

Dental Precautions for the Golden Thread Lift Procedure

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Abstract

In cosmetic surgery, golden threads have been used in thread lift procedures, wherein golden threads are placed under the skin of the neck and chin. These are mainly applied in the maxillofacial region adjacent to the sites of dental treatment to achieve cosmetic benefits. However, as dentists typically lack sufficient knowledge about the golden thread lift procedure, it may present a challenge to dental examinations and treatments. It is therefore crucial for dentists to have a comprehensive understanding of the procedure. This case report covers our experience with the dental examination of a patient with golden threads. We emphasize the dental complications and precautions that should be taken for such cases. These golden threads are made of pure gold, nonabsorbable, and can be broken. These can obstruct dental examination, as well as cause metal allergies and foreign body granulomas. Additionally, it is difficult to completely remove these threads when they break apart. In the future, since more patients are expected to undergo this procedure, it is possible to encounter these golden threads as artifacts on imaging. Therefore, it is important to educate dentists about the golden thread lift procedure and its dental implications. It is also imperative to determine whether the patient has undergone the golden thread lift procedure in the medical questionnaire prior to the magnetic resonance imaging examination. Thus, dentists should be able to conduct a detailed interview with the patient, determine the feasibility of examination or treatment, and communicate this assessment to the patient.

Keywords

Golden Threads, Computed Tomography, Magnetic Resonance Imaging, Metal Allergy, Foreign Body Granuloma

1. Introduction

In cosmetic surgery, thread lift procedures can use golden threads, which are implanted in the dermal layer of the face, neck, and hands to treat wrinkles and sagging skin. These are made from high-purity gold and are as thin as a hair. In the areas of implantation, the skin is activated, thereby improving fine lines and wrinkles, light blotches, and open pores, making the skin more supple and providing a mild lifting effect. However, several complications, side-effects, and failures during post-treatment medical examinations have been reported. However, as dentists typically lack sufficient knowledge about the golden thread lift procedure, it may present a challenge to dental examinations and treatments. It is therefore crucial for dentists to have a comprehensive understanding of the procedure. In this article, we report an overview of the golden thread lift procedure and the precautions that should be taken during dental examinations.

2. Case Report

A 62-year-old Japanese woman visited the Department of Orthodontics, Matsuyama Dental University Hospital for an examination of her occlusal abnormality. Approximately 3 - 4 years ago, she began having difficulty biting foods and had been receiving treatment at a dental clinic. However, since her symptoms persisted, she was referred to our hospital.

The patient claimed to have no significant pre-existing systemic medical conditions and no known allergies to food, metals, or pharmaceuticals. The oral mucosa did not display any evidence of inflammatory lesions that suggest the presence of allergic symptoms. The anterior teeth had an open bite, and no clicking sounds were heard in the bilateral temporomandibular joints during the opening. Palpation of the muscles involved in the occlusion did not reveal tenderness. There was no deviation of the mandible relative to the maxilla during opening.

Computed tomography (CT) scan, panoramic X-ray, cephalometric X-ray, and dental X-rays were used to closely examine the jaw deformity and internal jaw bones. Radiographs revealed numerous thin, undulating, thread-like discontinuous opacities across the face located in the bilateral neck, buccal perimandibular area, periorbital area, and forehead area (**Figures 1-3**). CT images showed irregularly shaped, linear, metallic-like structures with artifacts in some areas (**Figure 4**).

Referring to the X-rays, the dentist explained the presence of metal-like structures in the patient's face and asked if she had any idea what they were. Subsequently, the patient said that the golden threads were implanted several years earlier during cosmetic plastic surgery for skin rejuvenation. No tenderness, spontaneous pain, skin swelling, or ulceration was observed in the golden thread lift procedure treatment area.

The patient was diagnosed with jaw deformity, malocclusion, and maxillary prognathism. Afterward, the patient began orthodontic treatment at the Department of Orthodontics in our hospital.



Figure 1. Panoramic X-ray: Disordered shadows of torn golden threads are seen overlapping the images of the buccal, maxillary bone, mandible bone and neck.



Figure 2. Lateral cephalogram X-ray: In this radiograph, golden threads can be seen throughout the entire superficial layer of face.



Figure 3. Dental X-rays: The golden threads were not straight and appeared to be broken in some places.

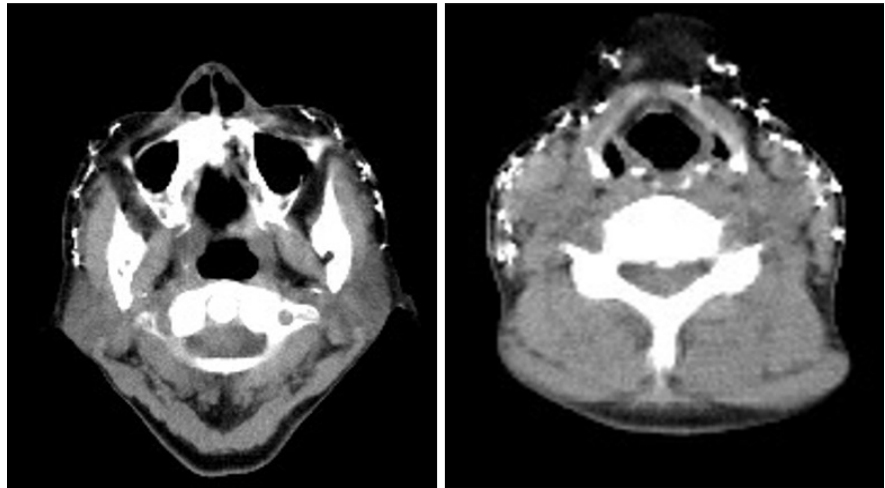


Figure 4. Computed tomography images: The golden threads that cover the maxillofacial region were embedded under the skin.

3. Discussion

The golden thread lift procedure was developed by Caux in 1969 as a technique to implant golden threads into the skin that had become lax with age [1]. Later, new methods were developed by Parisot, Orenes P., and others, and the golden thread lift procedure has since spread throughout Europe and the world. Currently, the procedure is performed to achieve skin rejuvenation [2]. This procedure involves implanting 24-karat 6 - 0 threads and 4 - 0 polyglycolic acid absorbable threads into the dermis, parallel to the skin surface [3]. The actual procedure involves joining 0.1 mm diameter 24-karat gold threads and polyglycolic acid absorbable threads to a straight needle, then implanting them in a grid pattern from the dermal layer of the facial skin to the subcutaneous tissue [3] [4]. The golden thread lift procedure can be done on the face and neck, as well as the upper arms, hands, chest, abdomen, buttocks, and almost the entire body. The golden thread is made of high-purity gold, which, when implanted, simulate phagocytosis of melanin by macrophages (immune cells), new capillary formation, new collagen formation, and fibroblast proliferation. These processes produce cosmetic effects. However, there is still a lack of scientific evidence regarding the golden thread lift procedure [4].

Some issues can arise with the golden thread lift procedure. One of these is the obstruction of examination. According to Matsuo *et al.* [3], patients were informed that the golden threads are absorbed over time, have effects lasting for 15 years, can easily be removed, and are hypoallergenic due to the use of high-purity gold. However, the golden threads tear over time but are not absorbed. Additionally, it is practically impossible to completely remove all of the golden threads implanted under the skin, especially since they can break apart. These broken golden threads thus become unwanted artifacts on panoramic radiographs and CT scans. In a panoramic radiograph examination, the bundle is angled upward at 5° [5]. The presence of metals such as earrings and piercings creates shadows on the opposite side, which are blurred horizontally and magnified vertically, appearing

high in the image. In this case, the metal artifacts obscured the normal anatomical outlines, thus hindering CT examination and interfering with the diagnosis. Meanwhile, magnetic resonance imaging (MRI) examinations are contraindicated in patients with tattoos, permanent eyeliners, or other art makeup [3], since metals that act as a conductor can heat up the surrounding soft tissues. Thus, in CT and MRI, we should be aware that artifacts may reduce the accuracy of diagnostic imaging, potentially miss the early detection of important diseases. However, since the golden thread lift procedure is not widely known in dentistry, it should be included in the list of items to be checked prior to MRI examinations.

Another problem is the development of metal allergies and foreign body granulomas caused by the golden threads. In their individual state, metals do not cause allergic reactions. Before a metal can act as an allergen, it must undergo ionization through sweat or other electrolyte solutions, which convert it into a soluble form [6]-[8]. The ionized metal then becomes an allergen. Allergen sensitization can cause allergic dermatitis and contact dermatitis. Matsuo *et al.* [3] and Makino *et al.* [4] reported on the current implementation of allergy testing before the golden thread lift procedure in Japan. The case of Makino *et al.* was a 49-year-old woman who developed a metal allergy after the golden thread lift procedure. Matsuo *et al.* [3] contacted the Golden Thread Information Center, who claimed that they did not perform allergy testing prior to the procedure and deemed it unnecessary. This was supposedly because the golden thread is made of 99.99% pure gold (24-karat gold), which has no effect on the human body and does not cause allergic reactions. In the case of allergy to golden threads by Makino *et al.* [4], a patch test before the procedure was also not performed. Allergic symptoms following gold-based treatments have also suggested the possibility of a delayed allergic reaction. Thus, it is important to consider that allergic reactions may occur in any treatment using gold; a patch test must be performed before the procedure. Meanwhile, there have been few reports of foreign body granulomas caused by golden threads, and the details of these cases are unknown. However, Rondo *et al.* [9] described a tuberculoid-type granulomatous reaction to gold threads. Additionally, in a case report by Matsuo *et al.* [3], granulomas were removed from the facial area of patients treated with hyaluronic acid injections and golden threads. Within these granulomas, 1 - 1.5 mm golden threads were found. The usual treatment for suspected allergy requires the removal of the causative agent. In dentistry, dental metals and piercings can easily be removed, and a metal-free treatment is used to identify and remove the causative metal. However, pieces of golden threads were present in the subcutaneous tissue in this case, likely because the golden threads are easily broken, making them impossible to remove completely. The sequelae of these thread pieces are reported to increase over time [2].

The patient, in this case, did not initially disclose undergoing the golden thread lift procedure, and thus, the dentist was unaware of this during the initial examination. However, subsequent examination revealed the presence of golden threads. In patients with a history of the golden thread lift procedure, golden threads may

be discovered incidentally on imaging. In fact, there are several cases wherein golden threads have been found on radiographs [10]-[14]. The golden threads were not the primary reason for the patient's dental consultation, but they compromised the accuracy of the examination due to being visible on imaging. Moreover, potential allergic reactions to novel dental metal treatments among patients who have undergone the golden thread lift procedure must be considered as well. Thus, dentists must understand the risks of the golden thread procedure; patients should be informed that this may interfere with the dental examination and treatment.

4. Conclusion

The golden thread lift procedure is currently being used as an antiaging treatment, with benefits in skin tightening, wrinkle reduction, and improved skin texture. Since golden threads remain stable in the body for a long time, the effects of this treatment are advertised to last longer than other thread lift procedures. However, complications can occur after the treatment, and dentists may encounter radiographs containing artifacts from these threads. Therefore, it is important to educate dentists about the golden thread lift procedure and its implications. In addition, dentists should thoroughly interview patients regarding previous surgical procedures that were not necessitated by disease (e.g., cosmetic surgery). This can allow dentists to have a higher index of suspicion for the presence of foreign objects presenting as artifacts on imaging, such as the gold threads. With this knowledge, dentists can proceed with the examination with greater care, considering the possibility of reduced image accuracy. Furthermore, the questionnaire prior to undergoing MRI examination should ask if the patient has undergone cosmetic surgery. Based on this, dentists should be able to determine whether the examination can be performed. By doing so, dentists can collate pertinent medical data and fully explain to patients the possible outcomes and treatment options. Lastly, since golden threads are nonabsorbable and difficult to remove, we believe that this procedure should be performed after obtaining sufficient informed consent.

Patient Consent

In accordance with the tenets of the Declaration of Helsinki, the patient was informed orally of the objective, methodology, safety concerns, and potential hazards associated with the case report prior to providing written consent.

Conflicts of Interest

This paper does not present any conflicts of interest. Furthermore, there are no affiliated companies or disputes.

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