

INVENTOR



Prof. Won Moon D.M.D. M.S

Dr. Won Moon is the Founder of the Moon Principles Institute (“the MoonLab”) and a Co-founder of BioTech Innovation. He served as the Thomas R. Bales Endowed Chair in Orthodontics for the orthodontic residency program at UCLA School of Dentistry (2013-2020), and he currently holds two academic positions: Full-Professorship at Aju University, and Adjunct Professorship at Forsyth Institute. He has been a Diplomate of the American Board of Orthodontics since 2002. He completed his dental education at Harvard and orthodontic education at UCLA. He studied mathematics prior to dentistry, and his research topics include 3D image analysis utilizing surface mapping functions and Elliptical Fourier’s Descriptors, Genomewide Association Study of Craniofacial Phenotypes, Finite Element Model (FEM) Development and Simulation, Applications of 3D Printing in Orthodontics, Orthopedic Correction, Airway Changes with Orthopedic Corrections, Accelerated Tooth Movement, Micro-implant (MI) Design study, Digital Workflow, and Aligner System Development.

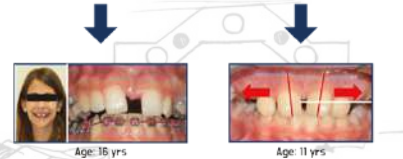
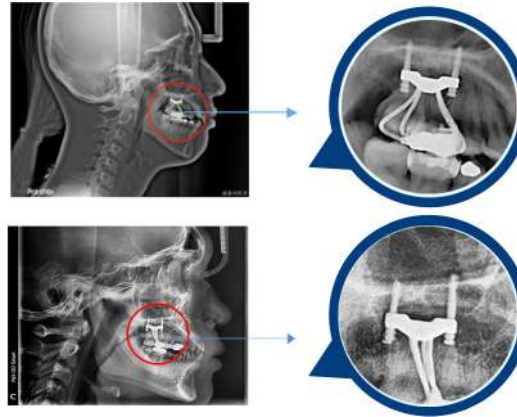
His work has been published in various journals, not necessarily limited to orthodontics because of his physical science background, and he is a co-author of six textbooks. He has presented these findings in 37 countries, totaling over 450 presentations. He received multiple research grants during his tenure at UCLA, including the Groundbreaking Research Project Grant Award in 2014. Besides the numerous research and presentation awards over the years, he has received the “Faculty of the Year Award” more times than anyone at UCLA Orthodontic Program, and he was the recipient of the “Lifetime Achievement and Faculty Dedication/Excellence Award” in 2019. His current focus has been establishing protocols for orthopedic corrections with MI, improving the airway for patients with nasal obstruction, creating virtual patients utilizing image analysis and FEM, and developing a novel Moon Aligner System.

His interest in mid-facial expansion began in 2004 as micro-implant became available in the USA, and he is responsible for developing Maxillary Skeletal Expander (MSE), a unique micro-implant assisted rapid palatal expander (MARPE). He has been active in advocating non-surgical skeletal expansion in both children and adult patients, especially for those who may suffer from airway restrictions. His presentation in MSE has been widely accepted internationally, and numerous peer-reviewed publications are available.

Article



CLINICAL CASE



BioMaterials America, Inc.

20280 S. Vermont Ave.
Suite#200 Torrance, CA 90502
TEL : 213-618-8725
andybma@gmail.com

BioMaterials Korea, Inc.

#506, 55 Digital-ro 34-gil,
Guro-gu, Seoul 08378, Korea
TEL : +82-2-2025-0726
info@biomk.com
www.biomk.com
www.moonmse.com



Facebook



User Group



Youtube

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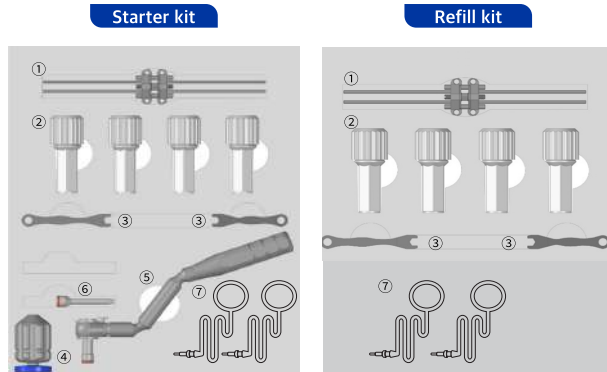
Maxillary Skeletal Expander

Invented by Prof. Won Moon
UCLA School of Dentistry



BIOMATERIALS KOREA

COMPONENTS

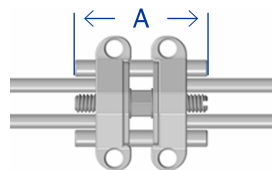


Components

- ① **MSE Expander** (Available expansion sizes : 8mm, 10mm & 12mm)
Choose an expander size according to a width of patient's palatal vault
- ② **Micro Implant(M.I.)** (Ø 1.8mm X 11mm & 13mm Lengths are available)
Choose M.I length according to the thickness of patient's palatal bone
- ③ **2 Activation Keys** (1 Short & 1 Long)
- ④ **Mini Hand Driver**
Use with initial insertion of M.I placement
The best way is to use Mini Hand Driver for initial
- ⑤ **Ratchet Wrench Driver**
Inserting and Removing M.I
- ⑥ **Short Engine Blade (Shaft)**
Attach to Mini Hand Driver
- ⑦ **Safety Leashes**
With ③ activation key

PRODUCT SPECIFICATION

Expander Size



MSE	8mm	10mm	12 mm
A	14.1mm	16.1m	18.1mm

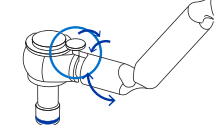
HOW TO USE COMPONENTS

Mini Hand Driver + Short Engine Blade

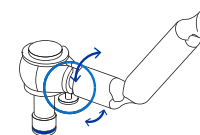
- 1 MHD and SEB
- 2 Insert a blade into the mini hand driver hole
- 3 Rotate the Blade until going through the MHD
- 4 Place M.I same as a picture
- 5 To separate the SEB and MHD, Press the blue button on the MHD

Ratchet Wrenches

Max. Insertion Torque : 80Ncm



The button on the Top :
Locking direction

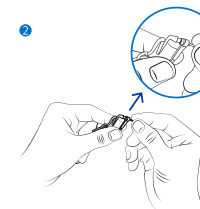
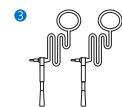


The button on the bottom :
Releasing direction

Safety Leash + Activation Key

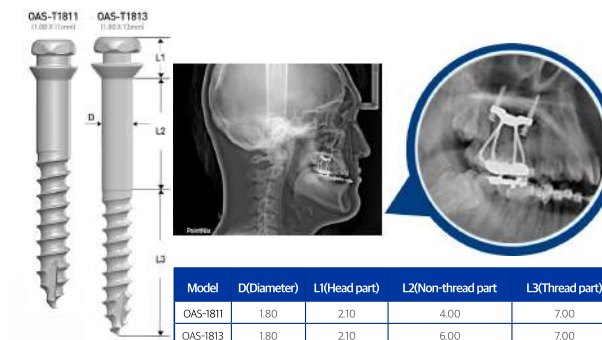


Activation Key & Safety Leashes



Pass through the key hole

MINI SCREW



LAB WORK



Less than 1mm space between palatal vault and the expander
Keep at least 3mm space between supporting arms and soft tissue in order to prevent tissue impingement

Soldered arms to the molar bands are intended as a guide for proper MSE placement

Even if the Mid-Palatal suture line is not in the middle, MSE must be placed vertically from the Mid-Line of the maxilla

INSERTION M.I.



* [Manual Driver]_MHD + SEB

* [Manual Driver]_RW

The inventor recommends to use the manual driver for placing M.I Because You can feel insertion torque and Bi-Cortical engagement as well.

If you use motor driver, You can't feel insertion torque and bi-cortical engagement.

Please don't insert the TAD too tightly because MSE body will be bent by strong pressures or forces.

ACTIVATION PROTOCOL

Caution : There could be situation when the hexagonal nut is not able to turn by the activation key In this case, stop activation for max 3 weeks for bone regeneration

MSE II



6 Turns ≈ 0.8mm (1 revolution)
ex) MSE II - 12 means to expand 12mm, Max. 90 turns

Early teens	6X / week (0.80mm / week)
Late teens	2X / day (0.27mm / day)
Early to Mid-20's	4-6X / day (0.53-0.80mm / day)
Older	Min. 4-6X / day
After Diastema	2X / day (0.27mm / day)