

# Chemical cautery of the inferior turbinates with trichloroacetic acid

## Cauterização química das conchas nasais inferiores com ácido tricloroacético

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### SUMMARY

**Introduction:** Chronic secondary nasal obstruction, the hypertrophy of the inferior turbinates is a common symptom of great morbidity in our society. Several surgical techniques are described to cases refractory to medical treatments, however, there are controversy about which one of them is more effective and less subject to complications.

**Objective:** Evaluate the efficacy, security and practicability of using ambulatory trichloroacetic acid to treat the hypertrophy of the inferior turbinates.

**Method:** Prospective study with 29 patients submitted to the ambulatory technique of 30% trichloroacetic acid infiltration in the inferior turbinate's submucosa, under topic anesthesia. The symptoms of rhinorrhea and nasal obstruction were evaluated using the analogical and visual scale (AVS 010) pre-cautery and one year post-procedure.

**Results:** Significant nasal obstruction and rhinorrhea reduction one year post-procedure. The complications were light synechia in two patients and small bleedings in four spontaneous resolution cases.

**Conclusion:** The proposed method showed excellent results concerning nasal obstruction and rhinorrhea, can be conducted in ambulatory environment, and has proved to be a low-complication method.

**Keywords:** cautery, nasal obstruction, trichloroacetic acid.

### RESUMO

**Introdução:** Obstrução nasal crônica secundária a hipertrofia das conchas nasais inferiores é um sintoma comum, de importante morbidade em nosso meio. Várias técnicas cirúrgicas são descritas para os casos refratários aos tratamentos clínicos, porém, há controversas sobre qual delas é a mais efetiva e sujeita a menos complicações.

**Objetivo:** Avaliar a eficácia, a segurança e exequibilidade do uso do ácido tricloroacético ambulatorial para o tratamento da hipertrofia dos cornetos inferiores.

**Método:** Trabalho prospectivo com 29 pacientes que foram submetidos à técnica ambulatorial de infiltração de ácido tricloroacético a 30% submucosa dos cornetos inferiores, sob anestesia tópica. Foram avaliados os sintomas de rinorreia e obstrução nasal utilizando escala visual e analógica (EVA 010) pré cauterização e um ano pós procedimento.

**Resultados:** Diminuição significativa da obstrução nasal e da rinorreia um ano pós procedimento. As complicações foram sinéquias leves em dois pacientes e sangramentos, de pequena monta, em quatro casos com resolução espontânea.

**Conclusão:** O método proposto apresentou ótimos resultados quanto à obstrução nasal e rinorreia, pode ser realizado em ambiente ambulatorial, e vem nos mostrando ser de baixa complicação

**Palavras-chave:** cauterização, obstrução nasal, ácido tricloroacético.

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## INTRODUCTION

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Hypertrophy of the inferior turbinates is a common cause of chronic nasal obstruction. It can be started by inflammatory processes, including allergic and nonallergic rhinitis. It causes significant morbidity, once it determines a negative impact over the inferior airways, impairments in craniofacial development in children and altering in speech and language.

Corticosteroids and systemic and topical decongestants, as well as symptomatic, are used in the treatment of this condition; however, surgery becomes necessary when no satisfactory result is achieved with clinical treatment.

Several surgical techniques of the inferior turbinates were already described: electrocauterization, cryotherapy, laser, radiofrequency, partial or total turbinectomy, turbinoplasty, but there are still controversies as to which offers better results and fewer complications. The trichloroacetic acid, as known as trichloroethanoic acid, is an analogue of acetic acid, considered safe by CPDB (carcinogenic potency database). Its use is wide, being used on the skin or mucosa by various medical specialties.

The main objective of this study is to evaluate the efficacy of the chemical cauterization of inferior turbinates with trichloroacetic acid for rhinorrhea and nasal obstruction. We also studied the complications, tolerance, viability and time of the procedure.

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## METHOD

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In this clinical Trial were selected 29 patients with condition of nasal obstruction and/or persistent serous rhinorrhea, who showed indication of surgical treatment to correct the hypertrophy of the inferior turbinates. The individuals were treated as outpatients, from January 2007 to December 2009. The project was approved by the Ethics and Research Committee of the institution, protocol number 043/2007.

The research included individuals of both sexes, between 12 to 60 years of age, with hypertrophy of the inferior turbinates and nonresponsive to clinical treatment with topical nasal corticosteroids. Were excluded: patients incapable to provide consistent answers, pregnant women, individuals submitted to previous nasal surgery or that presented allergy to the components used in the treatment. After the analysis of the inclusion and exclusion factors and the agreement to the free and informed consent, was scheduled a date for the intervention. Prior to the procedure,

patients were asked to quantify, through a visual analogue scale, the severity of the nasal obstruction and/or rhinorrhea. The score went from 0 to 10, being 0 the absence of symptom and 10 its highest expression. After the procedure, the individual was asked to use the same scale to quantify the pain caused by the method. The interventions consisted of, firstly, the retraction of the turbinates with naphazoline 0,5% and local anesthesia with neotutocaine 2% followed by xylocaine 10% for 10 minutes. Then, it was made the infiltration of 0,03 mL of trichloroacetic acid 30% through insulin syringe and spinal needle number 22, in three points of the inferior turbinate: tail, mid section, and head.

The initial grade of the symptoms was compared to the evaluation performed after 12 months of the realization of the procedure. The pain caused by the infiltration was also assessed. The statistical tests used were ANOVA followed by the t student test.

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## RESULTS

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Of the 29 patients submitted to the procedure, 17 completed the evaluation one year after the procedure.

Regarding the nasal obstruction, was observed a statistically relevant improvement at the symptom evaluation by the visual analogue scale, which before the procedure showed an average of 7,9 ( $\pm 0,5$ ) points by VAS and at the evaluation after one year evidenced an average of 2,5 ( $\pm 0,7$ ) points.

The evaluation results of the rhinorrhea symptom showed a decline of the value of average VAS score of 4,6 ( $\pm 0,9$ ) points before the cauterization to 1,8 ( $\pm 0,8$ ) points in the evaluations performed one year later.

Regarding the pain caused by the procedure, we found an average of 6,8 ( $\pm 0,7$ ) VAS points. The symptom did not remain for more than 24 hours after the procedure. Synechiae were observed in 2 patients, which were of small magnitude, and were corrected in the ambulatory during subsequent consultations. Epistaxis occurred in four cases, all of mild degree and resolved spontaneously.

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## DISCUSSION

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Nasal obstruction was a complaint common to all 17 patients that completed our evaluation, and all of them reported some degree of improvement. Using the visual analogue scale, we noticed that the average of obstruction found before the procedure was of 7,9 ( $\pm 0,5$ ) and fell to 2,5 ( $\pm 0,7$ ). Similar results were found by other authors (1, 2, 3), however, in these studies, the application of the

trichloroacetic acid was topical on the inferior turbinate and in higher concentration, of 80%.

Almost all patients reported reduction of rhinorrhea, with initial visual analogue scale index of  $4,6 (\pm 0,9)$ , falling to  $1,8 (\pm 0,5)$  after one year of the procedure. YAO *et al.* (4) also observed improvement of other symptoms of allergic rhinitis, such as rhinorrhea and sneezing, after the application of the trichloroacetic acid, and demonstrated in recent research, that occurred a reduction of the mucosa infiltration of T cells, Th2 type, admittedly responsible by the allergic answer of rhinitis, after the topical utilization of trichloroacetic acid, suggesting that the migration of these cells was inhibited by the local action of the acid.

The comparison of the infiltration of turbinates with steroids and botulinum toxin presented by YANG *et al.* (5) showed that the toxin is safest and most efficient than steroids in the treatment of allergic rhinitis with hypertrophy of the turbinates, reducing nasal obstruction, rhinorrhea, sneezing and prurience, but the effect has limited duration (20 weeks), and we should point out that its cost is elevated. In our study after one year of the procedure, the improvement was significant and the cost of the solution of trichloroacetic acid is reduced.

The infiltration of the inferior turbinates with trichloroacetic acid proved safe and with few complications. Only two patients presented synechiae, resolved in ambulatory regimen. There was no significant history of bleeding, frequent occurrences in the turbinatectomy and turbinoplasty procedures. The pain had spontaneous resolution in less than 24 hours. There were no bigger complications, such as those associated to infiltration of steroids which, despite being an old practice in otorhinolaryngology, may lead to visual loss, transitory or permanent, as described by MARTIN *et al.* (6) and MARBY *et al.* (7). The incidence of this fact is low, estimated as 0,006%, but the effect can be devastating. The mechanism is probably due to the embolization of the retinal arterioles, which suffer this injury due to retrograde flow of anastomoses between the anterior and posterior ethmoidal arteries and the ophthalmic artery. This grave complication did not occur in our small casuistry, but, due to the physicochemical characteristics of acids, that do not disseminate at distance, it is not likely to happen.

Regarding the pain reported by patients, the average found was of  $6,8 (\pm 0,7)$  points.

None of the patients denied undergoing the procedure on the contralateral nostril and the symptom did not remain for over a few minutes after the procedure. We shall reconsider the previous time of anesthesia, as well as

try other topical anesthetic agents for greater comfort during and after the procedure.

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## CONCLUSION

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The infiltration of trichloroacetic acid in the inferior turbinates proved to be safe and efficient regarding the decrease of the symptoms of nasal obstruction and serous rhinorrhea in studied patients, even after one year after the procedure. We believe this technique can be an alternative to the surgical interventions that need general anesthesia. Further studies will be of great value, especially to assess the efficacy of the method for control of the rhinorrhea related to "Rhinitis of elderly", knowing that these patients may present symptoms of difficult control and frequently present contraindications to surgical procedures.

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