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Clinical Case Study

Radiographic Identification of Gold Threading: A clinical case study

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ABSTRACT

Dental hygienists play a crucial role in oral health care through the acquisition and interpretation of radiographs. Certain cosmetic facial procedures involving metallic materials may be visible on dental radiographs. These materials may obscure anatomical structures and complicate interpretation, which is essential for dental procedure treatment planning. The dental hygienist needs to be able to differentiate these artifacts from pathological conditions. This case study describes a 28-year-old female patient with intraoral and extraoral radiographs demonstrating thread-like radiopacities consistent with gold threading. This report highlights the radiographic characteristics of gold threading, outlines clinical implications, and emphasizes the importance of professional awareness of cosmetic facial procedures that may influence radiographic image interpretation and complicate accurate dental hygiene care planning.

Keywords dental radiographs, gold threading, cosmetic facial procedures, radiographic interpretation

NDHRA priority area, **Professional development: Education** (evaluation).

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INTRODUCTION

Radiographic imaging is an essential diagnostic tool in dental hygiene practice, enabling the visualization of teeth, supporting bone, and surrounding structures. Artifacts, defined as inconsistencies between the radiographic image and actual anatomy, can obscure findings, interfere with interpretation, and compromise patient care. Artifacts may appear as distortions, extraneous marks, unexpected radiopacities, or radiolucencies within the image or soft tissues. Effective prevention of radiographic misinterpretation relies on the dental hygienist's education and training in image acquisition, analysis, and evaluation.

Dental hygienists receive formal education and competency evaluation in radiography as part of their educational and licensure requirements, consistent with the Consumer-Patient Radiation Health and Safety Act of 1981.[1] Responsibilities include exposure, processing, quality assurance, and image interpretation to ensure diagnostic accuracy and patient safety. Competency in image evaluation also requires awareness of factors that may alter radiographic appearance, including artifacts and materials introduced through cosmetic procedures.

The increasing popularity of aesthetic facial procedures has introduced materials that may appear on dental and maxillofacial radiographs. Dermal fillers containing calcium hydroxyapatite, silicone, and polymethyl-methacrylate produce characteristic radiopacities within soft tissues. In contrast, metallic components such as titanium meshes or gold wires may present as linear or diffuse densities.[2,3] These cosmetic materials can mimic calcifications or anatomical variations, underscoring the importance for clinicians to anticipate such possibilities, and leading to more accurate radiographic interpretation.[4] Among these procedures, gold threading is an example that demonstrates the diagnostic importance of recognizing cosmetic artifacts on dental radiographs.[5,6]

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Gold Threading

Gold threading is a minimally invasive cosmetic procedure that involves the implantation of fine gold threads beneath the skin to promote soft tissue tightening and rejuvenation. Gold threading is also known as gold thread lift or gold facial threading and first became widely available in the 1990s.[6] Gold is favored for implantation because of its high biocompatibility, long-term stability, and minimal risk of rejection by skin or subcutaneous tissues.[4] In a study of patients treated with gold thread reinforcement, improvements in skin tone and elasticity were shown to persist from three months to up to 15 years.[6]

Promoted for its anti-aging benefits, such as stimulating collagen production, improving skin elasticity, and promoting a youthful appearance, the treatment is frequently positioned as a cosmetic solution for individuals seeking subtle, gradual rejuvenation.[6] Gold threads are typically supplied in prepackaged sterile packets similar to surgical sutures. Gold thread therapy involves implanting pure gold threads, 0.1 mm in diameter, which are often braided with polyglycolic acid or polyvinylidene difluoride, into the subdermal skin at a depth of 3-4 mm.[7] The body perceives the gold as a foreign material, which stimulates an inflammatory response that boosts collagen and elastin production.[6-8] The claimed results are firmer, smoother, and a more lifted skin.[6] Gold threading is considered to be a niche or luxury treatment and has been reported to be popular in Asia and Russia.[6,7] The gold threads may be implanted in the face and neck, which can be identified in dental radiographic imaging.

Gold threads may be superimposed on anatomical structures that are essential for gathering information for treatment planning in dental and dental hygiene procedures. Incidental findings of gold threads on intraoral or extraoral radiographs may appear as irregular, wavy, linear radiopaque striations. It is important to differentiate these artifacts from pathological calcification, which is critical for accurate dental interpretations and diagnostic purposes. The purpose of this clinical case report is to present a case illustrating how gold threading was identified radiographically and to discuss implications for dental and medical practice.

CASE DESCRIPTION

A 28-year-old female patient, in good medical and dental health, presented for routine dental radiographs and assessments as a new patient to a dental hygiene program clinic in Southern California. The patient did not indicate on the medical history questionnaire that she had ever undergone any cosmetic procedures, nor did she report experiencing any intraoral symptoms. A comprehensive intraoral and extraoral head and neck evaluation was performed with no abnormal findings.

The patient had not had dental radiographs for three years, and the supervising dentist prescribed a full-mouth series and a panoramic radiograph. In this teaching institution, students are required to expose two periapical radiographs and then consult with their supervising dental hygiene faculty member before proceeding with the remaining radiographs. Upon reviewing the first two periapical radiographic images, stark radiopacities were observed. Multiple parallel, wavy, linear, thin radiopaque lines were observed in the soft tissue region, superimposed in the cheeks, perioral, and maxillary connective tissue (Figure 1). The radiopaque lines followed the contour of the facial skin and were not associated with bone or teeth.

Figure 1. Cosmetic gold thread material identified in the initial intraoral images.

After consulting with the patient, the faculty member confirmed that a cosmetic procedure had been performed during a spa treatment in Japan a few

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months prior. Bilateral superimposition of fine, curvilinear radiopacities was evident over the dentition, mandibular body, ramus, and soft tissue structures. There was no evidence of any intra- or extraoral anomalies that could have accounted for the radiographic image. Furthermore, these radiopacities did not resemble any of the more commonly observed superimposed radiopacities, such as calcifications of facial acne, phleboliths associated with soft tissue hemangiomas, or miliary osteomas of the soft tissues. The full-mouth series of radiographs and panoramic image revealed numerous artifacts (Figure 2 and Figure 3).

Figure 2. Gold thread material identified in the full-mouth series of radiographs.

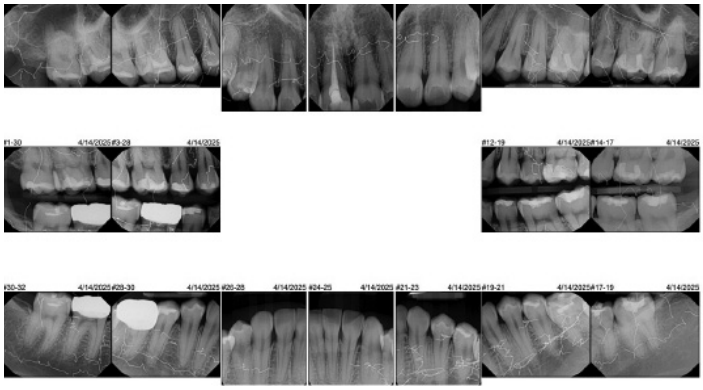

Figure 3. Gold thread material identified in the panoramic image.

The faculty member explained to the dental hygiene student that the radiopacities were the result of a cosmetic procedure called gold threading. The gold threads were differentiated from sialoliths, vascular calcifications, or foreign bodies of concern. Fine gold threads may be visible on maxillofacial images and are often identified as cosmetic artifacts rather than pathology, as shown in Figure 4. The student was directed to document the findings in the patient's record. The patient was informed and educated that the radiopaque lines correspond to cosmetic gold threading. No clinical intervention was required as the gold threads were not associated with complications, such as infection or evidence of granulomas.

Figure 4. Carotid artery calcification identified in a panoramic image.

DISCUSSION

This case illustrates the diagnostic value of recognizing cosmetic materials that may appear on dental radiographs. Threading is typically seen bilaterally and does not align with anatomical structures. Dental hygienists are educated to formulate a differential diagnosis as part of radiographic interpretation. A differential diagnosis involves asserting a plausible cause while systematically excluding other potential causes. Clinicians should rule out dangerous or urgent conditions first, then narrow to the most likely evidence-supported working diagnosis. In this case, differential diagnosis might include, but not be limited to, vascular (Figure 4) or lymph node calcifications, osteoma cutis, and artifacts such as hair extensions and jewelry (Figure 5). The clinical significance lies in correctly identifying artifacts as non-pathologic and ensuring that genuine calcifications or lesions are not overlooked, thereby reducing the risk of a misdiagnosis. Awareness of cosmetic artifacts is needed among radiologists, dental hygienists, and dentists, as patients may not readily disclose their use of cosmetic procedures.

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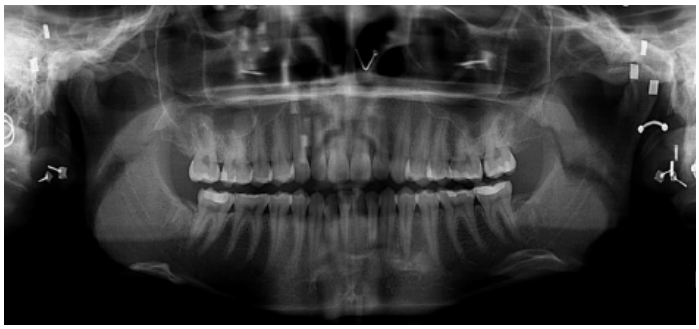
Figure 5. Artifacts, such as hair extensions and jewelry, identified in a panoramic image.



Although gold threading is marketed as a minimally invasive rejuvenation procedure, published studies report several potential side effects. The most frequently observed reactions include transient edema, bruising, tenderness, and mild discomfort at insertion sites, which typically resolve within days.[6] In a Korean cohort of 78 patients treated for periorbital wrinkles, minor complications such as foreign-body sensation (2.6%) and eye pain (1.3%) were documented, with no serious adverse events during short-term follow-up.[9] Larger long-term studies also describe occasional thread-end visibility or extrusion, as well as isolated cases of inflammation associated with pre-existing cysts.[6] Case reports have identified foreign-body granulomatous reactions surrounding fragmented gold filaments years after implantation,[10] and on histologic examination, mild chronic fibrotic tissue was observed encasing the filaments.[11] Additionally, some reports suggest that patients who undergo subsequent laser or light-based treatments may develop cutaneous pigmentation resulting from superficial deposition of gold particles within the dermis.[12] Collectively, these findings suggest that while the procedure is generally well tolerated, long-term tissue reactions and pigmentary changes remain possible, particularly with repeated interventions or concurrent aesthetic procedures.

Clinical Relevance

Recognition of gold threading on dental radiographs is essential for safe and informed patient care. Dental hygienists should obtain a comprehensive medical and cosmetic history that includes questions about facial rejuvenation procedures, as patients may not voluntarily disclose this information. Because gold threads are placed in the subdermal tissues of the cheek, jawline, and perioral regions, clinicians should exercise caution when retracting soft tissues, applying ultrasonic instrumentation, or administering local anesthesia in these areas.[6,11]

Elective dental hygiene procedures are best scheduled at least three to four weeks after thread implantation to allow tissue stabilization and minimize the risk of thread displacement or irritation.[5,6] Clear documentation of cosmetic materials observed radiographically helps prevent diagnostic confusion and ensures continuity of care. Awareness of potential adverse effects such as localized inflammation, granuloma formation, or pigmentation changes following light-based therapy enables timely identification and appropriate referral. Interprofessional collaboration with cosmetic and dermatologic providers promotes safe, coordinated management for patients who have undergone gold threading or similar aesthetic procedures.

CONCLUSION

Although gold threading may appear as an incidental finding on dental radiographs, accurate identification helps prevent unnecessary concern or intervention. Obtaining a thorough medical and cosmetic history during the initial dental assessment minimizes confusion and reduces the risk of misdiagnosis. Dental hygienists who recognize the characteristic appearance of cosmetic threads contribute to accurate radiographic interpretation and person-centered care. By educating dental team members to distinguish cosmetic implants from pathological findings and documenting observations clearly, continuity of care is maintained. Referral to a medical or cosmetic specialist is appropriate only if complications or adverse reactions are suspected.

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IMPLICATIONS FOR DENTAL HYGIENE PRACTICE

- Radiographic interpretation: Recognizing gold threading prevents misinterpretation of radiopaque strands as pathology, foreign bodies, or retained dental materials.
- Enhanced history-taking: Incorporating questions about cosmetic or alternative facial therapies improves diagnostic accuracy when unexpected radiographic findings appear.
- Person-centered education: Dental hygienists can guide patients on the oral and facial implications of gold threading, including potential localized tissue responses.

DISCLOSURES

The author has no conflicts of interest to disclose.

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