Case Report

Treatment of acute avulsion of posterior cruciate ligament of left knee with bony fragment by Siddha Varma therapy and traditional bone setting method

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Abstract

A 42-year-old man with the complaints of left knee swelling, severe pain, difficult to stand was reported to Siddha Varmam division after a road accident. He was diagnosed as acute avulsion of Posterior cruciate ligament (PCL). It was diagnosed based on the history of trauma, knee pain and swelling after trauma, positive posterior drawer test and avulsion fracture shown by radiograph. He was treated with Siddha Varmam therapy and traditional bone setting. After a month of treatment, the PCL avulsion fracture got healed without any surgical interventions and patient able to walk normally. This case report summarises the novel Siddha Varmam therapy and traditional bone setting treatments for acute avulsion of PCL with bony fragment.

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1. Introduction

The Posterior Cruciate Ligament (PCL) is an important structure that helps to maintain the stability of the knee during flexion and rotation. PCL injuries may lead to instability that allows the tibia to move in the posterior direction, impeding the ability to keep the back of the knee joint straight and inducing degenerative changes in the knee in the long term. PCL injuries are less common than anterior cruciate ligament (ACL) injuries. Since the PCL is strong, avulsion fractures of its attachment are common [1]. A direct force of hit to proximal anterior tibia is defined as dashboard injury. The incidence of ligament damage is 95% in all knee injuries. Grade I and II PCL injury can be managed by non-operative procedures [2]. Standard treatment for the avulsed post cruciate ligament is surgical reinsertion [3]. Due to backward force on front of flexed knee, the PCL gets ruptured. A fragment of bone may be detached with PCL. Bony fragment may be detached from back of inter condylar region of tibia.

The most common surgical procedure for PCL avulsion fractures is internal fixation. But it is tough to handle via arthroscopic procedure [4]. Traditional bone setting practises is gaining popularity currently in the urban cities for treating traumatic injuries [5]. Siddha Varma therapy (SVT) specifies the therapeutic manipulation of certain points in which the life energy is found concerted. Handling on these points with a particular force for the definite time will release the life energy from these points and fetch relief to the affected individual by regulating the flow of life energy which is blocked due to attack on particular Varma points or due to other causes [6]. The fear for surgical procedure for PCL avulsion fracture is the main reason for the patient to seek traditional medical systems.

2. Patient information

A 42-year-old man, electrical engineer had a trauma to his left knee while driving two-wheeler. When he applied sudden break, he was hit over the bumper on the left knee in the flexed position and fell down. His left leg was pulled down and experienced immediate pain and swelling around left knee. He had difficulty to stand on left leg. Soon he was taken to outpatient department for traditional bone setting under Siddha Varma division at Siddha Central Research Institute (SCRI), Arumbakkam, Chennai 600106.
3. Clinical findings

The patient was clinically examined and found profuse swelling in the left knee and severe tenderness over the posterior aspect of the left knee. There was restricted movement especially with range of movements (ROM) 30° flexion. The anterior drawer test, valgus and varus stress test were negative. Posterior drawer test was positive with grade III instability (approx. 12 mm of posterior translation). On examination based on Siddha principles, it was observed that Vatha Naadi was predominant.

4. Diagnostic assessment

Radiograph showed fracture of posterior intercondylar eminence and lateral tibial fragment. Magnetic resonance imaging of left knee revealed acute avulsion of posterior cruciate ligament along with bony fragment measuring 12.2 × 7.2 mm and moderate joint effusion with extension to tibiofemoral and patellofemoral joint space. The avulsion fracture was diagnosed based on the following criteria: a clear history of trauma; knee pain and swelling after injury; positive posterior drawer test; PCL avulsion fractures of the tibia shown by radiography and an intact PCL on MR imaging.

5. Therapeutic intervention

Intervention: Siddha Varmam Therapy (SVT) (Figs. 1a–d) and Traditional Bone setting (TBS).

Dosage: Once in 3 days (10 bandages totally).

5.1. Procedure

Position of Patient: Lying in supine.

Position of Physician: Standing on the left side of the examination table facing the patient’s knee.

After careful examination, the patient was treated with Siddha Varmam therapy (Table 1) [7] initially to reduce the pain. Then the left femur was stabilised by grasping the thigh approximately five inches above the knee by one hand. The other hand grasped the lower leg approximately four inches below the knee. Then the both hands were compressed towards each other. With the femur stabilized, the tibia was rotated laterally first, then medially. The rotation of tibia was maintained with pressure and compression down. Then the rotation was released slowly to its normal position [8].

Then the medicated oil, Sivappu kukkil thailam [9] was applied over the affected knee. Gentle massage was given. Then cotton gauze was wrapped around the knee and again oil was poured over it. Then 15 cm width cotton roller bandage was wrapped around the affected knee by traditional method of crossing the bandage at lateral and medial aspect of knee. This assured the tightness of the bandage. SVT was performed on the day of replacing the bandage once in three days. The procedures were repeated 10 times.

6. Follow up and outcomes

After Traditional bone setting (TBS) and bandaging, patient was asked to bear body weight on toes. Numeric Pain Rating Scale (NPRS) [10] was 9 initially. Soon after 3 days of 1st bandage, swelling was reduced. The NPRS reduced to 6. Then after 2nd bandage NPRS reduced to 4 and subsequently pain subsided. After 4 weeks flexion
The most common sites for PCL injuries are femoral and tibial areas. In this case the injury was at tibial insertion of PCL [11]. The injury to tibial insertion is rare. There are 3 possible causes for tibial insertion site PCL injury: hyperflexion of knee resulting in stuck of PCL between posterior tibial plateau and the roof of femoral ends in rupture [12], dashboard injury which occurs when a direct force is applied in pre-extension in proximal PCL injury [14]. In this case, the possible cause of injury could be dashboard type, based on the history and the nature of trauma.

The changes occurring in the body on hitting some specific points, force of hitting, duration of pressure and the location of the points, manifesting in the body varies with the physical strength of the patient.

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Varma therapy is the pressure manipulation over these points with a particular force for the specified time. This will regulate the flow of pranic energy which is obstructed due to assault on these points (Varma points) or due to any other causes. In this case the Varma treatment has been given to restore the strangulated life energy which remains concentrated in certain specific points in our body.

Varma points are stimulated gently with the fingers. The pressure varies from ¼ unit, ½ unit, ¾ unit to 1 unit/2 units (unit = Mathirai). The changing occurs in the body on hitting some specific points directly or indirectly with a particular force is also known as Varma. The signs and symptoms manifesting in the body varies with the location of the points, force of hitting, duration of pressure and the physical strength of the patient.

Table 1

| Name of the Varma Varmam Points | Location | Patient position | Procedure | Duration and Pressure given |
|---------------------------------|----------|------------------|-----------|----------------------------|
| Mutukannu Varmam                | Beneath the patella bone in small pits on either side | Lying supine with knee flexed position | Pressing the Varma points with medial ¼ part of thumb and give rotations for 3 times. With an interval of 2 s again repeat it for 3 times. | 30 Seconds and ½ Mathirai |
| Mutta Siratai Varmam            | Upper end and lower end of patella | Supine position | Pressing the Varma points with medial ¼ part of thumb and give rotations for 3 times. With an interval of 2 s again repeat it for 3 times. | 30 Seconds and ½ Mathirai |
| Mutta pathaippu Varmam          | Dimple on either side of centre of popliteal fossa | Supine with knee flexed position | Pressing the Varma point with middle finger moving upward. | 30 Seconds and ½ Mathirai |
| Karandaikunn Varma              | Anterior part of ankle on either side | Supine | Press and release the Varma point using ¼ medial part of thumb. | 30 Seconds and ½ Mathirai |

and extension knee exercises were started. At the end of 2 months, full range of movements of left knee was achieved. The healing of fracture was assured by X ray after 2 months treatment (Fig. 2).

7. Discussion

This case report describes an avulsion fracture of PCL along with bony fragment. This injury is different from other reported knee injuries to TBS OPD, as the patient is brought to the hospital soon after the fall. It is a case of acute avulsion of PCL along with the bony fragment. The fragment may be of tibial insertion of PCL. Due to avulsion, the fragment was detached. The nature of injury, swelling, capsular injury insists the significance of avulsion manoeuvre in detachment of bony fragment. The nature of injury pattern may be due to nature of trauma.

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energy due to trauma. TBS has been done to fix the fragment in position and facilitated by oil application. Moreover, the tight bandages over the knee sustains the position for healing. Frequent changing of bandages resembles functional casting model also helps in quick healing of fracture. With this case report we substantiate that the management through Siddha traditional bone setting treatment was effective in acute avulsion of PCL with bony fragment which was achieved by good knee function and assured by radiograph after treatment.

Informed consent

Written informed consent was obtained from the patient for publication.

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Conflict of interest

None.

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