

Concerning gold implants:

Gold implants have been used for a long period of time and have never been found to cause any unwanted effects.

Gorm Danscher

Some implementations of gold are presented below:

- 1) **Gold implants have been used in different surgery approaches for many years** e.g. as a remedy for lagophthalmos (Choi and Discoll 2004). They write among others: The use of gold weight eyelid implants is certainly a desirable option of treatment of patients suffering from lagophthalmos, but it is not always successful or esthetic due to the thickness of the prefabricated implants and the anatomical structures of the eye. The technique presented emphasizes the importance of proper positioning and contour of the eyelid implant and details a method of correcting an undesired result.
- 2) Foster et al. from Grant Eye and Ear Hospital, the Ohio State University, Columbus, Ohio 44195, USA write in the Abstract of their 2004 article: **Processed human pericardium barrier for gold weight implantation.** **PURPOSE:** To determine the safety and efficacy of processed human pericardium as a barrier material for gold weight implantation. **METHODS:** In this retrospective, noncomparative case series, all patients undergoing gold weight implantation with human pericardium barrier between November 2000 and May 2002 were studied. Charts were reviewed for surgical indications, gold weight size, follow-up interval, and complications. **RESULTS:** Twenty-three eyelids of 23 patients underwent gold weight implantation with processed human pericardium barrier material. There were 15 female and 8 male patients. Mean patient age was 53 years (range, 22 to 78 years). Indications for surgery included extruded implant (4 eyelids), thin tissues overlying existing implant (3 eyelids), thin anterior lamellar eyelid tissues (6 eyelids), radiotherapy (1 eyelid), and requirement for long-term gold weight therapy (9 eyelids). Mean follow-up was 11 months (range, 3 to 36 months). Acceptable tissue coverage was found in 23 of 23 eyelids. There were no complications of infection, extrusion, or thinning of overlying tissues. One patient had prolonged eyelid edema and erythema that resolved spontaneously 3 months after surgery. **CONCLUSIONS:** Human pericardium appears to be well tolerated on at least a short-term basis within the eyelid when used as a barrier material for gold weight implantation.
- 3) Tanigawa N et al. from Department of Radiology, Tottori University Hospital, Yonago, Japan writes in the abstract of their article “Reaction of the aortic wall to six metallic stent materials”
RATIONALE AND OBJECTIVES: We investigated the effects of various metallic stents on the aortic wall. **METHODS:** The wires of Gianturco-type expandable metallic stents were plated with gold, silver, or copper or coated with Teflon or silicone. Stents were inserted into the aortas of 15 adult mongrel

dogs. The time course of radiologic, macroscopic, and histologic changes in the aorta at the site of the stent was investigated at 1, 2, and 4 weeks after implantation. **RESULTS:** The gold-plated stent appeared to produce fewer macroscopic and histopathologic changes in the aorta than the other types of stents. The neointima was thinnest with gold (83.9 +/- 40.3 microns), followed by stainless steel (103.6 +/- 57.0 microns), Teflon (115.0 +/- 30.2 microns), silicone (209.6 +/- 25.9 microns), silver (228.6 +/- 33.8 microns), and copper (unmeasurable). With the copper-plated stent, the aorta suffered severe erosion of the vessel wall, marked thrombus formation, and aortic rupture.

CONCLUSION: Gold is a useful intravascular material because it reacts only minimally with the vessel wall.

- 4) **Gold implants seem not to give problems, if patients are exposed to magnetic resonance imaging (Marra et al. 1995)** : Implanted upper eyelid gold weights are used to prevent corneal injury in patients with facial nerve paralysis. Some of these individuals require postoperative radiographic surveillance for recurrent lateral skull base disease. Magnetic resonance imaging (MRI) provides the most accurate radiologic assessment; however, there is concern about the safety of performing MRI in patients with any metallic implant. Potential risks include local tissue heating and implant migration. Gold weights of 0.8 and 1.4 g were placed in an open chamber and were exposed to a magnetic field of 1.5 T. There was no measurable motion or displacement of the weights. The results were similar in 6 rats in which gold weights were subcutaneously implanted. Additionally, histologic examination of the implant sites revealed no adverse tissue effects attributable to MRI-generated heating of the implants. When carbon steel implants in the rat model were subjected to the magnetic field, there was no displacement of the implants and no adverse tissue effects were noted, despite the fact that a carbon steel implant in an open chamber demonstrated significant migration. The absence of motion of the gold weight implants combined with the lack of adverse tissue effects suggests the relative safety of performing MRI in patients with previously placed gold weights as upper eyelid implants.
- 5) **It has been known since the end of the 19th century that pure metallic gold is oligodynamic** i.e. act antimicrobial (Muller 1985, Heurman et al. 1982).