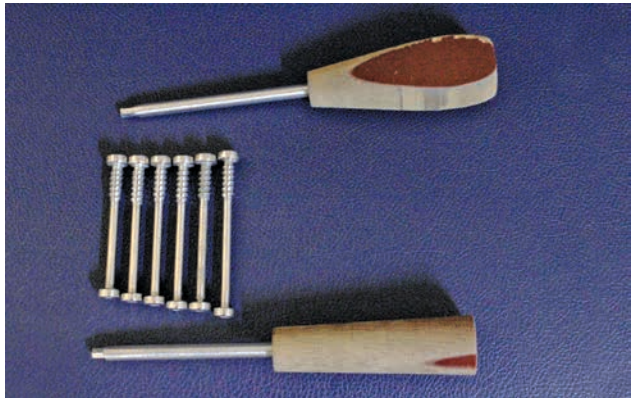
Bicondylar Compression Screw



Problem Statement: Bicondylar fractures are commonly treated using non-operative methods like plaster cast immobilisation, skeletal traction and functional cast bracing. Operative procedures of treatment include internal stabilisation of the fracture with screws alone or with a combination of plate and screws or external stabilisation with a fixator frame applied around the limb. Tibial (shin bone) fractures are one of such fractures. The researchers have addressed the need to make the operative treatment quicker and easier by developing a novel bicompression screw to be used by orthopaedic surgeons for fixing bicondylar fractures.

Uniqueness of the Solution: The proposed bicondylar compression screw, made of a biocompatible material, offers a rigid compression to the bicondylar fracture. It provides the early weight-bearing capability to the bone and early union of fractures. The novel technology provides a stable, congruent and smooth joint surface of the upper end of the tibia (shin bone) so that there is complete recovery of the knee joint function. This product can be used in all types of condylar fractures with a reduced cost compared to existing implants and screws commonly used.

Current Status of Technology: The researchers have established the proof of concept. Metal prototypes in biocompatible stainless steel material have been manufactured and tested in preclinical settings. The approximate cost of the product material and manufacturing is INR 5000.

Societal Impact: This novel bicondylar compression screw technology helps avoid the need to use multiple screws and plates to fix the fractures using operative treatment. It is beneficial and less stressful for the surgeons and patients by resulting in a reduction in the duration of surgery. The features of this technology aim at complete recovery of the knee joint function.

Patent(s): Filed

Relevant Industries: Healthcare, Medical Devices.

Faculty: Prof. Bhallamudi Ravi, Mechanical Engineering.