anterior instability. A totally 12 months after radial nerve motor and sensorial injury were improved. Bone lysis and sudden screw fail could be seen later in coracoid transfer procedures. There is a major ethical issue in the use of MRI on a patient with a ferromagnetic implant. The patient could have lost his life if the loosened screw had transacted a significant vessel, following the trajectory force of the MRI magnetic field. In that patient's plain graphs must be seen before the MRI shooting. Also, late-term acute neuropathic findings should alert the surgeon about possible implant failure, hematoma or irritation of the screw head of nerve root.

Keywords: Latarjet, Brachial, palsy, radial, nerve, hematoma.

INTRODUCTION

Transfer of coracoid to the anterior glenoid, to avoid instability was first described by Latarjet and became more popular with various successful results [1,2]. In early practice, while the technical details are not identified, complication rates accurately were higher. This case is about the failure of the fixation with MRI (Magnetic Resonance Imaging) shooting in a 20 years old Latarjet procedure. Another distinctive feature of this case was a temporary radial nerve injury due to the screw head.

Case Report: Patient was a 42 years old man presented with radial nerve motor and sensorial injury after shooting of cervical MRI. He reported that he applied to a neurosurgeon because of an acute neck soreness three months ago. There was no apparent history of trauma. Thus a cervical MRI was performed, and sudden pain in the shoulder region during the shooting was started. In a few days, ipsilateral wrist and finger extension muscle strength and sensation of hand dorsal were lost. When he applied to our clinic, he reported that twenty years ago he had undergone a successful recurrent anterior instability surgery in military hospital. After the procedure no dislocation or instability issue encountered. Also, he had no pain or snapping in the shoulder region until the last three months. In physical examination, there was a 5 cm length vertical incision scar on the anterior-inferior side of the shoulder. The swelling was mild with no erythema. With palpation, there was moderate pain, tenderness, and numbness beneath the incision and radiating to the forearm and hand dorsal. Shoulder ROM (range of motion) was reduced, and the apprehension test was positive. Lost of radial nerve motor and sensorial innervation was noted. Shoulder plain graphs and 3D-CT (3 Dimensions Computerised Tomography) were taken. On the plains, the screw was come back loosed, skewed and the coracoid graft was lytic. CT slices were showing a bony defect in anterior glenoid and hematoma near the brachial plexus.

The Screw head was pressing on the plexus (Figure 1). The examination under anesthesia confirmed

shoulder stability. The operation was performed in the beach chair position. After sterile draping, we used the old incision. A 5cm skin incision is made, starting at the tip of the coracoid process and extending inferiorly. Under the clavipectoral fascia, brachial plexus was dissected. The screw had come back and pushed on the radial nerve root, but there was not a complete axonal injury (Figure 2). After 20 cc hematoma aspiration screw pulled out easily while protecting the roots. Coracoid bone autograft was entirely lytic, but there was no anterior instability. Postoperative wound care and rehabilitation protocols were standard. On his follow-up visit three months after the open intervention, plain graph was obtained and he presented with a satisfying painless range of motion (Figure 3). All instability tests were negative. Moreover, a totally 12 months after radial nerve motor and sensorial injury were improved.

Fig-1A: Anterior-posterior xray shows the failure of the screw and lysis of the coracoid autograft.

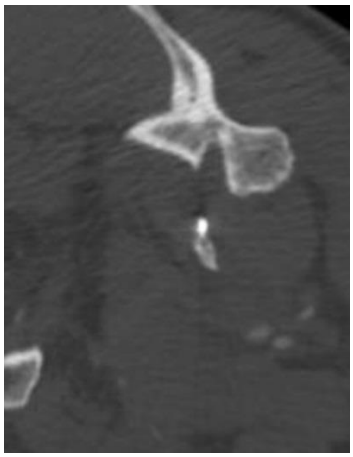

Fig-1B: Axial CT slice shows nonunion and failure

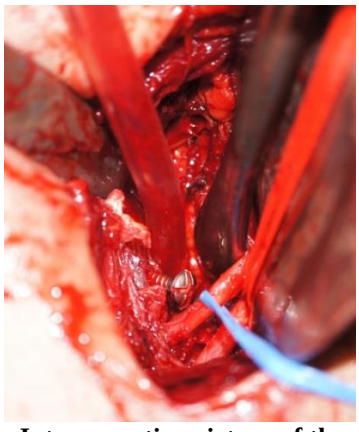

Fig-2A: Intraoperative picture of the contact

Fig-2B: Screw is old fashion, thought to be bended by power of magnetic field

Fig-3: Postoperative anterior-posterior xray shows acceptable bone structure

DISCUSSION

Intraoperative or postoperative complications may be encountered when the coracoid process transfer due to the proximity of the adjacent neurovascular structures [3-5]. Burkhart *et al*. reported a complication rate of 5% that included nonunions, loose screws, and hematomas [6]. In a systematic review, Griesser *et al*. reported a 1.4 % rate of neurovascular injury across open and arthroscopic techniques [7]. Of the six axillary nerve injuries, two were permanent while four were temporary. There were four trunk-level brachial plexopathies, 3 of which resulted in a permanent deficit. Shah *et al*. reported nerve palsy rate as 10 % after open Latarjet in a series of 48 shoulders [8]. There were two axillary nerve, two musculocutaneous nerve palsies, and one radial nerve palsy. There are some papers like above about nerve palsy in early term but to our knowledge there is no study about the late-term radial nerve root injury due to implant failure and also implant failure aggravated with MRI shootings. Another complication of coracoid transfer procedures is graft lysis. Di Giacomo *et al.* found a mean of 59.5 % osteolysis of the coracoid graft in a CT analysis study [9]. The osteolysis was most commonly seen in the superficial part of the proximal coracoid, while the thick portion of the distal region of the graft was the least involved in osteolysis and exhibited the best rates of bone healing. Malposition of the coracoid graft along the glenoid rim has also been previously identified as a risk factor for the development of graft lysis [10]. Meyer *et al*. developed a drill guide for screw orientation that assists in positioning of the graft to avoid malposition and related complications [11]. Therefore, Yi-Ming Zhu *et al.* reported the incidence of coracoid bone resorption as 90.5% (57 of 63) after one year [12]. Lafosse *et al*. suggested to add a second screw for greater rotational stability and compression and Gasbarro *et al*. showed that single screw fixation and inferior graft malposition are associated with failure. They concluded that single screw fixation might not confer enough rotational and compressive stability for union and more likely to fail [13,14]. Kumar *et al*. reported the safety of orthopedic implants in MRI. They investigated the deflection forces of various orthopedic implants in vitro, and only stainless steel external fixator clamp had been found sensitive. However, this study was in vitro. Also investigating only the prosthesis, plates and external fixators [15]. In this case, the patient's shoulder pain started suddenly after MRI shooting. This refers to us; an old fashion fixation screw, without a plate, fixed to a partially lytic bone may react to the magnetic field.

CONCLUSION

Bone lysis and sudden screw fail could be seen later in coracoid transfer procedures. There is a major ethical issue in the use of MRI on a patient with a ferromagnetic implant. The patient could have lost his life if the loosened screw had transacted a major vessel, following the trajectory force of the MRI magnetic field. In that patient's plain graphs must be seen before the MRI shooting. Also, late-term acute neuropathic findings should alert the surgeon about possible implant failure, hematoma or irritation of the screw head of nerve root.

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