



# Comparison between otoplasty performed under local anesthesia with and without sedation

*Comparaçao entre otoplastia realizada com anestesia local com sedação e sem sedação*

Fernanda Zanatta F. Santos<sup>1</sup>

Lauro Avellan<sup>2</sup>

Danillo Irineu Brito Vieira De  
Freitas<sup>3</sup>

Thaís Gomes Casali<sup>4</sup>

Diogo Petroni Caiado Fleury<sup>4</sup>

José Mauro de Oliveira Squarisi<sup>5</sup>  
Paulo Henrique Santos Laia<sup>3</sup>

## ABSTRACT

**Introduction:** Ear flappy is a congenital deformity most common of external ear, is transmitted by dominant form and occurs in 5% of general population. There are three main ways to do the modern surgery: the shaving, excision and fixation for stichs of ear gristle. The technique of Mustardé, in 1963, do a new antihelice was supported in permanent sutures for posterior way and the stichs takes until anterior perichondrium, without takes the skin. Furnas (1968) done suture with unabsorbed thread in conchal gristle, transfixing until anterior perichondrium and sutures in mastoid fascia. The otoplasty can be done with local anesthesia associated or not with sedation or with general anesthesia. The aim of the study is to evaluate the intensity of pain of patients submitted to otoplasty with local anesthesia with sedation and without sedation, comparing two techniques. **Method:** There were separated 2 groups: Group 1: 12 patients operated with local anesthesia and sedation in surgery center; group 2: 26 patients operated with local surgery in clinic of small surgeries. The study was done in one year (2011 to 2012 May). It was done a lot of questions with these patients to evaluate the level of pain during the surgery and post-surgery. **Results:** There was not significant difference between two groups. **Conclusion:** It is possible to do this surgery with less hospital cost and the use the rooms in surgery center for more complex surgeries.

**Keywords:** Ear/Surgery. Anesthesia. Conscious Sedation.

## RESUMO

**Introdução:** Orelha em abano representa a deformidade congênita mais comum da orelha externa, é transmitida de forma autossômica dominante e afeta aproximadamente 5% da população em geral. Existem três vias principais para a realização da otoplastia moderna: a raspagem, excisão e fixação por pontos da cartilagem auricular. A abordagem de Mustardé, em 1963, para a criação de uma nova anti-hélice era baseada em suturas permanentes por acesso posterior e os pontos englobavam até o pericôndrio anterior, sem transfixar a pele. Furnas (1968) realizava sutura com fio inabsorvível posicionado na cartilagem conchal, transfi-

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1. Specialization, Plastic surgery resident at the HC-UFGM.

2. Specialist Member of the Brazilian Society of Plastic Surgery. Tutor of the plastic surgery department at the HC-UFGM.

3. Third-year resident of plastic surgery at the HC-UFGM.

4. Second-year resident of plastic surgery at the HC-UFGM.

5. Second-year resident in plastic surgery of the HC-UFGM.

xando até pericôndrio anterior e suturado na fáscia mastoide. A otoplastia pode ser realizada com anestesia local associada ou não à sedação ou com anestesia geral. **Objetivo:** O presente estudo tem como objetivo avaliar a intensidade da dor dos pacientes submetidos à otoplastia sob anestesia local com sedação e sem sedação, comparando as duas técnicas anestésicas. **Método:** Foram separados dois grupos: Grupo 1 - 12 pacientes operados com anestesia local e sedação no centro cirúrgico; Grupo 2 - 26 pacientes operados com anestesia local e sem sedação no ambulatório de pequenas cirurgias. O estudo foi realizado no período de 1 ano (maio de 2011 a maio de 2012). Foi realizado um questionário com esses pacientes para avaliarmos o nível de dor no intraoperatório e pós-operatório. **Resultados:** Não houve diferença estatisticamente significativa entre os dois grupos. **Conclusão:** É possível realizarmos essa cirurgia com menor custo hospitalar e utilizarmos as salas do centro cirúrgico com anestesista para cirurgias mais complexas.

**Descritores:** Orelha/Cirurgia. Anestesia. Sedação Consciente.

## INTRODUCTION

Prominent ear is the most common congenital deformity of the external ear; it involves autosomal dominant transmission and affects approximately 5% of the general population<sup>1</sup>. More than 200 procedures for the treatment of prominent ear have been described in the literature<sup>2,3</sup>. There are 3 main methods for otoplasty: scoring, excision, and fixation through auricular cartilage points<sup>4</sup>.

Various otoplasty techniques have been developed for many years. In 1845, Dieffenbach described the first case of post-trauma otoplasty, which used postauricular skin resection and conchamastoid fixation<sup>5-7</sup>. Meanwhile, Ely<sup>8</sup> described his technique for elective otoplasties in 1881, involving postauricular skin excision, conchamastoid fixation, and excision of a strip of conchal cartilage. Furthermore, Luckett emphasized the importance of building and restoring the antihelical shape in otoplasty; to build the antihelix, he used posterior access and resected the cartilage with subsequent joining of the edges<sup>9</sup>. In 1952, Becker<sup>10</sup> introduced a concept for obtaining a smoother antihelical shape by using incisions on the cartilage associated with sutures; this technique was subsequently revised by Converse & Woodsmith in 1963. Mustardé's approach<sup>11</sup>, which was also reported in 1963, aims to build a new antihelix based on permanent sutures through posterior access; the sutures reach the anterior perichondrium without transfixing the skin. Meanwhile, in 1963, Stenstrom<sup>12</sup> used anterior scoring to obtain a smoother contour of the antihelix.

Conchal deformities may be treated using different techniques including excision, scoring, and fixation of cartilage. The techniques involving suturing were initially described by Owens & Delga-

do in 1955<sup>13</sup>; their method was modified by Furnas<sup>14</sup> in 1968. However, we currently make sutures with non-absorbable thread positioned on the conchal cartilage, transfixing it until the anterior perichondrium and suturing the mastoid fascia.

Otoplasty can be performed under local or general anesthesia with or without sedation. Innervation of the external ear follows the distribution of the branchial arches; it comprises the anterior and posterior branch of the major auricular nerve, which innervates the structures originating in the first branchial arch (i.e., the tragus and antihelical crus) as well as the auriculotemporal nerve. In turn, the auriculotemporal nerve innervates the structures originating in the second branchial arch (i.e., the helix, scapha, antihelix, concha, antitragus, external auditory meatus, and lobe). Furthermore, the external auditory meatus is innervated by branches from the vagus glossopharyngeal nerves.

## OBJECTIVE

Accordingly, this study compared anesthetic techniques by assessing the intensity of pain in patients submitted to otoplasty under local anesthesia with or without sedation.

## METHODS

This prospective study was performed from May 2011 to May 2012 by the plastic surgery team of the Hospital das Clínicas, Federal University of Minas Gerais. Patients submitted to otoplasty under local anesthesia with or without sedation were enrolled. The inclusion criteria were as follows:

1. Age between 14 and 48 years;
2. Primary otoplasty ;

3. Surgical risk classified as ASA 1 or 2;
4. Signed informed consent form for the surgery.

Patients submitted to bilateral otoplasty were divided into 2 groups according to the anesthesia used:

Group 1: included 12 patients who received local anesthesia and sedation and were operated on at a surgery center.

Group 2: included 26 patients who received local anesthesia without sedation and were operated on in outpatient settings.

The surgical and anesthetic techniques were identical in both groups, except for the use of preoperative sedation. The procedure was initiated with disinfection of the whole face, scalp, and ears with chlorhexidine. Next, operating fields were placed and fixed. Local infiltration of each ear was performed with 5mL xylocaine 2% with vasoconstrictor (1:200,000). Anesthesia was initially applied adjacent to the ear lobe and subsequently oriented towards the skull around the whole ear, completing 360°. Anesthetic infiltration of the concha and mastoid was performed in sequence.

Following anesthesia, the 3 points defining the antihelix and the 2 points of the concha were marked with methylene blue. The conchal cartilage was also marked with methylene blue whenever it needed to be removed. All otoplasties were performed using Mustardé's method as modified by Furnas<sup>11,14</sup> with scoring of the posterior auditory cartilage. After surgery, all patients received a gauze dressing casting the new ear shape, open gauze, and head bandaging, which was replaced by surgical dressing after 24 h, with instructions for the same to be used for 2 months.

The patients were monitored every week during the first month followed by consultations at 2, 3, 6, and 12 months postoperatively. Each patient was interviewed using a questionnaire with a 10-point Likert scale, with 0 corresponding to the absence of pain and 10 the worst pain imaginable. Pain was evaluated intraoperatively, during the first 12 hours postoperatively, and 12–36 postoperatively. Satisfaction with the final result after 40 days and whether the patient would repeat the surgery using the same anesthetic technique were also assessed. The data were analyzed by using the Epi Info™ 3.5.3 software package.

## RESULTS

There were no anesthetic or surgical complications during the procedure. Furthermore, as of

writing, there have been neither relapses nor the need for surgical reviews. The 2 groups exhibited similar results. Regarding the evaluation of pain, intraoperatively, a score of 0 was prevalent; the mean (SD) pain levels in Groups 1 and 2 were 0.58 (1.08) and 1.50 (2.61), respectively ( $P = 0.38$ ); in the first 12 hours postoperatively, they were 5 (2.95) and 4.69 (3.25), respectively ( $P^* = 0.86$ ). In contrast, there was some difference in pain levels from 12–36 hours postoperatively, although the difference was not significant: 4.08 (3.31) and 2.92 (2.69) in Groups 1 and 2, respectively ( $P^* = 0.25$ ).

Regarding the medications used during the postoperative period, 60% and 65% of patients in Groups 1 and 2, respectively, received opioid analgesics (i.e., tylex) in addition to common analgesics (i.e., dipyrone and paracetamol). Regarding satisfaction with the final result, 68.4%, 23.7%, and 7.9% of the patients were very satisfied, satisfied, and dissatisfied, respectively. When asked whether they would undergo the surgery again with the same anesthesia, both groups responded similarly: 92% answered yes and only 8% answered no.

## DISCUSSION

Although the mean pain level in the group under sedation was lower during surgery and higher in the postoperative period, there were no statistically significant differences between groups regarding the pain felt during or after surgery. Furthermore, the pain scores and need for opioid analgesics indicate that the procedure described herein is virtually painless intraoperatively but painful postoperatively. Concordant with the literature<sup>15</sup>, the present patients tolerated local anesthesia well with low postoperative morbidity. According to Lancaster *et al.*<sup>16</sup>, compared to general anesthesia, local anesthesia results in less vomiting during the postoperative period, thereby shortening hospital stay. Meanwhile, Clegg *et al.*<sup>17</sup>, report no difference between local anesthetic infiltration with lidocaine and regional nerve blockade with bupivacaine with respect to the duration or quality of analgesia, postoperative opioid medication use, nausea, or vomiting.

Regarding the technique used, anterior scoring of the cartilage is a safe method, resulting in a satisfaction rate of 94.8%<sup>18</sup>. In the present study, which involved posterior scoring, patients reported a similar level of satisfaction (92.1%). Koch *et al.*<sup>19</sup> report that use of the modified Mustardé technique resulted in a 91.4% satisfaction rate and a 17% recurrence rate.

The overwhelming majority of patients (92%) responded that they would undergo the surgery

again, indicating the procedure is quite tolerable.

This study was performed at a public hospital with NHS patients. The availability of anesthetists to administer sedation in accordance with the safety regulations laid out by the SBA<sup>20</sup> is limited, because such professionals are not always available in all operating rooms, especially in outpatient settings. In our department, patients undergoing surgery in operating rooms are sedated, while those operated on in outpatient settings are not. As mentioned above, this study evaluated whether there was a significant difference regarding the pain felt by patients who were sedated and not sedated. Although surgery with sedation is more comfortable for patients, patients surprisingly reported no significant difference in pain regardless of sedation. Thus, the results show that such procedures may be performed at minor surgery centers with low pain levels, lower costs, and without the risks associated with sedation.

## CONCLUSION

Otoplasties performed using the modified Mustardé technique with local anesthesia can be performed with or without sedation and are well tolerated by patients. The degree of discomfort is relatively small, and most patients would repeat the surgery with the same kind of anesthesia. Regardless of the anesthetic technique, the procedure described herein proved to be safe and produced good results and excellent patient satisfaction. This study indicates that otoplasty can be performed with local anesthesia alone in outpatient settings, avoiding the use of operating rooms in surgery centers, sedatives, and hospitalization, consequently decreasing costs for public health services.

**Fernanda Zanatta Freitas Santos  
Alameda Alvaro Celso, 250/311 - CEP: 30150-260  
Belo Horizonte, MG, Brasil.**

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