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The pterygoid hamulus as a pain-inducing factor

A report of a case and a radiographic study

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Abstract. A case is reported of a patient suffering from untraceable pain in the palate. The hyperplastic pterygoid hamulus appeared to be the cause of his discomfort. A computed tomography study on 20 adult patients revealed a wide variation in the anatomy of this region, but a fairly consistent pattern in the left–right relationship in the same patient.

Key words: computed tomography; pterygoid hamulus; facial pain.

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Pain in the soft palate or in the pharyngeal region may be due to various causes. Other symptoms may be present, forming a complex which can include hearing disorders, headache, difficulties in swallowing, pain and clicking in the temporomandibular joints (TMJ), uncontrolled movements of facial muscles, etc. In such cases, a single etiologic factor can be difficult to identify. However, consideration of the pterygoid hamulus as a pain-inducing factor should be included in the differential diagnosis.

These patients often report hearing disorders such as clicking or elevated noise sensitivity, dysphagia, and dysfunction of muscles[1,3,5,7]. At clinical examination, a sharp localized pain in the hamular region is usually present. Swelling and erythema of the palatal mucosa over the hamulus are also common signs. Infiltration of local anaesthesia can be an excellent diagnostic aid when differentiating hamular pain from other possible causes.

The hamular process is a hook-shaped bone projecting downward dorsolaterally from the medial pterygoid plate (Fig. 1).

It is the purpose of this study to report on the complex symptoms of a patient with the pterygoid hamulus syndrome and to discuss some anatomic parameters relevant to this condition.

Case report

A 25-year-old man was referred to the Temporomandibular Joint Clinic of the University Hospital Zürich because of pain and dysfunction of the right TMJ. The patient's history revealed that the symptoms appeared following traumatic removal of an upper third molar. Postoperatively, he developed maxillary sinusitis based on an oroantral fistula. The distal root of the second molar was exposed and the patient suffered from uncontrollable pain. Pulpitis of the tooth was thought to be the cause and endodontic treatment was performed. The pain did not diminish and finally the second molar was extracted.

The symptoms did not improve and the patient had more than 150 doctor's visits within one year. Occlusal splint therapy did not resolve the pain and examinations by numerous specialists, including maxillofacial surgeons, dentists, radiologists, neurologists

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	Left		Right		Difference between left and right (mm)	
	Range	Average	Range	Average	Range	Average
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Distance hamular tip – soft-tissue surface	4–11	8	2.5–12.5	8.1	0–2.5	0.8
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and orthodontists, did not lead to a satisfactory solution.

Clinical examination at the time of presentation revealed sharp pain localized immediately posterior to the right maxillary tuberosity. In this region, the hamulus could be palpated and appeared to have an abnormal elastic resistance. Comparing the left with the right area, the hamulus was present more laterally and was covered by thickened mucosa. The right masseter muscle was tender to palpation. No pain was noted on palpation of the TMJs, but on auscultation of the right TMJ a slight click was heard. The teeth did not show any abnormalities.

The patient reported an additional sensation of tension over the palate on the right side, which increased while speaking.

Infiltration of local anaesthesia to the right hamular base produced prompt resolution of pain. The symptoms returned as the anaesthetic was metabolized and, therefore, a diagnosis of hamular pain was made. Under local anaesthesia, the right pterygoid hamulus was exposed and freed from granulation tissue. A resection of the distal two-thirds of the hamulus was carried out.

The postoperative course was uncomplicated and the patient became completely pain-free. However, the sensation of tension did not disappear completely, and the patient developed a habit of probing the right posterior tuberosity region with his tongue, complaining that by doing this his right ear began to wiggle. Instructions regarding self-control techniques for resolving this habit were given. Overall, this patient was in pain for 18 months and only following a hamulectomy did he experience relief.

Material and methods of the radiographic study

Routine computed tomography (CT) scans of 20 patients (7 men and 13 women), were reevaluated concerning the anatomical position and the shape of the pterygoid hamulus. The average age was 52 years with a range from 18 to 79. CT scans were performed for various indications but none of the patients showed pathological changes in the region of interest. With a computer tomograph (Philips SR 7000®, voltage 120–140 kV, tube current 150–175 mA, scan time 2 s) axial (1.5 mm) and frontal (3 mm) serial slices were made. The following distances were measured on both sides (Figs. 2, 3A, 3B): hamulus – greater palatine foramen; hamular tip – perpendicular to median plane; tip of the hamulus – surface of soft tissue; length of the hamular process.

Results

The average distance between the hamulus and the palatine foramen was 17.6 mm (15–20 mm) on the left and 17.7 mm (15.5–21 mm) on the right side (Table 1). The average distance between the hamulus and median cut was 19.6 mm (15–27 mm) on the left, and 19.9 mm (16–26 mm) on the right. The average thickness of the overlaying soft tissues was 8.0 mm (left) and 8.1 mm (right). The average length of the left hamulus was 5.0 mm and the right 4.9 mm. Comparing the left and right parameters, no differences could be found. Table 1 shows the range of data between different individuals and between the left and right sides.

Discussion

The differential diagnosis of palatal pain should include the hamulus-induced pain syndrome, but other conditions one should consider include tumours, cysts, infections, foreign bodies, the styloid-syndrome, eruption of third molars, neuralgia, diseases of the TMJ and muscular dysfunction.

The shape and position of the pterygoid hamulus was seen to vary considerably between different persons, whereas, with the exception of the soft-tissue thickness, only a small range of anatomical parameters were found between the left and right sides in the same person (Fig. 3A and B). While the investigations of BIRKE & FISCHER[1] showed a longer hamulus on the right side, this was not confirmed in the present study.

Waitzman et al.[6] described the accuracy of CT assessments in the bony region with an error less than 5%, making CT a reliable instrument. CT-scans are an excellent aid to rule out skeletal pathology, but they cannot confirm a hamulus pain syndrome. Infiltration of local anaesthesia to the hamular base and comparison of clinical findings in the left and right sides are most important when arriving at a diagnosis.

The complexity of this patient's history and symptoms made the diagnos-

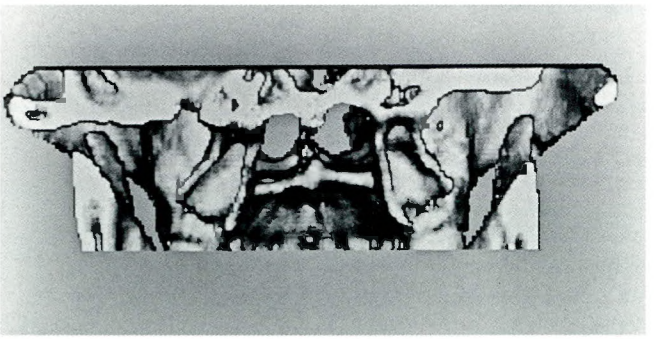


Fig. 1. 3-D CT reconstruction (with software package Gyroview® ISG Technologies, Toronto, Canada) showing anatomical situation of pterygoid hamulus.

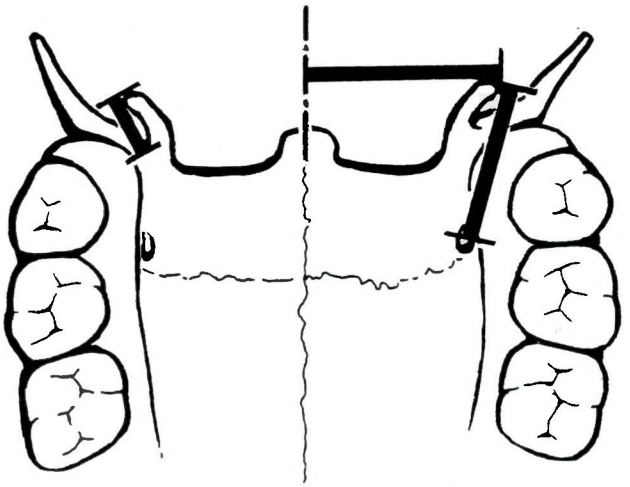


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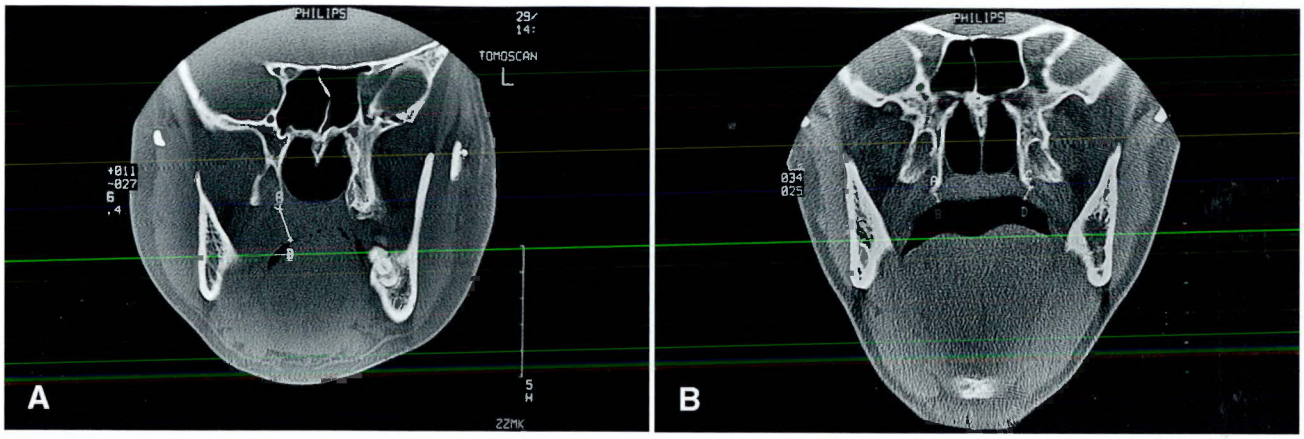


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As in the reported case, patients can alter psychologically due to the long duration of pain. In the presented case, the pterygoid hamulus became a trigger-point. Following onset of the symptoms, the patient began to centre his whole life around the pain. From the case presented, it can be learned that when the correct diagnosis is not made at an early stage, the patient may be the victim of mismanagement leading to a psychological upset which clouds the initial complaints even more. This vicious circle needs to be interrupted.

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As far as treatment is concerned, there is no generally accepted protocol. HERTZ[4], BIRKE & FISCHER[1], and KRONMAN et al.[5] prefer surgical exposure and resection of the hamulus to achieve resolution of the patient's complaints. WOOTEN et al.[7] and CHARBENEAU et al.[3] stress that leaving the hamulus in place and educating and reassuring the patient is adequate management. In the present case, hamulectomy appeared to resolve the patient's pain, but due to the long period of suffering from pain, his perception of the problem had changed.

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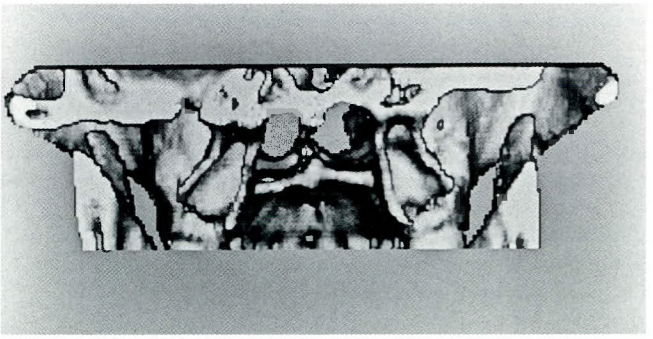


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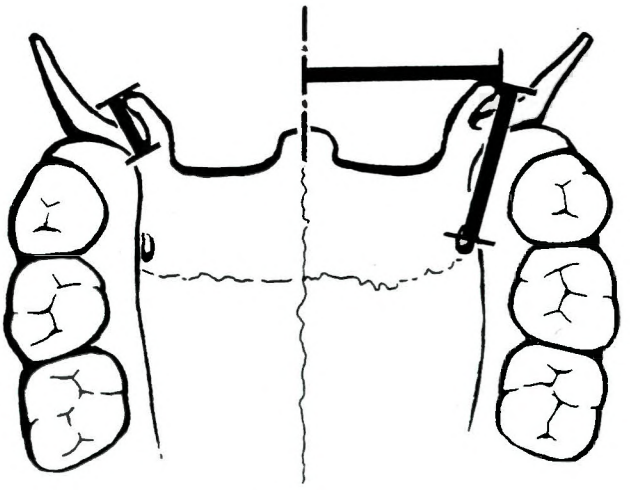


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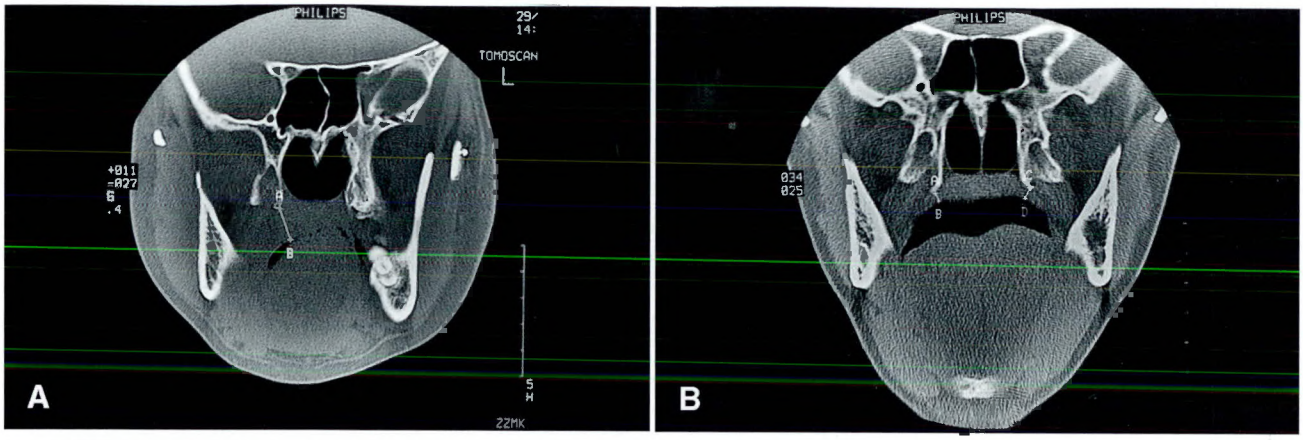


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