

Os lachrymal, variations in terminology

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Received: September 19, 2019, revised: December 26, 2019, accepted December 29, 2019

Summary

Os lacrymal, variations in terminology

Introduction:

We have found confusion in the nomenclature of the parts of the os lachrymal between most of the books and atlas of our University. This situation generates limitation in research, because structures are named differently depending on the atlas or book selected.

Material and Methods:

We performed a systematic review to compare the name given to the structures of the os lachrymal in the atlas and books most used in our institution.

Results:

Most textbooks and atlas do not include the three parts of the os lachrymal describe in *Anatomical terminology*, and it is not clear the description of the lacrimal groove in the majority of the.

Conclusion:

We conclude that most textbooks and atlas do not assimilate the anatomical terminology when describing the os lachrymal, and an effort should be done to unify the terminology because its clinical implications in reconstructive surgery of the lacrimal apparatus

Keywords: Anatomical Terminology; os lachrymal; os lacrimale; posterior lacrimal crest; crista lacrimalis posterior; lacrimal groove; sulcus lacrimalis; lacrimal Hamulus.

Resumen

Os lacrymal, variaciones en terminología

Introducción:

Hemos encontrado confusión en la nomenclatura de las partes del os lacrymal entre la mayoría de los libros y atlas de nuestra universidad. Esta situación genera limitaciones en la investigación, porque las estructuras se nombran de manera diferente según el atlas o el libro seleccionado.

Material y métodos:

Realizamos una revisión sistemática para comparar el nombre dado a las estructuras del os lacrymal en el atlas y los libros más utilizados en nuestra institución.

Resultados:

La mayoría de los libros de texto y atlas no incluyen las tres partes del os lacrymal descritas en Terminología Anatómica, y no está clara la descripción del surco lagrimal en la mayoría de los casos.

Conclusión:

Llegamos a la conclusión de que la mayoría de los libros de texto y atlas no asimilan la terminología anatómica al describir el os lacrymal, y se debe hacer un esfuerzo para unificar la terminología debido a sus implicaciones clínicas en la cirugía reconstructiva del aparato lagrimal

Palabras clave: Terminología anatómica; os lagrimal; os lacrimale; cresta lagrimal posterior; crista lacrimalis posterior; surco lagrimal; sulcus lacrimalis; Hamulus lagrimal.

Introduction

One of the most important factors to improve knowledge is unifying terms between investigators and clinicians, in order to exchange information without mistakes. We have seen in some publications, there is confusion in the terminology used by anatomical atlas and texts, used by students in University [15].

There is a trend for the unification of anatomical terms in the last decade of the twenty century, favoured by the development of the last *Anatomical terminology* by the Federative Committee on *Anatomical Terminology* [5]. This is a strategy to avoid confusion and discrepancy between anatomists. In order to achieve the objective, it is essential that most

known atlas and reference books update and adopt the *Anatomical terminology*.

The os lachrymal is a structure frequently involved in head and neck pathology. Within it, due to its transcendence and vital prognosis, tumours, especially squamous cell carcinomas of the sac, encourage us to improve our knowledge this area to plan our reconstructive surgeries, and due to its high frequency, the pathology of the lacrimal system, makes necessary to have an adequate knowledge of its variants. It is a bone that shows anatomical variations, highlighting the small variants at the entrance of the canaliculus in the lacrimal sac that occur in more than 50% of cases, and the variations in the number of orifices (separate orifices) that exist for this same canaliculus which can be multiple in less than 1% of cases [6]. We can also find gender and racial variations, which may generate a predisposition to pathology [4].

We have found confusion in the description of the *os lachrymal* in most of the reference books used in our University. We performed a systematic review of the os lachrymal in these books.

Material and Methods

The os lachrymal or lacrimal bone is a quadrilateral bone plate, flattened from outside to inside [21]. We can find three well differentiate parts, defined in the international anatomical terminology by the International Anatomical Nomenclature Committee, the posterior lacrimal crest (crista lacrimalis posterior), the lacrimal groove (sulcus lacrimalis) and the lacrimal Hamulus (Hamulus lacrimalis) [5]. These parts are marked in fig. 1.

As we can see in figure 1, the posterior lacrimal crest is a vertical ridge that divides the lateral face of the bone in two parts. Posterior to this crest is situated the lacrimal groove or lacrimal sulcus, that is a surface that is part of the nasolacrimal canal that supports the lacrimal sac. The lacrimal hamulus is a structure similar to a hook, that is inferior to the posterior lacrimal crest, and articulates with the maxilla.

To avoid confusion, we decide to perform a systematic review in well-known atlas and reference books, to find out if them adapt to the Anatomical terminology. From the database of our library, we selected the twelve most used textbooks and atlas of Anatomy. In every book we search for the parts of the os lachrymal according to the international nomenclature. Three authors revise every book in order to minimize bias.

We also included one interactive atlas; we selected the most downloaded atlas available in

Android and IOS. We selected the software from 3D4Medical and buy the complete application (Complete Anatomy for IOS). Three authors obtained data from the app in order to minimize bias.

Author	Posterior lacrimal crest Crista lacrimalis posterior	Lacrimal groove Sulcus lacrimalis	Lacrimal hamulus Hamulus lacrimalis
[1]	Yes	Yes	Yes
[2]	Yes	Variation	No
[16]	No	Variation	No
[20]	Yes	Variation	Yes
[19]	Yes	Variation	No
[7]	Yes	Yes	Yes
[13]	Yes	Yes	Yes
[21]	Yes	Variation	Yes
[22]	Yes	Yes*	Yes
[6]	Yes	Yes	Yes
[17]	No	Variation	No
[8]	Yes	Variation	No
Complete Anatomy	Yes	Yes	No

Table 1: Shows a summary of the revised books. In the column of the left we can see the author of the book. In the right columns we can see in the upper part, the terms studied described by the International Anatomical Nomenclature Committee, and in the lower part we can find if this term is mentioned by every author. (Variation: The term is mentioned, by the author gives another name, * only mentioned as the lacrimal crest.

Results

When we look for these terms in twelve anatomical atlas and textbooks, and one interactive atlas, we discover confusion in the management of the nomenclature (Table 1).

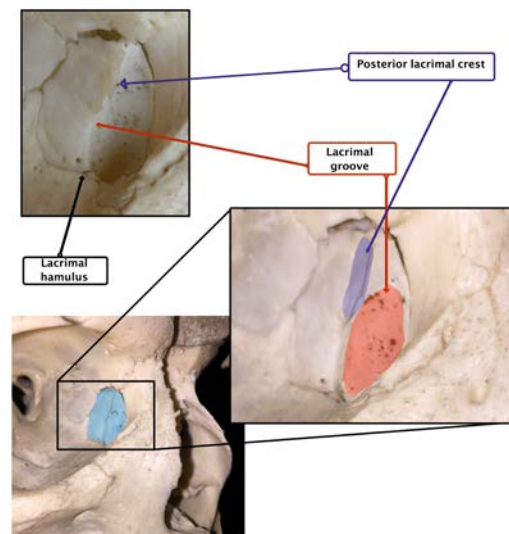


Figure 1: Photograph of the os lachrymal where the three structures described by the International Anatomical Nomenclature Committee are indicated.

There are only 5 books that fully match the terms as we can see in table 1. When we look closely, we find the terms used for the lacrimal groove are not always right. Most of the books refer to that term as canal or fossa for the lacrimal sac. Dauber [6] differentiate both parts, and he apply the term fossa for the lacrimal sac to the caudal part of the lacrimal groove. There is also anomaly when looking for the term

Hamulus lacrimalis, because half of the books avoid this term. The interactive 3D anatomical atlas describes the body of the lacrimal bone (corpus ossis lachrymal) and 3 surfaces, including the lacrimal sulcus (sulcus lacrimalis), the posterior lacrimal crest (crista lacrimalis posterior) and the orbital surface (facies orbitalis)

Discussion

The os lachrymal is a simple structure, with a crucial role in the pathology of the lacrimal apparatus and facial tumours [11, 14] and also in endoscopic procedures [10]. We have seen that this bone is not well described in most atlas and reference books available in most Universities. From all the three structures described in this bone, the most problematic structure is the lacrimal groove. Most authors described it as the canal or fossa for the lacrimal sac, but the fossa or canal for the lacrimal sac is the result of the articulation of two bones, the os lachrymal, who offers the lacrimal groove and the maxilla.

This description does not adapt to the *Anatomical Terminology* and should be clarify in every book or atlas to prevent misunderstood when describing facial bones. We have seen an increase in the interest of bony landmarks and measurements of the lacrimal bone in clinical practice [3,9,12] because of its implication in pathology. When we look for anatomical atlas for lacrimal surgery, we can find that they used the correct international terms [18]. To prevent bias in research we should adopt the same terminology.

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