



Comparison of effectiveness of different surgical treatments for meralgia paresthetica: Results of a prospective observational study and protocol for a randomized controlled trial



Godard C.W. de Ruiter*, Alfred Kloet

Department of Neurosurgery, Medical Center Haaglanden, The Hague, The Netherlands

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ABSTRACT

Introduction: Various surgical procedures can be applied in the treatment of meralgia paresthetica. The two main ones are neurolysis and neurectomy of the lateral femoral cutaneous nerve. To date, no prospective or randomized controlled trial has compared the effectiveness of these procedures with standardized outcome measures. In this study we present our results for two prospectively followed cohorts and we present the protocol for a double blind randomized controlled trial (RCT).

Methods and analysis: All patients that had an indication for surgical treatment of idiopathic meralgia paresthetica between August 2012 and April 2014 were included in the study. The patient decided on the type of treatment (neurolysis or neurectomy) after informed consent had been given. Primary outcome was measured using the Likert scale obtained 6 weeks after the surgery. Successful pain reduction was defined as Likert 1 or 2. Secondary outcome measures were the Numeric Rating Scale (NRS) and bothersomeness Index (BSI). In case of neurectomy the BSI for numbness was also obtained.

Results: A total of 22 consecutive patients were included: neurolysis was performed in 8 patients and neurectomy in 14 patients (one bilateral case). Successful pain reduction was observed more frequently after neurectomy (93.3%) than after neurolysis (37.5%, $P < 0.05$). Secondary outcome scores (NRS and BSI pain) were also better after neurectomy, although not significantly (respectively $P = 0.07$ and 0.05). Paired analysis of the scores before and after the surgery showed an improvement in both the NRS and BSI after the neurectomy procedure (both $P < 0.001$), while scores were not significantly different before and after the neurolysis procedure. Patient's scores for the BSI numbness after the neurectomy procedure were low (mean 1.4, SD ± 1.0 , range 0–3).

Discussion: The results of our prospective study confirm results previous studies reported in the literature in that the percentage pain relief was better after neurectomy than after neurolysis. A RCT is needed to further investigate potential differences in effectiveness. The protocol for such a trial is presented in this article.

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1. Background

Meralgia paresthetica is a mononeuropathy of the lateral femoral cutaneous nerve. Symptoms may consist of a burning or tingling sensation in the anterolateral part of the thigh. The severity can vary from slight discomfort to symptoms that severely disable patients in their daily activities. The exact pathophysiologic mechanism of meralgia paresthetica is still largely unknown, but probably consists of a combination of compression at the inguinal ligament

(where the nerve makes an angle of nearly 90 degrees in standing position) and repetitive motion in the hip (for example during walking or cycling). This combination of compression and stretching can lead to various macroscopic and microscopic intraneural changes (Figs. 1 and 2) [1].

In most cases (90%) symptoms resolve spontaneously or with help of conservative treatment (e.g. pain medication, loss of weight, avoid wear of tight clothes and local injection with steroids) [2]. If symptoms persist, surgical treatment should be discussed with the patient. The surgical options are neurolysis (release of the nerve by incision of the inguinal ligament) and neurectomy (transection of the nerve) [3]. These different surgical procedures have various advantages and disadvantages. The obvious advantage of the neurolysis procedure is that sensation in the anterolateral part of the

* Corresponding author at: Lijnbaan 32, 2301CK The Hague, The Netherlands. Tel.: 703302000; fax: 703574356.

E-mail address: g.de.ruiter@mchaaglanden.nl (G.C.W. de Ruiter).

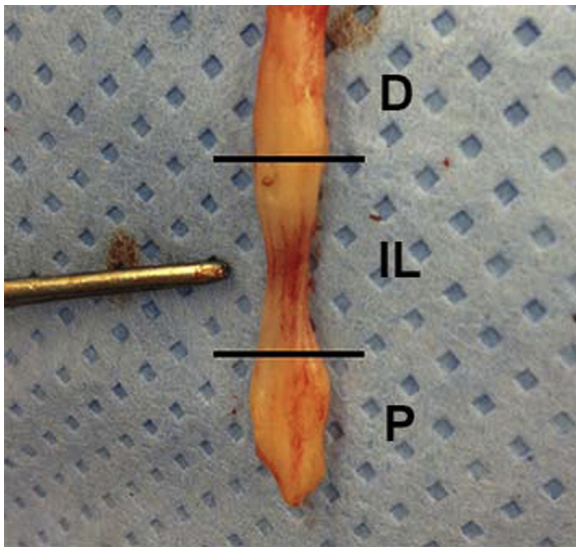


Fig. 1. Picture of a resected lateral femoral cutaneous nerve (LFCN) directly after the neurectomy procedure. Forceps points at previous site of compression at the inguinal ligament (IL). D = distal to ligament, P is proximal to the inguinal ligament.

thigh is preserved. The disadvantage is that the chance for pain relief is generally lower than after the neurectomy procedure [4].

The neurolysis and neurectomy procedures have been compared in a number of studies [4–7]. These studies however have several shortcomings: most studies have been performed in a retrospective manner, the studies are influenced by selection bias, and, often the reason for performing either a neurolysis or neurectomy procedure has not been mentioned. To provide better insight into the effectiveness of these different surgical procedures for meralgia paresthetica we have set up a double blind randomized controlled trial comparing these two procedures, called the STOMP trial (Surgical Treatment Options for Meralgia Paresthetica). In this article the protocol for this trial is presented. In addition, we report the results for a prospective study on 22 consecutive patients, in whom either a neurolysis or neurectomy procedure was performed. Outcome in this study was assessed using the same measures that will be used in the STOMP trial.

2. Methods and materials

2.1. Prospective observational study

All patient that were referred to our outpatient clinic with idiopathic meralgia paresthetica between August 2012 and April 2014 were included for prospective analysis. The diagnosis was made clinically and supported by temporary relief of symptoms

Table 1
Likert scale.

1	Complete recovery
2	Almost complete recovery
3	Some recovery
4	Unchanged
5	Some worsening
6	Serious worsening
7	Worse than ever

Table 2
Bothersomeness Index for pain and numbness (filled in for each separately).

	Not bothersome		Somewhat bothersome			Extremely bothersome	
	0	1	2	3	4	5	6
BSI pain or numbness							

after injection of local anaesthetic (19 patients) and/or inter-side difference in sensory nerve action potentials (SNAPs) or of somatosensory evoked potentials (SSEPs) (8 patients). The patients needed to have symptoms for at least 3 months with failed conservative treatment. The various advantages and disadvantages of both the neurolysis and neurectomy procedure were discussed with the patient. The patient chose the type of treatment pre-operatively after informed consent had been given: neither was the decision made by the surgeon, nor was the patient's decision changed intra-operatively by the surgeon.

All patients were operated and followed in the outpatient clinic six weeks postoperatively by one of the authors. Primary outcome was determined using the 7-point Likert scale (Table 1). Likert 1 and 2, respectively complete and almost complete recovery, were defined as a successful result.

Secondary outcome measures (pain intensity measured using the Numeric Rating Scale and Bothersomeness Index for pain and numbness, see Table 2) were also obtained by the surgeon during this visit.

2.2. Surgical procedures

Both the neurolysis and neurectomy procedure patients were performed through a small transverse incision made just below the anterior superior iliac spine (ASIS), parallel to the inguinal ligament. The nerve was identified in fat tissue medial to the sartorius muscle and followed proximally towards the inguinal ligament. In case of neurolysis, the inguinal ligament was incised over the nerve and the nerve was lifted to incise the iliac fascia under the nerve, to completely free the passage through the inguinal ligament. In case of neurectomy, the nerve was retracted a few centimetres out of the pelvis and transected as proximal as possible. Subsequently,

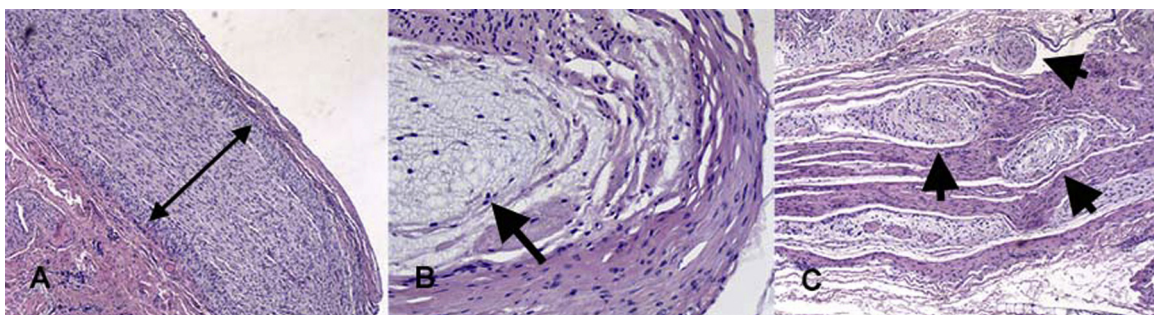


Fig. 2. Microscopic images of transverse (A and B) and longitudinal (C) sections taken through resected LFCN segments (H&E stain, magnification: A 4 \times , B and C 10 \times). (A) Thickened perineurium (between arrowheads), (B) mucoid deposition (pointed at by arrowhead), and (C) collagenous nodules between the nerve fascicles (pointed at by arrowheads).

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