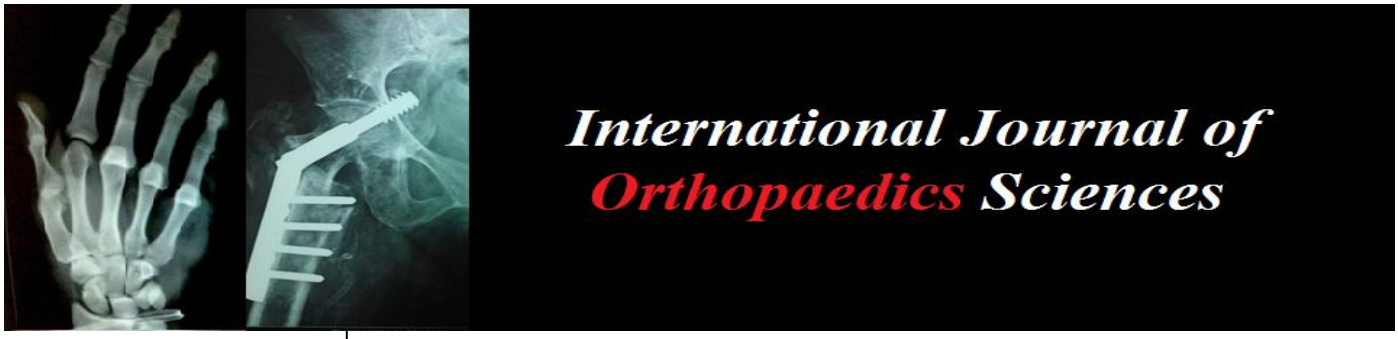

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A descriptive study of arthroscopy assisted anterior cruciate ligament reconstruction and evaluation of its functional outcome using Lysholm score

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Abstract
With the new advancements in the technology being used in orthopedic surgeries like arthroscopic reconstruction of joint injuries, the surgical outcome has improved a lot over the period of time. Arthroscopic reconstruction of the ACL ligament is one of the most commonly performed knee surgeries nowadays. The first arthroscopically assisted ACL reconstruction was performed in 1980 using an artificial ligament made out of carbon fiber supplemented with an extra-articular lateral substitution. Later in the first decade of twenty first century, anterior cruciate ligament reconstruction using Hamstring tendon autograft showed excellent self-reported and objective results. It was proved further that the outcome measures which favored Semitendinosus and Gracilis autografts included anterior knee pain, kneeling pain and extension loss. Long term studies have shown to have equal success rates with quadrupled Hamstring tendon graft or bone patellar tendon bone graft.
We conducted this study to evaluate the anterior cruciate ligament injuries, their arthroscopic surgical reconstruction and their functional outcome using Lysholm score over a period of 6 months follow up. 52 Patients admitted in the Orthopedic department of the hospital with ACL injuries were included in the study. 36% of the population had ACL injury due to RTA, 33% of the population had ACL injury due to fall and 31% of the population had ACL injury due to sports injury. 55.8% of the patients underwent surgery within 4 months of the injury. 29% of the patients had associated injuries, while 6% had complications post-op. Mean Lysholm score showed significant improvement post-operatively on evaluation at 6 weeks, 3 months and 6 months. 73.1% patients underwent ACL reconstruction, 15.4% had ACL reconstruction with Meniscal Debridement while rest 11.5% underwent ACL reconstruction with Meniscal Repair.

Keywords: ACL reconstruction, Arthroscopic knee surgery, Lysholm score

Introduction
Arthroscopic reconstruction of the ACL ligament is one of the most frequently performed procedure in the knee surgery today. Before 19th century ACL was the structure which was never considered in the diagnosis of the knee injuries, since the 20th century the ACL injuries have moved very much more central stage.
Bonnet [1] in 1845 first discussed ACL injury in the medical literature.
Stark [2] in 1850 described the rupture of anterior cruciate ligament.
In 1875, Georgeos C Noulis [3] of Greece described the technique of the Lachman test for the first time. He wrote "fix the thigh with one hand, with the other hand hold the lower leg just below the knee with the thumb in front and the fingers behind then you try to shift the tibia forward".
In 1917 Hey Groves [4] published his first case of ACL reconstruction with a tethered Fascia Lata graft. Two years later, Hey Groves edited a detailed operative strategy of reconstruction of the ACL and PCL.
In 1936, Campbell [5] described intra-articular use of the patellar tendon and stressed the need for ACL reconstruction in young athletic individuals.
During the 1980's a remarkable interest developed in the use of allograft tissue for ACL reconstruction. Shino [6] *et al* looked at allogeneic patellar tendon reconstruction of the ACL

in the dog. Shino and his group was also the first to publish clinical results of allogeneic reconstruction of the ACL. There were no significant differences between the mechanical properties of the graft.

In 1903, Fritz Lange [7] of Munich proposed Silk sutures as prosthetic ligaments in the human body. He also reported 4 cases of Flail knee joints that he had successfully stabilized using artificial ligaments made of silk combined with a Semitendinosus plasty.

In the 1970 and early 1980 many synthetic ligament were introduced for human clinical trials, including the Carbon fiber.

The first arthroscopically assisted ACL reconstruction was performed in 1980 by Dave Dandy [8], United Kingdom, who used an artificial ligament made out of carbon fibre supplemented with an extra-articular lateral substitution. There are many techniques currently in use, but mention should be made of the effort of Clancy 41 *et al* and Rosenberg [9] *et al* for their part in the development of these techniques.

In 2006, Lucy J. Salmon [10] showed that anterior cruciate ligament reconstruction using Hamstring tendon autograft affords excellent self-reported and objective results in both men and women after 7 years.

In Sep 2010, ShuZhen Li, Wei Su [11] *et al* showed that outcome measures that favoured Semitendinosus and Gracilis autografts included anterior knee pain, kneeling pain and extension loss. Overall, postoperative complications of the knee joint were lower for Hamstring tendon (HT) autografts than for bone patellar tendon bone (BPTB) autografts, and BPTB autograft were superior to Hamstring tendon (HT) autografts in resuming stability of the knee joint. But 4 stranded HT autograft combined with application of the moderm 'Endobutton' HT graft fixation could increase knee joint stability.

Long term studies have shown to have equal success rates with quadrapuled HT graft or BPTP graft [12]. Anterior knee pain and kneeling pain was significant in BPTB groupas compared with HT group [13, 14, 15]. Development of OA was around 61% greater in BPTB graft as compared to HT graft [16].

This study has been carried out to evaluate the anterior cruciate ligament injuries, their arthroscopic surgical reconstruction and their functional outcome using Lysholm score over a period of 6 months.

Objective

1. To study the cases of knee injury with Anterior Cruciate Ligament rupture.
2. To study the functional outcome of cases based on the Lysholm knee scoring

Materials and Methods

Study Site: Jehangir Hospital in Pune, Maharashtra.

Study Design: A descriptive study

Duration of Study: Duration of study 1st July 2014 to 31st December 2015.

Study Population: The patients admitted in our hospital's orthopaedic ward for anterior cruciate ligament reconstruction were included in the study.

Follow up time: 6 months.

Ethical approval was obtained from the institutional Ethics committee and patients willing to participate by giving written informed consent were included in the study.

Methodology

All patients in the study had undergone arthroscopic reconstruction, a total of 52 patients participated in our study who gave a written informed consent. All the patient's records including age, mode of injury, side affected, duration of injury to the time of surgery, associated injuries, complications and Lysholm score were evaluated using a questionnaire.

Statistical analysis

The data was entered in Microsoft Excel 2013 and was analyzed using SPSS version 22. Results were presented as per requirement in terms of frequencies and percentages, Chi square test, ANOVA test and other necessary tests were applied as per the requirement.

Results

In our study we have evaluated functional outcome of 52 consecutive patients presenting with ACL reconstruction using Lysholm score.

Table 1: Mode of Injury

Mode of injury	Number of patients	Percentage (%)
FALL	17	32.7
RTA	19	36.5
Sports injury	16	30.8
Total	52	100.0

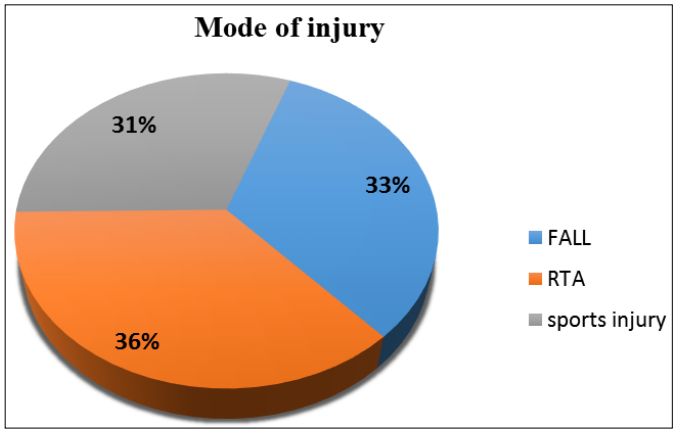

Fig 1: Pie chart showing mode of injury

Comment: 36% of the population had ACL injury due to RTA, 33% of the population had ACL injury due to fall and 31% of the population had ACL injury due to sports injury.

Table 2: Duration of injury to surgery

Duration of injury to surgery	Number of patients	Percentage (%)
≤ 4 month	29	55.8
5 - 8 month	8	15.4
9 - 12 month	8	15.4
> 12 month	7	13.4
Total	52	100.0

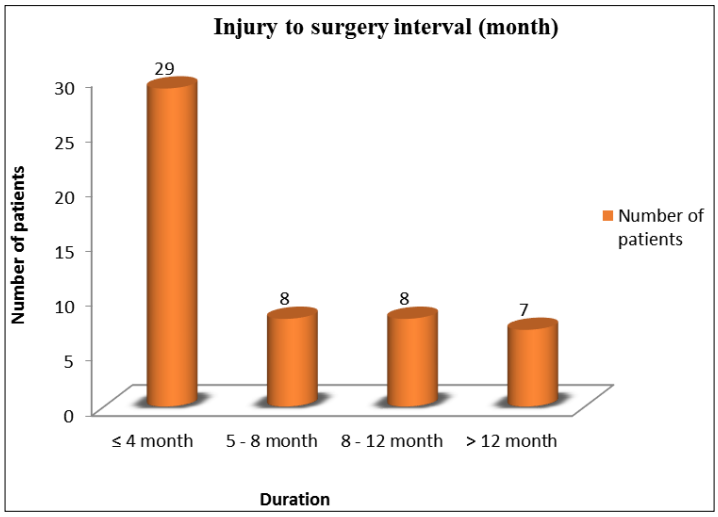

Fig 2: Bar diagram showing duration of injury to surgery

Comment: Majority of the population (55.8%) underwent surgery within 4 months, 15.4% each had undergone surgery within 5-8 months and 9-12 months. 13.4% had surgery after 12 months.

Table 3: Associated injury

Associated injury	Number of patients	Percentage (%)
Yes	15	28.8
No	37	71.2
Total	52	100.0

Comment: 29% of the population had associated injuries.

Table 4: complications

Complications	Number of patients	Percentage (%)
Inflammatory synovitis	1	1.9
Port site infection	1	1.9
Post-op adhesions	1	1.9
Total	52	100.0

Comment: 6% of the population had complications, one patient each experienced inflammatory synovitis, Port site infection & Post-op adhesions

Table 5: Lysholm score

	Number of patients	Lysholm score		P-Value
		Mean	SD	
Preoperative	52	70.09	14.87	
6 weeks	52	78.74	7.69	< 0.001
3 month	52	90.00	5.71	< 0.001
6 month	52	95.00	5.06	< 0.001

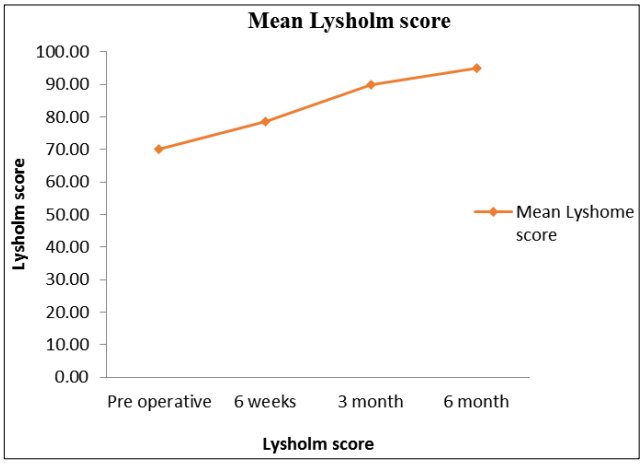

Fig 3: Line diagram showing mean lysholm score

Comment: By using paired t-test p-value < 0.05 therefore there is significant difference between mean Lysholm score at pre-operative and post-operative at 6 week, 3 month and 6 month.

Table 6: lysholm score according to age

Lysholm score at	Age group (years)									P-Value
	≤ 30			31 - 40			> 40			
	Number of patients	Mean	SD	Number of patients	Mean	SD	Number of patients	Mean	SD	
Preoperative	26	71.42	15.04	19	63.84	15.53	7	71.71	13.83	0.223
6 week	26	80.13	7.72	19	76.59	7.67	7	79.33	7.53	0.350
3 month	26	90.38	5.99	19	90.00	5.34	7	88.50	6.38	0.780
6 month	26	95.71	5.35	19	94.59	5.01	7	93.33	4.08	0.549

Comment: By using ANOVA test p-value > 0.05 therefore there is no significant difference between mean Lysholm score at pre operative, and post operative 6 week, 3 month and 6 month.

Table 7: No. Of patients underwent aclr, meniscal debridement & meniscal repair.

Surgery done	Number of patients	Percentage (%)
ACLR	38	73.1
ACLR + Meniscal Debridement	8	15.4
ACLR + Meniscal Repair	6	11.5
Total	52	100

Comment: 73% of the patients underwent ACL reconstruction.

Discussion

- 32.7% of the patients had fall, 36.5% patients had accident and 30.8% patients had Sports injury which led to the ACL damage.
- Majority (55.8%) of the patients underwent surgery within 4 months of the injury, 15.4% each had undergone surgery within 5-8 months and 9-12 months. 13.4% had surgery after 12 months.
- 28.8% of the patients had associated injuries.
- Around 6% of the population had complications.
- There was a significant difference between Lysholm score at pre-operative and post-operative at 6 week, 3 month and 6 month duration, indicating improvement in the patient's condition with time.
- There was no any significant difference between Lysholm score at pre-operative and post-operative at 6 week, 3 month and 6 month considering age groups.

References

1. Bonnet A. Traite des maladies des articulations. Paris: Bailliere, 1845.
2. Stark J. Two cases of ruptured cruciate ligaments of the knee joint. Edinnburgh Med Surg. 1850; 5:267-7.
3. Noulis G. Entorse Du Genou. Facults de msdecine. Paris, 1875, 1-53
4. Hey-grooves EW. Operation for repair of the cruciate ligaments. Lancet. 1917; 2:674-75.
5. Campbell WC. Repair s of ligaments of knee. Report of a new operation for repair of ACL. surg Gynecol Obstet. 1936; 62:964-68.
6. Shino K, Kimura T, Hirose H, Gotoh I, Inoue M *et al*. Replacement of ACL by allogenic graft : an operation for chronic ligamentous insufficiency. The journal of Bone & joint surgery, Br. 1986; 68B(5):739-46.
7. Lange F. UberDie Schnenplastik. Verb Dtsch Orthopo Ges. 1903; 2:10-12.
8. Dandy DJ. Arthroscopic surgery of knee. Edinburgh and London. Churchill Livingstone, 1981, 67-8.
9. Rosenberg T, Paulos L, Abbot PJ. Arthroscopic cruciate repair and reconstruction: An overview and description of technique. In: Feagin JJ, Ed. the Crucial Ligaments. New York; Churchill Livingstone, 1988, 409-23.
10. Salmon LJ, Refshauge KM, Russell VJ, Roe JP, Linklater J *et al*. Gender diffierences in outcome after anterior cruciate ligament reconstruction with hamstring tendon autograft. Am J Sports Med. 2006; 34(4):621-9.
11. ShuZhen Li, Wei, SuJinmin Zhao, Yinglong Xu, Zhandong Bo, Xiaofei Ding, Qingjun Wei. Department of Orthopaedics Trauma and Hand Surgery, the First Affiliated Hospital of Guangxi Medical University, Nanning, 530027, China. A meta-analysis of hamstring autografts versus bone–patellar tendon–bone autografts for reconstruction of the anterior cruciate ligament. 2011; 18(5):287-293.
12. Macaulay AA, Perfetti DC, Levine WN. Anterior cruciate ligament graft choices. Sports heal a multidiscip approach. 2012; 4(1).
13. Shelton WR, Fagan Bc. autograft commonly used in anterior cruciate ligament. J Am Acad orthop surg. 2011; 19(5):259-64.
14. West RV, Harner CD. Graft selection in anterior cruciate ligament J Am Acad orthop surg. 2005; 13(3):197-207.
15. Bartlet RJ, Clatworthy MG, Nguyen TNV. Review article graft selection in reconstruction of the anterior cruciate ligament. J Bone joint surg Br. 2001; 83:625-34.
16. Xie X, Xiao, Li Q, Zhu B, Chen J, Chen H *et al*. Increased incidence of osteoarthritis of knee joint after ACL reconstruction with bone patellar tendon bone autograft then hamstring autograft : a meta-analysis of 1,443 patients at a minium of 5 yrs:EurJ orthop surg Traumatol. 2015; 25(1):149-59.