

GUNZE



**For Rib
and Sternum
Fixation**

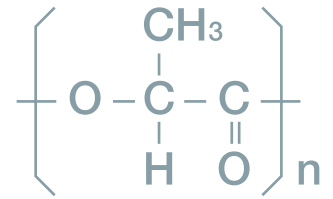


GRAND FIX™

Bioabsorbable Bone Fixation Devices

Characteristics

GRAND FIX™ is bioabsorbable bone fixation devices consist of poly-L-lactic acid (PLLA) . GRAND FIX™ is gradually degraded upon hydrolysis and absorbed in the human body.



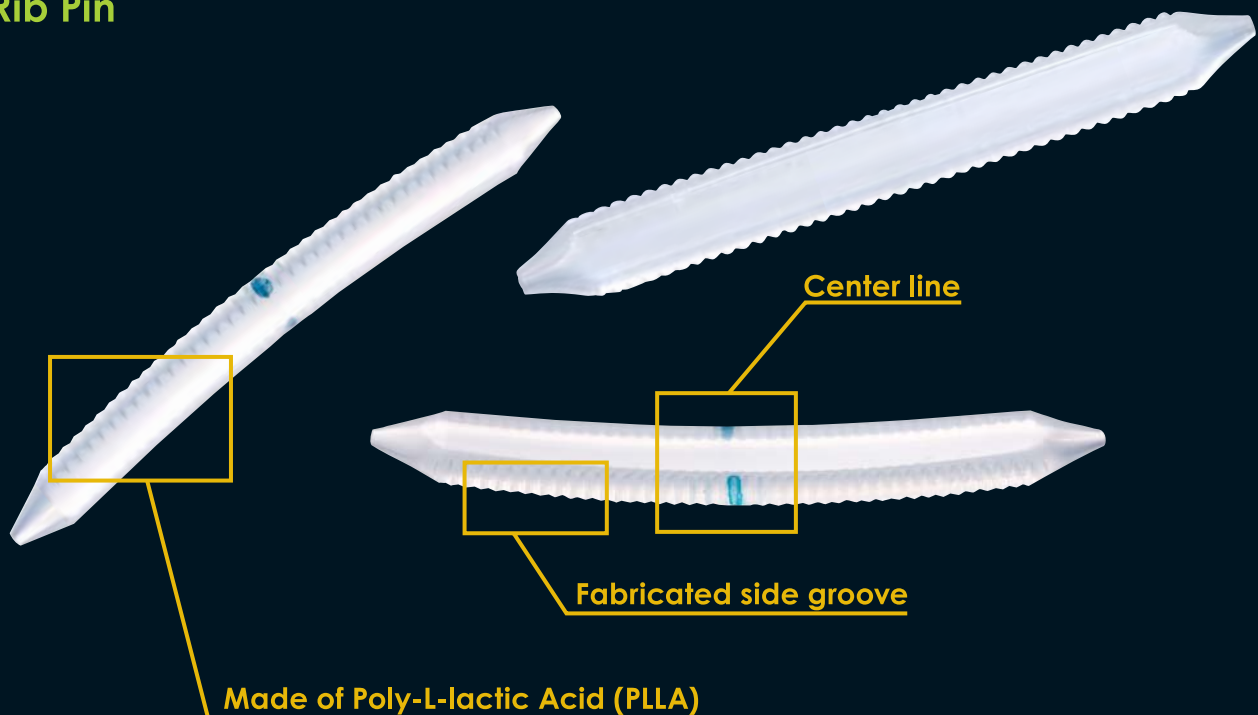
Stabilizing the internal fixation by GRAND FIX™ to your chest closing method, it enables to prevent joint surface of the divided sternums or ribs from separating.

References:

Tatsumi A. et al., Annals of Thoracic Surgery, 1999, 67, 765-768

Usage

Rib Pin

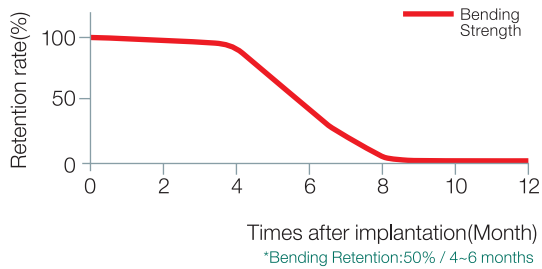


Bioabsorbability

Bioabsorbability

Bending Strength Retention

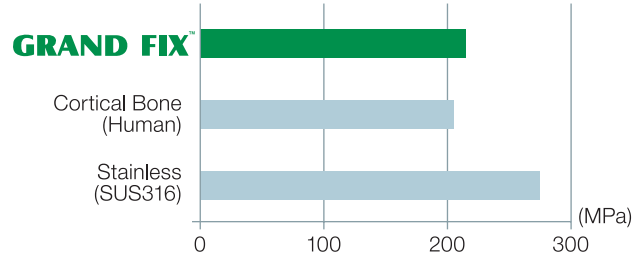
GRAND FIX™ is gradually degraded upon hydrolysis in the human body. Reoperation for GRAND FIX™ removal is no necessary because of its absorbance after healing of the joint portion.



Strength

Bending Strength

Bending strength comparable to or higher than that of living bones (cortical bones) at the initial stage of implantation.

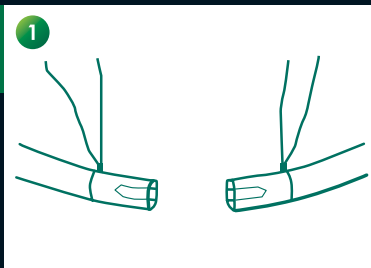


Instruction

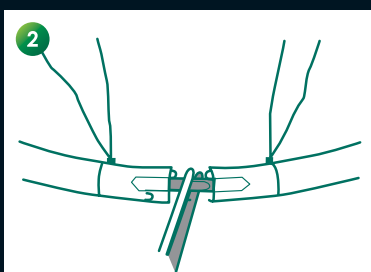
1 Osteotomy

Restoration and fixation of the rib or sternum bone resected for enlargement of the surgical field in thoracotomy

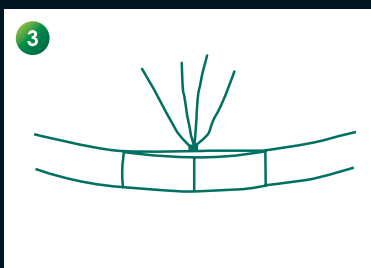
2 Osteosynthesis



Tie the rib with a suture about 2cm left from the end of rib. Make holes in the end of rib as deep as 1/3 of the length of GRAND FIX™ by scratching the marrow with the specific sizer. (The hole should be smaller than GRAND FIX™.) Decide the product size correctly by measurement using the special sizer.

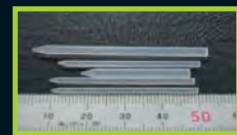


Insert GRAND FIX™ into the holes of ribs, holding the center of GRAND FIX™ with specific clamp. (Green marker should be positioned central.)

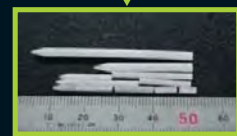


Stick both ends of ribs, draw the sutures and ligate each other. In case that it is hard to stick both ends, use a wire and so on together to support.

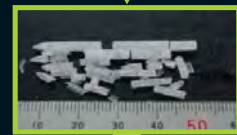
Degradation of PLLA pin in buffer solution



After 2 months



After 10 months

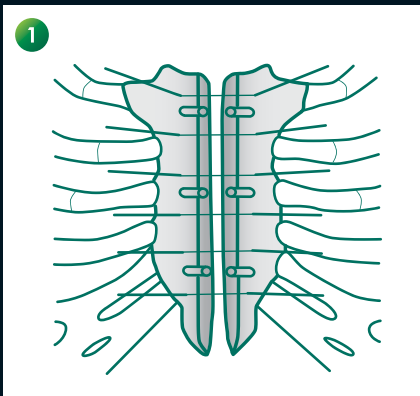
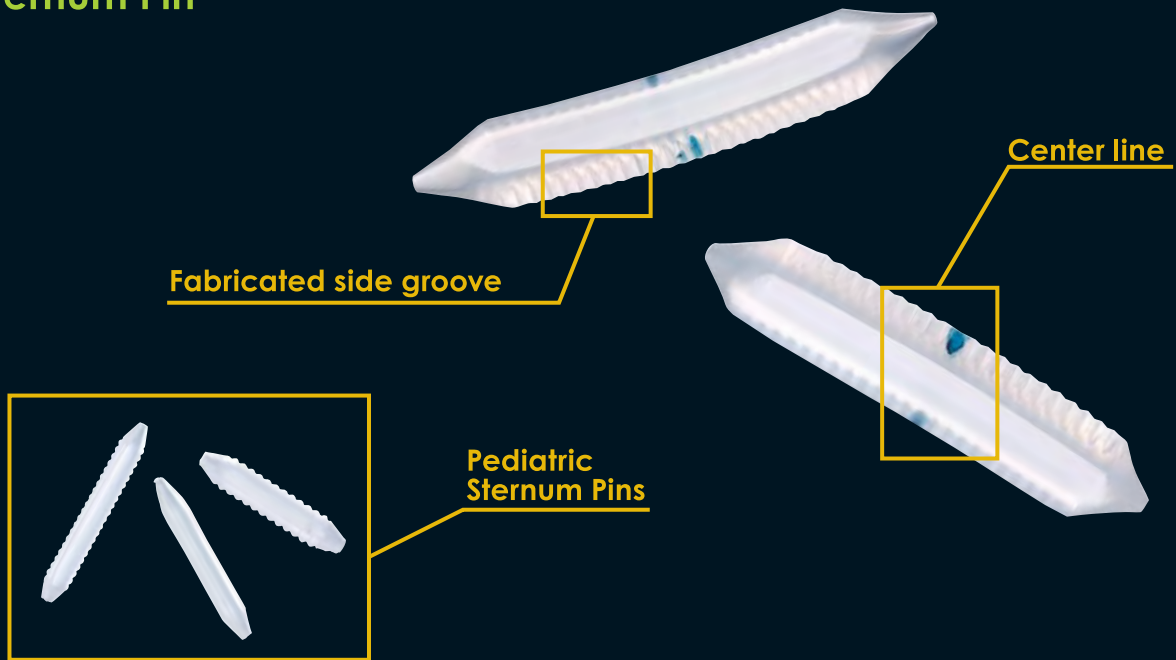


After 21 months

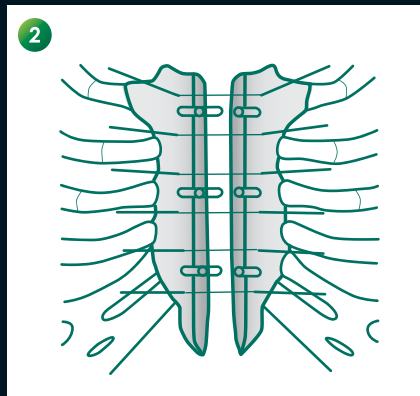


After 30 months

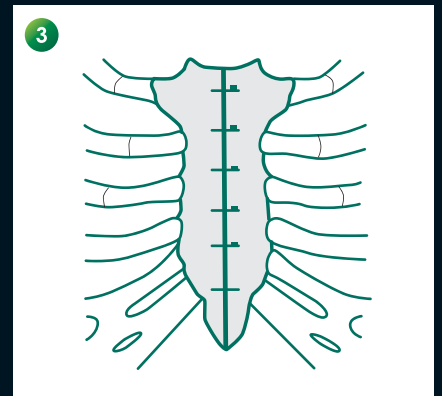
Sternum Pin



1 Hang several wires to both sides of the cut sternum.
Make holes in the both sides of the cut sternum by scratching the marrow with the specific reamer. If you need, use the specific sizer to expand holes.
(The holes should be made smaller than GRAND FIX™.)



2 Decide the product size by measurement using specific sizer.
Insert GRAND FIX™ into the holes of sternum, holding the center of GRAND FIX™ with a specific clamp.



3 Draw and stick both the sides of sternum, and tie with the wires.

GUNZE

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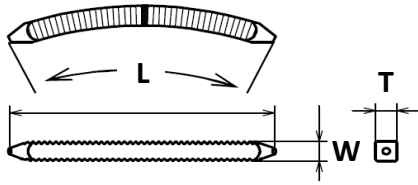
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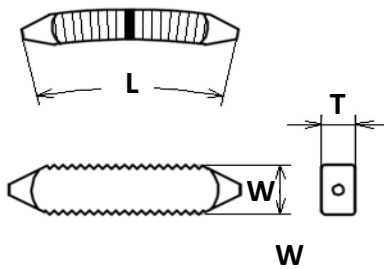
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Rib Pin



Product Code	L (mm)	W (mm)	T (mm)
RA-2722	27	2	2
RA-2732	27	3	2
RA-2733	27	3	3
RA-2743	27	4	3
RA-3432	34	3	2
RA-3433	34	3	3
RA-3443	34	4	3
RA-3833	38	3	3
RA-3843	38	4	3

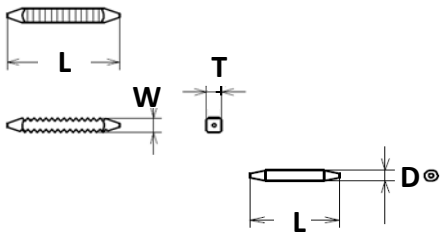
Sternum Pin



Product Code	L (mm)	W (mm)	T (mm)
BA-1533*	15	3	3
BA-1833*	18	3	3
BA-2033*	20	3	3
BA-2333*	23	3	3
BA-2053	20	5	3
BA-2353	23	5	3
BA-2753	27	5	3

* Straight Pin

Pediatric Sternum Pin



Product Code	L (mm)	W (mm)	T (mm)
BBS-1022**	10	2	2
BBS-1522**	15	2	2

Product Code	L (mm)	D (mm)
BPD-1510**	10	1.5

** No Centerline Pin

GRAND FIX™ Surgical Instrument

Specific Clamp Product Code	Application
GFCL015C★	D=0.15mm Pin
GFCL02C★	T=2mm Pin
GFCL02	T=2mm Pin
GFCL03	T=3mm Pin

Specific Reamer Product Code	Application
GFRM015L★	D=0.15mm Pin
GFRM32S	T=2mm Pin

Specific Sizer Product code	Application (W x T)
GFSZ22S★★	2mmx2mm Pin
GFSZ22	2mmx2mm Pin
GFSZ32	3mmx2mm Pin
GFSZ33	3mmx3mm Pin
GFSZ33R*	3mmx3mm Pin
GFSZ43	4mmx3mm Pin
GFSZ53	5mmx3mm Pin

★ For Pediatric Sternum Pin

* For straight Pin