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Surgical removal of genial tubercles

Remoção cirúrgica de tubérculos genianos

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ABSTRACT

Genial tubercles are tiny bone projections located bilaterally around the lingual foramen, on the lingual face of the mandible. This study intends to present diagnosis methods and surgical techniques to treat this relatively uncommon problem. A totally edentulous, 69 year old, female patient came to our clinic complaining of an increase in volume in the floor of the mouth, in the region of the lower central incisors, that was causing instability in the lower total prosthesis. The surgical planning was the removal of genial tubercle, one week after the surgery no one complications was observed. Surgical removal of genial tubercles are a rare situation however in this case this surgery was necessary and no complications was observed after the surgery.

Keywords: Oral surgery; Genial tubercles; Hypertrophy mandible

RESUMO

Tubérculos genianos são pequenas projeções ósseas localizadas bilateralmente ao redor do forame lingual, na face lingual da mandíbula. Esse estudo pretende mostrar métodos de diagnóstico e técnicas cirúrgicas para tratar este problema relativamente incomum. Uma paciente totalmente edêntula com 69 anos de idade compareceu à clínica queixando-se de um aumento de volume no soalho bucal, localizada na região dos incisivos centrais inferiores, que causava instabilidade na prótese total inferior. O planejamento cirúrgico foi a remoção dos tubérculos genianos, uma semana após a cirurgia não houve complicações. A remoção cirúrgica dos tubérculos genianos são uma situação rara, no entanto, neste caso a cirurgia foi necessária e nenhuma complicação foi observada após a cirurgia.

Palavras-chave: Cirurgia oral; Tubérculos genianos; Hipertrofia da mandíbula.

INTRODUCTION

Genial tubercles are bone projections located bilaterally around the lingual foramen, on the lingual face, between upper and lower edges of the mandible[1,2]. The geniohyoid and genioglossus muscles are located there[1-4]. In some cases, these insertions, or the presence of pronounced tubercles, can hinder or impede the use of prosthetic devices[4].

In literature, it is possible to find some complications related to the presence of genial tubercles, such as the fracturing of these structures[2,5]. This is generally observed in female patients over the age of 67[2]. Genial tubercle atrophy is also common, especially in atrophic mandibles[1,2]. Another complication occurs when edentulous patients present resorption of the alveolar process, because then the genial tubercles become pronounced and interfere in prosthesis use. Hypertrophy of these structures affects approximately 1.45% (+/- 0.5%) of female patients[3].

CLINICAL CASE

A 69 year old, female patient came to the FOB-USP surgery clinic complaining of an increase in volume in the floor of the mouth, in the region of the lower central incisors, that was causing instability in the lower total prosthesis. During the intraoral clinical exam, it was observed that the patient was totally edentulous and there was ulceration on the floor of the mouth due to trauma from total prosthesis use (Figure 1).

Standard lateral teleradiography was performed as well as volume CT-scan (Figure 2,3) to assess local bone structure. The diagnostic hypothesis was trauma due to genial tubercle protuberance, and this diagnosis was confirmed with the aid of imaging exams. Due to the discomfort caused by these structures to the patient, and the fact the patient does not want to undergo surgery to install osseo-integration implants, the proposed treatment plan was to surgically remove the genial tubercles. Surgery was performed in an outpatient environment under local infiltration and terminal anesthesia. The tubercle region was approached with the help of an incision on the crest of the ridge extending from the pre-molars on one side to the pre-molars on the opposite side, and another incision on the floor of the mouth, parallel to the median sagittal plane. The mucosa was then shifted and the muscles disinserted. Then, the base of the genial tubercles was sectioned using a no. 6 spherical bit. The remaining bone fragment was removed and the remaining bone was adjusted using a bone file. The region was sutured using 3-0 silk thread, with simple, interrupted stitches (Figures 4-7).

Figure 1: Pre-operative intrabuccal clinical aspect showing the mucosa lesion in the genial tubercle region.

Figure 2: Standard lateral teleradiograph showing the prominence of genial tubercles.

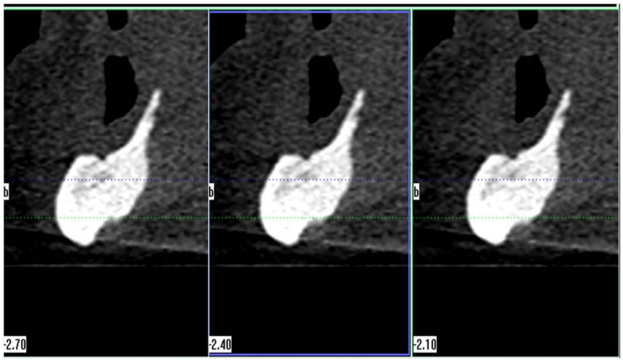

Figure 3: Sagittal cut of the Genial Tubercle region obtained from Cone Beam Volume CT scans (i-Cat).

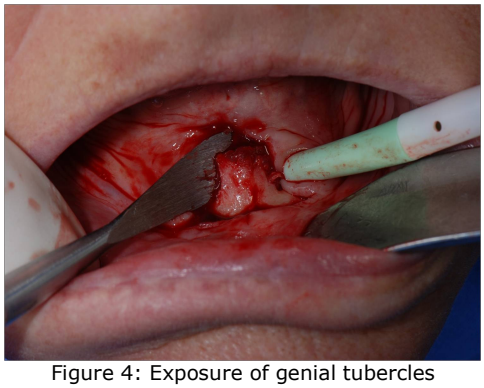

Figure 4: Exposure of genial tubercles

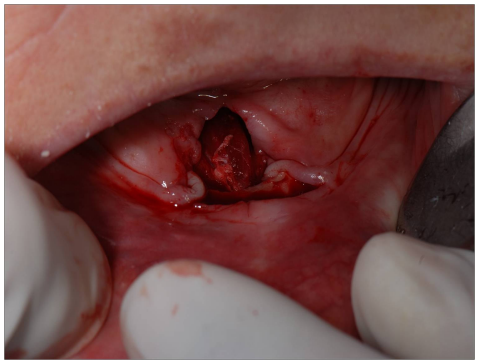

Figure 5: Disinsertion of muscles

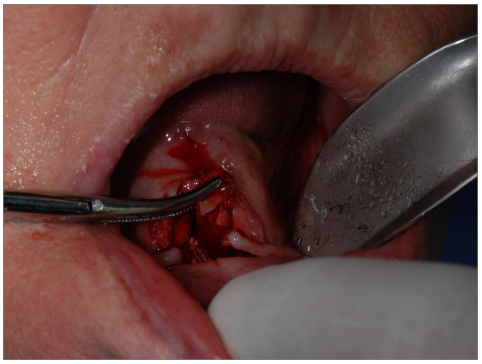

Figure 6: Removal of genial tubercles

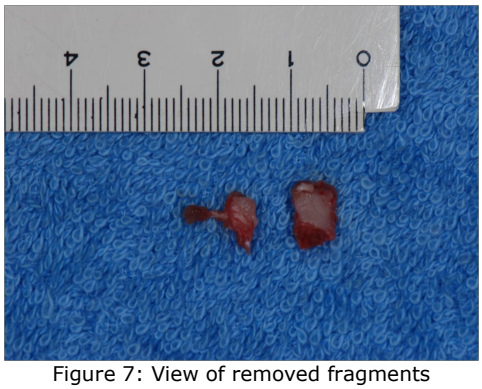

Figure 7: View of removed fragments

The stitches were removed one week after the surgical procedure. No clinical alterations were observed at this moment. At the 7-day control, the patient presented good clinical evolution (figure 8). An occlusal radiograph was taken (figure 9) and the patient was forwarded to have new prostheses made.

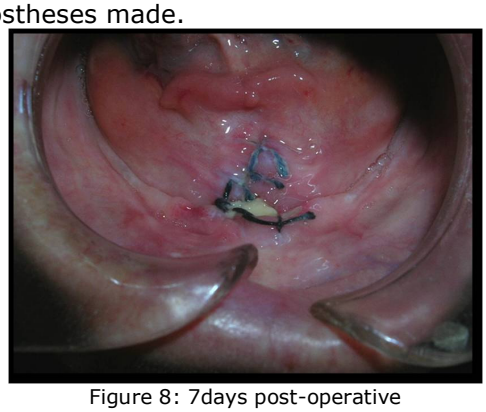

Figure 8: 7days post-operative

Figure 9: Occlusal radiograph of the mandible during 7-day postoperative control

DISCUSSION

Genial tubercles usually are small bony protuberances on the lingual aspect of the mandible symphysis6, according to Greyling[3], no important function can be attributed to the presence and size of genial tubercles. However, some authors comment on the importance of the structure's correct location in mandibular advancement surgeries, in patients with obstructive sleep apnea syndrome (SAAS)[7]. A study conducted by Hueman[7] with the objective of assessing the correct location of upper and lower genial tubercles, used volume CT scans (cone beam).

According to the author, use of the cone beam CT scan is valid for assessing the location of these structures because due to their location, the assessment of tubercles using panoramic or occlusal radiographs may be jeopardized. Thus, the main objective of using CT scans is to allow better visualization of these structures and more accurate measures (without distortions).

According to the literature we can increase8 or enlargement[6,9] of the genial tubercles, a fact that may be responsible to painful symptoms or poorly adapt of the prosthesis. In this work the painful symptoms and poor adaptation of prosthesis is related mandibular atrophy and a more superficial position of these structures. Similar cases can be found in the literature, where the enlargement of the genital tubercles and mandibular bone resorption were responsible for poorly adaptation of the prosthesis and painful swelling[6]. In this is the surgical removal of the genial tubercles is the treatment of this case. Another important aspect to underscore is what happens with the muscles that insert themselves in the genial tubercles after their removal. According to Petterson4, reinsertion of the genioglossus muscle occurs randomly, and according to Maw[10], there are 3 different explanations for the tongue's protrusion movement after disinsertion of the genioglossus muscle: The intrinsic muscles can adjust in such a way that projects the tongue slightly forward. The palatoglossus muscle, acting isolatedly, can lift the tongue and move it anteriorly.

After the fracture of the genial tubercle, the remaining fibers of the genioglossus muscle can maintain the tongue's capacity to protrude. The surgical technique used to remove genial tubercles also aims at reinserting the geniohyoid and genioglossus muscles. The technique described in this case is simple to apply, has excellent postoperative results and the complete oral rehabilitation of the patients.

Finally, it is worth underscoring that removal is opted for when the patient is not submitted to grafts to increase the alveolar

edge. In that case, it is suggested to keep the genial tubercles because they help in the region's bone reconstruction.

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