

# **Analysis of elements in the periosteum on titanium plates and screws for internal bone fixation -6-**

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## **Abstract**

In our previous research, we made a comparative study of the elements in the periosteum on titanium plates and screw for internal bone fixation, normal periosteum, and oral mucosa by PIXE method at the time of the removal operations of the materials. From our clinical analysis, however, it was not clear when titanium dissolution started and what effect the material had when it was in the body over 16 months. To clarify the kinetics of solution of the titanium materials in the body, we performed animals experimental.

By PIXE method, we made a comparative study of the titanium elements in the periosteum on titanium plates and screws for internal bone fixation, normal periosteum, bone contacting a titanium plate or screw, oral mucosa and skin of the rabbits. The implanted time length of the materials in the body was 1, 3, 6, 12 and 24 months.

As a result of our experiments, all the rabbits showed higher concentration values in the periosteum on the materials than in the normal periosteum, oral mucosa and skin. And there were higher concentration values of titanium in bone contacting the material than in control bone.