Effect of locoregional anesthesia on muscle recovery after knee ligamentoplasty

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Anesthetic agents used for motor blocks have local toxic effects, demonstrated in vitro and in animal models. Little work has been done on the clinical impact of this toxicity. In a context of physical medicine and sports medicine, we examined several patients who had undergone knee ligamentoplasty for tears of the anterior cruciate ligament (ACL). For these patients, functional recovery was correlated with recovery of quadriceps strength. The purpose of this study was to analyze the impact of peripheral nerve blocks on quadriceps recovery 5.5 months after knee ligamentoplasty.

Patients and methods.– We conducted a retrospective analysis of 69 patients divided into three groups: 33 who had had no locoregional anesthesia (NB), 24 had femoral nerve block (FNB) and 12 had an iliofascial block (IFB). Our main outcome criterion was relative loss of quadriceps muscle force compared with the healthy side using isokinetic measures 5 to 6 months after ligamentoplasty.

Results.– Loss of concentric force at 60°/s was, on average: 24.7 ± 14.8% in group NB, 17.2 ± 13.9% in group FNB, and 19.7 ± 10.7% in group IFB. The difference between the three groups was not significant (P = 0.208). At rapid speed (240°/s) the deficit was on average: 23.1 ± 11.1% in the group NB, 14.4 ± 10.5% in the group FNB and 13.4 ± 11% in the group FNB. The difference was significant only between NB and the other two groups, FNB and IFB. The quadriceps deficit was significantly greater in the patients who did not have a nerve block.

Discussion.– Surprisingly, this study demonstrated result contradicting the initial hypothesis. Our finding showed that the local toxicity of anesthetic blocks did not have a negative clinical impact on muscle force, but that there was a positive effect on the quality of quadriceps recovery during the time studied.

Double Bundle versus single bundle ACL reconstruction: Isokinetic and functional parameters comparison

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Two surgical techniques can be used to carry out a ACL reconstruction with hamstring graft: one known as anatomical corresponds to a double bundle plasty, an anteromedial bundle and a posterolateral bundle, and the other more conventional consisting of an anteromedial single bundle. In this retrospective study, we wished to study the clinical (isokinetic parameters) and functional results (KOOS = Knee Insult and Osteoarthritis Outcome Score) obtained in the 4th month post-surgery.

Forty subjects divided into 2 groups, one group underwent a double bundle plasty (group DB, n = 20 including 6 women and 14 men; mean age 30.96 years) and the other treated with a single bundle plasty (group SF, n = 20 including 6 women and 14 men; mean age 31.63 years) evaluated on isokinetic dynamometer (Cybex Norm®) in order to assess their level of muscular recovery.

**Results:**

- Loss of concentric force at 60°/s was less low than the score of group MF (respectively 51.15% versus 71.77%, P < 0.05).
- The PPLP2 scoring scale was significantly correlated with the possibility of getting back to competition (P = 0.012) and a high score was linked to a faster return to competition (follow-up of 258 patients). The optimal threshold score was 176. However this score remained poorly discriminating in regards to sensitivity (79.7%), specificity (49.3%) and the percentage of athletes returning to competition 2.5 months after completing the PPL2 scoring tool (37.9%).

**Conclusion:** The PPLP2 scoring tool is validated in the French language in terms of construct validity, reproducibility and sensitivity. This scoring scale is used for the follow-up and monitoring of ACL reconstruction in athletes, providing useful information on the quality of their recovery particularly during the post-operative phase and the possibilities of getting back to competition.

Validity and reproducibility of the PPLP scoring scale in the follow-up of athletes after anterior cruciate ligament reconstruction

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Keywords: Knee; Anterior cruciate ligament; Score; PPLP; Validation; Reproducibility; Monitoring; Sport

**Objectives:** Validate the use of the PPLP2 scoring scale in the follow-up of athletes after anterior cruciate ligament (ACL) reconstruction.

**Material and method:** We conducted a prospective follow-up study on athletes with ACL reconstruction during several time periods between 2003 and 2009.

**Results:** The PPLP tool is made of two parts: the first one (PPLP1) with a total of 100 points for post-operative follow-up and the second one also with a total of 100 points (PPLP2) adding up to the first score for determining a final post-operative monitoring score of 200 points. For construct validity we showed the differences in items’ characteristics (coefficient r of 0.20 in 763 patients), and adequate correlation of the PPLP score to other scoring scales found in the literature (OAK, Lysholm, Tegner, KOOS, Arpege, IKDC Subjectif and Psychovitality Test). The intra/inter examiner reproducibility was excellent ranging from 0.92 to 1. The PPLP2 scoring tool was well identified by a low PPLP score, mainly for Complex Regional Pain Syndrome Type 1 (CRPS1: 1.9%) with a mean PPLP1 score of 80.33 whereas uncomplicated clinical courses (80.8%) had a mean score of 94.28 with a significant difference (P < 0.0001). PPL2 scoring tool was significantly correlated with the possibility of getting back to competition (P = 0.012) and a high score was linked to a faster return to competition (follow-up of 258 patients).

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