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ACL Reconstruction with ACL and Meniscus Repair, Early and Midterm Outcomes

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Abstract

Background: Anterior cruciate ligament (ACL) injuries, often associated with meniscal tears, are common in young athletes. Timely surgical intervention is crucial to restore function, reduce pain, and prevent long-term sequelae such as osteoarthritis and persistent knee instability.

Objectives: To compare early and midterm clinical outcomes, patient satisfaction, functional recovery, and complication rates following isolated ACL reconstruction versus combined ACL and meniscal repair over a follow-up period of up to two years.

Methodology: This retrospective study analysed 135 patients undergoing ACL reconstruction (ACLR) at Ninewells Hospital, University of Dundee. Patients were categorised into isolated ACL tear and ACL with meniscal tear groups. Outcomes were assessed using the Knee injury and Osteoarthritis Outcome Score (KOOS), Visual Analogue Scale (VAS) for pain, and Tayside patient satisfaction questionnaire at 26, 52, and 104 weeks. Statistical analysis included t-tests and binomial tests. Complication rates were documented. Inclusion and exclusion criteria ensured a homogenous study population without multi-ligament or fracture-related knee injuries.

Results: Isolated ACL tears accounted for 40 patients; 95 had combined ACL and meniscal injuries. Most cases occurred in patients under 25 years. Both groups showed significant pain reduction (VAS) and functional improvement (KOOS) at all follow-up points ($p<0.001$).

The ACL-only group demonstrated superior early outcomes in pain, function, and sports participation, whereas by 52–104 weeks, the ACL+ meniscus group achieved better scores in quality of life and sports function. Satisfaction was consistently high in both groups but slightly higher in ACL-only patients at early follow-ups. Complication rates were 13% for ACL-only and 20% for combined repairs, with graft failure most common. Most complications occurred within 26 weeks and were managed conservatively or with minor surgical interventions.

Conclusion: Both isolated ACL reconstruction and combined ACL with meniscal repair significantly improve pain, function, and satisfaction. Early recovery is faster in isolated ACL injuries, but combined repairs demonstrate superior long-term quality of life and sports function outcomes.

Keywords: Anterior cruciate ligament, Meniscal tear, KOOS score, VAS pain, Arthroscopic repair

Introduction

ACL injuries are the most frequent knee injuries among young athletes. The ACL + meniscal injury is the most prevalent injury occurring in the knee, typically due to road traffic accidents or simple twisting motion. Immediately diagnosing and treating these injuries is essential to prevent chronic knee pain and to avoid forcing athletes to change their career paths[1]. The success of ACL surgeries largely hinges on early detection and the precision of the surgical procedure, as these injuries often occur alongside PCL damage, meniscal tears, medial collateral ligament avulsions, or PLC injuries. Osteoarthritis of knee can occur in chronic neglected cases[2].

A study by Labella and colleagues pointed out that awareness of ACL injuries has increased due to better access to MRI scans, resulting in higher rates of diagnosis. ACL tears are particularly common among female soccer players, followed by male football players[3]. At the high school level, ACL injury rates are significantly higher in adolescent girls compared to boys participating in sports such as football, basketball, baseball/softball, track, and volleyball, with girls being 2 to 6 times more affected. In collegiate athletics, the rates of ACL injuries are also higher among women.

An ACL injury typically occurs in an athlete with hip in internal rotation, knee in extension, their foot in plantar flexion, and a valgus force is put in to the knee while their centre of mass is behind the foot contact point[(3)]. The influence of ACL injuries on the mental health and academic performance of young athletes can be significant, as recovery and rehabilitation after surgery can take months. The failure rate for ACL reconstruction surgeries can range from 3% to 25%, influenced by genetic and environmental factors[4].

ACL injuries are commonly associated with lateral meniscal tears, failed reconstruction of ACL is typically associated with unrepaired meniscal injuries, leaving the meniscus unattended can lead to chondral defects osteoarthritis and increased episodes of instability[5].

Thus, investigating the short and midterm results of ACL reconstruction is crucial. ACL injuries often do occur alongside meniscal tears and understanding the outcomes of both isolated and combined treatments are crucial for improving patient care. Literature is critically missing on such treatments.

This study was conducted to assess the outcomes of ACL surgeries done in Tayside over a period of up to 2 years post- treatment.

Methods and Materials

The study was conducted at University of Dundee department of Orthopaedics and trauma Surgery (UDOTS), centre patients were cases operated at Ninewells hospital. Approval was sought and obtained from University of Dundee in the form of a Caldicott letter. My study involves a retrospective analysis of short-term and long-term outcomes.

Patients operated with primary ACL tears, patients operated with acute ACL tears, Patients operated with chronic ACL tears, Patients with ACL and meniscal tears and young age individuals below 40 years who are involved weekly/rarely in sports or high-end sports of age below 56 years with ACL/meniscus tears were included limit were included.

Cases with any associated fractures, Multi- ligament injury of knee joint, Medial or lateral Collateral ligament injuries Bilateral knee ligament injuries and patients with Injuries with osteochondral fractures were excluded.

Data was analysed using the SPSS software. Data had been collected for Knee injury and Osteoarthritis Outcome score (KOOS) [6], (VAS) Visual Analog score[7] and Tayside patient satisfaction questionnaire, approximately 40 patients were selected with isolated ACL, 95 had meniscal tears with ACL injury, and the rest of the patients had another knee injuries and were excluded.

Patients were divided into two groups: those with isolated ACL tears and those with ACL tears accompanied by meniscal injuries. Age categories were assigned to assess the incidence of these injuries across different age groups. Gender distribution was examined using frequency analysis to determine percentages. An independent samples T-test was used to identify any statistically significant differences between genders within the general population.

The Tayside questionnaire responses were assessed using a binomial test. A one-sample T-test was applied to evaluate satisfaction scores, with results presented as means and standard deviations. KOOS and VAS scores were analysed using paired sample T-tests to assess changes over time. This included calculating the mean and standard deviation and determining whether the changes were statistically significant. Within the KOOS assessment, key parameters—such as post-treatment pain, symptoms, quality of life, sports functionality, and ability to perform daily activities—were evaluated at 26 weeks, 52 weeks, and two years post-treatment.

Lastly, complications were reviewed using frequency analysis to calculate the occurrence as a percentage of the total patient group.

Results

The data presents a comparative analysis of patients with isolated ACL tears versus those with combined ACL and meniscal tears. 135 patients were selected and were separated in ACL group and ACL with meniscus group. The data indicated that individuals under 25 years exhibited the highest incidence of ACL injuries with or without meniscal involvement, accounting for 61% and 42.5% of cases, respectively. Patients aged 25–35 formed the second most affected group. Beyond age 45, the incidence declined notably. These findings align with trends reported in previous studies. P value shows significantly higher injuries in younger age group in both ACL and meniscal tears.

Table 1: Demographic Variables and Injury Type

Demographic Variables		ACL Tear (%)	ACL + Meniscal Tear (%)	P-value (ACL)	P-value (ACL + Meniscal)
Age Group	Under 25	17 (42.5%)	58 (61.1%)	0.002	<0.001
	26-35	15 (37.5%)	22 (23.2%)		
	36-45	6 (15.0%)	12 (12.6%)		
	46-55	2 (5%)	2 (2.1%)		
	56 and above	0 (0%)	1 (1.1%)		
Gender	Male	26 (65%)	68 (71.57%)	<0.001	<0.001
	Female	14 (35%)	27 (28.42%)		

The bar chart depicts the proportion of individuals, categorized by age, affected by ACL with meniscus tears (represented in orange) and ACL tears (represented in blue). Incidence was higher in males in both groups whereas females were less frequently injured. Men experienced 65% of ACL tears and 71.5% of ACL with meniscus tears, both represented in blue, while women accounted for 35% of ACL tears and 27% of ACL with meniscus tears.

Table 2: Satisfaction level post-operative:

Time Point	Satisfaction Level	ACLR (%)	ACLR + Meniscal repair (%)	P-value (ACL)	P-value (ACLR + Meniscus repair)
26 Weeks	Satisfied	16 (40%)	39 (41.4%)	<0.001	<0.001
	Dissatisfied	0 (0%)	6 (6.3%)		
	Not Reported	24 (60%)	50 (52.6%)		
52 Weeks	Satisfied	13 (32.5%)	22 (23.2%)	<0.001	<0.001
	Dissatisfied	2 (5%)	3 (3.2%)		
	Not Reported	25 (62.5%)	70 (73.7%)		
104 Weeks	Satisfied	10 (25%)	9 (9.5%)	<0.001	<0.001
	Dissatisfied	2 (5%)	0 (0%)		
	Not Reported	28 (70%)	86 (90.5%)		

Satisfaction was consistently higher among patients with isolated ACL tears. The combined injury group reported more dissatisfaction in early follow-ups, possibly reflecting more complex recovery challenges. Over the different follow-up periods, patients with isolated ACLR repairs showed more favourable recovery patterns and reported higher improvement levels particularly at the 26-week and 52-week intervals. By 104 weeks, the differences in recovery outcomes between the two groups became less marked.

Table 3: General improvement over time:

Time Point	Outcome	ACLR (%)	ACLR + Meniscal repair (%)	P-value (ACL)	P-value (ACLR + Meniscal repair)
26 Weeks	Improved	16 (40%)	40 (42.1%)	<0.001	<0.001
	Not improved	0 (0%)	3 (3.2%)		
	Deteriorated	0 (0%)	1 (1.1%)		
52 Weeks	Improved	13 (32.5%)	24 (25.3%)	<0.001	<0.001
	Not improved	2 (5%)	0 (0%)		
	Deteriorated	0 (0%)	1 (1.1%)		
104 Weeks	Improved	10 (25%)	9 (9.5%)	<0.001	<0.001
	Not improved	2 (5%)	0 (0%)		
	Deteriorated	0 (0%)	0 (0%)		

The improved and not improved percentages for ACL reconstruction (ACLR) and ACL with meniscal repair vary based on clinical outcomes and studies. For ACLR, improvement rates are generally high. Persistent symptoms such as stiffness and instability were primarily reported by the ACL + meniscal tear group. Over time, these complaints diminished but were still more frequent than in the ACL- only group (p value <0.001).

Consistently, individuals with only ACL tears demonstrated better recovery across all parameters, while those with additional meniscal tears expressed greater dissatisfaction, especially in earlier follow-ups, often due to symptoms such as pain, stiffness, and instability.

Table 4: Dissatisfaction Reported by Patients:

Time Point	Reported Issues	ACLR (%)	ACLR+ Meniscal repair (%)	P-value (ACLR)	P-value (ACLR + Meniscal)
26 Weeks	Pain, stiffness, mobility limitation, instability	0 (0%)	6 (6.6%)	<0.001	<0.001
	No Complaints	16 (40%)	39 (41.1%)		
	Not Reported	40 (60%)	50 (52.6%)		
52 Weeks	Pain, stiffness, mobility limitation, instability	2 (5%)	3 (3.3%)	<0.001	<0.001
	No Complaints	13 (32.5%)	22 (23.2%)		
	Not Reported	25 (62.5%)	70 (73.7%)		
104 Weeks	Pain, stiffness, mobility limitation, instability	2 (5%)	0 (0%)	<0.001	<0.001

	No Complaints	10 (25%)	9 (9.5%)		
	Not Reported	28 (70%)	86 (90.5%)		

Dissatisfaction was higher in ACLR+MENISCUS repair group, but levels improved over time. Patient satisfaction is evaluated on a scale from 0 to 10, with 0 representing the lowest satisfaction and 10 indicating the highest. The majority of patients have reported scores between 8 and 9, reflecting high satisfaction. Notably, there is little variation in satisfaction levels between the ACL reconstruction (ACLR) group and the group that underwent ACL reconstruction combined with meniscal repair.

Table 5: Overall Satisfaction Scores (Mean ± Standard Deviation)

Time Point	ACLR (Mean ± SD)	ACLR+ Meniscal repair (Mean ± SD)	P-value (ACLR)	P-value (ACLR + Meniscal)
26 Weeks	8.69 ± 1.40	8.00 ± 2.10	<0.001	<0.001
52 Weeks	8.33 ± 2.16	9.00 ± 1.38	<0.001	<0.001
104 Weeks	8.64 ± 1.29	8.89 ± 0.78	<0.001	<0.001

26 Weeks Post-Surgery

At 26 weeks, about 40% of patients from both ACL-only and ACL + meniscus groups reported improvement. Satisfaction levels were high in both groups, with average scores between 8 and 9 out of 10. Around 50–60% of patients did not respond. Dissatisfaction and unresolved symptoms were more frequently reported in the ACL + meniscus group. Statistical analysis confirmed the clinical significance of these outcomes ($p < 0.001$).

52 Weeks Post-Surgery

By 52 weeks, improvement rates dropped slightly to 25.3% in the ACL+ meniscus group and 32.5% in the ACL-only group. Dissatisfaction due to ongoing symptoms, pain, or instability was reported by 5% in the ACL group and 3.2% in the combined group. P-values remained < 0.001, affirming the clinical relevance.

104 Weeks Post-Surgery

At the two-year follow-up, improvement was noted in 25% of the ACL-only group, compared to 9.5% in the ACL+ meniscus group. Again, satisfaction remained high. The number of patients reporting unresolved symptoms decreased. The statistical significance of the results persisted ($p < 0.001$)

VAS Pain Score Outcomes

The VAS score for pain ranges from 0 to 10 where 0 is no pain at all and 10 is highest pain possible which can make a patient unable to move. The Visual Analogue Scale showed marked pain reduction in both groups. Pre-treatment pain levels were around 4–5 and reduced to 1–2 by 26 weeks. These improvements were statistically significant across all time points, as indicated by a paired sample t- test ($p < 0.001$). However, a slight increase in reported pain was observed in the ACL-only group at 104 weeks, which was not statistically significant.

Table 6: VAS outcome measures:

Time Point	ACLR (Mean ± SD)	ACLR + Meniscal repair (Mean ± SD)	P-value (ACLR)	P-value (ACLR+ Meniscal)	Comment
Pre- Treatment	3.49±2.55	4.97 ± 2.53	—	—	Higher baseline pain in ACL + Meniscal group.
26 Weeks	1.42±1.19	2.71±2.50	<0.004	<0.001	Pain reduced in both, more significantly in ACL- only group.
52 Weeks	1.22±1.29	1.68±2.48	<0.001	<0.001	Continued pain relief in both groups.
104 Weeks	3.87±3.86	1.70±2.24	0.251	<0.004	ACL-only pain worsened slightly; meniscal group stable.

The Visual Analog Scale (VAS) score is commonly used to measure pain levels in patients undergoing ACL reconstruction (ACLR) and ACL with meniscal repair. Figure generally reports significant pain reduction post-surgery for both procedures.

KOOS Score

The KOOS evaluates five areas: symptoms, pain, daily activities, sports/recreation, and quality of life, each scored separately. Scores are total led and scaled from 0 to 100, with 100 indicating the best outcome

Table 7: KOOS Score

Measure	Time Point	ACL Tear (Mean ± SD)	ACL + Meniscal Tear (Mean ± SD)	P-value (ACL)	P-value (ACL + Meniscal)
KOOS symptoms	Pre-treatment	69.72(14.78) 26week 64.59(15.37) 52week 66.03(17.93) 104week	61.61(18.19) 26week 67.21(14.26) 52week 63.10(14.90) 104week		
	26 Weeks	85.94 ± 9.48	78.71 ± 17.35	0.001	<0.001
	52 Weeks	85.98 ± 11.60	84.57 ± 13.71	<0.001	<0.001
	104 Weeks	85.95 ± 11.21	88.06 ± 8.27	0.005	<0.001
KOOS- pain	Pre-treatment	69.84(13.31) 26week 65.32(15.80) 52week 66.20(15.56)104week	52.74(18.26) 26week 62.78(19.17) 52week 55.60(22.21) 104week		
	26 Weeks	80.57 ± 12.78	76.63 ± 18.13	<0.004	<0.001
	52 Weeks	82.32 ± 10.25	84.99 ± 17.44	<0.001	<0.001
	104 Weeks	78.79 ± 15.74	83.17 ± 10.10	<0.012	<0.001
KOOS - Function (ADL)	Pre-treatment	78.06(17.64) 26week 74.01(16.99) 52week 76.95(19.30)104week	67.26(20.16) 26week 73.31(19.32) 52week 73.04(19.80) 104week		

	26 Weeks	96.23 ± 4.50	87.63 ± 18.02	<0.001	<0.001
	52 Weeks	95.20 ± 7.80	92.36 ± 13.76	<0.001	<0.001
	104 Weeks	93.90 ± 7.76	94.74 ± 8.89	<0.001	<0.001
KOOS - Sports/Rec Function	Pre-treatment	37.08(24.95) 26week 35.83(25.40) 52week 41.82(29.43)104week	32.49 (27.17)26week 37.40(23.02) 52week 25.71(22.80)104week		
	26 Weeks	74.06 ± 20.05	62.36 ± 22.05	<0.001	<0.001
	52 Weeks	73.02 ± 20.80	81.00 ± 16.35	<0.001	<0.001
	104 Weeks	73.64 ± 23.24	77.14 ± 13.80	<0.001	<0.001
KOOS - Quality of Life (QOL)	Pre-treatment	19.95(18.57) 26week 15.42(17.97) 52week 22.19(19.83)104week	23.00(17.50) 26week 26.28(17.97) 52week 25.94(15.90)104week		
	26 Weeks	51.97 ± 16.58	50.40 ± 19.16	<0.001	<0.001
	52 Weeks	58.68 ± 20.33	69.08 ± 20.42	<0.001	<0.001
	104 Weeks	59.69 ± 18.19	74.14 ± 11.63	<0.001	<0.001

KOOS – Symptoms

Symptom scores in both ACLR and ACL+ meniscus repair improved significantly from a baseline of 65 to post-operative values around 85, sustained across 26, 52, and 104 weeks. All changes were statistically significant ($p < 0.001$) in both groups.

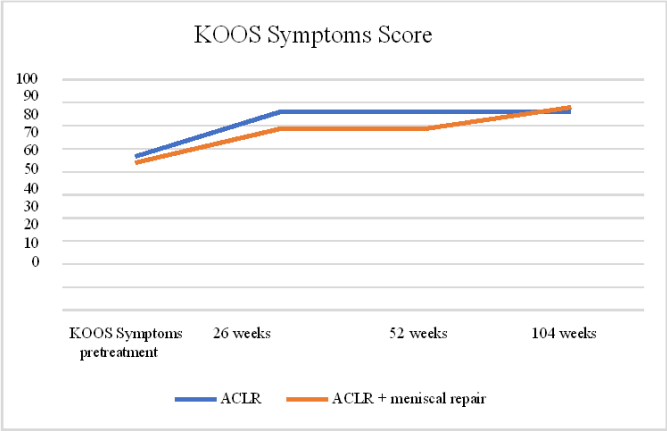

Figure 1: KOOS symptom line diagram

KOOS Pain scores rose from approximately 65 in ACL group to pre-treatments to 80+ post- treatment. In ACL+ meniscus group score rose from 55 to 85 approximately, improvement was maintained across all time points with p-values < 0.001.

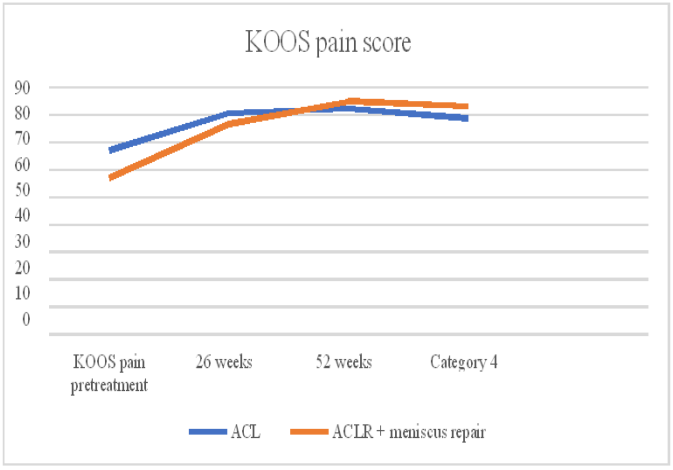

Figure 2: KOOS pain line diagram

KOOS – Function in Daily Living (ADL)

ADL scores improved from around 75 to 90 + in both ACLR and ACLR+ meniscus group. This functional recovery was consistently significant across all checkpoints ($p < 0.001$).

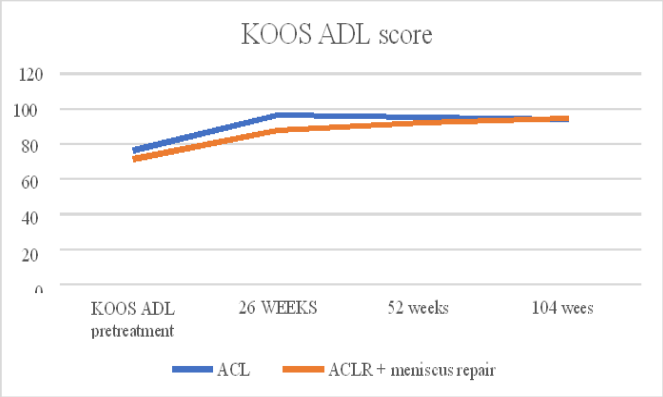

Figure 3: KOOS Activities of daily living score

KOOS – Sports Participation

Scores in this domain showed the most dramatic improvement—from 35 to 75 in both groups. While gains were seen at all stages; the most notable increases were at 52 and 104 weeks ($p < 0.001$).

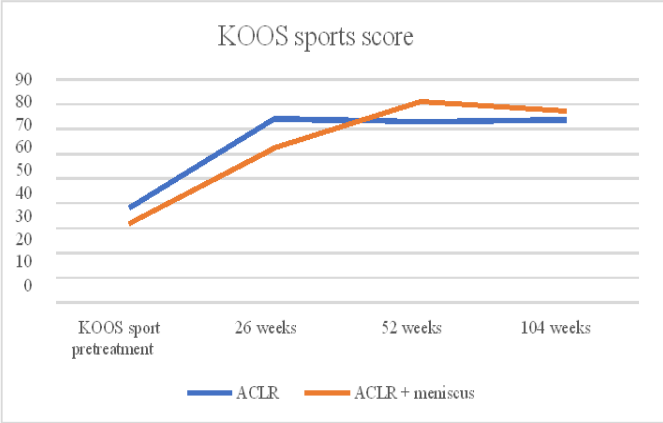

Figure 4: KOOS sports function score line diagram

KOOS – Quality of life score

QOL scores in ACLR+ meniscus group outperform ACLR group, dramatic improvement in scores is seen from approximately 20 to 56 in ACLR and from 24 to 70 in ACLR+ meniscus group with p value <0.001 indicating significance.

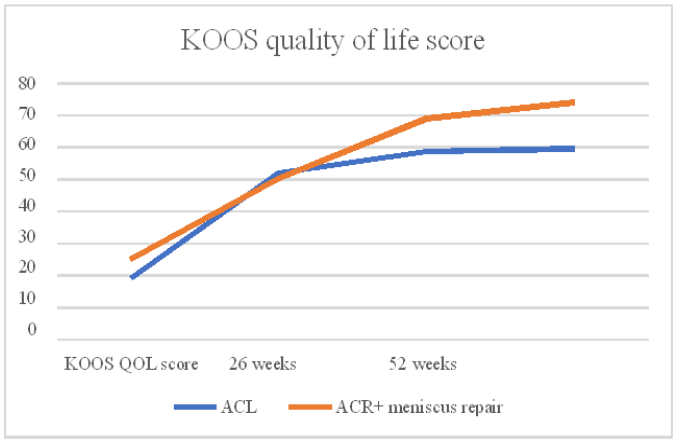

Figure 5: Line diagram QOL score

Complications

Overall complication rates were 20% for ACL + meniscus repairs and 13% for ACL-only procedures. Graft failure was the most frequent complication (10% ACL-only, 4.2% ACL + meniscus). Infections and cyclops lesions were more common in the ACL+ meniscus group. Most complications occurred within the first 26 weeks. Some patients required additional procedures like debridement, manipulation, or meniscectomy. Less frequent issues included bleeding, metalwork problems, and wound complications (each 1%).

Table 8: Complications

Complication (%)	35 (87.5%) No complication in 87% ACL tear	76 (80.0%) No complication in 80% ACL + meniscus	p-value
Cyclops Lesion	0 (0.0%)	4 (4.2%)	0.621
Deep Infection	0 (0.0%)	1 (1.1%)	
Excessive Bleeding due to Warfarin	0 (0.0%)	1 (1.1%)	
Pain	1 (2.5%)	1 (1.1%)	

Persistent Effusion	0 (0.0%	1 (1.1%)	
Re-Tear	4 (10.0%)	4 (4.2%)	
Re-Tear And Prominent Metal Work	0 (0.0%)	1 (1.1%)	
Recurrence of Symptoms	0 (0.0%)	1 (1.1%)	
Superficial Infection	0 (0.0%)	4 (4.2%)	
Wound Dehiscence	0 (0.0%)	1 (1.1%)	

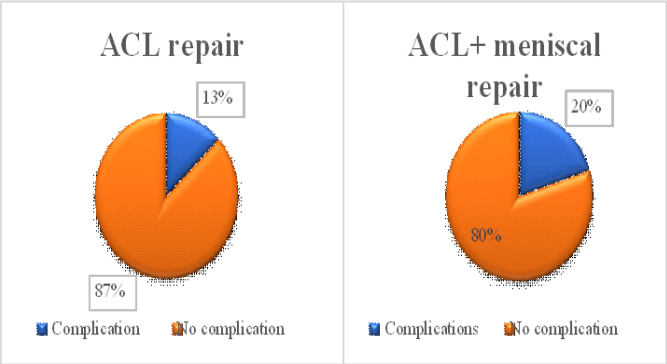

Figure 6: Comparison of complications IN ACLR and ACL with meniscus repair

Conservative management for superficial infection was the most frequently performed approach, followed by manipulation under general anaesthesia (GA). Meniscectomy was carried out in two patients, with one patient requiring the removal of prominent metalwork and another undergoing repair for retear of the ACL graft. Additionally, one patient underwent debridement and suture removal, another had excision of cyclops lesions, and two patients received injections for pain relief, alongside manipulation under GA.

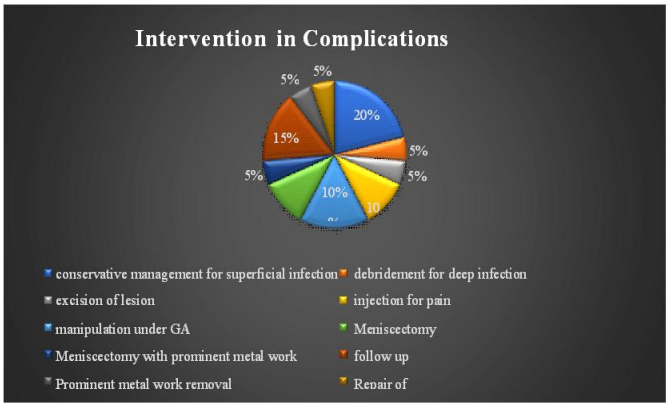

Figure 7: Intervention done in complications

Discussion

This study focused on analysing the outcomes of isolated ACL injuries with those involving combined ACL and meniscal tears. Consistent with wider clinical observations, isolated ACL injuries were found to be less common than combined injuries. The research evaluated short- and mid-term outcomes, specifically at intervals of 26, 52, and 104 weeks. Most patients underwent elective surgeries. Semitendinosus grafts were used for ACL reconstruction, and meniscal repairs were performed using an all-inside arthroscopic technique. The literature review underpinning this study included the historical evolution of ACL and meniscal surgery, notably early work by Scottish surgeons, and offered a comprehensive background on ligament and meniscal anatomy, diagnostic approaches, management strategies, and surgical interventions.

The primary tools for assessing outcomes were the Tayside satisfaction questionnaire, the VAS score for pain, and the KOOS score, which were distributed via email. NHS staff collected and anonymised the responses, which were then statistically analysed to determine clinical significance.

Patient Demographics

The data indicated that individuals under 25 years exhibited the highest incidence of ACL injuries with or without meniscal involvement, accounting for 61% and 42.5% of cases, respectively. Patients aged 25–35 formed the second most affected group. Beyond age 45,

the incidence declined notably. These findings align with trends reported in previous studies in literature above. While ACL and meniscal tears are the most frequent injuries, the increased incidence of chronic ACL tears developing into combined ACL and meniscal tears suggests that these cases warrant closer examination in future research efforts by Labella et al., 2014[3] and Montalvo et al., 2019[8].

Men were more likely to sustain ACL and meniscal injuries (70%) compared to women (30%). Smoking and previous surgeries were among the recorded comorbidities, but they did not significantly affect injury patterns as most participants had prior knee trauma and were awaiting surgery. Literature by Fox et al., 2015[9] and Montalvo et al., 2019[8] shows an increased trend of ACL tears in female athletes and military recruits.

VAS Pain Score Outcomes

The Visual Analogue Scale revealed significant reductions in pain levels for both groups. Initially, pain scores ranged from 4 to 5 but dropped to 1 to 2 by 26 weeks post-treatment. These improvements were statistically significant at all intervals ($p < 0.001$) as confirmed by a paired sample t-test. However, a slight rise in pain was noted in the ACL-only group at 104 weeks, although this increase was not statistically significant. The VAS pain score was in line with the methods used in this study by Meade et al., 2023[7].

KOOS Score Outcomes

The KOOS scores showed significant improvements in all domains. Symptom scores increased from 65 to around 85 post surgery, maintaining this improvement across all time points. Pain scores rose from approximately 70 to over 80, with consistent gains at each stage. Daily living functionality scores improved from around 75 to 90, reflecting steady recovery. The most dramatic improvement was in sports participation, which jumped from 35 to 75, with the greatest progress seen at 52 and 104 weeks. All changes were statistically significant ($p < 0.001$). QOL scores in ACLR+ meniscus group outperform ACLR group, dramatic improvement in scores is seen from approximately 20 to 56 in ACLR and from 24 to 70 in ACLR+ meniscus group with p value <0.001 indicating significance. The findings in this study are similar to the study by Sarraj et al., 2019[10] and Gerritsen, 2022[11].

Early recovery (up to 26 weeks): ACLR only patients tend to report better pain relief, functional scores, and symptom control.

One year (52 weeks): Differences diminish or reverse in some domains, with the ACL + meniscal repair group showing stronger QOL and sports recovery.

Two years (104 weeks): The ACL + meniscal repair group outperforms in QOL, pain, symptoms, and sports function, showing long-term gains.

Pain (VAS scores) and functional outcomes (KOOS scores) also favoured the ACL-only group, which recorded lower pain and higher scores in daily functioning, sports, and quality of life.

Complications

Overall complication rates were 20% for ACL + meniscus repairs and 13% for ACL-only procedures. Graft failure was the most frequent complication (10% ACL-only, 4.2% ACL + meniscus). Infections and cyclops lesions were more common in the ACL+ meniscus group. Most complications occurred within the first 26 weeks. Some patients required additional procedures like removal of metal work, manipulation and excision of cyclops lesion, repair of retears manipulation, or meniscectomy. Less frequent issues included bleeding, and infections which required

debridement (each 1%), Rate of deep infection in both groups was only 1% combined, even though the overall complications appear to be more in ACL+ meniscal repair group the reason can be multifactorial such as more than double the number of patients or chronic ACL tears progressing towards meniscal damage as suggested by Thomas L. Sanders, 2017 and Helito et al., 2023[13].

Strengths of the Study

Using data collected by NHS personnel helped minimise clinician bias. Written questionnaires avoided communication-related misinterpretation. Validated scoring systems (VAS and KOOS) provided a well-rounded understanding of outcomes, covering pain, function, and quality of life. This study adds value by specifically analysing the outcomes of combined ACL and meniscal injuries, an area not extensively covered in previous research.

Study Limitations

The study suffered from declining follow-up rates, especially at the two-year mark. Surgeon- specific details, procedural consistency, and implant types were not always available. These unknowns may have influenced outcomes. Most procedural assumptions were based on standard practices observed at Ninewells Hospital, including the use of semitendinosus grafts and all-inside meniscal repair techniques. The study also underlines the need for more comprehensive documentation and longer-term follow-up to further refine and optimise treatment strategies for these common orthopaedic conditions.

Conclusion

This study compared outcomes of ACL reconstruction alone versus combined ACL and meniscal repair. Combined injuries were more common, especially in patients under 25. Both groups showed significant improvements in pain, function, and satisfaction over 26, 52, and 104 weeks, with slightly better long-term results in isolated ACL injuries.

Combined injury cases had higher early complication rates, though major issues were manageable. Strengths included unbiased NHS data collection and standardised outcome measures; limitations were reduced follow-up and procedural variability. Overall, both surgical approaches effectively improved quality of life, highlighting the need for better documentation and extended follow-up.

References

1. Keyhani S, Esmailiejah AA, Mirhoseini MS, Hosseininejad SM, Ghanbari N. The Prevalence, Zone, and Type of the Meniscus Tear in Patients with Anterior Cruciate Ligament (ACL) Injury; Does Delayed ACL Reconstruction Affect the Meniscal Injury?. Arch Bone Jt Surg. 2020;8(4):432-8.
2. Lohmander LS, Englund PM, Dahl LL, Roos EM. The Long-term Consequence of Anterior Cruciate Ligament and Meniscus Injuries. Am J Sports Med. 2007;35(10):1756-69.
3. LaBella CR, Hennrikus W, Hewett TE, Brenner JS, Brookes MA, Demorest RA, et al. Anterior Cruciate Ligament Injuries: Diagnosis, Treatment, and Prevention. Pediatrics. 2014;133(5):e1437-e1450.
4. Wiggins AJ, Grandhi RK, Schneider DK, Stanfield D, Webster KE, Myer GD. Risk of Secondary Injury in Younger Athletes After Anterior Cruciate Ligament Reconstruction. Am J Sports Med. 2016;44(7):1861-76.
5. Pike AN, Patzkowski JC, Bottoni CR. Meniscal and Chondral Pathology Associated With Anterior

Cruciate Ligament Injuries. J Am Acad Orthop Surg. 2019;27(3):75-83.

6. Riddle DL. KOOS score maps were externally validated to inform knee arthroplasty shared decision making. Knee Surg Sports Traumatol Arthrosc. 2023;31(4):1491-2.
7. Meade M, Fliegel B, Szukics P, Ford E, Pontes M, McMillan S. Patients With Low Resilience Scores Have Significantly Worse Postoperative Outcomes After Anterior Cruciate Ligament Reconstruction Than Patients With Normal or High Resilience Scores. Arthrosc Sports Med Rehabil. 2023;5(3):e679-85.
8. Montalvo AM, Schneider DK, Webster KE, Yut L, Galloway MT, Heidt RS, et al. Anterior Cruciate Ligament Injury Risk in Sport: A Systematic Review and Meta-Analysis of Injury Incidence by Sex and Sport Classification. J Athl Train. 2019;54(5):472-82.
9. Fox AJS, Wanivenhaus F, Burge AJ, Warren RF, Rodeo SA. The human meniscus: A review of anatomy, function, injury, and advances in treatment. Clin Anat. 2015;28(2):269-87.
10. Sarraj M, Coughlin RP, Solow M, Ekhtiari S, Simunovic N, Krych AJ, MacDonald P, Ayeni OR. Anterior cruciate ligament reconstruction with concomitant meniscal surgery: a systematic review and meta-analysis of outcomes. Knee Surg Sports Traumatol Arthrosc. 2019;27(11):3441-52.
11. Gerritsen LM, van der Lelij TJN, van Schie P, Fiocco M, van Arkel ERA, Zuurmond RG, et al. Higher healing rate after meniscal repair with concomitant ACL reconstruction for tears located in vascular zone 1 compared to zone 2: a systematic review and meta-analysis. Knee Surg Sports Traumatol Arthrosc. 2022;30(6):1976-89.
12. Sanders TL, Hewett TE, Levy BA, Dahm DL, Stuart MJ, Krych AJ. Long-term rate of graft failure after ACL reconstruction: a geographic population cohort analysis. Knee Surg Sports Traumatol Arthrosc. 2017;25(1):222-8.
13. Helito CP, Silva AGMD, Giglio PN, Pádua VBCD, Pécora JR, Gobbi RG. Fatores de risco para formação de lesão cyclops sintomática após a reconstrução do ligamento cruzado anterior. Rev Bras Ortop. 2023;58(5):e760-5.