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# Earlier Return to Sports, Reduced Donor-Site Morbidity with Doubled Peroneus Longus Versus Quadrupled Hamstring Tendon Autograft in ACL Reconstruction

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**Background:** Graft choice for anterior cruciate ligament reconstruction (ACLR) has been evolving. The peroneus longus tendon (PLT) has been seen as a suitable choice for ACLR, providing comparable results to those of hamstring tendon (HT) autograft, but its clinical relevance in terms of return to sports, to our knowledge, has not been studied.

**Methods:** Two hundred and thirty-two patients who sustained an isolated ACL injury were enrolled and underwent ACLR using doubled PLT autograft or quadrupled HT autograft; 158 were followed for 24 months. Functional scores (International Knee Documentation Committee [IKDC] and Tegner-Lysholm scores) were assessed preoperatively and at 3,6, 12, and 24 months postoperatively. Graft diameter and graft harvesting time were measured intra-operatively. Donor-site morbidity was evaluated using subjective evaluation. Time to return to sports in both groups was compared.

**Results:** The mean diameter of PLT autograft was significantly larger than that of HT autograft, and the mean graft-harvesting time was less ($p < 0.001$). Patients in the PLT group returned to sports a mean of 34 days earlier than those in the HT group ($p < 0.001$) and had a lower rate of donor-site morbidity and, at 6 months, better patient-reported outcomes at the knee ($p < 0.001$). There were no significant differences between the groups in the rate of graft rupture or in IKDC and Tegner-Lysholm scores at the 24-month follow-up.

**Conclusions:** PLT is a suitable autograft for ACLR in terms of graft diameter and graft-harvesting time and may offer athletes an earlier return to sports related to better outcomes at 6 months of follow-up. HT autograft was associated with increased thigh weakness. Both grafts, however, performed similarly at 24 months postoperatively.

**Level of Evidence:** Therapeutic Level II. See Instructions for Authors for a complete description of levels of evidence.

Anterior cruciate ligament (ACL) injury is one of the most commonly seen orthopaedic injuries around the world, with an annual incidence of around 100,000 to 200,000 in the U.S. alone[1]. With the number of injuries increasing, the number of ACL reconstruction (ACLR) procedures is also on the rise, especially in children and adolescents[2]. The most widely used autografts include bone-patellar tendon-bone (BPTB), hamstring tendon (HT), and quadriceps tendon as well as Achilles tendon, peroneus longus tendon (PLT), and anterior or posterior tibial tendons[3].

The BPTB, quadrupled HT, and quadriceps tendons are considered good candidates for a graft but they often cause several donor-site morbidities, e.g., osteoarthritis and anterior knee pain with BPTB[3]. Use of the PLT, harvested just proximal and posterior to the lateral malleolus, was first described by Kerimoğlu et al. in 2008[4]. He et al. described PLT autograft as a

The authors note that this trial was not registered prospectively because of a lack of a public clinical trial registry in Pakistan at the start of the trial.

**Disclosure:** The **Disclosure of Potential Conflicts of Interest** forms are provided with the online version of the article (http://links.lww.com/JBJSOA/A580).

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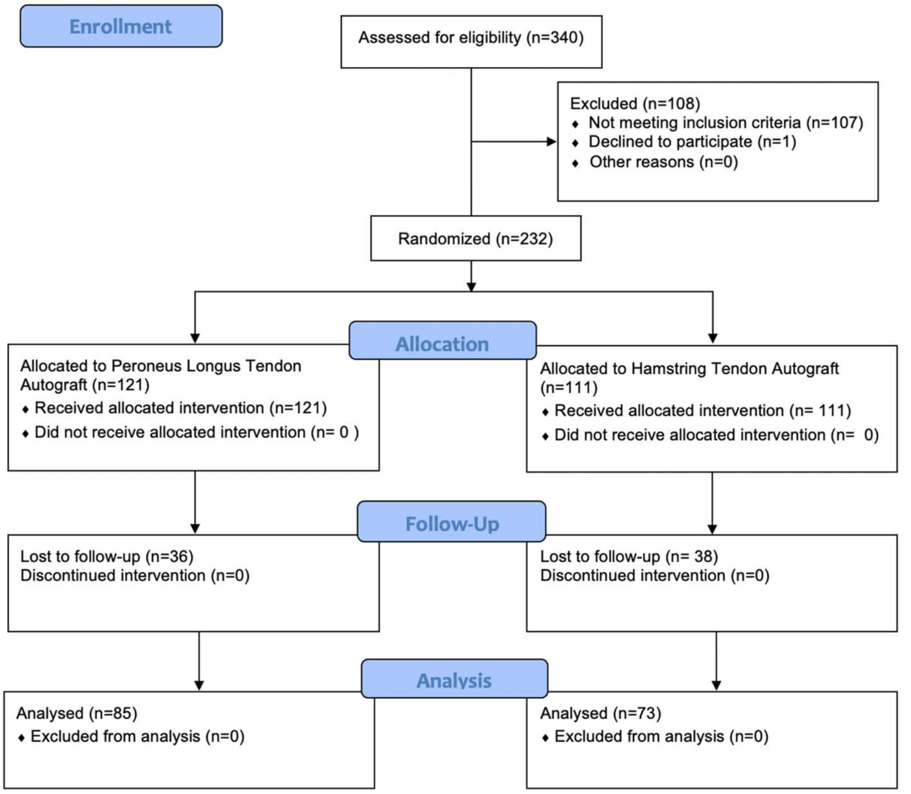


Fig. 1
CONSORT flow diagram.

comparable alternative to HT autograft in terms of functional outcomes. Moreover, they concluded that PLT autograft provided better clinical outcomes at the knee (reduced knee pain and thigh weakness) although a slightly lower American Orthopaedic Foot & Ankle Society (AOFAS) score compared with the preoperative score[5].

The increase in the use of PLT autograft is mainly attributed to its tensile strength, good functional outcome, and minimal donor-site morbidity. In comparison to native ACL tendon, PLT demonstrated more than double the ultimate tension load (mean and standard deviation, 4,268 ± 285 compared with 2,020 ± 264 N)[6]. Moreover, some authors have suggested that patients in the Asian region prioritize knee stability and strength because of cultural and religious practices such as kneeling[7]. Therefore, PLT autograft is a potential alternative option for ACLR.

In the current study, we aimed primarily to determine and compare the subjective functional outcomes, graft rupture, donor-site morbidity, and time to return to sports of the PLT and HT groups. Secondary outcomes included comparison of the graft-harvesting time and graft characteristics (in tunnel) between the 2 groups, and comparison of time to return to sports between professional and recreational athletes. The study highlights comparisons between PLT and HT as well as how the PLT yielded a robust graft with improvements in patient-reported outcomes at the knee postoperatively. PLT was associated with earlier return to sports and more favorable graft characteristics compared with HT.

## Materials and Methods

This prospective cohort study was conducted at a tertiary care hospital in Faisalabad, Pakistan, after receiving formal approval from the institutional review board of our hospital, followed by formal informed consent from all participants. We


Fig. 2
Doubled peroneus longus tendon (PLT) autograft with a 9-mm diameter.

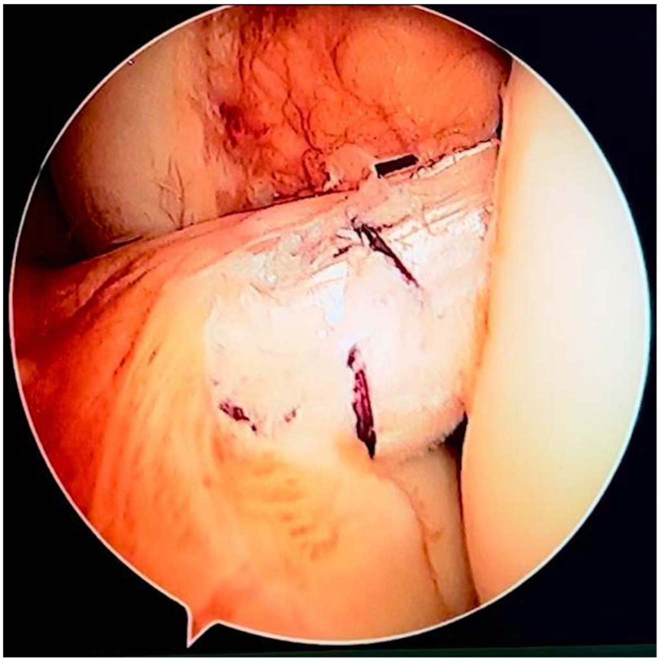

Fig. 3

Fig. 4

**Fig. 3** Reconstructed ACL with peroneus longus tendon (PLT) autograft. **Fig. 4** Marked site for the peroneus longus tendon (PLT) autograft.

assessed 340 patients from February 23, 2017, to February 23, 2021 (Fig. 1). Following consent and enrollment according to the inclusion criteria, 232 patients were enrolled. The inclusion criteria consisted of an age of 18 to 51 years and isolated primary ACL injury. Complete history, physical examination, radiographs, and magnetic resonance imaging (MRI) were obtained for all patients. All adult male and female patients aged 18 to 51 years presenting with an ACL tear were included. Patients including those with suspected meniscal injury on MRI and who were diagnosed with a meniscal tear during arthroscopy were excluded. Moreover, patients who had fractures of the knee and ankle or who were previously surgically treated for an ACL tear or had a multiligamentous knee injury were excluded. The ACL tear was confirmed by the anterior drawer test, Lachman test, and MRI evaluation. Preoperatively, patient-reported knee function was assessed by the Tegner-Lysholm score and the International Knee Documentation Committee (IKDC) score. Ankle function was also assessed using AOFAS ankle and hindfoot scores and AOFAS hallux MTP-IP (metatarsophalangeal-interphalangeal) scores.

After evaluation, patients were randomly assigned to 2 groups using computer-generated numbers, and patients were told about the selection of their graft. One hundred and

Fig. 5

Fig. 6

**Fig. 5** The peroneus longus tendon (PLT) is present superficially and easily accessed. **Fig. 6** Tenodesed distal peroneus longus tendon (PLT) with peroneus brevis tendon (PBT).

Fig. 7

Fig. 8

**Fig. 7** Stripping of the proximal part of the peroneus longus tendon (PLT). **Fig. 8** Closed tendon sheath.

eleven patients were treated using quadrupled HT autograft (doubled semitendinosus tendon + doubled gracilis tendon), and 121 patients were treated using doubled PLT autograft. The surgeries were carried out arthroscopically by the same surgeon; general or spinal anesthesia was used, depending on patients' health profile and risk stratification. PLT autografts were harvested perioperatively using the technique described by Budhiparama et al.[8], and HT autografts were harvested perioperatively using the technique described by Vinagre et al.[9]. Both (HT and PLT) grafts were prepared by stripping off excess muscle and using the following tool set: looped sutures (ACL TightRope RT and TightRope ABS; Arthrex), high-strength looped suture (no. 2 FiberLoop with curved needle and no. 2 FiberWire; Arthrex), and a Graft Prep station (Arthrex)[10], and graft diameter was measured (Fig. 2). Grafts for both groups were harvested from the ipsilateral limb. Simultaneously, any other suspected injuries or hidden injuries were also identified before ACLR. Graft fixation was done using EndoButtons (Arthrex TightRope) and Arthrex bioabsorbable screws (Fig. 3). After graft fixation, an anterior drawer test was performed intraoperatively to ensure graft fixation.

### *Summary of Steps in Harvesting PLT Autograft*

(1) Mark the location for a 1.5-cm incision, 1 cm posterior and 2.5 cm proximal to the tip of the lateral malleolus (Fig. 4).
(2) Dissect subcutaneous tissue and open the tendon sheath to identify the PLT (Fig. 5).
(3) Whipstitch the tendon and expose the peroneus brevis tendon beneath. The peroneus brevis has more flesh than the PLT.
(4) Avoid causing any damage to the sural nerve (2 to 2.5 cm posterior to the lateral malleolus) and the peroneal retinaculum.
(5) While keeping the foot in slight (5°) valgus, tenodese the peroneus longus with the peroneus brevis using a nonabsorbable suture (Fig. 6).
(6) Cut and separate the peroneus longus proximal to the tenodesis site and introduce a tendon stripper while keeping tension on the PLT. Keep 2 fingers proximally, on a mark 5 cm below the head of the fibula, and start harvesting the tendon distally (Fig. 7).
(7) Stop the tendon stripper at the mark to avoid causing injury to the common peroneal nerve (CPN).
(8) Close the tendon sheath to its normal position to make sure the peroneal retinaculum is restored (Fig. 8).
(9) Postoperatively, start rehabilitation of the peroneal muscles to regain ankle strength early. Some advantages of PLT autograft are listed in Table I.

### *Postoperative Course*

Patients were started on guided physiotherapy on the first postoperative day, and from 0 to 3 weeks, all of the patients were guided to perform ankle pump exercises, isometric quadriceps

**TABLE I Advantages and Disadvantage of Peroneus Longus Tendon (PLT) Autograft**

| Advantages |
| --- |
| Easily harvested |
| Fewer soft-tissue attachments compared to hamstring tendon (HT) autograft |
| Does not interfere with knee strength |
| Excellent behavior in tunnels, confirmed by postop. MRI scans |
| Adequate tensile load |
| Mean diameter of doubled graft comparable to quadrupled HT autograft |
| Sufficient length suitable for various ACL techniques and fixation devices |
| Less harvesting time than HT autograft |
| Reproducible, with low chances of graft-related complications during harvest |
| Smaller cosmetic incision than that for HT autograft |
| **Disadvantage** |
| Risk of sural nerve damage |

**TABLE II Patient Demographics, Sports Participation, Injury Characteristics, and Graft Allocation**

| Variable | Value |
|---|---|
| Age at surgery (n = 158)* *(yr)* | 29.55 ± 6.40 |
| Sex (n = 158)† | |
| Male | 138 (87.3) |
| Female | 20 (12.7) |
| Anthropometric measurements (n = 158)* | |
| Weight *(kg)* | 72.97 ± 7.06 |
| Height *(cm)* | 175.22 ± 5.99 |
| Body mass index *(kg/m$^2$)* | 23.75 ± 1.82 |
| Smoking history (n = 158)† | |
| Smoker | 27 (17.1) |
| Nonsmoker | 131 (82.9) |
| Type of sport (n = 158)† | |
| Basketball | 3 (1.9) |
| Cricket | 49 (31.0) |
| Football | 43 (27.2) |
| Kabaddi | 19 (12.0) |
| Powerlifting | 5 (3.2) |
| Runner | 14 (8.9) |
| Swimmer | 2 (1.3) |
| Nonathlete | 23 (14.6) |
| Type of athlete (n = 135)† | |
| Professional | 59 (43.7) |
| Recreational | 76 (56.2) |
| Side of injury (n = 158)† | |
| Right | 94 (59.5) |
| Left | 64 (40.5) |
| Duration from injury to surgery (n = 158)* *(wk)* | 17.37 ± 22.40 |
| Graft allocation (n = 158)† | |
| Quadrupled hamstring tendon (HT) | 73 (46.2) |
| Doubled peroneus longus tendon (PLT) | 85 (53.8) |

*The values are given as the mean and standard deviation. †The values are given as the number, with the percentage in parentheses.

contractions, and cycling movement to improve range of motion and knee stability. Full range of motion was obtained within 3 to 6 weeks. Full weight-bearing was allowed after the fourth week of follow-up. Patients underwent guided rehabilitation with physiotherapists for 3 months. Patients were allowed to run after 3 months but assessed for possible return to noncontact sports at 6 months after performing single-leg hop testing; contact sports were not recommended until 8 months postoperatively. Patients were also advised to continue quadriceps and hamstring strengthening exercises regularly.

Initial follow-up consisted of assessments at 2 and 6 weeks postoperatively, and after the sixth week, patients were routinely followed at 3, 6, 12, and 24 months postoperatively and were assessed for graft strength via the anterior drawer test and Lachman test. Subjective knee function was assessed using the Tegner-Lysholm score and the IKDC score at follow-up evaluations until 2 years (24 months) postoperatively. At 24 months of follow-up, ankle function scores were assessed, and preoperative and postoperative knee function was compared using the Tegner-Lysholm score and IKDC score. Pre- and postoperative (24-month) ankle function scores were compared in the PLT group using the AOFAS ankle and hindfoot score and the AOFAS hallux MTP-IP score. Lastly, graft characteristics in the tunnel were assessed by use of MRI at the last follow-up. Data were entered into and analyzed using SPSS (version 28.0; IBM).

*Source of Funding*

No external funding was received for this study.

## Results

Data analyses were carried out separately by 2 individuals to eliminate errors and analytical bias. The data of 158 of the 232 subjects randomized with respect to graft choice were available for analysis. Patient descriptive data (including type of sports and athletic level) and preoperative subjective knee function scores are shown in Tables II and III, respectively.

### *Graft Variables and Subjective Outcomes*

We found that the mean graft harvesting time in the PLT group (7.46 minutes) was significantly less than that in the HT group (10.28 minutes) and that the mean diameter of the PLT autograft (8.81 mm) was significantly larger than that of the HT graft (8.17 mm) ($p < 0.001$ for both) (Table IV). At 3, 12, and 24 months of follow-up, the 2 groups did not differ significantly in knee function in terms of the IKDC score and Tegner-Lysholm score (Fig. 9). However, at 6 months of follow-up, patients treated with PLT had significantly better subjective knee function (Table V). At 24 months of follow-up, patients in the PLT group underwent ankle function scoring. The mean AOFAS ankle and hindfoot score and mean AOFAS hallux

**TABLE III Preoperative Patient-Reported Knee Function***

| | Graft Type | | |
|---|---|---|---|
| Preop. Measure | HT (N = 73)† | PLT (N = 85)† | P Value |
| IKDC score *(%)* | 58.34 ± 5.57 | 57.98 ± 6.98 | 0.719 |
| Tegner-Lysholm knee score *(%)* | 62.76 ± 2.99 | 61.78 ± 4.41 | 0.106 |

*HT = hamstring tendon, PLT = peroneus longus tendon, and IKDC = International Knee Documentation Committee. †The values are given as the mean and standard deviation.

**TABLE IV Comparison of Graft Diameter and Harvesting Time**

| | Graft Type* | | | |
|---|---|---|---|---|
| | HT (N = 73) | PLT (N = 85) | P Value | Mean Difference |
| Graft diameter *(mm)* | 8.17 ± 0.43 | 8.81 ± 0.30 | <0.001† | –0.639 |
| Graft harvesting time *(min)* | 10.28 ± 0.87 | 7.46 ± 0.74 | <0.001† | 2.823 |

*HT = hamstring tendon, and PLT = peroneus longus tendon. The values are given as the mean and standard deviation. †Significant ($p < 0.05$).

(MTP-IP) score at 24 months were excellent clinically and subjectively, but the AOFAS ankle and hindfoot score was significantly lower than the preoperative score (Table VI).

Donor-site morbidity was defined as any symptoms at the knee and ankle (pain and weakness), paresthesia at the incision site, and pain at the incision site that persisted for 24 months postoperatively. The rate of donor-site morbidity was significantly higher in the HT group, with patients reporting persistent thigh pain or thigh weakness despite adequate knee function (Table VII). At the PLT donor site, pain and diminished eversion strength were the 2 subjective symptoms faced in the early rehabilitation phase, and these symptoms disappeared as the patients moved further along in rehabilitation, as confirmed at the 6-month follow-up visit.

Infections occurred in 6 (3.8%) of the patients in the study, and CPN injury was observed in 1 (1.2%) of the patients in the PLT group; the latter resolved at 6 months of follow-up with continuous physiotherapy. Of the 6 patients with infection, 2 experienced intra-articular infection in the early postoperative period and were treated with early arthroscopic irrigation and recovered. One patient experienced knee infection after 3 months related to a recent onset of urinary tract infection and upper-respiratory tract infection, which resolved with a 2-week course of broad-spectrum antibiotics. Three patients experienced early donor-site infection, which resolved with a course of oral antibiotics. The rate of graft rupture did not differ significantly between

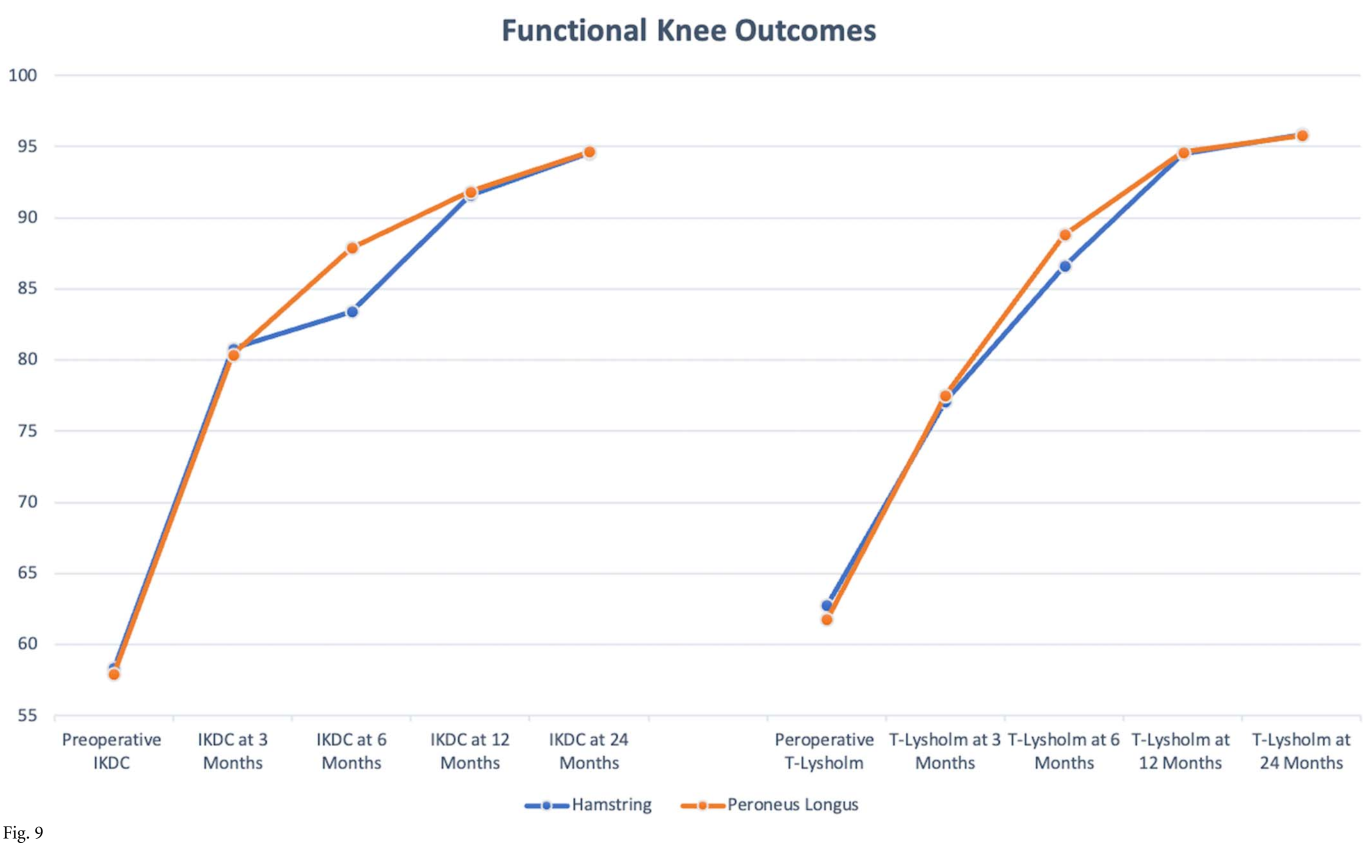


Fig. 9

Comparison of mean knee scores between peroneus longus tendon (PLT) and hamstring tendon (HT). IKDC = International Knee Documentation Committee, and T-Lysholm = Tegner-Lysholm.

**TABLE V Postoperative Patient-Reported Knee Function***

| | Graft Type† | | | |
|---|---|---|---|---|
| | HT | PLT | P Value | Mean Difference |
| IKDC score *(%)* | | | | |
| 6 mo | 83.44 ± 4.23 (n = 73) | 87.88 ± 3.90 (n = 84) | <0.001‡ | 4.438 |
| 24 mo | 94.54 ± 2.49 (n = 69) | 94.66 ± 2.80 (n = 83) | 0.797 | 0.112 |
| Tegner-Lysholm score *(%)* | | | | |
| 6 mo | 86.55 ± 3.18 (n = 73) | 88.82 ± 2.92 (n = 84) | <0.001‡ | 2.273 |
| 24 mo | 95.88 ± 1.86 (n = 69) | 95.93 ± 2.37 (n = 83) | 0.894 | 0.047 |

*HT = hamstring tendon, PLT = peroneus longus tendon, and IKDC = International Knee Documentation Committee. †The values are given as the mean and standard deviation. ‡Significant (p < 0.05).

the groups: 4 patients (5.5%) in the HT group and 2 patients (2.4%) in the PLT group experienced a graft rupture (p = 0.305).

### *Return to Sports*

Overall, the mean time to return to sports (and standard deviation) was 218.6 ± 26.61 days. Patients in the PLT autograft group returned to sports significantly earlier (by a mean of 34 days) than those in the HT group (p < 0.001). We also noted a significant difference between professional and recreational athletes in terms of the time to return to sports: professional athletes returned to sports 21.5 days earlier than recreational athletes (p < 0.001) (Table VIII).

## Discussion

Our study highlighted various comparisons between the 2 autograft choices for primary ACLR in patients with ACL injury.

### *Graft Characteristics*

In our comparison, PLT performed favorably in terms of graft-harvesting time and graft diameter. The mean graft-harvesting time for PLT was 7.46 minutes, which was 2.8 minutes less than for HT (p < 0.001), supporting results of Joshi et al[11]. The shorter harvesting time for PLT is likely due to its superficial location and the relatively less muscle tissue attached to it as compared with HT. This finding is important for surgeons to consider, as PLT may provide potentially reduced operative time and surgeon fatigue.

The current literature offers various discussions on the optimal graft diameter. Our comparison revealed that the mean diameter of quadrupled HT graft was 8.17 mm (range, 7.20 to 9.20 mm), which was significantly less than that of the doubled PLT graft, which was noted to be 8.81 mm (range, 8.0 to 9.30 mm) (p < 0.001). Spragg et al. concluded that, within the range of 7.0 to 9.0 mm, there was a 0.82-times lower chance of a graft rupture with every 0.5-mm incremental increase in graft diameter[12]. In their 2018 review of the literature, Figueroa et al. concluded that most studies indicate that a smaller diameter could result in higher rate of graft ruptures and revisions[13]. One recent study to back up this argument was by Snaebjörnsson et al., consisting of 2,240 patients[14]. In our study, there was no significant difference in the rate of graft rupture between the groups (p > 0.05).

**TABLE VI Ankle Function Scores in the PLT Group (N = 85)***

| | Time Period | Mean ± SD | P Value | Mean Difference |
|---|---|---|---|---|
| AOFAS ankle and hindfoot score *(%)* | | | 0.004† | 0.51 |
| | Preop. | 94.11 ± 3.16 | | |
| | 24 mo | 93.61 ± 2.98 | | |
| AOFAS hallux MTP-IP score *(%)* | | | 0.083 | 0.035 |
| | Preop. | 95.37 ± 3.07 | | |
| | 24 mo | 95.34 ± 3.06 | | |

*PLT = peroneus longus tendon, SD = standard deviation, AOFAS = American Orthopaedic Foot & Ankle Society, and MTP-IP = metatarsophalangeal-interphalangeal. †Significant (p < 0.05).

**TABLE VII Donor-Site Morbidity***

| | Graft Type | | | |
|---|---|---|---|---|
| | HT (N = 73) | PLT (N = 85) | P Value | Total No. |
| Donor-site morbidity *(no.)* | | | <0.001† | |
| No | 46 | 76 | | 122 |
| Yes | 27 | 9 | | 36 |

*HT = hamstring tendon, and PLT = peroneus longus tendon. †Chi-square test. Significant (p < 0.05).

**TABLE VIII Return to Sports***

| | Return to Sports† *(days)* | P Value | Mean Difference |
|---|---|---|---|
| Graft type | | <0.001‡ | 33.87 |
| HT (n = 62) | 235.19 ± 23.82 | | |
| PLT (n = 73) | 201.32 ± 17.71 | | |
| Athletic level | | <0.001‡ | 21.544 |
| Professional (n = 59) | 204.75 ± 22.64 | | |
| Recreational (n = 76) | 226.29 ± 25.61 | | |

*HT = hamstring tendon, and PLT = peroneus longus tendon. †The values are given as the mean and standard deviation. ‡Significant ($p < 0.05$).

### *Return to Sports and Knee Outcomes*

Return to sports is a crucial factor when selecting an optimal graft. It is especially important in resource-limited countries, where professional athletes may further suffer from the financial strain of not being able to return to sports quickly enough. To our knowledge, previous studies have not highlighted the time to return to sports among athletes who have undergone ACLR with PLT autograft. We found that the mean time to return to sports was 201.3 days (range, 164 to 241 days) for patients with PLT autograft compared with 235.2 days (range, 189 to 289 days) for those who received HT autograft ($p < 0.001$). Moreover, professional athletes returned to sports sooner than recreational athletes (205 versus 226 days, respectively), which could be explained by their athletic endurance and motivation to return to sports[15].

In our analysis, both groups had significant and clinically notable improvements in their knee function following ACLR. At 24 months, both groups performed similarly ($p > 0.05$) (Table V). Our results are similar to those of several previous studies comparing PLT with HT and confirmed that PLT is a suitable autograft for ACLR at a follow-up of 24 months. One significant difference that we observed was better knee function in the PLT group at 6 months of follow-up: the mean IKDC and Tegner-Lysholm scores were significantly better in the PLT group, as shown in Figure 9 ($p < 0.001$). In keeping, we saw an earlier return to sports in the PLT group. Further studies measuring this outcome could provide an answer regarding the choice of graft depending on the patients' motivation and requirement for return to sports. Additional, multicenter studies are warranted to assess the mean scores at 6 months and whether PLT could offer an earlier return to sports. Lastly, at the final follow-up, PLT autograft showed excellent osseointegration in the tunnel (Fig. 10).

Donor-site morbidity is one of the central outcomes when it comes to choosing a graft. Despite its ability to stabilize the knee better, BPTB autograft has demonstrated a significantly higher rate of anterior knee pain[16,17]. HT was associated with a statistically higher rate of thigh weakness and potential hypotrophy of thigh muscles[18]. Moreover, the hamstring muscles work synergistically with the ACL tendon in preventing anterior laxity of the leg[19]. In our study, there was a significantly higher rate of donor-site morbidity in the HT group ($p < 0.001$), with patients reporting persistent thigh weakness or their knee being "never like before." This complaint was considerably less in patients with PLT autograft in our study (as no further damage was done to the knee in terms of autograft harvesting) and is a reason why PLT should be considered as an excellent candidate for ACLR.

Donor-site morbidity for the PLT group was one of the primary foci of our study. At 24 months, AOFAS ankle and hallux function scores were excellent subjectively and clinically. We found a small but significant difference (0.51%; $p = 0.004$) between the preoperative and 24-month postoperative AOFAS ankle and hindfoot scores. The preoperative and 24-month postoperative AOFAS hallux MTP-IP scores did not differ significantly ($p > 0.05$). The ankle function scores of our subjects were similar to the ankle functions scores of healthy populations as described by Schneider and Jurenitsch[20]. Keyhani et al. found that the postoperative

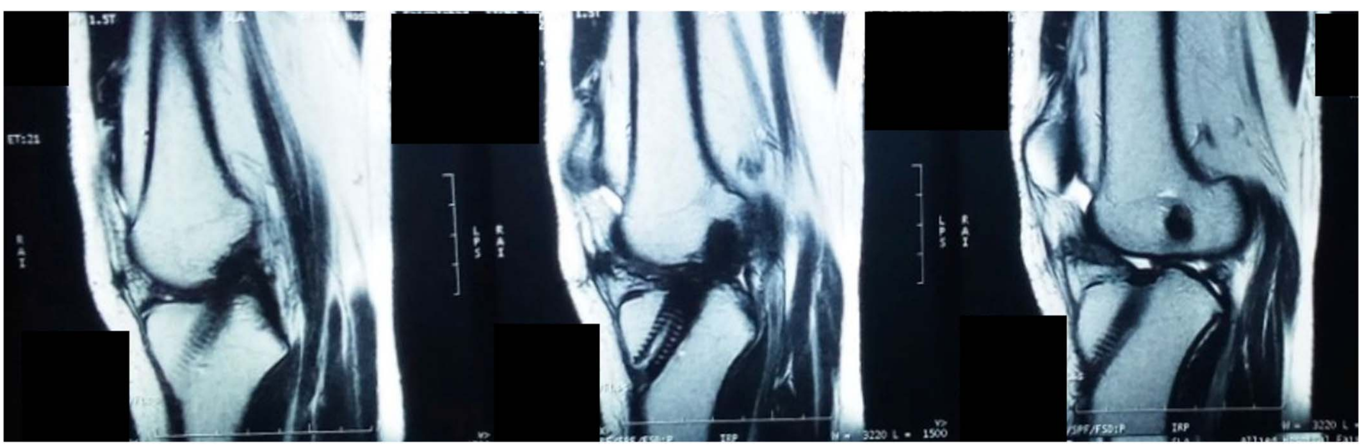

Fig. 10

Peroneus longus tendon (PLT) graft osseointegration in the tunnel.

AOFAS score was 93.42, which was not significantly different from that of the contralateral side[21]. Rhatomy et al. also described similar clinical ankle function and an AOFAS score of 98.93 at the last follow-up[22].

### *Limitations*

Our study had several limitations. This trial was not registered prospectively because of a lack of a public clinical trial registry in Pakistan at the start of the trial. In addition, a bigger cohort is needed to further confirm our findings and assess the applicability of the results within a larger population. Objective assessments such as KT-1000 (MEDmetric) arthrometer scores, knee flexion and extension strength, and ankle eversion and inversion strength could have been measured and correlated with subjective function scores. The loss to follow-up was another notable limitation. However, in a low-income country in which patients come from faraway suburbs with difficult and costly transportation for ACL surgery, this loss to follow-up at the end of 2 years was expected. Nonetheless, 96% of the patients were followed for the first 6 months. Thereafter (at 12 months of follow-up), 51 patients having little or no problems with their procedures could not follow up because of their limited resources and low-paying contracts with their organizations. An additional 18 patients moved to other countries, including the United Arab Emirates, Qatar, the U.K., and the U.S. These 69 patients were contacted via telephone, and no subjective symptoms were reported. Because of their inability to visit our clinic physically, the calculation of their relevant scores, MRI evaluation, and objective assessment by the surgeon at 2 years were not possible; therefore, they were not included in the final analysis. However, bias was minimized by utilizing a single surgeon, the same graft-harvesting technique, and same postoperative rehabilitation course.

### *Conclusions*

PLT autograft is a suitable graft choice for ACLR in terms of its tensile strength, easy harvesting, knee functional outcomes, and minimal donor-site morbidity. Compared with HT, PLT was associated with improved patient-reported outcomes at 6-months of follow-up and can potentially help athletes return to sports earlier. A bigger cohort and longer follow-up are needed to confirm these results and their applicability. ■

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