Case report

Arthroscopic decompression with indigo carmine for treating paralabral cysts in the shoulder


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ABSTRACT

Paralabral cysts in the shoulder are a relatively rare pathology. It is sometimes difficult to detect the location of a paralabral cyst in the shoulder using arthroscopy, and it can be difficult to confirm sufficient decompression by arthroscopy. We describe the case of a 64-year-old woman who underwent arthroscopic decompression for a paralabral cyst in the shoulder. Indigo carmine was injected into the cyst under ultrasonography guidance just before the operation. The leakage point of indigo carmine was detected using arthroscopy. Arthroscopic decompression was performed until the indigo carmine was completely discharged. Her shoulder pain, limited range of motion, and muscle weakness during abduction and external rotation improved postoperatively. Magnetic resonance imaging confirmed the disappearance of the cyst. Arthroscopic decompression using an ultrasonography-guided injection of indigo carmine is a useful treatment for a paralabral cyst in the shoulder.

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1. Introduction

Paralabral cysts in the shoulder cause pain and suprascapular nerve palsy [1]. Treatment options for paralabral cysts in the shoulder vary from conservative, nonsurgical means to operative excision [1,2]. Symptomatic paralabral cysts that fail to respond to conservative treatment may be treated surgically by open excision or arthroscopic decompression [1,3]. With the development of arthroscopy, arthroscopic decompression has been performed to treat paralabral cysts in the shoulder [3–5]. However, accurately identifying the location of the paralabral cyst and confirming the decompression are often difficult [5]. We performed arthroscopic decompression for paralabral cysts in the shoulder using an ultrasonography-guided injection of indigo carmine, and we evaluate the efficacy of this technique herein. We hypothesized that an ultrasonography-guided injection of indigo carmine would enable us to identify the location of the paralabral cyst and confirm the decompression.

2. Case report

A 64-year-old woman presented with right shoulder pain lasting for several months. She reported being in a traffic crash that occurred several months ago; a car’s side view mirror hit her right shoulder while she was riding a bicycle. The physical examination showed significant supraspinatus and infraspinatus atrophy, as well as muscle weakness during abduction and external rotation. The range of motion of the right shoulder were as follows: flexion, 100°; abduction, 90°; and external rotation, 30°. Magnetic resonance imaging (MRI) and ultrasonography examinations showed a cystic lesion in the right scapular notch (Fig. 1a and b). She was diagnosed as having a paralabral cyst in the right shoulder. Conservative treatment with nonsteroidal anti-inflammatory drugs (NSAIDs), ultrasonography-guided aspiration, and physical therapy resulted in no improvement. Thus, surgical treatment was recommended.

Under general anesthesia, she was placed in the lateral recumbent position. Indigo carmine (Daichi Sankyo, Tokyo, Japan) was injected into the cyst with the guidance of an ultrasound unit (LOGIQ e, GE Healthcare, Tokyo, Japan) just before the surgery (Fig. 2a and b). Standard posterior and anterior working portals were established. Diagnostic arthroscopy was performed using standard procedures. Fibrillation was observed at the posterosuperior labrum, and a labrum tear was observed at the 11-o’clock position. The location of the paralabral cyst in the shoulder was identified by using an indigo carmine injection (Video). The

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leakage point of the indigo carmine was expanded using arthroscopic electrocautery (VAPR, STRYKER JAPAN, Tokyo, Japan), and arthroscopic decompression was performed until indigo carmine was completely discharged (Fig. 2c). There was no significant bleeding, hematoma, or anaphylactic reaction.

Postoperatively, her right shoulder pain and muscle weakness during abduction and external rotation improved. The postoperative MRI examination did not show a cyst, and the ranges of motion in her right shoulder 3 months postoperatively were as follows: flexion, 165°; abduction, 165°; and external rotation, 60°. There was no recurrence of symptoms at the 2-year follow-up.

3. Discussion

Paralabral cysts in the shoulder are a relatively rare pathology [1]. Although their pathogenesis is unclear, it may be associated with a one-way valve mechanism, in which fluid leaks out of the joint through a superior labral tear and forms a cyst, with restricted fluid entry back into the joint [6,7]. Hence, continuous fluid exudation results in a persistent cyst. In our case, a posterosuperior labrum tear was identified by arthroscopy, supporting the possibility of this pathogenetic mechanism.

Several treatments for paralabral cysts in the shoulder have been reported. Conservative treatment includes rest, physiotherapy, NSAIDs, and ultrasonography-guided or computed tomography-guided aspiration [8,9]. Surgical treatment includes open excision and arthroscopic decompression [3–5]. Excellent treatment results using arthroscopic decompression for paralabral cysts in the shoulder have been previously reported [4]. However, arthroscopy may not enable surgeons to determine the location of the paralabral cyst [5]. In addition, confirming whether the decompression is sufficient by arthroscopy can be difficult. In our patient, indigo carmine leakage enabled us to quickly and accurately locate the paralabral cyst, and confirm sufficient decompression, as we performed decompression until complete discharge was achieved.

Indigo carmine is generally safe, and it is often used to determine ureteral patency during pelvic and urologic surgery. In orthopedic surgery, the efficacy and safety of indigo carmine for locating cystic lesions in the knee have been reported [10]. In shoulder surgery, the efficacy and safety of indigo carmine has been evaluated for the intraoperative rotator cuff tear stain test [11]. Our patient did not experience any side effects.

We performed the same treatment for two more similarly diagnosed patients. These patients experienced improvement in symptoms without recurrence. The first case was a 33-year-old man. He presented with right shoulder pain lasting for several months. He reported being in a traffic crash that occurred several months ago while riding a motorcycle. The physical examination showed significant weakness in the right shoulder during...
abduction and external rotation. An MRI scan showed a cystic lesion in the right scapular notch. His symptoms had failed to respond to conservative treatment, so surgical treatment was performed in the same manner as aforementioned. Fibrillation of the labrum was observed at the 10-o’clock position. The leakage point of the indigo carmine was seen at the 10-o’clock position in the labrum. Postoperatively, his right shoulder pain and muscle weakness improved. There was no recurrence of symptoms at the 6-month follow-up. The other case was a 40-year-old man. He presented with left shoulder pain lasting for several months. He reported being in a traffic crash that occurred several months ago while riding a motorcycle. The physical examination showed significant weakness of the left shoulder during abduction and external rotation. An MRI scan showed a cystic lesion in the left scapular notch. Surgical treatment was performed in the same manner as previously described. Fibrillation of the labrum was observed from the 9-o’clock position to the 12-o’clock position. The leakage point of the indigo carmine was seen at the 10-o’clock position in the labrum. Postoperatively, his left shoulder pain and muscle weakness improved. There was no recurrence of symptoms at the 5-month follow-up.

An ultrasonography-guided indigo carmine injection enables surgeons to identify the location of the paralabral cyst and confirm the decompression; additionally, this procedure results in excellent clinical results at a mean of 2 years postoperatively. In conclusion, arthroscopic decompression with an ultrasonography-guided injection of indigo carmine is a useful treatment for paralabral cysts in the shoulder.

Disclosure of interest

The authors declare that they have no competing interest.

Appendix A. Supplementary data


References