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Title: Allergic contact dermatitis to gold weight upper-eyelid implant.

Running head: Allergic contact dermatitis to weight upper-eyelid implant.

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Editor

Gold-weights are used for the correction of lagophthalmos associated with facial nerve injury since the 1960s. Complications associated with these are rare, being more frequent those associated with incorrect size and weight of the implant or infections processes. Non-infectious persistent inflammatory reactions, suggesting type IV hypersensitivity to gold, are poorly described in the literature¹.

A 48-year-old woman came to our departament to evaluate a desquamative erythematous edematous plaque on the upper left eyelid, which began 10 days after insertion of a gold weight upper-eyelid implant (ALOS Gold eyelid Implant 1.6 grs, [AJL OPHTHALMIC, S.A,]). The cutaneos clinic became more intense during the following 6 months (Fig. 1a). The gold weight implant was placed for the correction of a lagophthalmos associated with paralysis of the left facial nerve, which had remained as a sequel after the treatment of a brain tumor.

The patient was not a carrier of dental implants or metal prostheses, nor did she report previous dermatitis with the use of gold jewelry. She was patch tested with the Spanish Contact Dermatitis Research Group (GEIDAC) baseline series (TRUE Test®, supplemented with allergens obtained from Chemotechnique [Vellinge, Sweden]), applied in Finn Chambers (Tuusula, Finlan) on Omnifix E (Hartmann, Heidenheim, Germany) tape, and a metals series from Chemotechnique (Vellinge, Sweden). The patch tests were applied on the upper back for 2 days. Readings were performed on day (D) 3 and D7. Patch test results were positive at D3 (++) and D7 (++) for gold sodium thiosulfate in TRUE Test® (75 mcg/cm²)

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and in 0.5 and 2% in petrolatum (Fig. 1b). Hence, allergic contact dermatitis to gold weight upper-eyelid implant was diagnosed. The gold weight implant was removed with complete resolution of the cutaneous clinic at one month of follow-up.

Gold is the material of choice in weight eyelid implants because it is a malleable, dense, insoluble, and largely unreactive metal. For the elicitation of an allergic contact dermatitis from metallic gold, "inert" metal ionization is necessary, allowing its liberation and then its skin penetration. Subcutaneous gold implants have a higher risk of inducing type IV hypersensitivity reaction due to prolonged exposure of the metal to an ionizing environment². Allergic contact dermatitis to gold weight implant are rare. In the literature review, we found thirteen cases of type IV hypersensitivity reaction associated with gold eyelid implants (Table 1)¹⁻⁷. Most of them were women, with a beginning of the cutaneous clinic between the first and seventh week after implant placement. Patch tests were performed in six of them, presenting in all these cases positivity to gold sodium thiosulfate at different concentrations. In twelve of the thirteen cases it was necessary to remove the eyelid implant for the resolution of the clinic, while in one of the cases was controlled with intralesional corticosteroids³. In cases where a hypersensitivity reaction to gold is demonstrated, platinum implants are an alternative. Platinum is denser than gold, allowing smaller implants to achieve similar effects with fewer complications. However, they are more expensive. No reaction of allergy to eyelid implants of this material has been reported to our knowledge.

Although hypersensitivity reactions to gold implants are rare, it is important to take them into account, A personal history of gold allergy should be looked for before upper eyelid gold weight implantation. It has been proposed that patch tests should be performed in patients where there is doubt about whether gold has been the specific cause of previous allergic reactions, for patients who have undergone previous dental restoration involving gold, or if there is a positive family history of gold allergy².

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Figure Legends

Figure 1: (a) Desquamative erythematous edematous plaque on the upper left eyelid; (b) Positive at D7 (++) for gold sodium thiosulfate in TRUE test (75 mcg/cm²) and in 0.5 and 2% in petrolatum, after applying patch tests on the upper back for 2 days.

Table 1: Cases of type IV hypersensitivity reaction associated with palpebral gold implants.

P: patient; F: female; M: male; NA: not available;

P	Author (reference)	Sex	Age (years)	Onset of symptom (weeks)	Patch testing	Result	Implant removed	Symptom resolution
1	Blair RL et al (3)	F	47	3	No	-	Yes	Yes
2	Blair RL et al (3)	F	62	3	No	-	No	Yes
3	Blair RL et al (3)	F	80	4	No	-	Yes	Yes
4	Dinces E et al (4)	M	73	4	No	-	Yes	Yes
5	Björkner B et al (5)	F	51	1	Yes	Positive	Yes	Yes
6	Björkner B et al (5)	F	71	1	Yes	Positive	Yes	Yes
7	Björkner B et al (5)	F	68	1	Yes	Positive	Yes	Yes
8	Björkner B et al (5)	F	77	NA	Yes	Positive	Yes	Yes
9	Doyle E et al (2)	F	67	2	Yes	Positive	Yes	Yes
10	Doyle E et al (2)	F	79	1	No	-	Yes	Yes
11	Iordanous Y et al (6)	F	48	7	No	-	Yes	Yes
12	Kilduff CLS (1)	M	46	7	No	-	Yes	Yes
13	Poziomkowska-Gęsicka I (7)	M	50	3	Yes	Positive	Yes	Yes
14	Our patient	F	48	2	Yes	Positive	Yes	Yes

