



A Clue Finding for to Detect the Localization of Pellet in Elbow

Arthroscopy

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Abstract

In this case report, we aimed to share our experience of arthroscopic finding of chondral lesion can be helpful to detect the location of pellet that between brachial muscle and capsule in a 15 years male subject with left elbow gunshot injury.

Key Words: Elbow, arthroscopy, gunshot injury

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Introduction

After embedded in soft tissues, bullets fragments containing lead are usually harmless. The lead remains inert and can be left in place. However, this is not true when the bullet is in contact with synovial fluid. Lead dissolves in synovial fluid and can enter the systemic circulation [1].

We would like to share our experience of arthroscopic finding of chondral lesion can be help to detect the location of pellet that anterior to the joint capsule in a patient with elbow gunshot injury

Case

By examining of 15 years male subject, applied to emergency service because of the left elbow gunshot injury, we determined several pellet entrance lesions on the around of the left elbow. Radiological evaluation showed the pellet residues inside and outside of the elbow joint (Figure 1 a-b). Range of motion was within the normal range, but painful. Subject was discharged from the hospital with antibiotic and analgesic medications and wound care instructions. At the 2 month follow-up examination, subject underwent the orthopedic surgery to pull out the pellet residues inside and outside of the joint because of the pain complaint when the elbow joint at 90 degree flexion.

Subcutaneous four pellet residues detected by palpation were extracted. The arthroscopic intervention was accomplished by standard proximal medial, lateral and posterior portals at prone position. The anterior-posterior compartments and medial-lateral gutters were inspected. During the first inspection, there was no any pellet residue inside of the joint. However, scattered lead particles that have less than 1 mm diameter were observed. The elbow was evaluated under the X-ray scope and it was re-entered to the joint by arthroscope in case of the presence a pellet residue with our suspicion. A grade 1 degeneration as fibrillation on the cartilage area at the anterior face of medial trochlea was noticed (Figure 2). This area was matched with suspected area on the scope views in which a pellet residue could probably be inside of the joint. After removing the capsular tissue across this area, the pellet appeared between brachial muscle and capsule and extracted by a surgical clamp. (Video 1) (Figure 1 c-d). At the follow-up one month after the operation, subject's complaints were recovered without any functional limitations.



Figure1. a) Preoperative AP radiograph of the elbow; b) Preoperative Lat. radiograph of the elbow; c) Postoperative AP radiographs of the elbow; d) Postoperative Lat. radiograph of the elbow



Figure2. Illustration of chondral lesion at medial trochlea

Video1. Arthroscopically extraction of the pellet at elbow joint**Discussion**

The lead arthropathy process is well outlined in a study by Sclafani et al 1985 [2]. Bullets in joints are not physiologically inert and should be removed whenever encountered [3]. Surgical extraction of retained intraarticular missiles from low-velocity handguns should be performed to minimize the risk of mechanical arthritis, synovitis, and lead toxicity. Arthroscopy-assisted bullet extraction using the bullet tract with a minimally invasive approach should be considered when it can be safely accomplished without iatrogenic damage associated [4].

In our case, despite the pellet was next to the capsule outside the joint, pain complaint relieved by only extraction of pellet from the joint. Since we arthroscopically found a chondral lesion just opposite the pellet embedded in synovium site, we attributed this finding that even if pellet or pellet remnants are located between capsule and brachial muscle, the forces generated by brachial and biceps brachii muscles during joint flexion may cause some cartilage degeneration and pain with chronic irritation of the this pellet .

Conclusion

Contrary to the current knowledge that pellets outside the joint are not harmful, we strongly suggest that these residues should be removed if located between the brachial muscle and capsule because they may cause condral lesion and condral pain in the elbow joint due to chronic irritation generated by muscle during flexion movement.

Declaration of conflicting interests

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