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Pegasus see REX Ortho website  
<https://rexortho.com>

## **Evaluation of a two-winged removable expansion screw device intended to increase resistance to screw cut-out in patients with trochanteric hip fractures**

### **Who are the patients?**

Elderly patients who sustain a hip fracture that has more than 2 fragments (classified as unstable) and with poor bone quality who are at risk from screw fixation failure.

### **What is the problem?**

When patients break their hip joint >95% will receive an implant. The current standards of operative care are metallic screws either in combination with metal plates or intramedullary nails and these may fail due to screw cut-out in weakened bone. This screw cut-out complication is painful and disabling for these elderly patients, and usually necessitates a more expensive and more complicated second surgery. To reduce the risk of this re-operation there are several ways to increase the cut-out resistance but at present we do not have much evidence to say which is the one most likely to succeed in reducing screw cut-out

### **What is the need?**

This project is to develop a test method to compare biomaterial augmented screws with mechanically augmented standard screws in a static test model. In particular the mechanically augmented screws, which use deployable wings, should be compared with a standard screw either alone or with cement augmentation. A dynamic testing model proposal is also required.

### **What is the benefit (if problem were solved)?**

The improved ability for the combination of the implant and poor bone to bear load through to healing. This project would enable a better understanding of the comparative failure risk compared to a standard screw of: 1) cement (CaP), 2) cement (PMMA) 3) a modified "Pegasus" two winged expandable screw device

As an additional goal: can the winged version be improved by some means?

### **Wrap up**

Developing a test method to evaluate and compare the resistance to loads of the screw alone, the screw with cement augmentation and additionally the two winged Pegasus screw.

