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Ayurvedic management of (AbhigatajSnayuGata Vata) Anterior Cruciate Ligament Injury: - A Case Study

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ABSTRACT

Knee joint is one of the body's biggest and most intricate joints. Because of their significance in ensuring knee stability, the anterior and posterior cruciate ligaments of the knee are frequently referred as the "crucial" ligaments. Every *Samhita* and *Sangraha Grantha* mention *Snayugata Vata* under *Vatavyadhi*. When agitated or irritated by anything internal or external, vata component residing in *Snayu* causing immediate *Snayugata Vata's* manifestation. According to *Sushruta, Snayugata Vata* is, lodge in *Snayu* then *sthambha (*stiffness*)* angered *Vata*. The creation of *Kampa (tremors), Shoola* (pain), and *Akshep* (involuntary movements) the affliction of *Snayu* by *Prakupita Vata* is the chief phenomena in *Samprapti* of *Snayugata Vata*.The main causes of knee ligament injuries are indirect, bending or twisting stresses on the knee or often rotating movements of the knee joint. Complete ACL rupturecan lead to other knee diseases. Here is a case study of a 26-year-old women who injured his left knee while driving a vehicle and had severe pain and a pop sound at period of occurrence. When she arrived to the hospital, the knee was enlarged and having a lot of pain in, movement. She was found to have a partial ACL injury on the MRI. The patient was given a *Tailadhara, Abhyanga* (oil massage), *lepa* (external application) and some internal medicine that lasted one month. The patient was stable enough to resume his normal activities and also got relieved from the pain and swelling

Keywords: *Anterior cruciate ligament tear, Knee joint, Janusandhi, Asthimajjagataroga, Snayugataroga*

1. INTRODUCTION

The knee joint is one of the body's most strained joints.(1) Stability and movement are two fundamentally contradictory characteristics. Quadriceps femoris and collateral ligaments are crucial for stability. (2)Due to an increase in knee ligament injuries, which are more frequent in sports and accidents, are also on the rise.An anterior cruciate ligament injury (ACL) is the overstretching or rupture of the ACL in the knee. The ACL is the tissue that connects the thighbone to the shinbone in the knee. (3)Sports like basketball, tennis, skiing, football, and traffic accidents are where most ACL injuries occur. To restore knee function, these injuries are treated surgically.(4)However, it does not ensure that your knees will function well and at their prior level of activity. For persons in the middle class, surgery is a pricey alternative. Due to its anatomical structure, functional needs, and ease of exposure to external forces, it is also one of the most frequently injured joints. The ligaments, tendons, and related muscles work together to keep the knee joint stable. Between 25% and 50% of ligamentous knee injuries are to the anterior cruciate ligament. Due to its limited ability to undergo biological healing as a result of the local intra-articular circumstances, ACL injury presents specific therapeutic challenges. Common clinical signs of an ACL tear are limited motion, primarily extension, and scattered, mild knee discomfort. Lachman's test typically returns a positive result and is extremely reliable for tearing the ACL. The front drawer test could be successful in the majority of ACL tear cases. (5)Radiographs may show an avulsion of the ligament from the tibia or a Second fracture at the lateral margin of the

tibial plateau, hence it is always advisable to get an X-ray after a suspected ACL injury. In cases where the diagnosis cannot be verified, MRI should be chosen. The fact that there are fundamentally two different types of knees affects the prognosis of an ACL tear. The first one is the knee with weak secondary stabilisers that is ACL dependent. The second knee may not be entirely dependent on the ACL because there will be healthy secondary stabilisers in that knee. It has been seen that a knee can operate satisfactorily even with a defective anterior cruciate ligament over an extended period of time. Any additional injury to the knee later on could increase the risk of developing symptoms.Early medical interventions for knee ligament injuries include rest, ice pack application (to reduce swelling that appears within hours after the injury), compression (from an elastic bandage or brace), elevation, and analgesics. When the anterior cruciate ligament, medial collateral ligament, or other knee ligaments and meniscus are injured, patients may feel pain, swelling, localised soreness, haemarthrosis, sprains (ligament injuries), and strains (muscle and tendon injuries). According to *Acharyas Susruth*, *ayurveda* The knee joint, or *janusandhi* (knee joint), is both a *vaikalyakaramarma* (an injury to a component that results in permanent incapacity to that joint) and a *sakthimarma* (a marma present in the lower limb). At the point where the *jangha* (leg) and *uru* (thigh) meet is where *janumarma* is located. *Susruta*regards *Janumarma*. It is *three angoli* in size.(6) *Balakshaya* (weakness) and *khanjatha* (lameness), which the person will have to deal with for the rest of their lives, may arise from any harm to this *marma*. *Susruta* employed the term *sandhimukta* (injuries to joint), a subclass of *bhagna*, to describe injuries to the *sandhi*. There are two types of *bhagna*. *Kanda Bhagna* and *Sandhimukta*.(7)

Sprains can be categorized by degree as (8):

I degree - Means there is only a small tear, local pain, and no instability.

II degree - More disruption but no instability in a situation.

III degree -Interruption is total.

With the use of *sandhigata* and *snayugata vata* therapy, an effort has been made to manage knee ligament injuries in an affordable way.

2. MATERIAL AND METHODS

A female patient, 26 years old, with a torn ligament in her knee joint was a patient in Wardha, Maharashtra. She complained of left knee joint pain and walking trouble on visiting our *kayachikitsa* department's OPD at MGACHRC Wardha. Her knee became sore and swollen as a result of the accident. She visited a neighbouring doctor at that time for treatment. She first took the therapy from a local doctor at the time, but she was not satisfied with the outcome. She then took analgesics from her family doctor, but she still experienced pain, so she then saw an orthopaedic doctor. The doctor recommended surgery based on the results of the MRI. The patient came to our OPD for continued treatment after declining to have surgery.

3. CASE REPORT

• Presenting complaints

'X', a 26-year-old woman who was previously healthy, has face an accident and complained about left knee instability and pain, as well as swelling in the joint. No complaints in the past. The patient claimed that she injured her left knee while driving a vehicle. She had knee pain and was unable to walk at the time of the incident. Within an hour, edema also appeared in the knee. She took medical advice.

General Examination: The patient was determined to be healthy-looking, moderately fed, afebrile, and normotensive. Pallor, cyanosis, icterus, and lymphadenopathy were not present.

Prakruti–kapha-vataj,

B.P. - 130/80 mmHg, Height - 5.3ft, Wt. - 65 kg, Pulse - 76/min, moderate tenderness and swelling over left knee joint region, no crepitus were found, temperature over knee joint was less than normal , no redness was found.

Systemic Examination: RS: Normal vesicular breathing, CVS: S1, S2 Heard, no murmur, no added sounds.

AshtaVidhaPariksha

- *Nadi: 76 b/ min*
- *Mutra: 5- 6 times*
- *Mala: once daily, complete evacuation*
- *Shabda: Spashta*
- *Jiwha: Alipta*
- *Akriti: Sthoola*

•*Druk: Avishesha*

•*Sparsha: AnushnaSheeta (sthaniksparshsheeta)*

Investigation

- X-ray- There was no radiologically detectable fractures
- MRI left knee – Partial rupture of Anterior Cruciate Ligament with haemarthrosis.

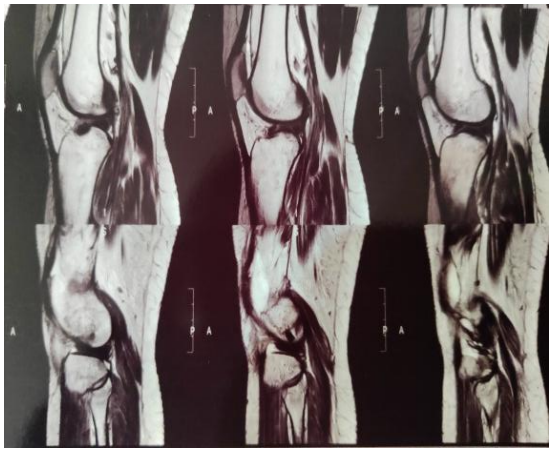

Figure 1 –MRI of left

On examination

She had no other associated systemic illness. On detailed examination no associated neurological deficits were seen. The findings are given below.

Table 1: INSPECTION

Swelling	++
Contusion / bruising	Absent

Table 2: PALPATION

Warmth	++
Tenderness	Grade 1 – lateral compartment

Table 3: RANGE OF MOVEMENTS

Flexion	40-degree limitation in terminal flexion
Extension	20-degree limitation in terminal extension

Table 4: TESTS

Patellar tap test	+ve
Valgus test	-ve
Varus test	-ve

Anterior drawer sign	+ve
Posterior drawer sign	-ve
Lachman test	+ve

Treatment protocol

Internal medications

- *Raktpachakvati*-1(250 mg) BD (before food)
- *Manspachakvati*-1(250 mg) BD (before food)
- *Asthimajjapachakvati*-1(250 mg) BD (before food)
- *Tapyadiloha*- 1(125 g)Bdafter food
- *Chandraprabha*– 1(125 g)BD (after food)
- *Swarnamakshikabhasma*- 1(125 g) BD (after food)
- *Manjisthalepa*
- *Murivennatail-aabhyanga*
- *Pindtailadhara*
- *Ksheeerbalatailadhara*
- *Sarivashatavrariksheerpaka* 20 ml in morning

Table 5: TREATMENT PROCEDURE

Days Treatment done	Treatment done	Condition of patient
Day 1 to 7	1. *Raktpachakvati* 1(250 mg) BD (before food) 2. *Manspachakvati* 1(250 mg) BD (before food) 3. *Asthimajjapachakvati* 1(250 mg) BD (before food) 4. *Muriveenataila* local application (thrice in a day) 5. *Manjisthalepa* (twice a day)	Swelling - reduced. Flexion -40-degree limitation Extension -20-degree limitation Temperature at knee joint increases
Day 8 to 14	1. One to three is continued 2. *Muriveenataila* local application (thrice in a day) 3. *Manjisthalepa* (twice a day) 4. *Pindtailadhara* 5. *Tapydailoha*(125 g) (after food bd)	No swelling Flexion -40-degree limitation Extension -20-degree limitation Tenderness -Grade 1 – lateral compartment
Day 15 to 21	1. One to three is continued 2. *Manjisthalepa* (twice a day) 3. *Pindtaila and ksheerbalatailadhara* 4. *Tapydailoha* (after food bd) 5. *Chandraprabhavati* (after food	Flexion –complete Extension -complete with pain

	bd)	
Day 22 to 28	1. *Tapydailoha*1(125 g) (after food bd) 2. *Chandraprabhavati*(125 g) (after food bd) 3. *Sarivashatavrariksheerpaka* 20 ml in morning	Flexion –complete Extension-complete without pain
Day 29 to 35	1. *Tapydailoha*1(125 g) (after food bd) 2. *Chandraprabhavati*1(125 g) (after food bd) 3. *Swarnamakshikbhasm*1(125 g) BD (after food)	All the actions are restored with no pain

4. RESULT

A follow-up was conducted on the 45th and 60th days. The patient did not experience any more symptoms during this time. After the 45th day, the patient reported a gradual improvement in knee discomfort, walking difficulty, swelling, movement restrictions, and tenderness on the left knee joint. Patient had notable relief following treatment. Prior to starting treatment as well as 45 and 60 days after finishing it, assessments were conducted.

Table 6: RESULT

Sign and symptoms	BT	On 45th day	On 60th day
Swelling	+++	+	-
Restricted movement	+++	+	-
Pain	+++	++	-
Difficuly in walking	+++	+	-
Tenderness	+++	+	-

5. DISCUSSION

In the beginning of every injury, the tissue will experience an inflammatory response as a form of protection. If such an inflammatory process is not managed and is allowed to run its course, it may lead to post-traumatic stiffness. Therefore, to boost the body's regenerative capacity and obtain a greater functional restoration, the inflammatory mechanism should be permitted to continue in a carefully controlled manner.

Raktpachak, Manspachak, and AsthiMajjapachakvati

In order to improve *rakt mans* and *asthimajja dhatu*, which aids in the quick regeneration of the ligament, a *kwath* of *raktpachak, manspachak*, and *asthimajjapachakvati* has been provided.(9)

Manjisthalepa (Rubiacordifolia)

External therapies were subsequently initiated. *Lepa* may be able to relieve swelling and pain to some extent by helping to regulate inflammatory responses. *lepa* may be applied till the gross swelling subsides (till the inflammation comes under control). Complete rest for the joint during this time should be encouraged. Although the patient in this case wasn't in an acute state, *Alepa* utilising *manjisthalepa* was applied for 21 days since it will enhance blood flow and keep the wounded area's temperature stable.(10)

Murivennataila Abhyanga

Murivennataila Abhyanga has been administered twice daily in addition to *Alepa* since it lessens swelling.(11)It treats the *vrana* (damage to the ligament), provides *sandhisthairyatha* (stability to the joint), and, to a certain extent, controls the

emergence of future swelling and pain. *Murivenna's* immediate anti-inflammatory effects have been demonstrated clinically and experimentally.(12)

PindtailaSnehana* and *Swedana

Snehana and *swedana* may also make the knee joint more flexible, hence lessening joint stiffness.(13) The patient also followed a graded exercise regimen in addition to *snehana* and *swedana*, which helped to maintain muscle endurance. After *snehana* and *swedana*, the knee regained full range of motion, and the muscles' tonicity was enhanced.

Sariva (Hemidesmusindicus) Shatavari(Asparagus racemosus) ksheerpaka

After the joint was made less stiff and could move again, *sarivashatavarikshererpaka* was prescribed for *brmhan*. (14)

Tapyadiloha, Chandraprabhavati with Swarnamakshika

For *dhatu vridhi* and *brhaman, tapyadiloha, chandraprabhavati* with *swarnamakshika* was suggested. Any injury will result in muscular atrophy from lack of usage following a period of immobilisation and reduced activity, which is sometimes referred to as *mamsa dhatu kshaya*.(15) Therefore, *ksheerbalatailaand pindtailadhara* ,Abhyanga and swedan are used for that.(16)Quadriceps, hamstrings, and gastrocnemius muscles in and surrounding the knee joint are strengthened by these techniques.

After *brmhan*, the instability was much reduced. The texture and tone of the quadriceps returned to normal. The patient was also instructed to conduct kinetic knee exercises in addition to this surgery. After 35 days of therapy, the patient was able to walk without experiencing instability or pain, and his or her knee had recovered to full range of motion. When it comes to meniscal and ligament damage to the knee, there is a provision for watchful waiting. The length of time it takes to recover from knee ligament damage without surgery typically relies on the severity of the initial injury, pre-existing fitness, and dedication to therapy. Unless the patient follows precise guidelines, a complete rupture of the anterior cruciate ligament with accompanying additional ligament injuries is difficult to manage conservatively.

6. CONCLUSION

According to the examination of traumatic knee injury in terms of *Ayurveda*, this condition can be correlated to an Ayurvedic term based on the symptoms, which we have interpreted to *abhigatajSnayugata Vata* and are being treated as such. The therapy approaches described in the classics are useful in providing notable relief in indications and symptoms aches, cramps, oedema, and difficulty walking are some symptoms. Using the findings of this investigation, it is stated that *Shamana* medicine taken orally together with *Tailadhara, lepa* and *swedana*is beneficial in reliving increasing the quality of life for those who are suffering from high grade knee injuries. The patient has gain all the movements back with knee stability and got relief in pain with this treatment protocol. Patient experienced an 80% improvement in subjective metrics and are able to walk unaided or without a knee brace. It is crucial to have a complete understanding of the injury through a physical examination and supported by evidence-based special investigations before choosing a course of therapy. In terms of signs, symptoms, and post-traumatic challenges, an Ayurvedic therapy regimen can offer an overall result.

CONFLICT OF INTEREST

None

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