

Revision anterior cruciate ligament reconstruction outcome, using contra-lateral hamstrings graft

Mohammed Redwan ¹ and Ali Abdullah Mohammed AL Lawati ^{2,*}

¹ Orthopedic Medical Officer, Khoula Hospital, Muscat, Sultanate of Oman.

² Orthopaedic Consultant, Khoula Hospital, Muscat, Sultanate of Oman.

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Abstract

Anterior cruciate ligament (ACL) injury is a common pathology to treat in modern orthopaedics, with the anterior cruciate ligament reconstruction (ACR) surgery being one of the commonest orthopaedic interventions that is performed to address knee instability. Graft failure due to poor compliance or technical errors can lead to recurrence of the instability. Revision anterior cruciate ligament reconstruction (RACR) operation is needed to address knee instability after a significant and symptomatic graft tear.

This report presents the outcome RACR, using the contra lateral hamstrings graft.

Keywords: Anterior cruciate ligament reconstruction; revision ACL reconstruction; Hamstrings graft for revision ACL

1. Introduction

Anterior cruciate ligament reconstruction addresses knee instability in anterior cruciate ligament deficient knees. The procedure has progressed over time and represents today one of the commonest orthopaedic interventions worldwide. Those patients who present with re tear of the ACL may need to be operated if they have instability.

Revision anterior cruciate ligament reconstruction (RACR) addresses a knee that has instability with existing and sometimes widened bony tunnels. The revision graft needs to be placed and fixed in appropriate positions that are meant to provide stability with good range of movement and with no impingement (1).

2. Material and methods

Patients, who presented with confirmed knee recurrent instability with a history of a previous ACR, were appropriately examined and investigated to confirm the diagnosis of ACL graft tear.

All patients were consented for the operation, and the construction was performed using the hamstring tendons graft from the other knee, as a single bundle reconstruction.

Outcome Evaluation was performed both clinically and by using a knee scoring system.

The scoring system used was the International Knee Documentation Committee Subjective Knee Form (IKDC).

Fourteen patients were recruited for this report.

* Corresponding author: Ali Abdullah Mohammed AL Lawati.

3. Results and discussion

Table 1 Demographics and the results for the scoring system, both in numbers and in percentages

Side Operated	Patient age	IKDC Score	IKDC in percentage
Right	40	76	87.4%
Left	26	85	97.7%
Right	40	47	54%
Right	33	67	77%
Right	25	83	95.4%
Left	32	87	100%
Left	25	49	56.3%
Right	30	79	90.8%
Left	34	77	88.5%
Left	48	58	66.7%
Right	39	75	86.2%
Right	31	86	98.9%
Right	40	58	66.67%
Left	38	74	85.06%
Average	34	71.5	82.2%

The above table shows the demographics and the results for the scoring system, both in numbers and in percentages.

The average age among this cohort of patients was 34 years. These patients were operated over a four years period.

The average score for the total of fourteen patients was 71.5 that correspond to 82.2 percent on the IKDC. The lowest score was 58, in two patients, both of which had advanced osteoarthritis grade 3-4.

This report shows a good post operative outcome of revision ACL with contra lateral hamstrings graft with no internal bracing and no additional extra articular procedures.

Anterior cruciate ligament reconstruction (ACR) has evolved over the years with better comprehension to anatomical considerations and evolution of surgical techniques (1). In these reconstructive operations, while using the hamstrings tendons as allograft, the graft could be used as a single bundle or a double bundle. It has been demonstrated that a double bundle reconstruction of the torn ACL, did not improve stability or functional outcome (2).

ACR has a good surgical outcome in re establishing stability in anterior cruciate ligament deficient knees (3).

Although ACR operation is successful it is not failure proof, with those individuals who present with re-tear of the ACL graft may need revision if they have instability. Preoperative assessment and planning is mandatory before proceeding to the surgical revision of these cases (4).

All the cases involved in this case series were operations of revision reconstructions of failed primary ACR. None of them was post anterior cruciate repair, which is reported in literature to have a high failure rate of about 30% at one year, follow up (5).

Although CT scan would give good visualization of the bone stock and tunnels positions in the pre operative planning phase (6), in this cases series the pre operative planning was based on two views knee x-rays, to assess tunnels positions and potential widening.

No osteotomies were needed in these cases as none of the involved patients had any clinically significant mal-alignment.

Intra operatively new tunnels were created according to the harvested graft size, and previous tunnels trajectories were avoided.

After graft preparation, graft tensioning and tunnels preparation, the graft was inserted in the respective tunnels as a single bundle and tension of the graft in the femoral tunnel was judged clinically. Later an interference screw was inserted with desired graft tension in 70 degrees of flexion. Knee stability is assessed clinically after the procedure.

Pre-operative scoring for most of the patients was performed, but since some patients unfortunately did not have their pre-operative scoring done; we opted to focus in this report on the post-operative scoring only, as all the patients included in this report had their post operative scoring performed on follow up. Cases were operated within four years period, with average follow of two years.

This report addresses a single surgeon series of revision ACL reconstruction, each of whom the hamstrings tendons allograft was taken from the contralateral side, and secured in anatomical ACL tunnels positions, while using the same type of Tight Rope suspensory fixation on the femoral side and the same type of interference screw on the tibial side. None of the cases included in this report needed bone grafting.

The similarities of the revision surgery to the primary operation, on the issue of hamstrings tendons graft harvest, makes it appealing as the graft quality and preparation is similar to the primary setting, but from the contra lateral side. After preparing the tunnels for the revision side, the prepared graft then is passed through and secured in place.

We routinely advise knee brace and crutches for all ACL patients for two weeks post operatively, and flexion to 90 degrees at two weeks, then to start flexion beyond 90 degrees. All the patients in this report were treated with the same physiotherapy rehabilitation protocol as the primary cases. No additional precautions were exercised for revision cases.

4. Conclusion

Upon follow up these patients did well in terms of regaining the knee stability and range of movement. The revision graft failure rate was seemingly low at follow up in this case series.

Longer-term follow up would give a better understanding of the longevity of the revision graft ability to sustain knee stability.

Compliance with ethical standards

Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

Informed consent was obtained from all individual participants of this study.

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