Dentomaxillofacial Radiology (2008) 37, 117–120

http://dmfr.birjournals.org

CASE REPORT

Soft tissue augmentation of the cheeks detected on intra- and extraoral radiographs: a case report

G Alsaadi*,[1], R Jacobs[2], M Quirynen[1] and D van Steenberghe[1]

[1]*Department of Periodontology, Faculty of Medicine, Catholic University of Leuven, Belgium;* [2]*Oral Imaging Centre, Faculty of Medicine, Catholic University of Leuven, Belgium*

Augmentation material used in plastic surgery such as facelift procedures can be radiopaque and thus become visible on extra- and intraoral radiographs. These objects may obscure anatomical structures and mask critical findings, therefore leading to potential misinterpretation of otherwise successful images. The present report describes a case in which the radiographic intra- and extraoral data are partly masked by a superimposed radiopaque mesh, which was suspected to originate from a facelift procedure. A gold thread lift was confirmed by the plastic surgeon.
Dentomaxillofacial Radiology (2008) **37,** 117–120. doi: 10.1259/dmfr/32951026

Keywords: plastic surgery; facelifting; radiography; artefacts; soft tissue calcification

Patient report

A 60-year-old woman was referred to the Department of Periodontology of the University Hospital of the Catholic University Leuven, Belgium, because she wanted oral rehabilitation by means of oral implants.

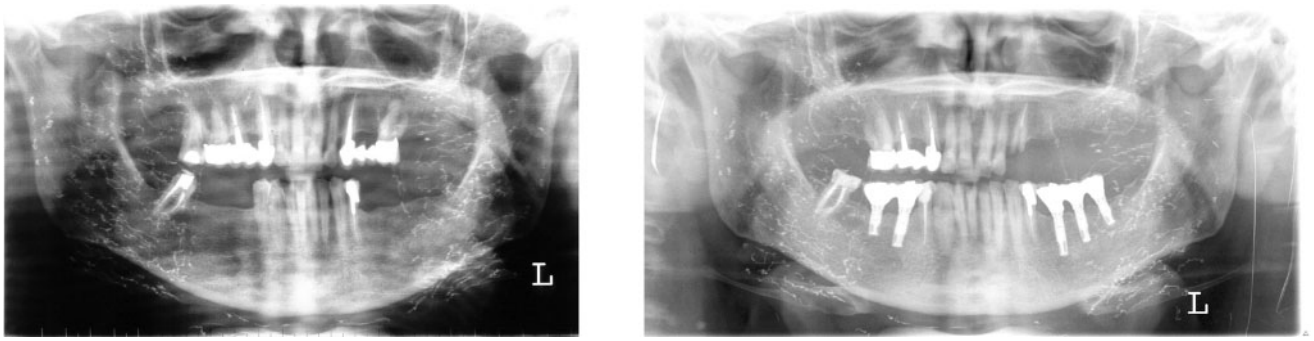
Her medical history revealed hypothyroidism, hypotension and osteoporosis. The surgical history included intestinal polyps, a facelift some 10 years previously and removal of a breast cyst. She had no known pathological conditions in the maxillofacial region and no history of trauma to the jawbones or facial structures. Oral and head and neck examination yielded no obvious abnormalities (Figure 1). The oral mucosa showed a strictly normal appearance.

With a view towards periodontal surgery, a panoramic radiograph was taken using a Cranex Tome multimodal unit (Soredex, Helsinki, Finland). The panoramic radiograph showed irregular strings and curved lines of dense radiopaque material. These threads appeared bilaterally overlapping with the ramus ascendens and the rest of the mandible. Additional intraoral radiographs offered a detailed image of the radiopaque strings and curved lines. A panoramic radiograph taken 5 years earlier showed an almost perfect match with the radiopaque threads (Figure 2). The patient stated that she had used a special cosmetic ointment on her face containing opaque particles. Considering the similarity of the images over 5 years, the assumption that such makeup would explain the radiopaque marks was abandoned and the facelift procedure was considered instead.

Causes of radiopaque marks in the lateral areas of the craniofacial area include multiple calcifications of acne,[1] calcified phleboliths associated with soft tissue haemangioma,[2,3] miliary osteomas of the soft tissues[4] and calcification associated with synthetic implant material for hair artefacts.[5]

Figure 1 Facial skin appearance

*Correspondence to: Ghada Alsaadi, Department of Periodontology, Faculty of Medicine, Catholic University of Leuven, Kapucijnenvoer 7, 3000 Leuven, Belgium; E-mail: alsaadi-ghada@belgacom.net
Received 16 October 2006; revised 6 February 2007; accepted 13 March 2007



a b

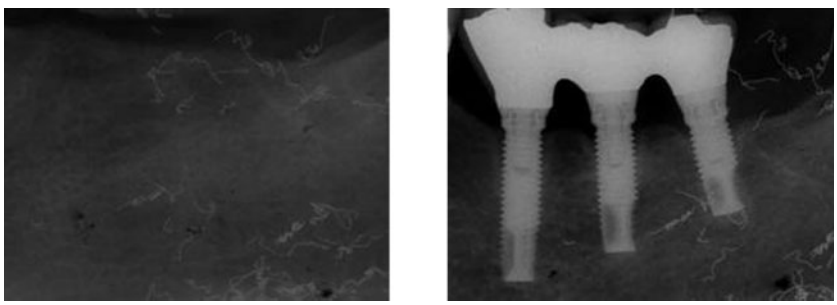
Figure 2 Panoramic image showing irregular strings and curved lines of radiopaque material, bilaterally overlapping the ramus, soft tissues and part of the mandibular body, at (a) age 55 years and (b) age 60 years after placement of oral implants

After considering all of the possibilities, it was tentatively diagnosed as radiopaque artefacts in relation to soft tissue augmentation (Figures 2–5). A further investigation related the radiopacities to very thin (0.1 mm thick) gold wires used for the facelifting procedure.

Discussion

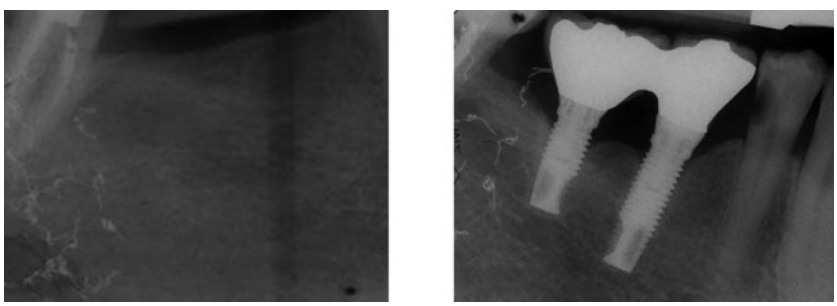
The occurrence of soft tissue radiopacities located in the cheeks and/or lips on panoramic radiographs has been well documented in the literature. The most common opacities include image artefacts caused by artificial structures such as bullets, toothpaste slurry and hair artefacts (wigs/dreadlocks/bound hair).[5]

The present images, however, did not show any of the radiographic characteristics related to the aforementioned pathologies and artefacts. The history of facelifting using a synthetic soft tissue augmentation material in the cheeks seemed the most plausible explanation for the diffuse and widespread image artefact formation. Mupparapu and Mozaffari[6] reported bilateral calcification secondary to synthetic soft tissue augmentation of the cheeks with injectable silicone.



a b

Figure 3 Intraoral radiographs of the mandibular left molar area (a) before and (b) after implant insertion



a b

Figure 4 Intraoral radiographs of the mandibular right molar area (a) before and (b) after implant insertion

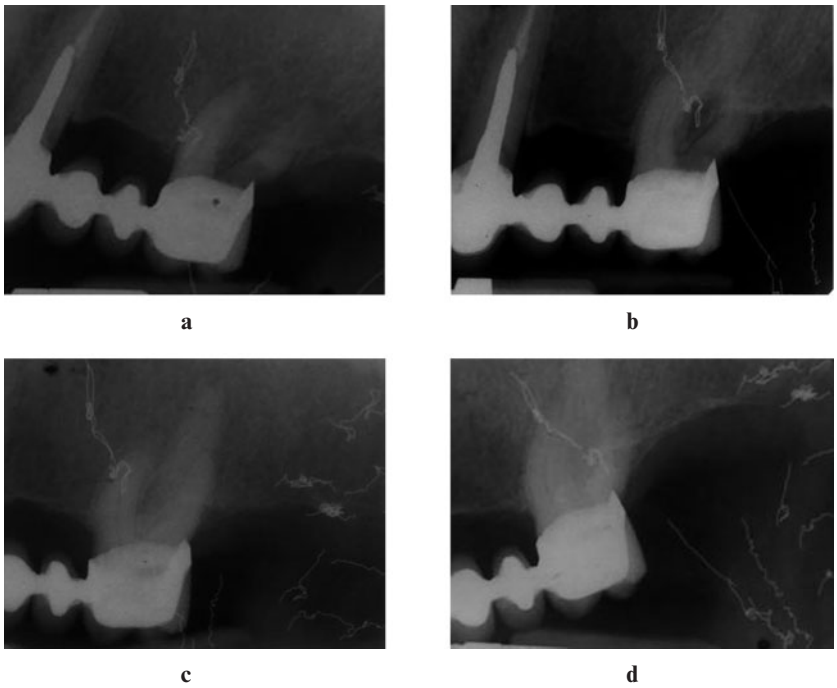


Figure 5 Intraoral radiographs of the maxillary left molar area in different periods. (a,b) At the age of 65 years and (c,d) at the age of 59 years

Animal-derived or synthetic materials have been advocated since the late nineteenth century for plastic surgery. A number of materials have been used since the late nineteenth century to augment the soft tissues of the orofacial region or to expand skin tissue and reduce wrinkles.[7–9] These materials include paraffin wax, silicone, silastic, collagen, Teflon and expanded Teflon. They basically differ from one another in their nature, flow and tissue compatibilities.

Over the years, many implantable substances and devices have been utilized to cosmetically enhance soft tissue defects and deficiencies. Soft tissue augmentation through the use of filling agents has become increasingly popular as more and more individuals seek aesthetic surgery. Soft tissue augmentation dates back to 1893 when Neuber used autologous fat for tissue augmentation. Today, physicians have a much larger armamentarium (see review[8]). Although the radiopaque features of these filling materials are not extensively reported in the literature, particular silicon vessels present radiopaque images (*e.g.* Corry Bores Vessel Loops®; Cory Bros, Herts., UK). The application of such vessels may help surgeons to identify arteries, veins, tendons and nerves.

In the present patient, the dermatologist confirmed that a plastic surgeon had carried out a gold thread lift. This procedure, which has been popular in France, improves facial wrinkles by placing 24 karat gold threads of 0.1 mm diameter into the skin. The foreign-body reaction that follows increases collagen production, which fills the wrinkles. This technique is poorly documented in medical literature.[10]

Since the oral radiographic opacities had been detected early after the soft tissue augmentation, and since the consecutive panoramic and intraoral radiographs taken over 5 years revealed no changes over time, the possibility of bilateral calcifications secondary to synthetic soft tissue augmentation of the cheeks could be ruled out.[6,9]

The description of this particular facelifting technique therefore seemed the only plausible explanation for this particular appearance on both intraoral and panoramic radiographs. Clinicians and radiologists in particular should be aware of the use of radiopaque substances for facelifting and other augmentation procedures as it may cause artefacts and/or mask defects.

Conclusions

From the present report, it can be stated that particular facelifting procedures may result in radiographic radiopacities. Clinicians should be aware of the existence of such radiopaque materials that are used for soft tissue augmentation (either radiopaque silicone or gold wires).

References

1. Gfesser M, Worret WI, Hein R, Ring J. Multiple primary osteoma cutis. *Arch Dermatol* 1998; **134**: 641–643.
2. Smith JF, Drake J, Sollee N. Massive oral hemangioma with phlebolithiasis. *Oral Surg Oral Med Oral Pathol* 1966; **21**: 83–88.
3. Ikegami N, Nishijima K. Hemangioma of the buccal pad with phlebolithiasis: report of a case. *Acta Med Okayama* 1984; **38**: 79–87.
4. Goldminz D, Greenberg RD. Multiple miliary osteoma cutis. *J Am Acad Dermatol* 1991; **24**: 878–881.
5. Scheifele C, Lemke AJ, Reichart PA. Hair artefacts in the head and the neck region. *Dentomaxillofac Radiol* 2003; **32**: 255–257.
6. Mupparapu M, Mozaffari E. Bilateral calcifications secondary to synthetic soft tissue augmentation of the cheeks: report of a case. *Dentomaxillofac Radiol* 2002; **31**: 388–390.
7. Maas CS, Denton AB. Synthetic soft tissue substitutes. *Facial Plast Surg Clin North Am* 2001; **9**: 219–227.
8. Klein AW. Techniques of soft tissue augmentation. *Am J Dermatol* 2006; **2**: 107–120.
9. Kemp HK. Buccal radiopacities associated with cosmetic wax implants. *Br Dent J* 1982; **152**: 134.
10. http://www.la-medicine-esthetique.com/guy-haddad-magazines.html