Conventional arthrography has proved to be a useful imaging method to detect full-thickness rotator cuff tear, in spite of their invasiveness. But there is a potential risk of misinterpreting a full-thickness rotator cuff tear as normal.

We report a case of a surgically confirmed medium sized full-thickness rotator cuff tear with false negative arthrography, which demonstrates pitfalls of conventional arthrography.

**CASE REPORT**

A 42 year old man visited our department suffering from a non-dominant left shoulder pain, which started after lifting a heavy object 1 year before presentation. The pain was more severe at night. A clinical examination showed positive impingement sign and abduction weakness.

Plain radiography showed type III acromion with a large spur according to the classifications of Bigliani et al.\(^1\) and Park et al.\(^10\).

Before visiting our hospital the patient had already received MRI at a private radiologic clinic, but the MRI films were not available at the time of presentation. Therefore, arthrography was performed at our hospital after injecting 14 cc Urografin\(^\circledR\) (Schering, Germany). The MRI then became available to us. It had been carried out using a 0.5-T system (Signa; GE Medical Systems, Milwaukee, WI). Oblique coronal and axial scans of the shoulder joint showed about a 12 × 10 mm sized high signal intensity lesion at the insertion site of the supraspinatus tendon on the T2-weighted gradient echo image (flip angle 20\(^\circ\)), which suggested a full-thickness rotator cuff tear (Fig. 1). In contrast to the MRI findings, single-contrast arthrography showed no abnormal findings without any leakage of contrast media (Fig. 2). Therefore, there was significant discrepancy between MRI and arthrography.

On arthroscopic examination of the glenohumeral joint, there seemed to be no partial or full-thickness rotator cuff tear (Fig. 3). But bursoscopy of the subacromial space showed a U-shaped full-thickness tear of the supraspinatus tendon at the attachment site on the greater tuberosity measuring 3.0 cm in diameter, which had an intact joint capsule attached to the bone. These findings were confirmed by mini-open skin incision (Fig. 4), through which the torn supraspinatus tendon was repaired using 2 suture anchors.

At 4 months after surgery, his symptoms were relieved completely, and shoulder strength was regained. Shoulder function was normal with a full range of motion.

**DISCUSSION**

Rotator cuff tears are common sources of chronic shoul-
Arthrographic Pitfalls in the Diagnosis of Full-Thickness Tears of the Rotator Cuff

A rticular pain and loss of function in middle-aged people. According to Neer9), the end stage of impingement syndrome is rotator cuff tear with biceps brachii rupture and bony changes. The detection of full-thickness rotator cuff tear is very important because its treatment approaches differ from that of tendinitis of the rotator cuff. Arthrography is one of the useful imaging tools for diagnosing full-thickness rotator cuff tear despite its invasiveness. Controversy remains regarding the accuracy and utility of shoulder arthrography13). The surgically proven accuracy of arthrography is 98% in our hospital, which is comparable with reported data ranging from 91% to 99%3,4,8).

In spite of the high accuracy of arthrography for detecting full-thickness rotator cuff tear, several pitfalls of arthrography have been reported1,5-4,11,12,14). One such cause is a small full-thickness tear filled with clot, scar tissue or a thin synovial covering. In the present case, the tear size was 3.0 cm in diameter, which was much different from the cases cited in the previous literatures. However, no evidence of either a partial or a full-thickness tear was observed by arthrography although a full-thickness tear of medium size was confirmed at surgery (Fig. 2). In operative finding, the supraspinatus tendon was found to have torn from the greater tuberosity in a U shaped flap fashion, but the glenohumeral joint capsule was intact (Fig. 4A). Therefore, we believed that the intact capsule prevented contrast media from leaking into the subacromial space in arthrography.

This report alerts the possibility of a rare but potentially serious pitfall of arthrography for the diagnosis of rotator cuff tear.
cuff tear. This pitfall could also be applied to MR arthrography of the shoulder joint in the same manner. No leakage of contrast media from the shoulder joint capsule on conventional or MR arthrography does not exclude the possibility of a full-thickness rotator cuff tear, especially in case with discrepant arthrography and MRI findings.

REFERENCES


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전관절 조영술에서는 정상으로 판단되었으나 수술 당시 전층 파열로 확인되었던 회전근 개 파열 1예를 체험하였기에 보고하고자 한다. 회전근 개가 전층 파열되었으나 관절 낭이 찢어지지 않고 정상적으로 보존된 경우였으며 이로 인하여 자기 공명 영상에서는 전층 파열 소견을 보이는 반면, 관절 조영술에서는 정상 소견을 나타낼 것으로 사료된다.

색인 단어: 회전근 개, 전층 파열, 관절 조영술, 함정, 자기 공명 영상