

Reconstruction of Tissues in Patients with Serious Injuries through the Use of the Vestigial Muscle

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Abstract

In recent years, the anatomical knowledge of blood vessels, skin, muscles and their attachments have advanced a lot, as well as the development of surgical techniques. All this means that today we have techniques to repair serious injuries with the most appropriate tissue and minimize surgical sequelae in patients.

Keywords: Reconstructive Surgery, Vestigial Muscle, Serious Injuries.

Introduction

For many years, the belief has been maintained that vestigial organs are biological structures that in the past had some important function in our ancestors but that, today, in our species, do not play any role, at least in an apparent way [1].

The vestigial are organs that, although millions of years ago fulfilled essential roles in the carrier species, evolution caused them to be less and less important at a physiological level. And this, throughout the generations, gives rise to an involution of the organ. Over time, these organs are destined to disappear by simple natural selection (although humans, with Medicine, have stopped this evolutionary process), but it takes a long time to lose a body structure [2].



Image 1: Evolution of man and main human traits and structures modified with evolution.

However, it has been found that human beings have vestigial organs since some have not managed to completely disappear, which explains why we have structures that occupy a more or less large space of the body that are regressed compared to those that our ancestors had but that are still there [3].

Currently they are recognized as those organs or structures of our body that do not fulfill any biological function but are the result of the evolutionary inheritance of our ancestors, colloquially called "The leftovers of evolution" [4].

The only characteristic in common of all vestigial organs is the lack of functionality, and that is that not only do they not fulfill any biological purpose (at least, in an apparent way), but they can also become infected, such as the appendix, or fracture, such as the vertebrae of the coccyx [5].

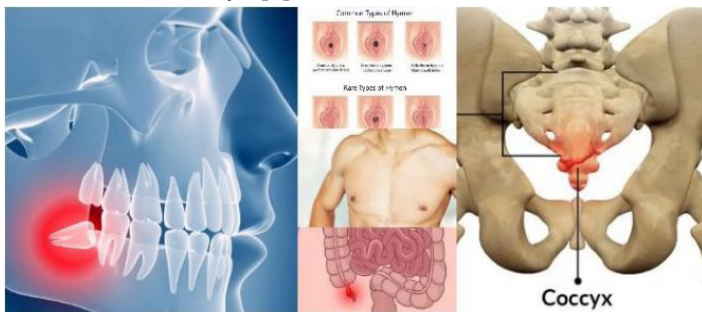


Image 2: Organs considered vestigial.

Materials and Methods

A bibliographic search was carried out that spanned from 2017 to 2021 in the databases PubMed, Elsevier, scielo, Update, Medline, national and international libraries. We use the following descriptors: severe injuries, muscle reconstruction, reconstructive surgery. The data obtained oscillate between 7 and 20 records after the use of the different keywords. The search for articles was carried out in Spanish and English, it was limited by year of publication and studies between 2017 and 2021 were used. The main exclusion criteria were articles that had more than 5 years of publication.

Results

Anatomical variants are part of the nature of our anatomy. They can consist of the absence of structures, supernumerary structures and deviations from the usual location. Muscles are no exception. Thanks to the different imaging techniques and the increasingly better resolution that we obtain from them, it is possible to detect accessory muscles that were previously only reported in surgical or cadaveric cases. Many of these can go unnoticed in imaging studies, due to the similar echostructure and fibrillar pattern, density and signal intensity as native muscles in ultrasound (US), computed tomography (CT) and magnetic resonance imaging (MRI) respectively, therefore that the correct knowledge of the normal anatomy and the variants are fundamental factors that allow the adequate diagnosis of the accessory muscles, which are usually asymptomatic, without any apparently important function to date and that could serve to replace tissues whose composition and structure is similar to each of these [6].

Serious injuries usually end for 90% of patients with movement restriction, limitation in functionality and even lead to an impossibility of normal anatomical functioning, for this reason the possibility of performing tissue replacement such as tendons, muscles, etc. has been presented. , that present some limitation by a portion of the vestigial organ that means a possibility to resume movement, functionality and anatomical-structural reconstruction in its entirety, meaning for the patient an improvement of 95% and being of tissues with the same anatomical structure is presented low rejection rate.

Discussion

The authors Dekker and Bender describe a technique through the use of the plantaris muscle for the reconstruction of tendon injuries, these authors like many others, such as fetto et al, recommend techniques like this in which vestigial muscles are used, however these Techniques cannot always be carried out because these muscles are not always present, the plantaris muscle, as is the longus muscle and many others are subject to variations, in a literature review by Arner and Lindholm the absence of the muscle is documented plantaris in 14% of the cases, on the other hand the authors Daseler and Anson describe in their anatomical study the absence of this muscle in 160 of 1545 legs studied. There is also the fact that it is impossible to know if it is present or not in the physical examination, however despite everything, for some authors, especially those of French origin, its presence makes it the method of choice to replace areas seriously injured [6].

Conclusion

Although there is no universality or evidence that the use of vestigial organs can be an applicable technique in the field of reconstructive surgery, the hypothesis is handled with such veracity and on solid bases that hope is not lost that soon the medicine of Research and innovation present it as a new hopeful technique for the percentage of the population that struggles day by day with serious injuries as a result of accidents, pathological complications or genetic alterations. For now, it only remains to continue studying and wait for the physical evidence of certified experiments in this regard [7].

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