

edgeX INTERLOCK 1.0

ADJUSTABLE, SOPHISTICATED, INTERMEDULLARY NAIL



EDGEX INTRODUCTION

EdgeX aims to design and develop product, and goods, technology that overcomes the existing challenges and offering engineering based solutions and overall improve the consumers quality of life.



Established date: August 2020



Status: Privately owned



Achievement: Officially registered 18 products at Korean Intellectual Property Office



Award: IF Design Award 2021 for 'Little Star Traffic Light' for color-blind people

EDGEX INTERLOCK 1.0 MISSION

Registered at Korean Intellectual Property Office (KIPO)
Patent Number: 10-2225080

Millions of people suffer from the broken bones caused by injuries, falls, car accident.
In USA alone, 1.5 million long bone fracture cases occur annually

EDGEX INTERLOCK 1.0 is designed to overcome limitations current intramedullary nails are facing by enabling full control over adjustment of the **length and angle**.

Our product will enable more improve the surgery process, shorten the recovery time, and decrease the number of revision surgery.



INTRAMEDULLARY NAIL LIMITATIONS



LOCKING

Lack of modification for the locking can cause various complications.

LACK OF MODIFICATION

Limitations on the adjustment for the length and angle can cause several complications.

SUFFERING

Bone misalignment by less than 10 degrees can cause severe pain, and cause the walking abnormal.

STIFFNESS

Axial loading angular stability also significantly increased stiffness. Can result in reduced motion.

PREVISION SURGERY

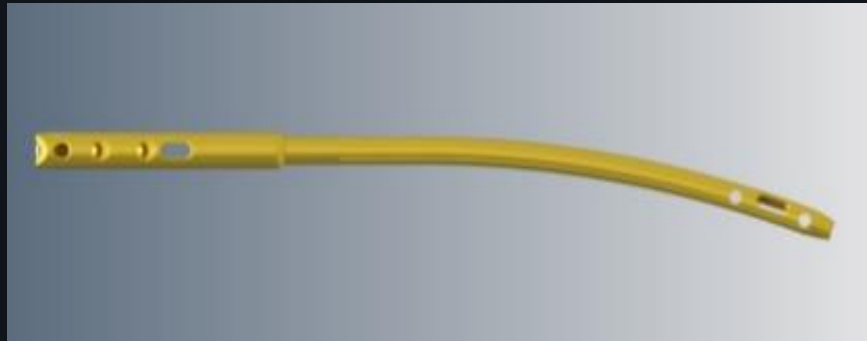
- Rotation misalignment after the nailing can be as high as 41%.
- 18% of the patient receive revision surgery due to discomfort, misalignment, rotation error etc.

Resource: Hendrickx et al., 2020



EDGE X INTRAMEDULLARY NAIL

MORE PRECISE, EASILY ADJUSTABLE, ENABLES MORE DELICATE PROCEDURE



1

- Full control over length adjustment
- Length control enables the nail to extend up to 5mm

2

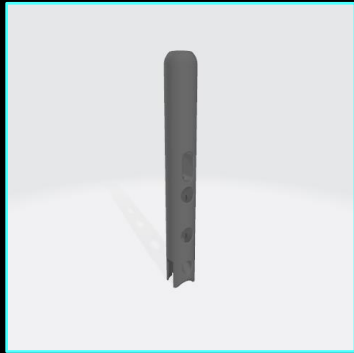
- Full control over angle adjustment
- Angle adjustment rod enable proximal slot to be adjusted by X degree

3

- Length and angle can be adjusted after the locking the cap
- Provide more safe and stable procedure



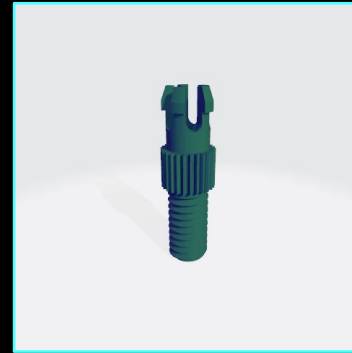
INTERLOCK 1.0 COMPONENTS'



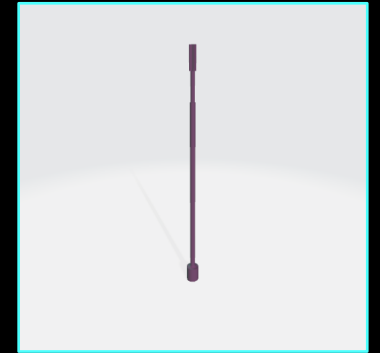
**DISTAL LOCKING
SLOT**



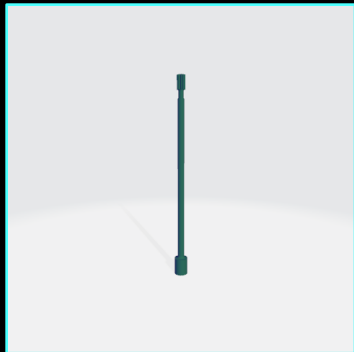
**PROXIMAL LOCKING
SLOT**



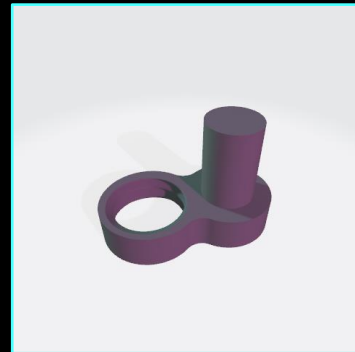
CENTER ROTATOR



**ANGLE CONTROL
ROD**



**LENGTH CONTROL
ROD**



**ANGLE CONTROL
ROD NUT**



**LENGTH CONTROL
ROD NUT**



CAP



INTERLOCK 1.0 KEY FEATURES

ANGLE ADJUSTMENT

After locking the screw angle control rod can be adjust angle of the proximal slot

LENGTH ADJUSTMENT

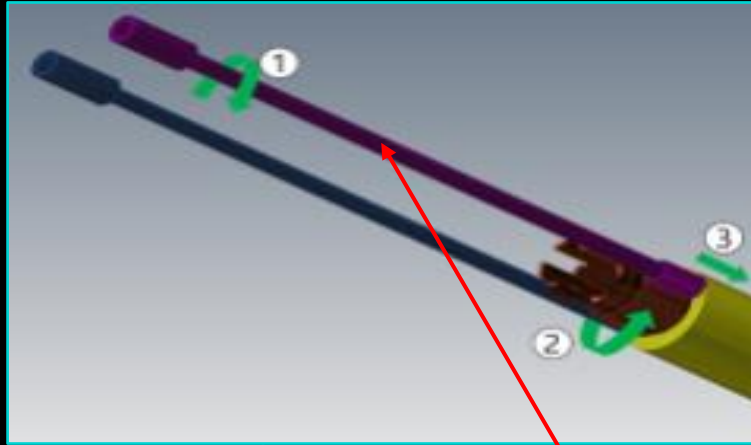
Length control rod adjusts the gap between the proximal and distal slot

DISTAL AND PROXIMAL SLOT CONTROL

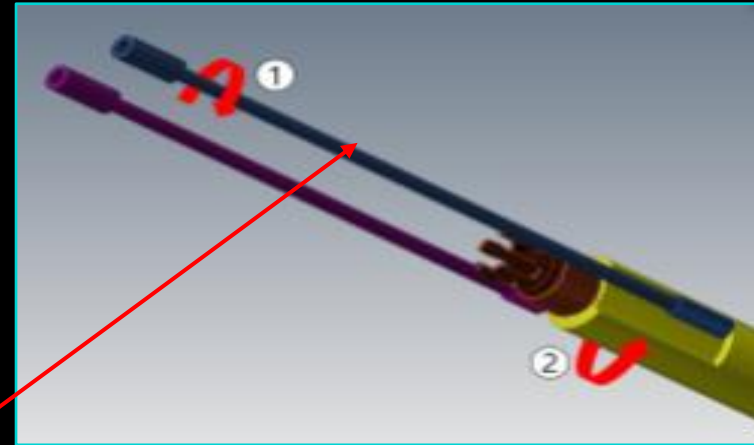
The distal and proximal slot is connected by the center rotator



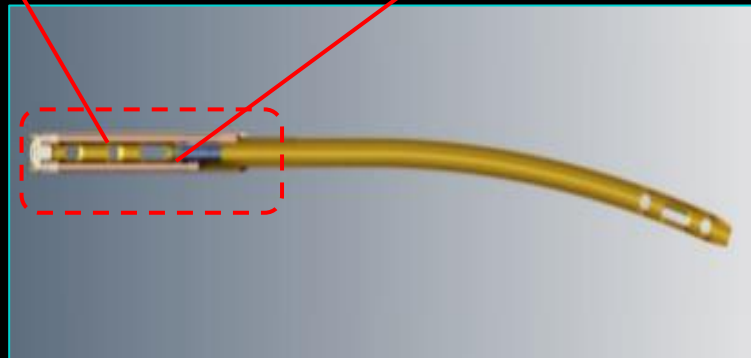
STEP BY STEP PROCESS OF ADJUSTMENT



Angle rod on the top of the nail can adjust the angle of the nail



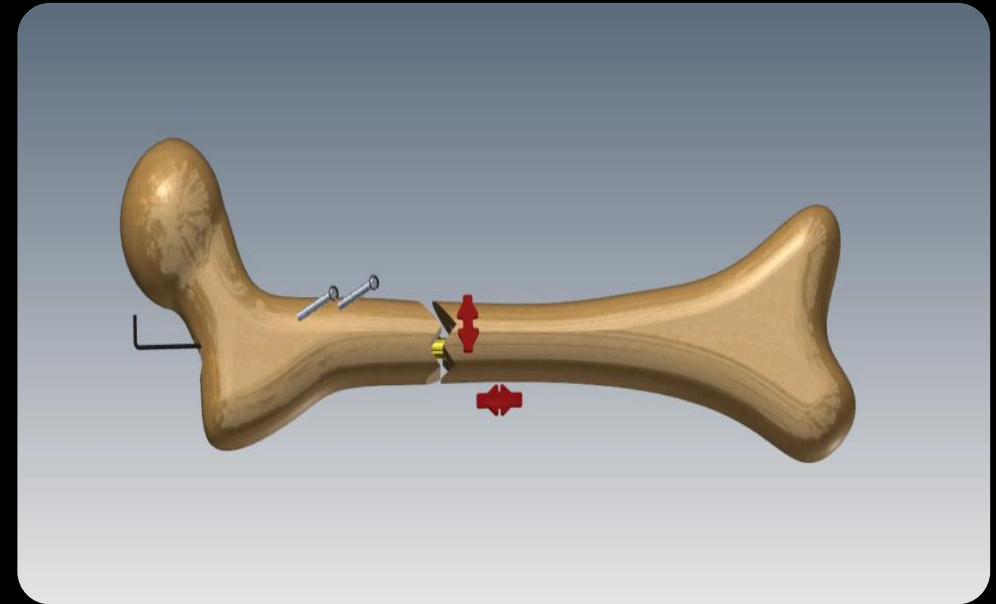
Length rod on the top of the nail can adjust the length of the nail



INTERLOCK 1.0 MECHANISM



ADJUSTABILITY



ALIGNMENT PROCESS





COMPARISON OF ONGOING INTRAMEDULLARY NAIL RESEARCH AND DEVELOPMENTS

| | EDGE X | MAYO CLINIC | GLOBUS MEDICAL | STRYKER EUROPE |
|--|---|--|--|--|
| LENGTH CONTROL | O | X | O | O |
| ANGLE CONTROL | O | O | X | X |
| LENGTH ADJUSTMENT | After locking the screws, length control rod can be adjusted enabling the nail to fit properly | X | To extend through an intramedullary canal of a long bone. The intramedullary nail comprises an elongate nail body having a proximal portion and a distal portion. An elongate adjustment rod extends through the nailbody. | The shaft comprises a central longitudinal axis, an outer surface extending in a longitudinal direction and in a circumferential direction, wherein the recess is formed in the outer surface of the nail shaft. |
| ANGLE ADJUSTMENT | After locking the screws, angle control rod can be used to adjust angle degree of the proximal locking slot | Push the distal nail by the 1 st axis and adjust the angle by rotating the 1 nd axis. After adjustment, turn the 1 st axis again to pull the distal nail close to the proximal nail | At least one anchor configured to extend at an angle transverso to the intramedullary nail. | The adjustment screw may further be adapted to adjust an angle between the central longitudinal axis of the nail shaft and the expansion element |
| CORRECTION FOR THE DISTAL AND PROXIMAL SLOT | The central rotation allows easy adjustment for the both length and angle control | Proximal nail goes into the outside cover and then it is going to connect with the distal nail by the nut | Enhanced Locking once expanded. May not require additional incisions to achieve distal locking and may provide more robust proximal locking of the intramedullary nail. | |



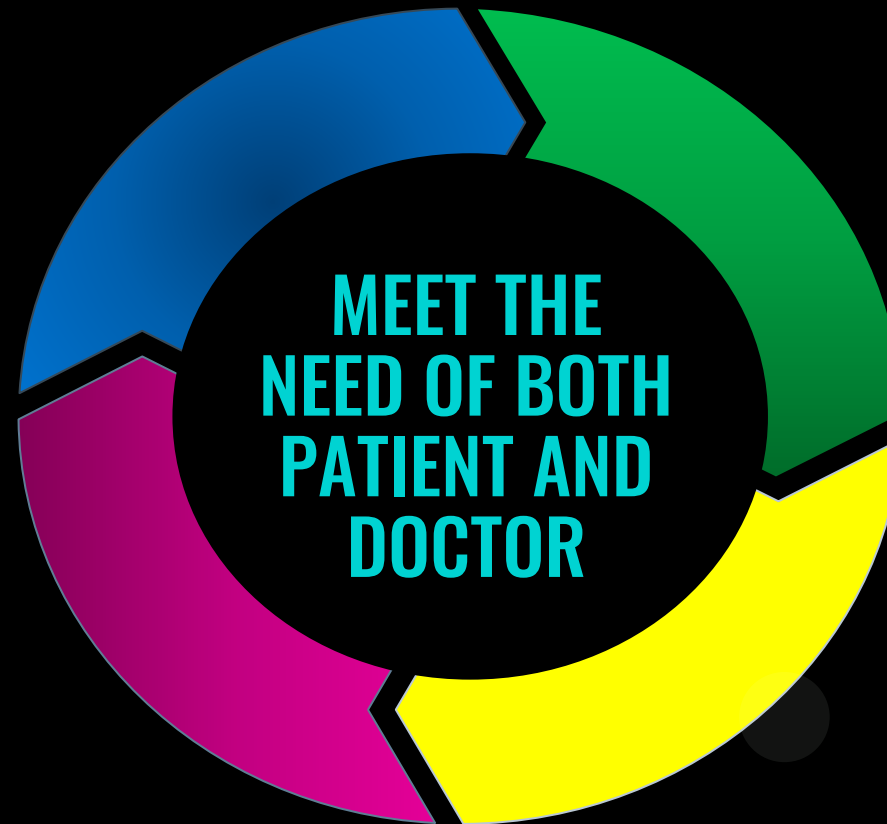
EDGEX INTERLOCK 1.0 ADVANTAGES

REDUCE IN PAIN

The main limitation of interlock nails surgery among patients is pain and discomfort caused by misalignment and rotation error. By enabling the intramedullary nail to be adjustable, permanent chronic pain and injury can be prevented.

SHORTEN THE OPERATION TIME

Rotating the intramedullary nail to the given position takes an extensive amount of time. Control over the length and angle even after tightening the screws will shorten the operation time.



SPEED UP THE RECOVERY

Full control over the length and angle of the intramedullary nail can decrease rotation error. Consequently, shorten the recovery time.

LESS REVISION SURGERY

Adjustable nail moves alignment easier and faster hence enhancing the success rate of the surgery. As a result, it will decrease the probability of revision surgery.



**WE AIM TO ADVANCE AND
BRING A CHANGE IN
INTRAMEDULLARY NAIL
DEVELOPMENT**

