

Successful management of temporomandibular joint ankylosis after relapse in childhood

Sucesso no manejo de uma anquilose da articulação temporomandibular após recidiva na infância

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Abstract

Objective: to describe the successful surgical management of a reankylosis in a 9 years old girl. **Case report:** when the patient was 3 years old she underwent arthroplasty of the right temporal muscle but presented a relapse due to the lack of cooperation during physiotherapy. The oral exam revealed a severe limitation of mouth opening (0.0mm), low weight for her age (19kg-P10%), bad oral hygiene and difficulties in socializing. The child was submitted to excision of the ankylotic mass and resection of the condyle (condylectomy) and reconstruction with a costochondral graft followed by aggressive postsurgical physiotherapy. After 7 months of specialized and home physiotherapy, the patient presented a mouth opening of 25 mm, and had increased weight significantly. **Conclusion:** the correct follow up was essential for the success of the surgical intervention and improvement in the child's quality-of-life. **Keywords:** Oral Surgical Procedures. Child. Dentistry

Resumo

Objetivo: descrever o tratamento cirúrgico bem sucedido de um reaquilose em uma menina de 9 anos de idade. **Relato de caso:** quando a paciente tinha 3 anos de idade foi submetida a artroplastia do músculo temporal direito, mas apresentou uma recidiva devido à falta de colaboração durante a fisioterapia. O exame oral revelou uma grave limitação da abertura da boca (0,0 milímetros), baixo peso para a idade (19 kg-P10%), má higiene oral e dificuldades de socialização. A criança foi submetida a excisão da massa anquilótica e ressecção do côndilo (condilectomia) e reconstrução com enxerto costochondral seguido por fisioterapia pós-cirúrgica. Após 7 meses de fisioterapia especializada e em casa, a paciente apresentava uma abertura de boca de 25 mm, e aumentou de peso significativamente. **Conclusão:** o acompanhamento correto da paciente foi essencial para o sucesso da intervenção cirúrgica e melhoria na qualidade de vida da criança.

Palavras-chave: Procedimentos Cirúrgicos Bucais. Criança. Odontologia

INTRODUCTION

Temporomandibular joint (TMJ) ankylosis is a pathological condition that involves the fusion of the mandibular condyle to the base of the skull¹. The disease causes a limitation or even a total failure of the movement of the TMJ and when it occurs in a child, can have devastating effects on the future growth and development of the jaws and teeth^{1,2}. TMJ ankylosis is commonly associated with trauma, infections, and/or poorly treated condylar fractures³ and consequently affects the deglutition, mastication, speech, appearance, oral hygiene, and quality of life of an individual¹.

TMJ ankylosis can be diagnosed through clinical evaluation, computerized tomography (CT), magnetic resonance imaging, and panoramic radiography and these

latter techniques can show any condylar deformity, joint space obliteration, or new bone formation⁴. The treatment of choice for TMJ ankylosis in children is generally surgical intervention, and the success depends on several factors, such as the patient's age, type and severity of the ankylosis, the material used in the reconstruction or interposition, and the intense and correct post-surgical physiotherapy^{5,6}.

The aim of this case report was to describe the successful management and the follow up of a temporomandibular joint reankylosis in a child by costochondral graft.

CASE REPORT

A 9 years old female patient, whose main complaint was difficulty in opening the mouth, was taken by her parents to the dentistry clinic of the Universidade Federal do Rio de Janeiro, Brazil. During anamnesis, the parents reported that the child did not have any systemic problem and wasn't under regular follow-up with the pediatrician.

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Parents also reported that when the child was 3 years old she had had the same problem, and had been diagnosed with unilateral TMJ ankylosis, with mouth opening reduced to 10 mm. The patient underwent arthroplasty with interposition of the right temporal muscle followed by post-surgical physiotherapy at home⁷. In the third post operative year, the parents reported that the child was still suffering from a continuous loss of mouth opening, and today, 6 years after surgery, the patient has difficulty in speaking, playing with other children and feeds only liquid-pasty foods through straws.

The physical examination showed that the child was under weight according to percentile levels (10%) for her age, established by the World Health Organization (WHO) and the Child Growth Standards⁸. Also, there was facial asymmetry with mandibular deviation to the right, severe limitation of mouth opening (0.0 mm), unilateral crossbite and a poor oral hygiene (Figure 1 A, B and C). Complementary tests were requested (computed tomography and orthopantomography) and fusion was observed between the mandibular condyle and articular fossa of the temporal bone; thus confirming the TMJ reankylosis on the right side (Figure 1 D, D2, D3 and D4). The patient was referred to the Department of Oral and Maxillofacial Surgery of the University where the case was studied. The planned surgery was condylectomy with costochondral graft.

Figure 1A – Physical aspect (showing lowest weight)



Fonte: O autor

Figure 1B - Asymmetric facial expression of the patiente



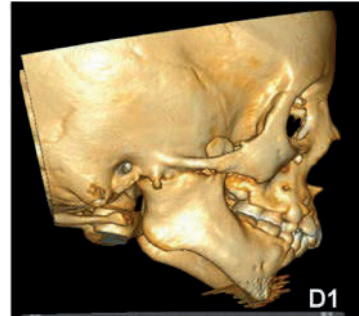
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Figure 1C – Initial mouth opening(0mm)



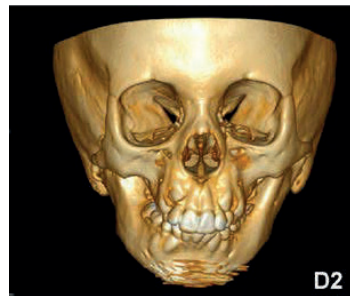
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Figure 1 D1 – 3D Computed tomographic lateral



Fonte: O autor

Figure 1 D2 – 3D Computed tomographic front



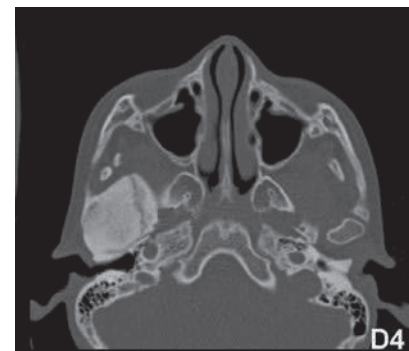
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Figure 1 D3 – 3D Computed tomographic coronal



Fonte: O autor

Figure 1D4 – 3D Computed tomographic axial, demonstrating fibro-aseous ankylosis



Fonte: O autor

The surgery was performed under general anesthesia with nasotracheal intubation. A pre-auricular and a right submandibular access were performed, to expose and separate the ankylosed mass from the glenoid fossa through an osteotomy. After the resection of the ankylosed mass, 30 mm of ribs was removed, being 20 mm of bone and 1 cm of cartilage, and then the osteoplasty was performed for modeling the graft to better fit in the receiving area. After that it was held the contention and the graft fixation with plates and screws sutured with 3.0 vicryl and nylon 5.0. Physiotherapy was initiated 48 hours after surgery with lateral and opening/closing movements using popsicle sticks. A significant improvement in mouth opening was reported after one week (from 0.0mm to 13mm) (Figure 2 A and B). The exercises were carried out 4 times a day for 3-5 minutes, and 4 weeks post surgery the diet was advanced to solid foods. The treatment was implemented for 6 months, and 7 months after the surgery the patient showed a significant improvement in mouth opening (25 mm) (Figure 2 C and D). During this period, parents reported that the child was more sociable, uninhibited and feeding well. Her weight had increased significantly reaching percentile levels 15.8% according to WHO⁸ (25 kg). The child's oral hygiene also improved significantly, and all dental needs were cared for. The patient is still attending follow-up appointments at the Department of Surgery and Pediatric Dentistry for evaluation of mandibular growth and mouth opening.

Figure 2A and B – Mouth opening 7 days post-operative (mouth open 13mm)



Fonte: O autor

Figure 2C – Clinical aspect 7 months after surgery (mouth open 25mm)



Fonte: O autor

Figure 2D – Panoramic radiography 7 months post-operative



Fonte: O autor

DISCUSSION

Temporomandibular joint (TMJ) ankylosis in children is uncommon and is one of the most difficult and challenging problems managed by oral and maxillofacial surgeons⁶. Moreover, success depends on the patient's postoperative adherence to the treatment of intense physiotherapy to maintain the results of the surgery⁹. In this article, we report the successful surgical management of a 9 years old girl who presented a relapse of ankylosis TMJ. The reankylosis possibly happened due to an insufficient resection of the ankylosed mass and a lack of exercises immediately after the surgery when the patient underwent non specialized home physiotherapy.

Many surgical techniques have been described for the treatment of TMJ ankylosis. However, no consensus exists in the literature for the best treatment⁹⁻¹². Temporalis fascia muscle graft still remains the most popular choice of interposition graft in children; however, dissection of the temporalis muscle, can cause a contracture of the donor site, which may worsen trismus, increasing the risk of a relapse¹³. In this case, when the child was 3 years old an arthroplasty surgery was undertaken with interposition of temporal muscle and 3 years later the patient returned with a severe limitation of mouth opening, then TMJ ankylosis was diagnosed again. Therefore, the patient underwent a more invasive surgery: the condylectomy technique was applied and then reconstruction with costochondral graft followed.

The surgery carried out here followed the protocol of surgical ankylosis proposed by Kaban, Perrott e Fisher⁶, where all the ankylotic mass was removed and then was reconstructed with costochondral graft. This procedure provided good results. Ko, Huang e Chen¹⁴ conducted a study with children undergoing surgery of TMJ with costochondral graft, and observed a significant increase in mouth opening, reduced postoperative pain and absence of fibrosis or reankylosis. Thus, we concluded that costochondral graft is the technique of choice for children, since it gave good results and has an excellent potential for growth and regeneration. However, there is the possibility of excessive growth of the graft, resulting in deviation of the jaw and mandibular prognathism years later, which can possibly be corrected with orthopedic surgery. Our case is in agreement with the findings of Ko, Huang e Chen¹⁴, as the child had a significantly increased mouth opening (from 0.0mm to 25.0 mm), absence of pain and good regenerative results; however, our patient is still being monitored and evaluated for mandibular growth and mouth opening.

Regardless of the technique chosen to treat articular ankylosis, physiotherapy is crucial for the success and maintenance of the result. According to Chidzonga¹⁵, patients must be advised to initiate aggressive physiotherapy by practicing mouth-opening movements 24 hours after surgery. Our patient started therapy 48 hours after surgery, performing lateral movements of opening combined with the use of sticks in front of the mirror in order to stimulate the mouth opening. The exercise was done 4 times a day for 3-5 minutes each, and 4 weeks postoperatively the diet was advanced to solid foods, when a significant improvement in mouth opening had been observed (from 0.0mm to 19mm). The treatment was implemented daily for 6 months, with follow-up visits twice a week for 7 months. Physiotherapy also included heat and massage on the location of the surgery. After the first surgery, when the girl was 3 years old physiotherapy was not performed in this way, which was probably a major factor for reankylosis.

Children with TMJ ankylosis, present a reduced mouth opening, difficulty in deglutition, mastication, speech, and poor oral hygiene resulting in carious lesions and weight loss^{1,16}. Because of the severe limitation of mouth opening (0.0mm) the patient related in this case, had difficulty ingesting food, which might have contributed to the below-average weight at 9 years old (19kg), according to the percentile levels (10%) established by the WHO growth curve⁸. The child's weight increased considerably 7 months after surgery as a result of qualitative and quantitative changes in the diet. After the surgery, an appropriate program to recovery oral health was performed, being this very important to our patient in order to provide her with better quality of life.

The treatment of choice depends on each particular

situation and must be related to the patient's age and the severity of the case. The treatment must always be associated with physiotherapy to increase the chances of success. It should also be emphasized that offering these patients dental treatment after the surgery is extremely important to provide them with better oral health and better quality of life.

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