

# METALLOSIS MIMICKING OSTEOMYELITIS FROM A FOREARM PLATE RETAINED FOR 50 YEARS

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**A forearm plate retained for 50 years was removed because an acute inflammation mimicked chronic infection. The radiographs were very confusing. During the operation metallosis was obvious. Despite the general opinion that forearm plates should be kept in place, this probably should not apply to old "historical" hardware of uncertain chemical composition.**

**Keywords :** forearm ; fracture ; osteosynthesis ; infection.

**Mots-clés :** avant-bras ; fracture ; ostéosynthèse ; infection.

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## INTRODUCTION

Metallosis is rarely a problem after plating the forearm, even with material retained for an extended period of time. However older implants can cause diagnostic problems and treatment difficulties when they remain in place too long. We report such a case.

## CASE REPORT

A 73-year-old man consulted the hand clinic for a 4-month history of painful swelling at the ulnar border of the right forearm. In 1947, at the age of 23 years, he sustained an open forearm fracture of both bones, treated with a plate and screws. For unknown reasons the plate on the radius was removed after 3 months ; the plate and screws on the ulna remained in place for 50 years without problems.

Physical examination revealed tenderness over the ulnar border of the forearm with slight swelling and elevated temperature of the underlying skin. Function of the elbow, forearm and wrist was normal. There were no systemic signs of infection ; there were no pathological lymph nodes in the axilla.

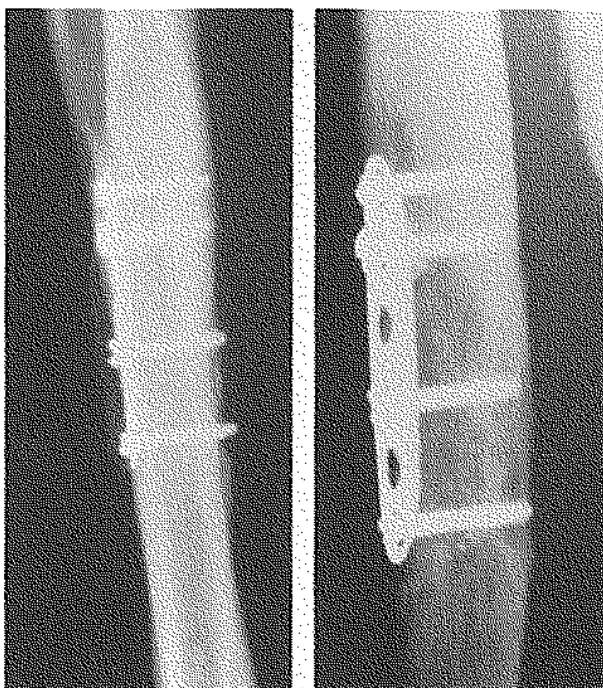
The radiographs (fig. 1) showed a healed fracture of the ulna and radius, no obvious loosening of the screws, but a periosteal reaction over the ulnar plate and alterations of the bone mineralization beneath the plate. The erythrocyte sedimentation rate was slightly elevated (17 mm/h). The other routine biochemical findings were within normal limits. These findings were thought to be related to a low-grade infection.

The forearm was explored surgically. Metallosis was present in the soft tissues surrounding the plate. The plate could easily be removed. The plate was extremely corroded (fig. 2). Intra-operative cultures were negative. The immediate follow-up was uneventful, with healing of the skin within 10 days. At 18 months follow-up, all signs and symptoms had disappeared.

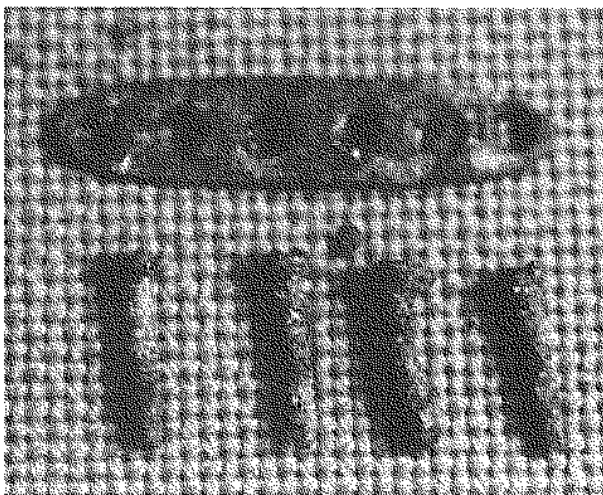
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*Fig. 1.* — Radiographs of the plate in vivo, with patchy osteoporosis, periosteal reaction and loosening of the proximal screw due to osteolysis.



*Fig. 2.* — The plate with marked corrosion.

## DISCUSSION

Plate osteosynthesis is the gold standard for the treatment of displaced forearm fractures. The decision to remove a plate after fracture healing is still

open to discussion (4). The high complication rate of the removal procedure and the fact that retaining the plate does not influence the outcome, had led to the conclusion that plates should remain in place (5). This approach is probably realistic with the modern alloys of the current implants, but older implants of obscure composition can lead to severe metallosis (6), foreign body reaction with granulation tissue and inclusion cysts. All these phenomena can cause pain, compression or secondary fracture of the involved bone. The effect of metal debris on the immune system with possible late infections, hypersensitivity reactions and even malignancies of the lymphoreticular system or adjacent tissues causes concern.

Metallosis has been described most frequently with knee and hip arthroplasties, usually because of abnormal friction (1). Other implants are rarely reported to cause disturbing metallosis, but metallic particles can be found in the surrounding tissue, even after uneventful healing of fractures or osteotomies. Acute aseptic inflammation can become apparent years after implantation (2, 3).

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## SAMENVATTING

*L. DE SMET. Metallose na een onderarm osteosyntheseplaat imiteert een acute infectie na 50 jaar.*

We beschrijven een casus waarbij de osteosyntheseplaat meer dan 50 jaar voordien geplaatst, een acute infectie imiteert. Terwijl iedereen het eens is dat onderarmplaten best worden ter plaatse gelaten, geldt dit niet voor deze „antieke legeringen”.

### RÉSUMÉ

*L. DE SMET. Métallose simulant une ostéomyélite, au niveau d'une plaque d'ostéosynthèse cubitale en place depuis 50 ans.*

L'auteur présente le cas d'un patient qui a présenté une inflammation aiguë de l'avant bras, provoquée par une réaction de métallose sur une plaque d'ostéosynthèse placée 50 ans auparavant. On considère en général que les plaques d'ostéosynthèse au niveau de l'avant-bras ne doivent pas être enlevées, mais ceci ne s'applique pas aux implants «historiques» de composition chimique incertaine.