ORIGINAL ARTICLE

LOCALIZATION OF THE TIBIAL ENTRY POINT

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ABSTRACT

Objective: To assess the intramedullary nail entry point in the proximal region of the tibia, through a questionnaire. Methods: 230 participants undergoing treatment for tibial fractures were interviewed. The questionnaire was created with three sections that could be answered in a "Yes" or "No" format and a fourth section that had two figures representing anteroposterior (AP) and lateral view x-rays that could be answered in an "A, "B" or "C" format. Results: The most frequent reason was "ease of access" (67.8%), followed by "better nail insertion access" (60.9%) and, in third place, "to prevent knee pain" (27.4%). The reasons for choosing the access so as to "prevent knee pain" and "avoid tendinitis" had a significant relationship with points "A" and "C" of the schematic AP x-ray figure, especially "C" (medial tibial crest). There were no significant differences between the types of access to the patellar ligament in the schematic AP and lateral x-ray figures between age groups. Conclusion: The greater the age was, the larger the proportion choosing the question "to avoid valgus deformity" was. The reasons from a medical (practical) perspective related to the type of access in the transpatellar ligament, while the reasons from a patient (functional) perspective related to medial parapatellar access. Transpatellar access was chosen by most of the participants (66.5%).

Keywords – *Fracture fixation, intramedullary; Tibial fractures; Patellar ligament*

INTRODUCTION

Fractures of the tibial diaphysis remain the commonest injury treated by orthopedic surgeons. Intramedullary nails have become the treatment of choice both for unstable closed fractures and for low-energy exposed fractures[1,2]. A variety of entry points in the proximal region of the tibia have been described, but the ideal location remains a topic of discussion[1,3-6]. Several surgical accesses can be used to obtain the entry point, including medial and lateral parapatellar access and transpatellar incision[1,4,7]. According to the literature, authors have reported complications such as pain in the anterior region of the knee, ligament instability, necrosis of the retropatellar fat, cartilage and meniscus lesions, reflex sympathetic dystrophy, gait abnormality and tenosynovitis as possible cause of the surgical procedure[7-14]. However, sometimes the pain is not relieved by removing the nail, and the transpatellar incision has been partially implicated as the cause of these complications[7-10,12]. The aim of the present study was to investigate the intramedullary nail entry point in the proximal region of the tibia, by means of a questionnaire answered at the Brazilian Congress of Orthopedics and Traumatology.

METHODS

During the 40th Brazilian Congress of Orthopedics and Traumatology, which took place in Rio Grande do

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Sul in 2008, 230 participants who treat tibial fractures were interviewed to obtain information. The questionnaire was formulated with three sections that could be answered in a "yes" or "no" format and a fourth section containing two figures representing anteroposterior (AP) and lateral view radiographs that could be answered in an "A", "B" or "C" format. The participants were divided into three categories according to age group (25-35, 36-45 and > 45 years), in order to find out whether the surgeon's experience would influence the results.

The orthopedists were asked whether they treated fractures of the tibial diaphysis using an intramedullary nail. If so, they were asked whether they used one or more accesses. In relation to the patellar ligament, they were asked whether they used a medial, lateral or transpatellar access. They were also asked what the reason was for their selection of access to the patellar ligament (see annexed questionnaire)

Participation was voluntary and the responses were confidential. The results were calculated and subjected to statistical analysis.

General profile of the sample

The aim was to describe the profile of the 230 participants in accordance with the questionnaire for evaluating the entry point for the intramedullary nail in the tibia. Table 1 furnishes the frequency (n) and percentage (%) of the responses to the questionnaire, for the whole sample.

STATISTICAL ANALYSIS

The statistical tests applied were the chi-square (χ^2) or Fisher exact test, to compare proportions between data of categorical nature. The results were presented in tables and expressed by means of frequencies (n) and percentages (%). The criterion used for determining the significance was the level of 5%. The statistical analysis was processed using the statistical software of the SAS® System, version 6.04.

RESULTS

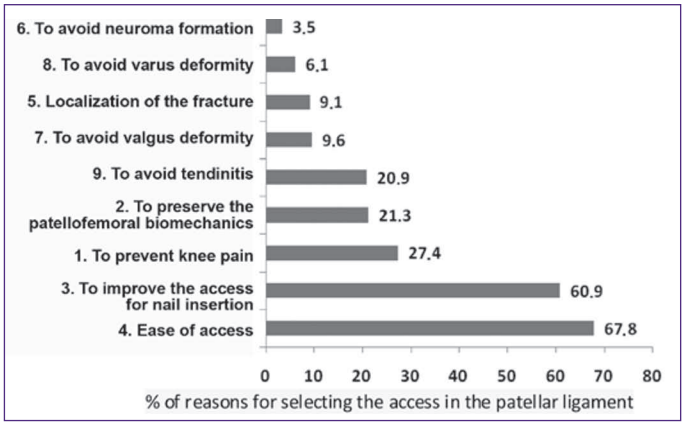
Among the reasons for choosing the surgical access, it was seen that the most frequent reason was "ease of access" (67.8%), followed by "better access for nail insertion" (60.9%) and, in third place, "to prevent knee pain" (27.4%). Figure 1 illustrates the distribution of the reasons for selecting the access in the patellar ligament.

Table 1 – Description of the questionnaire for 230 respondent participants

Variable	Category	n	%
Age group[a]	25 to 35 years	95	42.0
	36 to 45 years	71	31.5
	> 45 years	60	26.5
Access for nail emplacement	Single access	201	87.4
	Several types	29	12.6
Patellar ligament	Medial	64	27.8
	Transpatellar	153	66.5
	Lateral	13	5.7
Reason for selecting the ligament access	1. To prevent knee pain	63	27.4
	2. To preserve the patellofemoral biomechanics	49	21.3
	3. To improve the access for nail insertion	140	60.9
	4. Ease of access	156	67.8
	5. Localization of the fracture	21	9.1
	6. To avoid neuroma formation	8	3.5
	7. To avoid valgus deformity	22	9.6
	8. To avoid varus deformity	14	6.1
	9. To avoid tendinitis	48	20.9
Radiographic reference – 1[b]	A	32	14.4
	B	149	66.8
	C	42	18.8
Radiographic reference – 2[b]	A	61	27.4
	B	120	53.8
	C	42	18.8
Comments	Yes	13	5.7
	No	217	94.3

[a] No information in relation to four patients.
[b] No information in relation to seven patients.
Source: Orthopedics and Traumatology Service, Hospital Santa Teresa, Petrópolis, RJ.

From the responses of the 230 participants, it was investigated whether there were any significant diffe-



Source: Orthopedics and Traumatology Service, Hospital Santa Teresa. Petrópolis, RJ.

Figure 1 – Percentages of the reasons for choosing the access in the patellar ligament