


## Treatment of chronic osteoarthritic hip pain with phenol neurolysis of the obturator nerve Quadfen 1

### Tratamento da dor crônica na osteoartrite do quadril com neurólise do nervo obturador com fenol Quadfen 1

Chiara Maria Thá Crema<sup>1</sup>, Luiza Previato Trevisan Magario<sup>1</sup>, Ana Paula Bertole Cirino dos Santos<sup>1</sup>,  Marcelo Riberto<sup>1</sup>

#### ABSTRACT

The conservative treatment of osteoarthritis (OA) of the hip is essentially symptomatic, seeking to relieve pain and optimize function. Despite presenting great clinical effect, hip arthroplasty may have restrictions, and in these situations, the neurolytic blockade of the anterior branch of the obturator nerve can be a therapeutic alternative, since it stops the afferent pain from the hip joint. **Objective:** To describe the results of treating patients with severe OA of the hip by applying phenol to the obturator nerve. **Method:** Twelve consecutive patients with OA of the hip, refractory to conservative treatment, were recruited to have the obturator nerve localized through electrostimulation and blocked with phenol. They were evaluated in terms of pain intensity via the visual analogue scale (VAS), pressure dolorimetry in the medial and lateral gluteus medius, gluteus minimus, and piriformis, and quality of life by the Harris Hip Score (HHS) at baseline (BL) after 1 (M1), 2 (M2), and 6 months (M6). **Results:** The patients were between 30 and 72 years old with an average of  $47.5 \pm 1.7$  years old, 5 of them were women. Three patients were excluded for not being able to come for follow up evaluations. VAS values varied from  $8.2 \pm 0.9$  at BL to  $6.6 \pm 1.7$  at M1,  $6.5 \pm 1.7$  at M2, and  $7.3 \pm 1$  in M6 ( $p=0.0094$ ). As to the HHS, the values were BL: $33.27 \pm 2.9$ ; M1: $39.2 \pm 6.4$ ; M2: $40.2 \pm 8.1$ , and M6:  $38.8 \pm 9.7$  in the final evaluation ( $p=0,040$ ). For dolorimetry, non significant variation was BL:  $11 \pm 5.7$ , M1:  $7.9 \pm 2.2$ ; M2:  $10.9 \pm 5.6$ ; M6:  $8.1 \pm 1.6$  ( $p 0.69$ ). **Conclusion:** The application of phenol to the anterior branch of the obturator nerve can be an alternative in the treatment of severe OA of the hip in patients with restrictions to Total Hip Replacement (THR), since it reduces pain and improves quality of life.

**Keywords:** Osteoarthritis, Hip, Pain, Rehabilitation, Therapeutics, Phenol, Quality of Life

#### RESUMO

O tratamento conservador da osteoartrite (OA) do quadril é essencialmente sintomático, visando alívio da dor e otimização da funcionalidade. Apesar de apresentar grande efeito clínico, a artroplastia quadril pode ter restrições, nestas situações o bloqueio do ramo anterior do nervo obturador (RAO) pode ser uma alternativa terapêutica, uma vez que interrompe a aferência dolorosa da articulação do quadril. **Objetivo:** Descrever os resultados do tratamento de pacientes com OA grave do quadril por meio da aplicação de fenol no nervo obturatório. **Método:** Nove pacientes com OA de quadril resistente ao tratamento conservador que se apresentaram consecutivamente ao nosso serviço foram submetidos à aplicação de fenol no nervo obturatório com localização por meio de eletroestimulação e avaliados quanto a intensidade de dor pela escala visual analógica (EVA), dolorimetria de pressão e qualidade de vida pelo *Harris Hip Score* (HHS) após 01, 02 e 06 meses. **Resultados:** Foram selecionados 12 pacientes que preenchem os critérios de inclusão e exclusão, destes, 3 foram excluídos após não conseguirem mais comparecer para as avaliações. Os valores médios de EVA variaram de  $8,2 \pm 0,9$  na medida basal para  $6,6 \pm 1,7$  ao final de um mês,  $6,5 \pm 1,7$  ao final de dois meses e  $7,3 \pm 1$  com 06 meses ( $p=0,0094$ ). Quanto ao HHS, os valores foram  $33,27 \pm 2,9$ ;  $39,2 \pm 6,4$ ;  $40,2 \pm 8,1$  e  $38,8 \pm 9,7$ , na avaliação final. A última variável analisada foi a Dolorimetria, onde foi realizada a média entre os valores atingidos pela avaliação com o dolorímetro no glúteo médio medial, glúteo médio lateral, glúteo mínimo e piriforme. Na avaliação inicial média de  $11 \pm 5,7$ ,  $7,9 \pm 2,2$  no final do primeiro mês,  $10,9 \pm 5,6$  no segundo e no 6º mês  $8,1 \pm 1,6$ . Ao aplicarmos o teste ANOVA, não foi observado diferença estatística ( $p 0,69$ ). **Conclusão:** A aplicação de Fenol em RAO pode ser uma alternativa no tratamento da OA de quadril grave em pacientes com restrições à realização de ATQ, pois implica em redução da dor e melhora da qualidade de vida.

**Palavras-chave:** Osteoartrite do Quadril, Dor, Reabilitação, Terapêutica, Fenol, Qualidade de Vida

<sup>1</sup>Departamento de Biomecânica, Medicina e Reabilitação do Aparelho Locomotor, Faculdade de Medicina de Ribeirão Preto, Universidade de São Paulo – FMRP USP

#### Mailing address:

Chiara Maria Thá Crema

E-mail: [chiaracrema8@gmail.com](mailto:chiaracrema8@gmail.com)

Submitted: 31 December 2018

Accepted: 15 January 2019

#### How to cite

Crema CMT, Magario LPT, Santos APBC, Riberto M. Treatment of chronic osteoarthritic hip pain with phenol neurolysis of the obturator nerve Quadfen 1. *Acta Fisiatr.* 2018;25(4):191-194.

DOI: 10.11606/issn.2317-0190.v25i4a163881



©2018 by Acta Fisiátrica  
This work is licensed under a  
Creative Commons - Attribution 4.0 International

## INTRODUCTION

The conservative treatment of osteoarthritis (OA) of the hip is essentially symptomatic, seeking to relieve pain and optimize function.<sup>1</sup> The consensus for therapy consists of non-pharmacological treatments such as exercise, correcting misalignments, and pharmacological treatments such as analgesics, anti-inflammatory drugs, opioids, capsaicin cream, and injections with glucocorticoids and hyaluronic acid.<sup>2</sup>

When the clinical treatment fails, a surgical approach with hip arthroplasty may be recommended. The greatest concern is that the surgery is major and can be risky for patients with other diseases. As osteoarthritis of the hip is common in older age groups and in patients with greater body weight, the prevalence of comorbidities that may increase surgical risk is also greater.<sup>3</sup> In these cases the use of a conservative treatment may be advisable, even if less efficient, because of safety issues and morbidity.

Another problem that afflicts patients in the Brazilian health system is the lack of resources, which results in a lack of surgical material and long waiting lists for surgical intervention. Under these conditions the neurolytic blockade of the obturator nerve can be used as a palliative analgesic therapy.<sup>4</sup>

Greater duration of the blockade can be achieved if drugs capable of harming the nerve axons are used. Phenol has an immediate local anesthetic action, due to its immediate selective effect on smaller nerve fibers.<sup>5,6</sup>

## OBJECTIVE

This study sought to describe the results of treating patients with severe osteoarthritis of the hip, refractory to conservative treatment, for pain relief and quality of life, through the application of phenol to the anterior branch of the obturator nerve.

## METHOD

This study was approved by the research ethics committee of the institution, and all participants signed the free and informed consent form. Consecutive outpatients followed in the HCRP hip clinic were recruited if they met the following inclusion criteria:

- Older than 18 years-old.
- Both genders.
- Diagnosed with osteoarthritis of the hip (hip pain associated with at least two of the following: VHS<20mm/h, osteophytes in the femur or acetabulum or reduction of articular Reduction of joint space in the acetabulum in rx).
- Failure of conservative treatments with therapeutic exercise, modalities, walking aids, remedies (analgesics or anti-inflammatory drugs), or with trigger-point blockades.
- Pain assessed by the Visual Analogue Scale greater than 6 at the time of evaluation.
- Not having any known allergy to phenol or uncontrolled coagulopathy.

The exclusion criteria were:

- Having been submitted to total hip replacement (THR) or any other surgical procedure in the lower limbs after inclusion in the study.
- Limited understanding of the procedures or evaluation instruments.
- Difficulty in clinical follow-up or coming in for evaluations for any reason.

In this study, patients were evaluated at the time of recruitment as well as immediately before the phenolic blockade (baseline - BL), then at 1 month (M1), 2 months (M2), and 6 months (M6) after the intervention. The following assessment instruments were used:

- The visual analogue scale (VAS), which consists of a straight line of 100 mm anchored at the ends in the expressions 'no pain' and 'worst pain possible' on which the patient indicates the intensity of their pain symptom. The intensity of the pain is considered as the distance in centimeters from the end 'no pain' to the point where the patient has indicated his pain.<sup>7</sup>
- Pressure dolorimetry (PD) is the imposing of progressively more intense pressure at a steady rate of about 1 kgf/cm<sup>2</sup>/s, on trigger points identified by muscle palpation, with a dynamometer that has a circular, rubberized 1cm<sup>2</sup> standardized end until the patient manifests pain.<sup>7</sup>
- The functional questionnaire Harris Hip Score (HHS) consists of four items: pain in the affected joint, function, presence or absence of deformity, and the range of motion of this joint. The function is assessed by asking about the patient's activities of daily living and gait, whether the patient presents with claudication or needs external support, and the maximum distance he can walk. The score may range from 0 to 100, where the lower the score, the greater the functional impairment of the patient.<sup>8</sup>

The treatment was performed with application of phenol in the anterior branch of the obturator nerve. A Braun Stimuplex HNS 12 electrostimulator was used along with a Stimuplex A 0.8X75mm needle which was inserted two fingers from the inguinal region, just below the ventral muscle of the adductor longus, with the tip of the needle pointing to the antero superior iliac spine on the same side.

An electrical current of 2mA and 1 Hz helped to locate the nerve, which resulted in rhythmic contraction of the adductor muscles concomitant in the same frequency. Maintenance of contractions after decrease of current intensity to 1mA confirmed the tip of the needle positioned in close contact with the obturator nerve.

Nerve block consisted in the injection of 2.5ml of 6% phenol. After the application, the patient was also evaluated on whether or not he needed gait support, to continue the therapeutic measures in use, and was counselled as to analgesics and maintaining physiotherapy, if necessary.

Quantitative variables were assessed for normality by the Kolmogorov-Smirnoff and described by the mean and standard deviation. Categorical variables were grouped into categories and expressed in percentages.

Any incomplete data from clinical follow-up spreadsheets were filled in a conservative manner with the LOCF technique (last observation carried forward). The clinical measures of the effect of therapeutic intervention were analyzed by ANOVA for repeated measures and, where significant, there was a post hoc comparison between moments of evaluation by the paired t test. The significance level was 0.05.

## RESULTS

Twelve patients were selected who met the inclusion and exclusion criteria and agreed to participate. The patients were between 30 and 72 years of age, with an average of 47.45± 1,7; time with the disease between 2 and 16 years, with failures in conservative treatment using analgesics such as dipyrone, paracetamol, tramadol and codeine, as well as physiotherapy with THR recommended.

One month after the procedure one patient could no longer participate in the study, followed by 2 other patients after the third evaluation, due to transportation problems.

Among the 12 patients at the beginning of the study, 5 were female and 7 males. After the application, all patients reported improvement of symptoms. Only one patient reported loss of motor strength in the adductor muscles: a foreseeable side effect of the procedure.

Concerning pain intensity, in the initial assessment, prior to the application of phenol to the anterior branch of the obturator nerve, the patients had a mean of 8.2 ± 0.9. with a drop to 6.6± 1.7 and remained stable with a slight increase in the sixth month (7.3±1).

A p-value of 0.009 was found when the ANOVA test was applied. When the results were analyzed in relation to the HHS, a baseline mean of 33.27±2.9 was found in the HHS, with improvement of the score after the first and second month, and a slight decrease in the sixth month (38.8±9.7) and p-value of 0.040.

The last variable analyzed was for dolorimetry, where the mean of the values was calculated for the assessment of pain in the medial and lateral gluteus medius, gluteus minimus, and piriformis. In the baseline evaluation they showed a mean of 11±5.6 and a worsening of the score in the evaluation after 1 month (7.9±2.2) and slight improvement afterwards (8.1±1.6 in the sixth month). When applying the ANOVA test, there was no statistical difference observed ( $p$  0.69) (Table 1).

**Table 1.** Clinical evolution of patients with hip osteoarthritis in a 6 months period following the application of phenol to the anterior branch of the obturator nerve

	Baseline	Month 1	Month 2	Month 6	P
N	12	12	11	9	
EVA	8,2 ± 0,9	6,6 ± 1,7*	6,5 ± 1,7*	7,3 ± 1,0* §	0,009
HHS	33,0 ± 2,9	39,2 ± 6,4*	40,2 ± 8,1*	38,8 ± 9,7*	0,04
DP	11,0 ± 5,7	7,9 ± 2,2	10,9 ± 5,6	8,1 ± 1,6	0,694

Legend — VAS: visual analogue scale; HHS: Harris Hip Score. PD: pressure dolorimetry: \* difference in relation to the baseline value  $p < 0.05$ ; §: difference between 2 and 6 months  $p < 0.05$

## DISCUSSION

Nerve blockades are therapeutic strategies in the treatment of chronic pain. Nerve blockades can be applied when a patient presents pain in joints or even muscles. The alleged therapeutic mechanism is the interruption the nociceptive path from their origin, blocking the conduction of nerve impulses.<sup>9</sup> The analgesic effect of these procedures may be permanent or temporary by interrupting the vicious cycle of pain.

Phenol has been used in the treatment of pain since 1936 as a neurolytic agent applied via intrathecal or epidural routes, or directly on the nerves.<sup>6,10</sup> It causes nerve destruction by inducing protein precipitation. There is a loss of cellular elements, separation of the myelin sheath from the axon and axonal edema. The substance takes immediate effect by its selective effect on small nerve fibers.<sup>11</sup>

Because of these properties, phenol was chosen for the neurolysis of the anterior branch of the obturator nerve. In a study conducted by Monagle & Ee<sup>6</sup> a 3ml intra-articular injection was applied to the hip, with improvement of pain and mobility, and after 1 year the patient was sent for a repeat procedure.

Silva et al.<sup>4</sup> blocked the obturator nerve with 10ml of 0.25% bupivacaine and obtained a 100% improvement in the pain and function of one patient after the procedure, who reported independence for all activities, with the analgesic effect lasting for 40 days.

The patients in the present study had severe OA of the hip, were refractory to clinical treatment, and complained of severe pain and many functional limitations. The results showed pain improvement by patients, who complained about intense pain, especially during the first 2 months after the blockade, with a difference of 2 points from the initial VAS and a subsequent stabilization.

But in the third assessment there was a slight regression of the score, concurrent with the patients complaining of pain once again, a fact that may be related to the duration of the phenol effect, since its effects are not permanent and a functional re-innervation occurs over a period of months-usually between 2 and 6 months.

The time of action of this procedure varies with the concentration, injected volume, duration of exposure, and injection technique.

If the phenol is injected near nerves that have a predominance of sensory fibers, it may cause dysesthesia or anesthesia that can last up to 4 months.<sup>12</sup> In the study there was only one complain about side effects, 1 patient said that felt lost of motor strength but no lost in function and no dysesthesia.

The improvement in the HHS happened in terms of mobility, with larger angles achieved in goniometry, as well as in the perception of ease in activities like tying shoes, taking a bus, and going up and down stairs. Regarding the dolorimetry parameter, although no statistical difference was found, the patients presented a mild worsening of pain perception which, according to Imamura et al.<sup>13</sup> can be associated with the myofascial pain syndrome, a condition associated with weakness and muscle shortening, which is common in patients with OA of the hip, especially in the areas being evaluated such as the piriformis, gluteus medius and minimus, and hip adductor muscles. The patients in the study had struggle with pain for long periods of time, already with a chronic pain, affecting other joints, altering the dynamic of walk and resulting in more myofascial syndrome.

The present study had some limitations, such as the lack of a control group and the sample size. Another bias was the large number of comorbidities in the patients, with many already having osteoarthritis elsewhere, such as gonarthrosis and widespread pain, which affects the pain perception of the patient and would require a more comprehensive treatment; this would include providing gait supports, which in the Brazilian Health System can take up to 6 months to obtain, or the need to continue with physical therapy, where there is also a lack of time slots and professionals in the public network.

## CONCLUSION

The application of phenol to the anterior branch of the obturator nerve can alleviate the pain and improve the quality of life in patients with hip OA, being an alternative treatment for patients who have not undergone THR, either because they lack the clinical conditions or because of long waiting lists for the procedure.

## REFERENCES

1. Longo DL, Fauci AS, Kasper DL, Hauser SL, Jameson JL, Loscalzo J. Harrison's Principles of Internal Medicine. 18 ed. New York: McGraw-Hill; 2012.
2. American College of Rheumatology Subcommittee on Osteoarthritis Guidelines. Recommendations for the medical management of osteoarthritis of the hip and knee: 2000 update. *Arthritis Rheum.* 2000;43(9):1905-15. Doi: [https://doi.org/10.1002/1529-0131\(200009\)43:9<1905::AID-ANR1>3.0.CO;2-P](https://doi.org/10.1002/1529-0131(200009)43:9<1905::AID-ANR1>3.0.CO;2-P)
3. Horn CC. Impacto da artroplastia total de quadril sobre a qualidade de vida em idosos portadores de artrose incapacitante [Dissertação]. Porto Alegre: Pontifícia Universidade Católica do Rio Grande do Sul; 2006.
4. Silva MF, Masiero D, Chamlian TR, Wasserstein S. Bloqueio do nervo obturador como proposta terapêutica analgésica para osteoartrose de coxofemoral - técnica simplificada. *Acta Fisiatr.* 2000;7(2):75-7.
5. Abejón D. Técnicas intervencionistas en el dolor reumático. Bloqueo neural y articular: técnicas y evidencias. *Reumatol Clin.* 2006;2(Supl 1):S23-7. Doi: [https://doi.org/10.1016/S1699-258X\(06\)73078-9](https://doi.org/10.1016/S1699-258X(06)73078-9)
6. Monagle J, Ee J. Treatment of chronic hip osteoarthritic pain with intra-articular phenol. *Indian J Pain.* 2013;27(1):41-3. Doi: <https://doi.org/10.4103/0970-5333.114866>
7. Wolfe F. The relation between tender points and fibromyalgia symptom variables: evidence that fibromyalgia is not a discrete disorder in the clinic. *Ann Rheum Dis.* 1997;56(4):268-71. Doi: <https://doi.org/10.1136/ard.56.4.268>

8. Guimarães RP, Alves DPL, Silva GB, Bittar ST, Ono NK, Honda E, et al. Tradução e adaptação transcultural do instrumento de avaliação do quadril "Harris Hip Score". *Acta Ortop Bras.* 2010;18(3):142-7. Doi: <http://dx.doi.org/10.1590/S1413-78522010000300005>
9. Braun L, Braun L. Técnicas intervencionistas no tratamento da dor. *Cienc Cult.* 2011;63(2):49-50. Doi: <http://dx.doi.org/10.21800/S0009-67252011000200015>
10. Barbosa Neto JO, Sousa AM, Tahamtani SMM, Ashmawi HA. Bloqueio neurolítico subaracnoideo em paciente com dor oncológica refratária. *Relato de caso. Rev Dor.* 2013;14(1):76-7. Doi: <http://dx.doi.org/10.1590/S1806-00132013000100018>
11. Quagliato E, Bang G, Botelho LA, Gianini MAC, Spósito MMM, Lianza S. Espasticidade: tratamento medicamentoso [texto na Internet]. São Paulo: Projeto Diretrizes ABM/CFM [citado 2017 Abr 27]. Disponível em: [https://diretrizes.amb.org.br/\\_BibliotecaAntiga/espasticidade-tratamento-medicamentoso.pdf](https://diretrizes.amb.org.br/_BibliotecaAntiga/espasticidade-tratamento-medicamentoso.pdf)
12. Sposito, MMM. Bloqueios químicos para o tratamento da espasticidade na paralisia cerebral. *Acta Fisiátr.* 2010;17(2):68-83. Doi: <https://doi.org/10.11606/issn.2317-0190.v17i2a103314>
13. Imamura ST, Riberto M, Fischer AA, Imamura M, Kaziana HHS, Teixeira MJ. Successful pain relief by treatment of myofascial components in patients with hip pathology scheduled for total hip replacement. *J Musculoskelet Pain.* 1998;6(1):73-89.