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Case Report

Limited fasciotomy in dupuytren contracture: a case report

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ABSTRACT

Dupuytren's disease is a benign fibroproliferative disorder usually isolated affects the palmar fascia. The condition usually has a progressive course, from the appearance of a nodule, to the formation of a fibrous cord which pulls the finger in a flexion posture. Management from dupuytren's disease has developed, from conservatifly, surgery, and minimal invasive. One of the conventional treatments that can be done is fasciotomy. A man, 72 years old, an Australian patient with Dupuytren's disease that affects his 4th MCP joint. From the history it was found that the complaint had been felt since 8 years ago. Patients were do limited fasciotomy and get recovered his hand function with good result. Dupuytren's disease is a disorder of the palmar and digital fascia that can decrease the function of patient hands. Many therapies have been developed for the treatment of this disease. From conventional treatments such as fasciotomy, to minimal invasive such as the injection of clostridium histolyticum collagenase. All of these therapies give different results and side effects. We would like to say that conventional management, especially limited fasciotomy, is still a good choice in view of the return of hand function and the minimum side effects. Limited fasciotomy gives good results, fast recovery of hand function, with minimal side effects.

Keywords: Dupuytren contracture, Metacarpophalangeal joints, Limited fasciotomy

INTRODUCTION

Dupuytren's disease is a fibroproliferative disorder of the hand associated with abnormal collagen production. This is an active cellular process in the hand fascia, which is characterized by the development of nodules in the palmar and digital fascia, which occur in certain locations along the longitudinal tension line. This condition is a normal hand disorder that causes finger contractures that can compromise with hand function and the condition is called dupuytren contracture.[1-3]

Population studies show that dupuytren disease almost always affects caucasians, especially those of northern European descent. The incidence increases with age, and it is very rare in children. Men are 7-15 times more likely to have a clinical presentation that requires surgery than women, who tend to develop a more benign form of disease that appears later on. The etiology of dupuytren's disease is considered multifactorial. There is a higher incidence in the alcoholic population, diabetic population, and epilepsy population. Because the relationship between smoking and microvascular changes is at hand, some people believe that tobacco also plays a role in this disease. Although not usually associated with hand trauma, dupuytren's disease sometimes develops after significant hand injury, including surgery. The prevalence of dupuytren's disease varies with geographical location and gender and age of the patient. This is unusual among individuals younger than 50 years and is more common in men, although this sex difference can decrease with age. The prevalence is highest in men from Northern Europe, and in British men and women over the age of 75, each may be as high as 18% and 9%. The etiology of

dupuytren's disease is not fully understood. Higher prevalence among family members has been accepted for a long time. The most common digits involved are the little finger, which is involved in about 70% of patients.[3,4]

Dupuytren disease can be classified into three biological stages: The first stage is the proliferation stage which is characterized by intense production of myofibroblast and nodule formation. The second stage is the involuntary stage represented by alignment of the myofibroblast along the tension line. The third stage is the residual stage, the tissue becomes mostly acellular and without myofibroblast, and only the thick band of collagen is left.[3]

Treatment is not mandatory, and after informed discussion about natural history of different conditions and treatment options, a patient can choose hand observation. Mild sufferer's disease and no functional disorders can also be observed. Observation may add some exercise and splinting for good result.[4-6]

Very limited fasciectomy or segmental aponeurectomy is a small incision made over the parts of the dupuytren cord that causes contractures, and the segments are cut so that the fingers are straightened. There was no attempt to remove all the cords that caused the contracture. The benefit of this procedure is that it is relatively less invasive and involves a fast recovery period (two weeks or three weeks). However, this is done in the operating room and is thought to be associated with a high dupuytren recurrence rate-up to 38%, which can occur because significant deposits of dupuytren tissue persist in the hands and fingers. Although most surgeons agree that this procedure has a role in dupuytren's disease in the palm causing the MCPJ contracture, this procedure is less popular for the treatment of the strap on the finger itself, which causes PIPJ contracture, because it introduces the risk of digital nerve damage and the inability to release PIPJ contracture reliably.[4,7,8]

Limited Fasciectomy is procedure that remove all dupuytren cords that cause finger contractures. Limited fasciectomy has been the most popular treatment for dupuytren's disease in the past, but it carries a significant recurrence rate and involves a relatively long rehabilitation phase (four to six weeks). In addition, it carries a small, though significant risk of complications, such as diffuse finger stiffness, which may involve not only the operated finger but also the other fingers. Recurrence after limited fasciectomy can exceed 20% in five years, perhaps because disease-forming cells are stored in subcutaneous fat and the skin can form 'recurring' contractures.[4,8]

Surgery in the form of limited fasciectomy has become the main treatment option for reducing contractures. Limited fasciectomy is often effective in reducing contractures, postoperative complications such as nerve injury and wound healing problems often occur and patients can experience contracture recurrence.[1,9]

CASE REPORT

Male 72 years, an Australia with complaints of unable to bend the ring fingers of right hand since 8 years ago. Patient experienced these complaints after hitting the pool wall when the patient swimming. After the accident the patient feels stiffness in the fourth finger, and gets progressively worse overtime.

Figure 1: Patient's knee appearance.

The patient feels his complaint interferes with his daily activities, although not all movements of his hand are interrupted, but in certain movements the patient has difficulty using his right hand. The patient's sister has the same disease as the patient where it happened to her left hand. At present the patient is not actively working. History of infection or disease in the hands is denied.

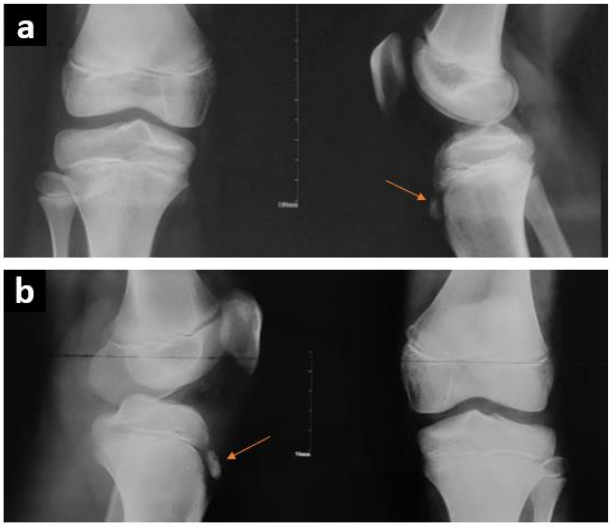

Figure 2: X-ray (antero-posterior and lateral view) of (a) right and (b) left knee of the patient. There is a bone fragmentation (arrow) anterior to the tibia tuberosity with soft tissue swelling.

The patient had a history of BPH, GERD, cataracts, and OA in the hip joint that had already THR surgery. From the general status patient is quite healthy with an overweight BMI status. Physical examination showed

flexion deformity in the ring fingers of right hands with the skin on the palm being stretched and looking tense. Nodules are felt in the fourth metacarpal area with a supple consistency and no tenderness is found. Active movement of the metacarpal joint with proximal phalanx is limited with flexion of 10° and extension of 20°.

Figure 3: X- Magnetic resonance imaging (MRI) of the knee of the patient in (a) T1-weighted sagittal and coronal, and (b) T2-weighted sagittal and axial.

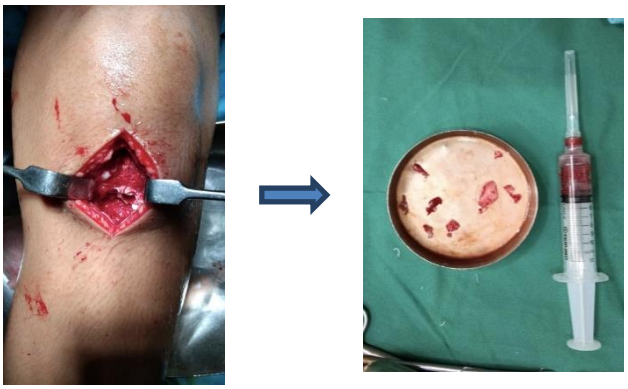

Figure 4: X-Surgical debridement and sample collection for histopathologic examination.

In this patient there was no X-ray examination and only a routine blood examination was done with normal results. Before surgery, the patient is asked to fill out the DASH questionnaire to determine the function of the patient's upper extremities before surgery. This patient's DASH score before surgery was 25.8. After that the Limited Fasciotomy surgery was performed on this patient under general anesthesia. Surgery was performed on the plantar area in the patient's right hand, using the Bruner zigzag incision technique from the fourth proximal phalanx level to the hypothenar area. The incision is deepened to the fascial layer and Dupuytren cords are found attached to the flexor tendon. Incision made on to remove the cord from the tendon. Then the incision is closed using interrupted suture technique. MUA in the metacarpal joint with distal phalanx extension 0 degrees with 90-degree flexion. Then the wound is closed with sterile hass. Patients were asked to control every week and follow up on the wound and active movement of the MCP-IP joint and a DASH score was measured to determine the outcome.

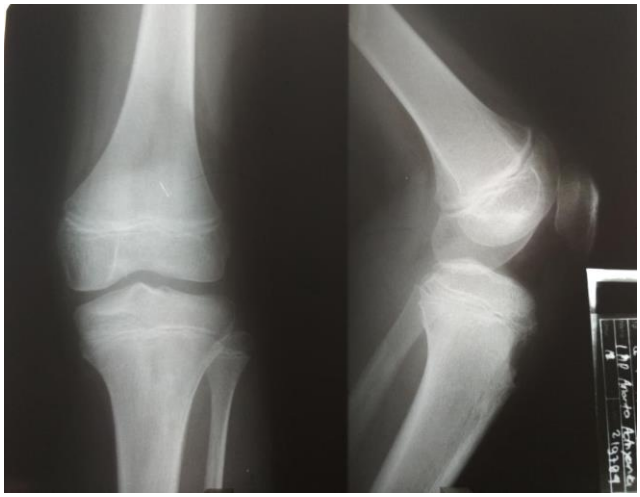

Figure 5: X-ray (antero-posterior and lateral view) of left knee after several months.

DISCUSSION

The etiology of Osgood-Schlatter disease (OSD) was repetitive trauma and inflammation, while bacteremia is the responsible mechanism of action for epiphyseal hematogenous osteomyelitis in children.[1,5] These two disease has two different mechanism and mimics each other yet also appear together and correlates one and another due to its nidus site of infection, that is the valveless sinusoidal loops of the venules at their reflection at the epiphysis and is attributed to slow and nonlaminar blood flow through this vascular bed.[2] The colonization can be promoted by prior inconsequential trauma that causes metaphyseal hematoma, which could explain the appearance of both OSD and epiphyseal osteomyelitis in this presented case. His laboratory result showed no significant abnormality, which might be caused by the medication for his fever that has last for 7 days.[6]

The appropriate management for osteomyelitis is a combined both medical and surgical therapy.[10] It is the duty of orthopedic surgeon to collect specimens that establish the cause of osteomyelitis and to provide drainage and debridement of the acute infection when abscess is present and dead tissue removal, while the pediatrician should supervise antibiotic therapy and monitor the clinical response.[7] Once the culture results are available, antibiotics can be targeted more specifically to the causative pathogen. Duration of therapy in children

is typically 3-6 weeks.[1,8] Both surgical and medical approach using broad spectrum antibiotic were done for this patient with good satisfaction of improvement. Physiotherapy was also planned for him to improve the quadriceps, hamstring, and gastrocnemius muscle which atrophied due to long term immobilization.

CONCLUSION

Thorough examination is needed in diagnosing patient with both mimicking conditions such as in this presented case, to decide the appropriate treatment and the need of surgery which could improve patient's morbidity. Conventional x-ray is really good in diagnosis OSD, however not so much when it comes to osteomyelitis. Pain and swelling are the common manifestation for both diseases, while on knee x-ray only OSD was confirmed, indeed the clinician's analysis matters most to order more advanced study for further diagnosed or exclude a diagnosis. MRI plays significant role in diagnosing osteomyelitis and determine the next step for the orthopedic surgeon to do the surgery and solve a patient's knee.

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