Reply to: Comments on Alentorn-Geli et al.: Anteromedial portal (AMP) versus transtibial (TT) drilling techniques in ACL reconstruction: a blinded cross-sectional study at two- to five-year follow-up

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Dear Editor,

We read with great interest the comments on our article entitled “Anteromedial portal (AMP) versus transtibial (TT) drilling techniques in ACL reconstruction: a blinded cross-sectional study at two- to five-year follow-up” [1] by Sunil Gurgur Kini.

In his first concern, Dr. Kini states that the TT group in our study may have more knee laxity because of a too vertical tibial starting point considering that we drilled at 20° in the coronal plane. Studies referenced by Dr. Kini to support his first concern reported a tibial tunnel orientation of 60–70° in the coronal plane, but these angles were considered from the horizontal line, whereas the 20° in our study was considered from the vertical line [4, 5, 7]. Other

authors perform the tibial tunnel with a mean angulation of 60.6°, ranging up to 74.2° [9]. Thus, we can not assume our tibial tunnel significantly differs from the existing literature.

Dr. Kini highlighted the excellent cadaveric study by Bedi et al. [3] comparing the AMP and TT drilling. The TT drilling was performed with oblique positioning of the tibial guide at 60° in the coronal plane, reaching a mean femoral angulation of $54.81^\circ \pm 7.17^\circ$, corresponding approximately to 10:45 in a clock position. The TT group in our study had the femoral tunnel in the 11 (or 13) o'clock position, which we believe is comparable with the interesting study by Bedi et al. Although both TT and AMP drilling may produce a femoral tunnel close to ACL footprints, the tibial starting point to achieve this position in the TT drilling must be more medial and could be too close to the tibial joint line. This may result in a short tibial tunnel and enlarged tibial tunnel aperture, which may in turn compromise the graft fixation and incorporation [6]. In addition, a too medialised tibial tunnel starting point during the TT technique may result in an increased risk of injury to the MCL, and may produce a more lateral and posterior tibial tunnel intra-articular entry point resulting in a less effective reconstruction from a biomechanical point of view [8].

In his other concern, Dr. Kini discusses the risk of a short femoral tunnel and the increased risk of posterior wall blow out with the AMP technique. In our experience with the AMP technique, the posterior wall blow out is extremely rare. Using the Acuflex Endoscopic femoral drill guide (Smith and Nephew®), a security distance can be systematically left in the posterior wall of the femoral condyle, thus preventing its rupture. The posterior wall

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blow out may be also prevented by performing the femoral drilling through an AMP as inferior and medial as possible in order to make a perpendicular drill with direct visualisation of the femoral drilling also avoiding cartilage damage of the medial femoral condyle [10].

Although we agree that the AMP technique may produce a shorter femoral tunnel compared to the TT technique, the length of this tunnel through an accessory portal may be long enough for the bone–patellar tendon–bone graft [2, 10]. Silver et al. [10] found a mean distance of 37.1 mm and 43.5 mm with 120° knee flexion using straight and flexible guide pins, respectively. In our experience, a minimum length of 35 mm with a knee flexion of 110° is reached with the AMP technique, which is also consistent with Basdekis et al. [2].

We appreciate the efforts of Dr. Kini to further discuss this interesting issue, as any improvement in ACL reconstruction may help optimise clinical outcomes and contribute to return-to-sports at high level of physical activity in injured athletes.

Thanks for your considerations.

References

- Alentorn-Geli E, Samitier G, Alvarez P, Steinbacher G, Cugat R (2010) Anteromedial portal versus transtibial drilling techniques in ACL reconstruction: a blinded cross-sectional study at 2- to 5-year follow-up. *Int Orthop* 34:747–754
- Basdekis G, Abisafi C, Christel P (2008) Influence of knee flexion angle on femoral tunnel characteristics when drilled through the anteromedial portal during anterior cruciate ligament reconstruction. *Arthroscopy* 24:459–464
- Bedi A, Raphael B, Maderazo A, Pavlov H, Williams RJ (2010) Transtibial versus anteromedial portal drilling for anterior cruciate ligament reconstruction: a cadaveric study of femoral tunnel length and obliquity. *Arthroscopy* 26:342–350
- Chhabra A, Diduch DR, Blessey PB, Miller MD (2004) Recreating an acceptable angle of the tibial tunnel in the coronal plane in anterior cruciate ligament reconstruction using external landmarks. *Arthroscopy* 20:328–330
- Golish SR, Baumfeld JA, Schoderbek RJ, Miller MD (2007) The effect of femoral tunnel starting position on tunnel length in anterior cruciate ligament reconstruction: a cadaveric study. *Arthroscopy* 23:1187–1192
- Heming JF, Rand J, Steiner ME (2007) Anatomical limitations of transtibial drilling in anterior cruciate ligament reconstruction. *Am J Sports Med* 35:1708–1715
- Howell SM, Gittins ME, Gottlieb JE, Traina SM, Zoellner TM (2001) The relationship between the angle of the tibial tunnel in the coronal plane and loss of flexion and anterior laxity after anterior cruciate ligament reconstruction. *Am J Sports Med* 29:567–574
- Purnell ML, Larson AI, Clancy W (2008) Anterior cruciate ligament insertions on the tibia and femur and their relationships to critical bony landmarks using high-resolution volume-rendering computed tomography. *Am J Sports Med* 36:2083–2090
- Rue JP, Ghodadra N, Lewis PB, Bach BR (2008) Femoral and tibial tunnel position using a transtibial drilled anterior cruciate ligament reconstruction technique. *J Knee Surg* 21:246–249
- Silver AG, Kaar SG, Grisell MK, Reagan JM, Farrow LD (2010) Comparison between rigid and flexible systems for drilling the femoral tunnel through an anteromedial portal in anterior cruciate ligament reconstruction. *Arthroscopy* 26:790–795