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Japanese engineers test titanium fiber plates for fixing bone injuries

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The titanium fiber plate was issued a patent in both the United States of America and Japan.



Researchers from Shinshu University have found that, unlike conventional plates, the titanium fiber plates do not cause bone embrittlement after close contact with the bone for prolonged periods. This could eliminate the need for plate extraction and the associate surgical risks.

For the first time, patented titanium fiber plates developed by Japanese engineers for medical use were put to the test in an animal model. The titanium fiber plate was issued a patent in both the United States of America and Japan.

According the the engineers, the titanium fiber plates share a particularly important characteristic with natural bone. They both have a nearly identical measurement of stiffness, known as Young's modulus. Conventional plates have a Young's modulus four to 10 times higher than that of bone. The difference in stiffness levels can eventually causes eventual bone embrittlement as the bone and plate are in contact.

The team also tested the use of titanium fiber plates in regenerative medicine. Since the shape of the titanium fibers remains unchanged as the plates are prepared at room temperature, a unique porous environment is created throughout the plate.