Journal of Orthopaedic Surgery **2010;18(1):104-6**

Use of autologous fibrin sealants to treat ganglion cysts: a report of two cases

Kenjiro Nakama,[1] Masafumi Gotoh,[1] Yasuhiro Mitsui,[2] Isao Shirachi,[2] Fujio Higuchi,[1] Kensei Nagata[2]
[1] Department of Orthopaedic Surgery, Kurume University Medical Center, Fukuoka, Japan
[2] Department of Orthopaedic Surgery, Kurume University, Fukuoka, Japan

ABSTRACT

Two patients underwent arthroscopy-guided injections of autologous fibrin sealants to treat ganglion cysts causing suprascapular nerve palsies. After at least 2 years of follow-up, both patients had no suprascapular nerve symptoms and their external rotation strength had returned to normal. Magnetic resonance imaging revealed no evidence of ganglion cyst recurrence.

Key words: *fibrin tissue adhesive; ganglion cysts*

INTRODUCTION

Ganglion cysts located in the suprascapular fossa are uncommon. They can be treated with open excision, computed tomography/ultrasound-guided aspiration, or arthroscopic decompression. We report 2 patients who underwent arthroscopy-guided injections of autologous fibrin sealants to manage ganglion cysts causing suprascapular nerve palsies.

CASE REPORTS

Case 1

In October 2004, a 26-year-old woman presented with a 3-month history of persistent weakness and dull pain around the right shoulder, but no previous trauma. No definitive diagnosis was made after a thorough examination, and anti-inflammatory medication did not relieve the symptoms. Her shoulder range of motion was not restricted, with no swelling or local heat. A blood examination showed normal inflammatory marker levels. There was mild atrophy and tenderness over the right infraspinatus fossa compared with the left. Her muscle strength was normal except for external rotation. Her cervical spine motion was full, with no radicular symptoms. Radiographs showed no gross abnormality. Coronal and axial T2-weighted magnetic resonance imaging (MRI) demonstrated a ganglion cyst with a high-signal intensity in the suprascapular fossa (Fig. 1a). An electromyographic examination showed evidence of isolated infraspinatus denervation.

The ganglion cyst was aspirated under ultrasound

Address correspondence and reprint requests to: Dr Masafumi Gotoh, Department of Orthopaedic Surgery, Kurume University Medical Center, 155-1 Kokubu-machi, Kurume, Fukuoka, 839-0863, Japan. E-mail:gotomasa@kurume.ktarn.or.jp

guidance then injected with steroids. The symptoms disappeared for 3 months but later recurred (Fig. 1b). Fibrin sealant made from the patient's blood was prepared. She opted for open excision, rather than arthroscopic decompression, should the fibrin sealant injection fail. Arthroscopic exploration revealed no glenoid labrum tear. From the posterior portal, the superior part of the joint capsule appeared to be prominent owing to compression by the ganglion cyst in the supraspinatus fossa. From the anterior portal, a long 18G needle was inserted into the ganglion cyst through the superior part of the joint capsule. The ganglion cyst was aspirated, then injected with the autologous fibrin sealant. Arthroscopic decompression, including capsulotomy and cyst wall removal, was not performed.

At the 3-year follow-up, the patient had no suprascapular nerve symptoms, and her external rotation strength had returned to normal. MRI revealed no evidence of recurrence of the ganglion cyst (Fig. 1c).

Case 2

In September 2006, a 41-year-old man presented with a one-month history of left shoulder pain, which was worse at night. Injection and medication did not alleviate the symptoms. He had isolated infraspinatus muscle atrophy and weak external rotation in the left shoulder. An electromyographic examination revealed evidence of isolated infraspinatus denervation. Coronal and axial T2-weighted MRI demonstrated a high-signal intensity area measuring 2x2 cm in the suprascapular fossa (Fig. 2a). A posterior superior labrum injury was detected during arthroscopy. The ganglion cyst was removed using an arthroscopic shaver through the injured labrum, then injected with the autologous fibrin sealant. The labrum and capsule were kept open. At the 2-year follow-up, the patient had no suprascapular nerve symptoms, and his external rotation strength had returned to normal. MRI revealed no evidence of recurrence of the ganglion cyst (Fig. 2b).

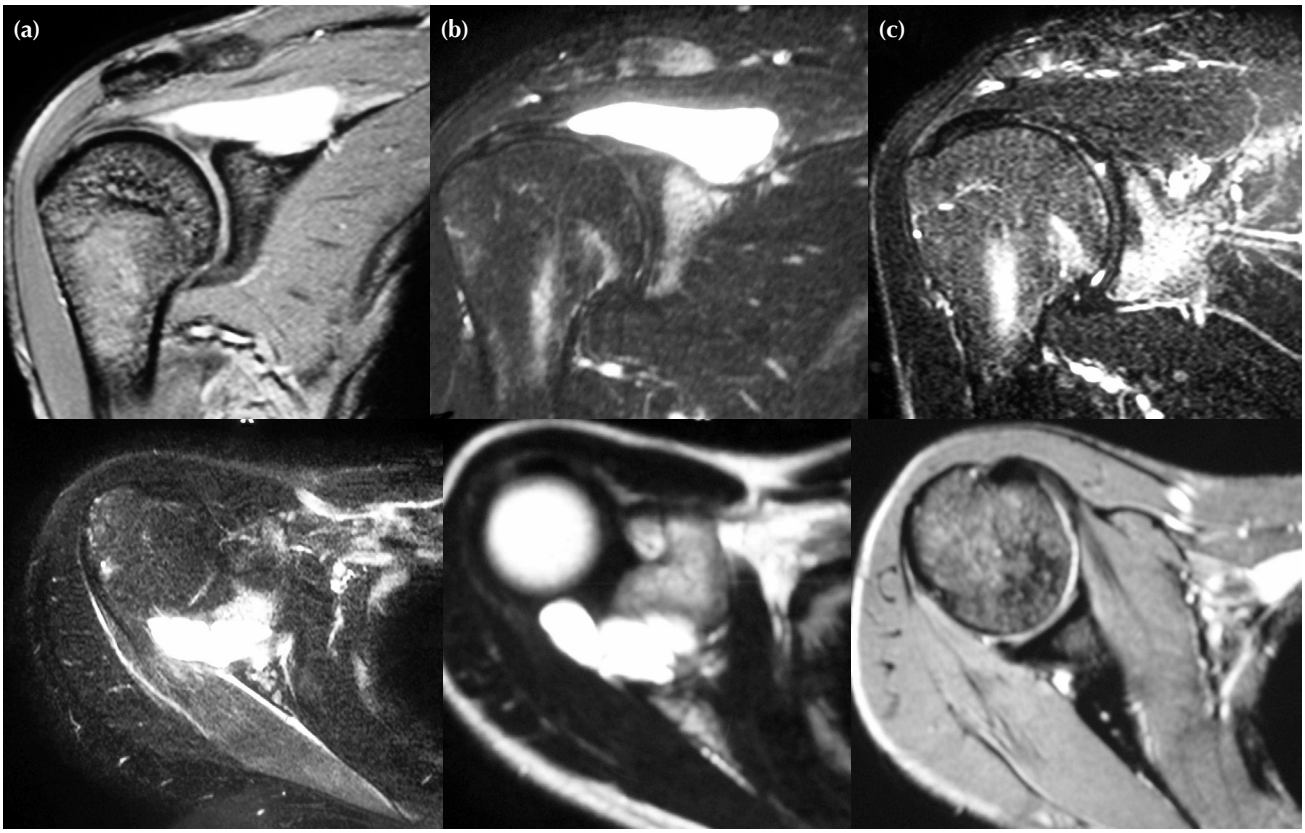

Figure 1 Patient 1: T2-weighted magnetic resonance images showing **(a)** the ganglion cyst in the suprascapular fossa, **(b)** its recurrence 3 months after aspiration and steroid injection, and **(c)** no recurrence 3 years after arthroscopy-guided aspiration and injection of autologous fibrin sealant.

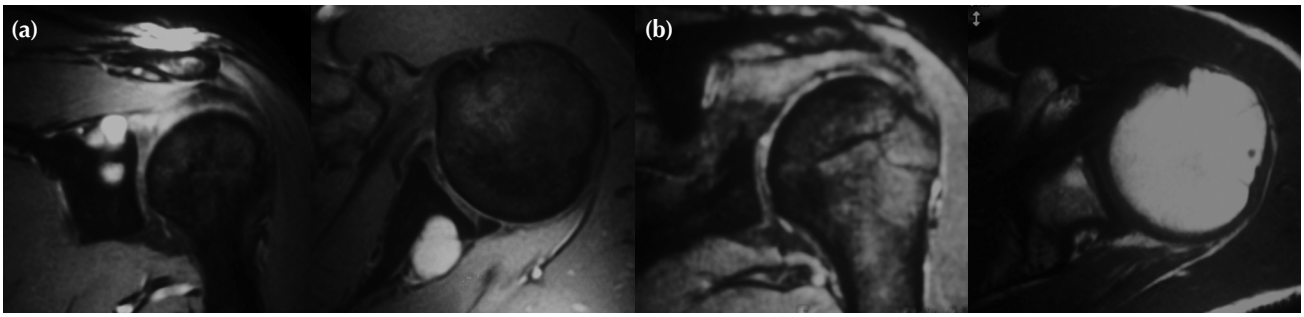

Figure 2 Patient 2: T2-weighted magnetic resonance images showing **(a)** a high-signal intensity area measuring 2x2 cm in the suprascapular fossa, and **(b)** no evidence of recurrence 2 years after removal of the ganglion cyst and injection of autologous fibrin sealant.

DISCUSSION

Arthroscopic decompression destroys the check valve mechanism thought to cause ganglion cysts in the suprascapular fossa.[1–4] A study of 14 patients with suprascapular fossa ganglion cysts who underwent arthroscopic decompression with posterior superior capsulotomy and cyst wall removal found that all had their pain relieved and a return of their normal external rotation strength; there was no recurrence after a mean period of 4 years.[5]

Fibrin extracted from human blood has been used as a tissue adhesive. Fibrin sealants have been applied to fix osteochondral fractures and as sutures for the repair of peripheral nerves and meniscus tears.[3] The adhesive force is sufficient for fixation of cyst walls,[4] despite the risk of prion anaphylaxis resulting from the animal aprotinin content.[2]

Autologous fibrin sealant contains a large amount of fibrinogen and blood coagulation factor XIII in autologous plasma, and congeals when mixed with thrombin and calcium solution in the surgical field. It contains a large amount of fibronectin, a cell-adhesion molecule, and coagulation factors for acceleration of wound healing, without the risk of transfusion infection.[1]

Although the efficacy of injection of autologous fibrin sealants to treat suprascapular fossa ganglion cysts remains unknown, it is a technically easy and useful procedure and should be used with/without arthroscopic decompression.

REFERENCES

1. Nakamura H, Matsuyama Y, Yoshihara H, Sakai Y, Katayama Y, Nakashima S, et al. The effect of autologous fibrin tissue adhesive on postoperative cerebrospinal fluid leak in spinal cord surgery: a randomized controlled trial. Spine (Phila Pa 1976) 2005;30:E347–51.
2. Oswald AM, Joly LM, Gury C, Disdet M, Leduc V, Kanny G. Fatal intraoperative anaphylaxis related to aprotinin after local application of fibrin glue. Anesthesiology 2003;99:762–3.
3. Shah MA, Ebert AM, Sanders WE. Fibrin glue fixation of a digital osteochondral fracture: case report and review of the literature. J Hand Surg Am 2002;27:464–9.
4. Shigeno Y, Harada I, Katayama S. Treatment of cystic lesions of soft tissue using fibrin sealant. Clin Orthop Relat Res 1995;321:239–44.
5. Westerheide KJ, Dopirak RM, Karzel RP, Snyder SJ. Suprascapular nerve palsy secondary to spinoglenoid cysts: results of arthroscopic treatment. Arthroscopy 2006;22:721–7.