



COMPARATIVE STUDY OF TRANSTIBIAL VS. ANTEROMEDIAL PORTAL TECHNIQUE IN ARTHROSCOPIC SINGLE BUNDLE ANTERIOR CRUCIATE LIGAMENT RECONSTRUCTION USING HAMSTRING MUSCLE AUTOGRAFT.

Orthopaedics

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ABSTRACT

BACKGROUND : The knee joint is the most common injured joint of all and anterior cruciate ligament is the most commonly injured ligament. The modern high speed vehicular trauma and modern lifestyle has led to increased ligament injuries of the knee. The anterior cruciate ligament forms the pivot in the functional stability of the knee in association with other ligaments, capsules, muscles and bones. During the past decade arthroscopically assisted techniques have been accepted method of reconstructing the ACL.

The aim of this study was to compare outcomes of transtibial Vs. the Anteromedial Portal technique for drilling the femoral tunnel in arthroscopic single bundle ACL reconstruction.

MATERIALS AND METHODS : The study was a case series study and was conducted for period between May 2011 to September 2016. The prospective study consists of 20 patients who had undergone Arthroscopic ACL reconstruction by TRANSTIBIAL femoral portal and 20 patients using ANTEROMEDIAL femoral portal.

RESULTS : The knee joint is the most commonly injured of all joints and the anterior cruciate ligament is the most commonly injured ligament. Patients treated by AM group had better results compared to TT group.

CONCLUSION : In our study looking to the number of patients in each group and follow up period no definitive conclusion can be reached. However, patient treated by AM group had better results compare to TT group.

KEYWORDS

ACL, AM- Antero medial, TT- Trans tibia, Knee joint, arthroscopic reconstruction, ACL, hamstring autograft.

BACKGROUND

The knee joint is the most commonly injured of all joints and the anterior cruciate ligament is the most commonly injured ligament.

The modern high speed vehicular trauma and modern life style has led to increased ligament injuries to the knee. The anterior cruciate ligament forms the pivot in the functional stability of the knee in association with other ligaments, capsule, muscles and bone.

Anterior cruciate ligament injury is the most common serious injury to the knee joint. The ACL is the primary stabilizer against the anterior translation of tibia on the femur and is important in counteracting rotation and valgus stress. ACL deficiency leads to knee instability. This results in recurrent injuries and increase risk to intraarticular damage, especially to meniscus.

The goal of ACL reconstruction are to restore stability of knee allow the patient to return to normal activities and to delay onset of the osteoarthritis with associated recurrent injury to the articular cartilage and loss of Meniscal function. During the past decade arthroscopic assisted techniques have been an accepted method of reconstructing the ACL. Femoral tunnel position in anterior cruciate ligament reconstruction is critical to a good outcome.

Generally, there are two alternatives for drilling the femoral tunnel, the transtibial approach and anteromedial approach. The traditional TT approach for femoral tunnel placement is limited by the angulation of the tibial tunnel and places the femoral tunnel higher in intercondylar notch. Therefore the anteromedial portal was introduced to overcome these limitations and to increase the rotational stability.

MATERIALS AND METHODS

The prospective study consists of 20 patients who had undergone Arthroscopic ACL reconstruction by TRANSTIBIAL femoral portal and 20 patients using ANTEROMEDIAL femoral portal using hamstring autograft at the ORTHOPEDIC DEPARTMENT SMIMER HOSPITAL, SURAT from MAY 2011 to SEPTEMBER 2013.

INCLUSION CRITERIA

- Willingness to participate and follow up.
- No prior knee surgery
- Normal contralateral knee
- Patients aged 15-40 years who underwent elective, primary ACL with hamstring autograft.
- Diagnosed case of ACL tear with instability of 3 weeks or more

than 3 weeks old injury.

EXCLUSION CRITERIA

- Previous surgery on either the ipsilateral or contralateral knee.
- Multiligamentous reconstruction
- Concomitant bony procedure that might distort the bony anatomy.
- ACL injuries with associated intrarticular.
- Osteoarthritic changes in XRAY.

General information like name, age, sex, occupation and address were noted. Then, a detailed history was elicited regarding mode of injury. Past medical history and family history was also recorded. Patients for surgery were selected as per indications and patients consent.

General condition of the patient was examined that is for pallor, pulse rate and blood pressure. Respiratory and cardiovascular system were examined for any abnormalities.

RESULTS

40 Cases of arthroscopy assisted ACL reconstruction were followed up for 1 year to 1.5 years. The mean follow up period was 1.25 years.

Age	TT group	%	AM Group	%
15-20	2	10	1	5
21-25	4	20	4	20
26-30	8	40	5	25
31-35	2	10	3	15
36-40	4	20	7	35
Total	20	100	20	100

Table 1 : AGE DISTRIBUTION

In TT group 40% patients were in 26-30 years age group while in AM group 35% were in 36-40 years age group.

Sex	TT Group	%	AM Group	%
Male	19	95	18	90
Female	1	5	2	10
Total	20	100	20	100

Table 2 : SEX DISTRIBUTION

In TT 95% of patients were male and in AM group 90% of patients were male.

	AM group	%	TT Group	%
NONE	12	60	12	60
MILD	4	20	4	20
MODERATE	5	20	4	20
Total	20	100	20	100

Table 3 : EFFUSION OR SWELLING

	AM Group	%	TT Group	%
NO	16	80	12	60
Slight and Periodical	4	20	6	30
Severe and Constant	0	0	2	10
Total	20	100	20	100

Table 4 : LIMP

	AM Group	%	TT Group	%
No	16	80	8	40
Occasionally	3	15	8	40
Frequent	1	5	4	20
Total	20	100	20	100

Table 5 : LOCKING EPISODES

In AM group 15% of patient shows occasional locking episodes while in TT 40% show occasional locking episodes.

	AM Group	%	TT Group	%
NEVER	14	70	7	35
Rarely	4	20	6	30
Frequently	2	10	7	35
Total	20	100	20	100

Table 6 : INSTABILITY (GIVING AWAY SENSATION)

In only 10% of patient treated with AM Giving away sensation is present then in 35% of patients in TT

	AM Group	%	TT Group	%
No problem	14	70	6	30
Slight Problem	5	25	10	50
Only at a time	1	5	4	20
Total	20	100	20	100

Table 7 : STAIR CLIMBING

After surgical reconstruction only 25% of patients in AM group had problem in stair climbing, where as 50% in TT group.

	AM Group	%	TT Group	%
No pain	16	80	8	40
Slight pain	4	20	8	40
Moderate pain	0	0	4	20
Total	20	100	20	100

Table 8 : PAIN

	AM Group	%	TT Group	%
YES	0	0	0	0
NO	20	100	20	100
Total	20	100	20	100

Table 9 : USING CRUTCHES

	AM Group	%	TT	%
No Problem	16	80	9	45
Slight Problem	4	20	11	55
Total	20	100	20	100

Total 10 : SQUATING

In AM group 20% of patients show slight problem while this was observe in 55% of patients in TT group.

	AM Group	%	TT Group	%
Excellent (95-100)	11	55	3	15
Good (84-94)	4	20	4	20
Fair (65-83)	4	20	9	45
Poor (<64)	1	5	4	20
Total	20	100	20	100

Table 11 : LYSHOLM SCORE

75% of AM group shows excellent and good results while only 35% in TT group.

DISCUSSION

The knee joint is the most commonly injured of all joints and the anterior cruciate ligament is the most commonly injured ligament.

The modern high speed vehicular trauma and modern life style has led to increased ligament injuries of the knee. The anterior cruciate ligament forms the pivot in the functional stability of the knee in

association with the other ligaments, capsules, muscles and bone.

In our study when we compare outcome by means of post op instability or giving away sensation present only in 10% of patients with AM Drilling then 35% in TT group.

When we compare outcome by means of post op locking episodes 15% of patients underwent AM drilling shows occasional episodes while 40% of patients in TT group

The AM approach Group had better lyhsolm scores at 3 months and better performance in the time movement function tests at 3 and 6 months. No other comparisons were significant.

While evaluating LYHSOLM score 75% of AM group shows excellent and good results while only 35% in TT group and 65% shows fair or poor results in TT group while only 25% in AM group.

Ku Kim et al. evaluated the clinical results in 33 patients with ACL rupture who were treated by anatomic ACL reconstruction using the two AM portal technique. The control group included 33 patients with ACL rupture who were treated with the conventional TT non anatomic method. An objective instability test was performed both pre operatively and at final follow up. The clinical results of both group were compared using IKDC and Lyhsolm scores as subjective tests. At the final follow up in the group of patients who underwent anatomic reconstruction by the two AM portal techniques, results in the pivot shift showed statistically significant improvement compared to the control group. They concluded that anatomic ACL reconstruction by two AM portals is an effective surgical technique that restores rotational stability with excellent clinical results..

CONCLUSION

In our study looking to the number of patients in each group and follow up period no definitive conclusion can be reached.

However, patient treated by AM group had better results compare to TT group.

BIBLIOGRAPHY

- Butler DL, Noyes FR, Grood ES - Ligamentous restraints to anterior posterior drawer in human knee. A biomechanical study. J Bone Joint surg Am 1980; 62:259-70.
- Haimes JL, Wroble RR, Grood ES, Noyes FR - Role of structures in the intact and anterior cruciate ligament deficient knee. Limits of motion in the human knee. Amj J sports med 1994
- Veth R, Jansen H, Leenslang J, Pennings A. Experimental meniscal lesions reconstructed with a carbon fiber-polyuretha - ne-poly (L-lactide) graft. Clin Orthop Relat Res. 1986;202:286-293.
- Englund M, Roos EM, Roos HP, Lohmander LS. Patient-relevant outcomes fourteen years after meniscectomy: influence of type of meniscal tear and size of resection. Rheumatology. 2001;40:631-639.
- Forriol F. Growth factors in cartilage and meniscus repair. Injury. 2009;40(Suppl 3):S12-16.
- Forriol F, Longo UG, Duarte J, et al. VEGF, BMP-7, Matrigel (TM), hyaluronic acid, in vitro cultured chondrocytes and trephination for healing of the avascular portion of the meniscus. An experimental study in sheep. CurrStem Cell Res Ther. 2014;10:69-76.
- Forriol F, Ripalda P, Duarte J, Esparza R, Gortazar AR. Meniscal repair possibilities using bone morphogenetic protein-7. Injury. 2014;45(Suppl 4):15-21.
- Chambers S, Cooney A, Caplan N, Dowen D, Kader D. The accuracy of magnetic resonance imaging (MRI) in detecting meniscal pathology. J R Nav Med Serv. 2014;100:157-160.