The relationship of infrapatellar nerve to the sartorius
and study on the frequency of occurrence of its different positions

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During meniscectomy and anteromedial incision for pes anserinus plasti (slocum) operations on the knee, the infrapatellar nerve may be severed. As a result, in the postoperative period some complaints related to nerve incision may occur. In our study which was carried out on 21 cadavers we observed that infrapatellar nerve has a relationship to the sartorius in three different positions. The first of these was where infrapatellar nerve emerged at the posterior border of the sartorius with a rare of 71.5%. This was followed, respectively, by penetrating (23.8%), the infrapatellar nerve emerging from the body of the sartorius and, anterior (4.7%) infrapatellar nerve emerging from the anterior border of the sartorius.

Key Words: Infrapatellar nerve, the sartorius muscle

Three bones, the distal end of the femur, the patella and the proximal end of the tibia-take part in the formation of the knee joint which is the largest and most complicated joint in the body. Thus, many ligaments and tendons took part in protecting the stability of this wide joint surface.

Knee is affected with direct or indirect trauma during traffic accidents in which especially cyclists and motorcyclists are involved or from sports injuries.

On the knee, strains occurring during rotation movements may cause ruptures in different regions of lateral and medial meniscus. The course of infrapatellar nerve gains importance because of anteromedial knee incisions applied during meniscectomy, and pes anserinusplasti (slocum) operations (1).

During the above mentioned operations, the infrapatellar nerve may be severed (2-4). Thus, due to paresthesia around the incised area and neuroma developed on the tip of the incised nerve in postoperative period, pain responding to local anesthetics may occur (5,6). In Jonson’s study, anteromedial incisions were evaluated, in 35 out of 76 patients, no numbness was present, while, in others numbness related to nerve incision and related functional disorders were found in postoperative period (4).

The femoral nerve, the largest branch of the lumbar plexus (T12, L1, L2, L3, L4), reaches anterior aspect of thigh passing under the inguinal ligament, through lacuna musculorum, with the iliopsoas. It provides motor branches during its course within femoral triangle. The saphenous nerve, the largest femoral cutaneous branch, penetrates the adductor (subsartorial) canal (Hunter canal) from about the top of femoral triangle. The saphenous nerve runs together with the femoral artery and vein, pierces vastoadductor lamina before reaching the lower tip of the canal. Then in the medial aspect of the thigh, at the posterior aspect of the sartorius, it pierces fascia lata and proceeds along with great saphenous vein subcutaneously (7).

Infrapatellar nerve during its course is in relationship with the sartorius in different positions by passing its anterior and posterior aspects, and through it.

The anatomical relationships of the infrapatellar nerve with the sartorius have clinical importance. The aim of our study is to fully describe the course of the infrapatellar nerve and its different positions.

MATERIALS AND METHODS

We carried out this study on 21 lower limbs. Four of these were obtained from cadavers and 17 from fresh

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amputated limbs. In 17 amputated limbs, it was impos­
sible to determine sex, nine were the right and eight
were the left limbs. All of the 4 limbs obtained from
the practical work material were from woman cadavers
(2 were right and 2 were left).

Through an incision from medial section, skin and
subcutaneous tissue were opened. Infrapatellar nerve
was reached through carefully dissecting fascia lata
along the course of the sartorius.

RESULTS
As a result of dissections carried out, on 15 cadavers
infrapatellar nerve parted with saphenous nerve right
at the posterior aspect of the sartorius. Twelve nerves
which ran a posterior course extended to prepatellar
region crossing the sartorius as soon as they pierce
fascia lata. In 3 cadavers, infrapatellar nerve, after be­
coming superficial, descended for a while parallel to
the sartorius and then crossed the sartorius in order to
reach prepatellar region. In one of these, infrapatellar
nerve parted saphenous nerve in two branches (Figure
2). In 1 cadaver, infrapatellar nerve pierced 'superficial
fascia passing before the sartorius (Figure 1). In 5 ca­
davers, infrapatellar nerve ran its course piercing the
sartorius (Figure 3) (Table 1).

DISCUSSION
During operations on the knee, especially due to ante­
eromedial incision, infrapatellar nerve may be severed
and as a result, numbness may occur (2). In our study
we obtained the results shown in Table 1. As seen in
the table, there is not a significant difference between
right and left limbs.

There has been only one publication with which
we could compare our results. The results of the study
carried out by A. Arthornthurasook et al. on 41 cases
compared to the results of our study are shown in
Table 2 (2).

The above-mentioned researchers determined the
positions of infrapatellar nerve according to its rela­
tionship to the sartorius. However, although it is in
posterior position, they chose to indicate parallel
course separately. We believe it would be better to
examine parallel position as a subgroup within poste­
rior position.

We obtained the total number of cases running
posterior and parallel, and compared these with our
results. We could not find a significant difference be­
tween groups (p>0.05).

Again in the same publication, researchers provi­
ded some results of measurements about the distance
between the point infrapatellar nerve crossed the sar­
torius and the most projecting point of medial femoral
epicondyle in order to provide a guide to the clinicians.
However, since body features of people differ and the
course of infrapatellar nerve vary a great deal, we
consider that this evaluation is not adequate.
Table 1. Different relationships of infrapatellar nerve to the sartorius and its frequency of occurrence

<table>
<thead>
<tr>
<th>Type</th>
<th>Cadaver Right</th>
<th>Cadaver Left</th>
<th>Amputation Right</th>
<th>Amputation Left</th>
<th>Frequency of Occurrence</th>
</tr>
</thead>
<tbody>
<tr>
<td>Posterior</td>
<td>1</td>
<td>1</td>
<td>8</td>
<td>8</td>
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<tr>
<td>Penetrating</td>
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<td>1</td>
<td>1</td>
<td>3</td>
<td>23.8</td>
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<td>Anterior</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>4.7</td>
</tr>
<tr>
<td>Total</td>
<td>21</td>
<td></td>
<td></td>
<td></td>
<td>100%</td>
</tr>
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</table>

In conclusion, knowledge about the anatomy and variations of the infrapatellar nerve is important for surgical approach. If the surgeon is fully aware of the possible anatomical variations, this nerve will, thus, be prevented from accidental damage during operations.

REFERENCES