

# The Results of Arthroscopy Assisted Bone Tendon Bone ACL Reconstruction, A Retrospective Study of 100 Cases

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## ABSTRACT

A retrospective study of 100 arthroscopy assisted acl reconstructions was carried out using metallic interference screws. The patients were followed up for a minimum of six months. There were associated meniscal injuries in 20 cases. There was one case of infection,5 cases of instability,6 cases of extension lag more than 5 degrees. In 3 cases flexion stayed less than 100 degrees. There was no incidence of fracture at the donor site. In 21 cases there was graft-tunnel mismatch. Functionally there was a good result in 61 cases.

## BACKGROUND

The treatment of Anterior cruciate ligament injuries has long been a challenging problem. These injuries are usually sustained on a playing field. Soccer is by far the commonest sport to generate this injury. However other contact sports like Rugby and hockey are also major contributors. Non contact sports like Tennis, Golf, Athletics can also result in the same. This injury can also be sustained in high energy trauma like motorbike accidents.

These injuries can be managed both operatively and non operatively. Non operative treatment entails an elaborate physiotherapy programme. The aim here is to strengthen the Quadriceps musculature to the extent that it can substitute the work of Anterior Cruciate. This mode of treatment is especially useful in the non athletic and middle aged people who are not keen to undergo the rigours of surgical treatment.

In the case of younger more active or athletic patients, the treatment of choice is usually surgery. The torn ligament can not be repaired effectively, therefore it needs to be reconstructed. In the past various methods were used either employing hamstring autografts or synthetic grafts. Synthetic grafts did not do very well. Hamstring grafts also failed because of two distinct reasons. Firstly effective anchorage devices were not available and secondly, the length of the graft harvested was not sufficient enough to allow the doubling of the graft which in turn resulted in a rather weak and elastic structure not providing sufficient stability. This problem has been addressed to a certain extent by the use of endobuttons as anchorage devices and the advent of a tendon stripper which

provides grafts of sufficient lengths to achieve doubling of the graft. However these devices are extremely expensive and are not within the reach of most third world patients. Another method which provides good stability is the use of patellar tendon also called bone tendon bone graft. We have in our setup employed a bone tendon bone graft to reconstruct the Anterior Cruciate Ligament and used the metallic interference screws which are cheap and affordable.

## METHODS AND MATERIALS

This retrospective study was carried out on 100 cases at Sir Ganga Ram Hospital over a 2 year period. Only patients aged less than 35 years were included in the study. All patients had an MRI proven ACL injury. An examination of the knee was performed under anesthesia. A diagnostic arthroscopy was performed. Any meniscal tears were treated with partial meniscectomy at this stage. A bone tendon bone graft was harvested. A guidewire was passed under arthroscopic control. A tunnel was cut out over the guidewire. Tibial tunnel was drilled 1.0mm. more than the femoral tunnel in diameter. The graft was then inserted through the tunnel using an introducer. The graft was anchored in the tunnels using metallic interference screws. The wound was closed without drain and a knee immobilizer was applied for the first 2 weeks but the patient was allowed full weight bearing from day 1. After 2 weeks range of motion exercises were started. The patient was not allowed to sit on the floor or engage in any contact sports for 6 months. The functional outcome was assessed using Tegner scoring system<sup>1,2</sup>.

## RESULTS

All cases were followed up for a minimum of six months. After 2 weeks of surgery they were put on a regime of physiotherapy. Associated meniscal tears were present in 20 cases. The functional results of patients undergoing ACL reconstruction were relatively poor if these patients suffered from associated meniscal injuries.

According to the Tegner scoring system, 40% had good functional result, 35% had average function and 25% had poor function.

Infection was encountered in only 1 case, which required early removal of screws. Infection settled after 6 weeks but the patient continued to suffer from knee instability.

6 patients continued to suffer from instability which was probably because of graft failure as technical difficulties were faced during surgery. However all of these were encountered in the first 50 cases. With increasing experience, technical difficulties were no longer encountered.

Extension lag of more than 10 degrees was encountered in only 2 cases. This was probably due to arthrofibrosis. In 6 cases range of flexion did not go beyond 100 degrees.

There was graft-tunnel length mismatch in 24 cases. This resulted in the graft protruding from the tibial tunnel.

There was no incidence of fracture at the donor site.

## DISCUSSION

Functional results were evaluated according to the Tegner scoring system. These results are comparable with those published in international journals<sup>3</sup>. However these could have been even better if our rehabilitation facilities were comparable to those in the western world. Associated meniscal tears had an adverse effect on the functional results of ACL reconstruction.

There was graft tunnel mismatch in an astonishingly high no. of patients. According to Schaffer et al.

This happens when the patellar tendon is greater than 5.0 cm. in length<sup>4</sup>. This problem was addressed by twisting the graft. A twist of 540 degrees shortens the graft length by 8.0 mm. Patellar tendon length is probably affected by the religious reasons in our population which is predominantly Muslim and obviously observes prayers.

Only 1 patient suffered from infection and although the infection settled with implant removal

the patient was left with permanent knee instability which might lead to early arthritic changes<sup>5</sup>.

In 2 patients there was persistent extension lag of more than 10 degrees despite extensive physio. This was probably due to arthrofibrosis<sup>6</sup>. These patients may benefit from a follow up arthroscopic debridement. Arthrofibrosis is much more common if reconstruction is performed in the acute phase. However in our practice we never perform reconstruction before 6 months.

Overall the stability was good in 94% of cases. This is much better than that shown by hamstring grafts which suffer from elastic stretch of the tendons resulting in something called Bungee effect. There is poor control of pivot shift in these repairs by hamstring grafts. However these effects were nullified by the use of double bundle grafts<sup>7,8</sup>.

## CONCLUSION

Arthroscopic Bone tendon bone Graft for the reconstruction of Anterior Cruciate Ligaments is a very successful Procedure because it is economical to the patient as metal screws cost much less than Endobuttons or Bioabsorbable interference screws<sup>9-14</sup>. Which are mandatory if hamstring anchorage is required to be satisfactory. Their cost is prohibitive for most patients.

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