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Limited mouth opening of unknown cause cured by diagnostic coronoidectomy: a new clinical entity?

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Abstract

Limited mouth opening is a constant annoyance and can be life-threatening should intubation be needed. The causes are numerous and are categorised as intra-articular or extra-articular, which are often difficult to distinguish. We present what we regard as a new clinical entity – long-standing limited mouth opening of unknown cause – and describe our treatment. Four female patients presented with limited mouth opening and lateral and protrusive movements within normal limits, which were typical of restriction of extra-articular origin. However, the radiological findings were within normal limits, with no visible cause of the restriction. All four were treated by bilateral coronoidectomy that resulted in the immediate return of mouth opening to within normal limits that was preserved over subsequent years. Histopathological examination showed atrophy and degenerative changes in the temporalis band that had been attached to the coronoid, which accounts for the stiffness of the temporalis muscle but does not explain the pathogenesis. In the light of this "diagnostic coronoidectomy" further studies are required to document the underlying pathological changes and to develop more accurate imaging that will enable correct diagnosis in future.

Keywords: Temporomandibular joint; Limited mouth opening; Coronoid hyperplasia; Coronoidectomy; Temporalis muscle

Introduction

Limited mouth opening prevents normal eating and yawning[1] and routine dental care, and can clearly be life-threatening should intubation be needed.[2–4] The mean maximum interincisal opening in adults varies from 47[5] to 58.6 mm,[6] while in children it is 45 mm.[7] There is consensus, however, that any measurement below 34 mm is limited.[5]

There are many causes of limited mouth opening, all of which can be categorised as intra-articular or extra-articular.[8] The most common intra-articular causes are anchored disc phenomenon,[9,10] irreducible anterior disc displacement, osteoarthritis, various systemic diseases, and impairment as a result of injury.[11] The many extra-articular causes range from common muscle spasm through coronoid hyperplasia to irradiation of the functioning structures. Definitive diagnosis can be quite difficult, and often results in missed or delayed diagnosis.[12]

About 5% of all cases can be attributed to the coronoid process,[13] either enlargement by osteochondroma or osteoma,[14] or congenital or acquired coronoid hyperplasia.[12,15,16] Other limitations include ankylosis of the coronoid to the zygomatic arch,[17] formation of a pseudojoint between an enlarged coronoid process and the inner surface of the zygoma (Jacob's disease),[17–18] or pseudoankylosis as a result of scarring of the temporalis muscle by neurosurgical intervention,[10] foreign body reaction, or irradiation.[14]

The clinical diagnosis of coronoid hyperplasia is quite straightforward. Patients commonly have normal lateral and protrusive movements but the maximum mouth opening is limited. Diagnosis should be confirmed by imaging,

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Fig. 1. Preoperative mouth opening of 25 mm with mild deviation to the left (published with the patient's consent).

including 3-dimensional computed tomography (CT), which can provide detailed information about the length and width of the coronoid process and its relation to the zygomatic bone and arch.[12,15,18–20]

We present what may be a new entity: four female patients who complained of limited mouth opening of long duration with clinical signs and symptoms typical of coronoid hyperplasia but with no cause identifiable on imaging.

Patients, methods, and results

Case 1

A 58-year-old woman was referred to the Department of Oral and Maxillofacial Surgery by her dentist complaining of pain that originated in the wisdom teeth but which could not be treated because of limited mouth opening. She gave a history of limited mouth opening for the past 20 years, asthma, osteoporosis, and goitre.

On clinical examination the maximum interincisal distance was 25 mm at rest and 32 mm when forced, with mild deviation to the left (Fig. 1). She had lateral movement of 10 mm to the right and left, and protrusion of 3 mm, without pain or clicks in the temporomandibular joints (TMJ) or tenderness over the masticatory muscles. Intraorally she had a dental Angle Class II occlusion with an anterior deep bite. We suspected that she had coronoid hyperplasia so she

Fig. 2. Panoramic radiograph showing normal architecture of both temporomandibular joints and coronoid processes.

was referred for imaging studies. On panorex radiograph the architecture of both TMJ and coronoids was within normal limits (Fig. 2). CT showed moderate irregularity of the articular surfaces of the left mandibular condyle with a subchondral cyst, indicating mild degenerative joint disease. The coronoid processes were normal in shape and size, with no detectable interference when the mouth was opened. However, careful study of the 3-dimensional CT showed a hook-shaped bony process at the top of the left coronoid that was thought to have been formed by something invisible radiologically such as fibrotic band (Fig. 3, arrow). Magnetic resonance imaging (MRI) provided no further information. The patient was referred for bilateral coronoidectomy.

Under general anaesthesia she had a bilateral transoral coronoidectomy followed by extraction of wisdom teeth. The resected coronoid processes were tightly connected to the temporalis muscle and therefore quite difficult to remove (Fig. 4). The immediate postoperative maximum interincisal opening was 51 mm, and this was preserved over subsequent years (Fig. 5). Histological examination showed cortical trabecular and young laminar bone, with atrophy and degenerative changes in the temporalis band connected to the bone (Fig. 6).

Case 2

A 36-year-old woman was referred to our oral and maxillofacial clinic with limited mouth opening that had developed gradually over the past 10 years. She had had no

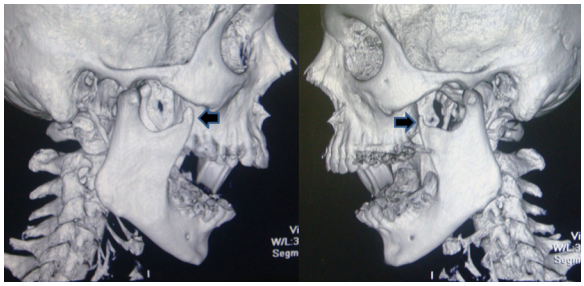

Fig. 3. Three-dimensional computed tomography showing a hook-shaped bony process at the top of the coronoid, mainly to the left, which was thought to have been formed by something radiologically "invisible" such as a fibrotic band.