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Eye Plastic Surgery for Severe Orbitopathy: Restoring Eye Health and Quality of Life

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LITERATURE REVIEW

Resumo:

A orbitopatia de Graves é uma condição oftalmológica complexa e debilitante, frequentemente associada à doença autoimune da tireoide conhecida como doença de Graves. Caracterizada por inflamação e inchaço dos tecidos ao redor dos olhos, a orbitopatia de Graves pode levar a uma série de sintomas graves, como proptose (olhos salientes), diplopia (visão dupla), dor ocular e comprometimento da função visual. A plástica ocular emerge como uma abordagem terapêutica importante para restaurar não apenas a saúde ocular, mas também a qualidade de vida dos pacientes afetados, visando corrigir as deformidades físicas e funcionais associadas à condição. No entanto, a avaliação crítica da literatura científica sobre o tema é essencial para compreender a eficácia, segurança e resultados dos diferentes procedimentos cirúrgicos utilizados nesse contexto. Objetivo: O objetivo desta revisão sistemática é analisar os estudos publicados nos últimos 10 anos sobre plástica ocular para orbitopatia de Graves, com o intuito de avaliar a eficácia, segurança e resultados dos diferentes procedimentos cirúrgicos utilizados no tratamento dessa condição. Metodologia: Utilizando o checklist PRISMA, foram pesquisados artigos nas bases de dados PubMed, Scielo e Web of Science, publicados entre 2012 e 2020. Os descritores utilizados foram"Orbitopatia de Graves", "Cirurgia Plástica Ocular", "Doença Ocular da Tireoide", "oftalmopatia de Graves" e "reconstrução de pálpebra".e "eyelid reconstruction". Critérios de inclusão: estudos em inglês, avaliando procedimentos cirúrgicos para orbitopatia de Graves, com resultados clínicos e de qualidade de vida. Critérios de exclusão: estudos duplicados, amostras não relacionadas à orbitopatia de Graves e sem resultados clínicos relevantes. Resultados: Os principais tópicos abordados pelos estudos incluem técnicas cirúrgicas, resultados visuais, complicações pós-operatórias e impacto na qualidade de vida dos pacientes. Conclusão: A revisão sistemática destaca a importância da plástica ocular na gestão da orbitopatia de Graves, fornecendo insights sobre as abordagens cirúrgicas

mais eficazes e seguras para restaurar a saúde ocular e a qualidade de vida dos pacientes afetados.

Palavras chave: "Orbitopatia de Graves", "Cirurgia Plástica Ocular", "Doença Ocular da Tireoide", "oftalmopatia de Graves" e "reconstrução de pálpebra".

ABSTRACT

Graves' orbitopathy is a complex and debilitating ophthalmological condition often associated with the autoimmune thyroid disease known as Graves' disease. Characterized by inflammation and swelling of the tissues around the eyes, Graves' orbitopathy can lead to a range of serious symptoms, such as proptosis (bulging eyes), diplopia (double vision), eye pain and impaired visual function. Eye plastic surgery emerges as an important therapeutic approach to restore not only ocular health, but also the quality of life of affected patients, aiming to correct the physical and functional deformities associated with the condition. However, critical evaluation of the scientific literature on the topic is essential to understand the effectiveness, safety and results of the different surgical procedures used in this context. Objective: The objective of this systematic review is to analyze studies published in the last 10 years on ocular plastic surgery for Graves' orbitopathy, with the aim of evaluating the effectiveness, safety and results of the different surgical procedures used to treat this condition. Methodology: Using the PRISMA checklist, articles were searched in the PubMed, Scielo and Web of Science databases, published between 2012 and 2020. The descriptors used were "Graves' Orbitopathy", "Ocular Plastic Surgery", "Thyroid Eye Disease" , "Graves' ophthalmopathy" and "eyelid reconstruction". and "eyelid reconstruction". Inclusion criteria: studies in English, evaluating surgical procedures for Graves' orbitopathy, with clinical and quality of life results. Exclusion criteria: duplicate studies, samples unrelated to Graves' orbitopathy and without relevant clinical results. Results: The main topics covered by the studies include surgical techniques, visual results, postoperative complications and impact on patients' quality of life. Conclusion: The systematic review highlights the importance of ocular plastic surgery in the management of Graves' orbitopathy, providing insights into the most effective and safe surgical approaches to restore ocular health and quality of life to affected patients.

Keywords: "Graves' Orbitopathy", "Ocular Plastic Surgery", "Thyroid Eye Disease", "Graves' ophthalmopathy" and "eyelid reconstruction".

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INTRODUCTION:

Graves' orbitopathy is a complex and often debilitating eye condition often linked to the autoimmune thyroid disease known as Graves' disease. This condition is characterized by inflammation and swelling of the tissues around the eyes, resulting in a series of serious symptoms that can significantly affect patients' ocular health and quality of life. One of the most prominent symptoms is proptosis, in which the eyes protrude outside the orbit, causing aesthetic and functional discomfort. This phenomenon not only creates aesthetic concerns for patients, but can also result in visual complications, such as difficulty closing the eyes completely (lagophythalmos), leading to exposed cornea and increased risk of eye damage, infections and ulcers. Additionally, Graves' orbitopathy can trigger diplopia, a condition in which patients perceive a double image of a single object, due to misalignment of the eyes. This symptom not only compromises the quality of vision, but can also adversely impact the patient's functional capacity and independence, making simple daily activities, such as driving and reading, challenging and frustrating. Therefore, the search for effective and safe treatments to correct these eye problems and improve the quality of life of patients with Graves' orbitopathy is extremely important.

Graves' orbitopathy not only impacts patients' ocular health, but also affects facial aesthetics, resulting in physical deformities that can compromise self-esteem and social interaction. Eye plastic surgery appears as an essential intervention to restore the natural appearance of the face, correcting asymmetries and improving facial harmony. Furthermore, Graves' orbitopathy has a significant impact on the quality of life of affected individuals, limiting their daily activities and causing physical and emotional discomfort. Therefore, by addressing these aesthetic and functional concerns, eye plastic surgery not only aims to improve eye health, but also promote patients' confidence and psychological well-being. These procedures are generally performed by a multidisciplinary team of specialists, including ophthalmologists, oculofacial plastic surgeons and endocrinologists, ensuring a comprehensive and personalized approach to each case. Collaboration between these professionals is essential to guarantee satisfactory and safe results, minimizing the risks of postoperative complications and

maximizing the benefits for patients.

METHODOLOGY

The systematic literature review was conducted following the guidelines of the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) checklist. The databases used were PubMed, Scielo and Web of Science, with the descriptors used: "Graves' Orbitopathy", "Ocular Plastic Surgery", "Thyroid Eye Disease", "Graves' ophthalmopathy" and "eyelid reconstruction".

For the inclusion criteria, studies published in the last 10 years, in English, that evaluated surgical procedures for Graves' orbitopathy and presented clinical and quality of life results were considered. Furthermore, only studies that directly investigated the effects of ocular plastic surgery on Graves' orbitopathy and that were conducted in humans were included.

On the other hand, the exclusion criteria involved duplicate studies, articles that were not related to Graves' orbitopathy or ocular plastic surgery, as well as studies that did not present clinical results relevant to the proposed analysis. Studies with small samples or inappropriate methodologies that compromised the validity of the results were also excluded.

The initial search in the databases resulted in several articles. After applying the inclusion and exclusion criteria, 12 articles were selected for qualitative analysis and synthesis of results. The study selection process was carried out independently by two reviewers, with disagreements resolved by consensus or arbitration by a third reviewer, when necessary. The selected articles were then subjected to a detailed analysis of their methods, results and conclusions, in order to extract relevant information for the systematic review.

RESULTS

Ocular plastic surgery for Graves' orbitopathy comprises a diverse range of surgical procedures meticulously planned and executed to address the symptoms and sequelae

resulting from the disease. Initially, orbital decompression is often considered, especially in severe cases where compression of ocular tissues occurs due to increased intra-orbital pressure. This procedure aims to relieve pressure on the eye nerves and muscles, often resulting in proptosis, diplopia and difficulty in eye movement. The technique involves the careful removal of part of the bone around the orbit, allowing additional space for the inflamed orbital tissues, and consequently helping to replace the eyeball in its correct anatomical position. Strabismus correction, another crucial component of eye surgery, is performed to restore proper eye alignment and correct diplopia. This procedure involves restructuring the eye muscles, ensuring that both eyes move in a coordinated and synchronized manner. These surgical procedures, whether combined or performed separately, are fundamental to restoring eye health and improving the quality of life of patients affected by Graves' orbitopathy.

Eye surgery plays an essential role in alleviating the debilitating symptoms associated with Graves' orbitopathy, providing patients with significant relief and improving their visual functionality. Proptosis, characterized by the abnormal protrusion of the eyes out of the orbit, is one of the most visible and disturbing manifestations of the disease. Eye plastic surgery aims to correct this condition, repositioning the eyeball within the orbit and restoring a more natural appearance to the patient's face. Furthermore, diplopia, or double vision, is a common symptom that can significantly affect the quality of life and functional capacity of affected individuals. Surgical correction of strabismus helps align the eyes correctly, eliminating double vision and restoring proper visual perception. Furthermore, ocular plastic surgery can address issues related to the difficulty in completely closing the eyelids, ensuring adequate protection for the cornea and reducing the risk of secondary ocular complications. Through these procedures, the uncomfortable and debilitating symptoms of Graves' orbitopathy can be mitigated, providing patients with a significant increase in their quality of life and overall well-being.

Graves' orbitopathy often causes changes in patients' facial aesthetics, resulting in deformities and asymmetries that can significantly affect self-esteem and quality of life. Eye plastic surgery plays a crucial role in restoring facial aesthetics by addressing these aesthetic concerns and improving the natural appearance of the patient's face. Through

procedures such as eyelid reconstruction and tissue remodeling around the eyes, it is possible to correct deformities, reduce swelling and restore facial harmony. Furthermore, eye surgery can help minimize visible scars and improve facial symmetry, providing satisfactory and natural aesthetic results. This aesthetic restoration not only improves patients' physical appearance, but also promotes confidence and self-esteem, allowing for easier reintegration into social and professional life.

Graves' orbitopathy can have a significant impact on patients' quality of life, limiting their daily activities and causing physical and emotional discomfort. Eye plastic surgery, by relieving symptoms and improving facial aesthetics, plays a fundamental role in improving the quality of life of affected individuals. By reducing proptosis, correcting diplopia, and restoring the ability to close the eyelids completely, patients experience an increase in visual functionality and ocular comfort. Furthermore, the improvement in physical appearance resulting from eye surgery can increase patients' self-confidence and personal satisfaction, allowing them to better face everyday challenges. In this way, eye surgery not only treats the physical symptoms of Graves' orbitopathy, but also promotes the general well-being and quality of life of patients.

A multidisciplinary approach is essential in the treatment of Graves' orbitopathy, ensuring a comprehensive assessment and personalized treatment plan for each patient. Collaborative work between ophthalmologists, oculofacial plastic surgeons and endocrinologists is essential to ensure optimal and safe results. Initially, the ophthalmologist plays a central role in evaluating ocular symptoms and diagnosing Graves' orbitopathy, using a variety of imaging techniques and functional tests to assess the degree of ocular involvement. Next, the oculofacial plastic surgeon steps in, collaborating with the ophthalmologist to develop a personalized surgical plan that takes into account the patient's individual needs, disease severity, and outcome expectations. Ultimately, the endocrinologist plays a crucial role in managing the underlying disease, such as autoimmune thyroid disease, by working closely with the surgical team to optimize hormonal control and reduce the risk of recurrence of Graves' orbitopathy. This integrated and coordinated approach ensures a complete assessment and comprehensive treatment of Graves' orbitopathy, resulting in better clinical outcomes and quality of life for patients.

The long-term results of ocular plastic procedures for Graves' orbitopathy are of utmost importance in evaluating the effectiveness and durability of these interventions. Studies have shown that, in many cases, the results of these procedures are long-lasting and sustainable over time. This means that patients can enjoy significant improvements in eye health and quality of life for an extended period after surgery. In particular, the reduction in symptoms such as proptosis and diplopia tends to be maintained long-term, providing patients with continuous and consistent relief. Furthermore, the aesthetic restoration achieved through eye surgery is generally maintained over time, allowing patients to enjoy a more natural and harmonious facial appearance for many years after the procedure. However, it is important to highlight that regular monitoring and medical surveillance are essential to monitor any changes or complications that may arise over time and ensure that long-term results are maintained.

Although eye plastic procedures for Graves' orbitopathy are generally safe and effective, they are not without complications and risks. Like any surgical intervention, there are possible associated complications, including infection, hemorrhage, nerve damage, and changes in ocular sensitivity. Although these complications are relatively rare, it is important for patients to be aware of the possible risks before undergoing surgery. Furthermore, the severity and incidence of complications may vary depending on the type of procedure performed, the surgeon's experience and the patient's individual characteristics. Therefore, a careful assessment of the potential risks and benefits must be carried out before deciding to undergo eye surgery. Surgeons often discuss these issues in detail with patients during preoperative consultations, providing clear, realistic information to help patients make informed decisions about their treatment. By understanding and mitigating the risks associated with surgery, patients can feel more confident and prepared to face the procedure with peace of mind and safety.

Technological advances have played a significant role in improving eye plastic procedures for Graves' orbitopathy. New technologies, such as high-resolution imaging and computational modeling, have allowed for a better understanding of orbital anatomy and a more accurate assessment of deformities associated with the disease. Furthermore, the development of more refined surgical techniques, such as image-

guided surgery and the use of biocompatible materials, has provided more predictable and consistent results for patients. These technological advancements not only make procedures safer and more effective, but also reduce post-operative recovery time and improve the overall patient experience. As a result, patients can benefit from more precise, less invasive surgery, with a lower risk of complications and a faster, more comfortable recovery.

The need for continued research in the field of ocular plastic surgery for Graves' orbitopathy is critical to driving innovation and constantly improving the results and safety of procedures. Through prospective clinical studies and randomized controlled trials, researchers can evaluate the effectiveness of new surgical techniques, compare different treatment approaches, and identify potential risk factors for complications. Additionally, basic research in orbital anatomy, biomechanics, and molecular biology contributes to a deeper understanding of the pathophysiology of Graves' orbitopathy, guiding the development of new therapies and therapeutic approaches. Collaboration between academic institutions, clinics and medical industries is essential to promote translational research and translate scientific discoveries into tangible clinical advances. By investing in ongoing research, healthcare professionals can ensure that patients benefit from the latest innovations and best practices in the treatment of Graves' orbitopathy, thereby improving their quality of life and overall well-being.

Continuing research plays a crucial role in the evolution of ocular plastic surgery for Graves' orbitopathy, driving innovation and constantly improving available techniques and therapeutic approaches. Active research in areas such as biotechnology, biomaterials and regenerative medicine offers significant promise for developing new therapies and more effective treatments. Furthermore, conducting well-designed clinical trials and observational studies allows critical assessment of the efficacy and safety of existing surgical interventions, providing valuable insights to guide clinical practice. Collaboration between research institutions, clinics and medical industries is essential to promote translational research and translate scientific discoveries into tangible clinical advances. By investing in ongoing research, healthcare professionals can ensure that patients benefit from the latest innovations and best practices in the treatment of Graves' orbitopathy, thereby improving their quality of life and overall

well-being. A commitment to continued research is critical to addressing the persistent challenges associated with Graves' orbitopathy and developing effective, sustainable solutions to improve ocular health and quality of life for affected patients.

CONCLUSION

In the context of ocular plastic surgery for Graves' orbitopathy, several scientific studies have highlighted its importance in restoring ocular health and improving the quality of life of affected patients. The surgical procedures performed aimed not only to alleviate symptoms associated with the disease, such as proptosis and diplopia, but also to restore facial aesthetics and promote the psychological well-being of affected individuals. The multidisciplinary approach, involving ophthalmologists, plastic surgeons and endocrinologists, was essential to guarantee a comprehensive and personalized treatment, taking into account the individual needs of each patient.

Furthermore, technological advances have played a significant role in the evolution of eye plastic procedures, resulting in more precise and less invasive techniques. However, despite the observed benefits, it is important to highlight the need for continued research to further improve existing interventions and develop new therapeutic approaches. Collaboration between research institutions, clinics and medical industries is crucial to driving innovation and translating scientific discoveries into tangible clinical advances.

In short, eye plastic surgery for Graves' orbitopathy plays a vital role in restoring eye health, improving quality of life, and promoting the overall well-being of affected patients. The positive results observed in scientific studies highlight the effectiveness of these procedures and highlight the importance of a multidisciplinary approach and continuous research in the search for better clinical results and patient satisfaction.

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