Inventor Conference 2020

科妍生物科技股份有限公司
SciVision Biotech Inc.

Dr. Chun Chang Chen
Project Manager | R&D Dept

Disclaimer

This slide contains our business prospect, financial condition and sales prognosis which are derived from our existing internal/external data analysis. The actual result of operations may differ from the expressed or implied in these forward-looking statements due to various reasons, including but not limited to price fluctuation, competition, global economic condition, exchange rate fluctuation, market demand or other risks that beyond our control. The forward-looking statement in this release reflect the current belief of SciVision at this point and SciVision undertakes no obligation to update these statements with new information or future events.

Outline

1. Company & Product &Technology Overview

2. Business Operation

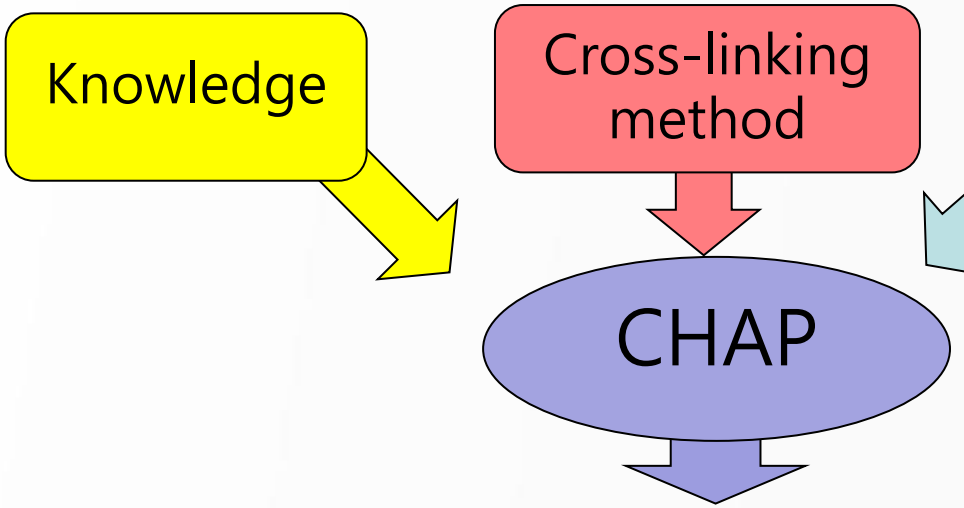
About SciVision

- Established in 2001
- Listed on TSE in 2013 (Code: 1786)
- Located in Kaohsiung Export Processing Zone, Taiwan
- Professional in Hyaluronic Acid medical device production
- Factory covers an area of 19,781.85 ㎡ (5,984 Taiwanese ping)
- Follow to ISO 13485, GMP, US FDA and PIC/s GMP standards
- Produces 12 million syringes of medical device annually

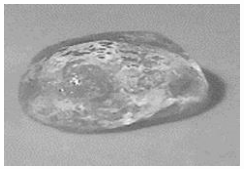
SciVision Biotech Inc.

Core Technology

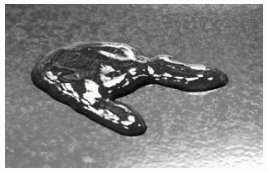
(Crosslinked Hyaluronic Acid Platform, CHAP®)



CHAP technology can be widely used on producing crosslink HA products.

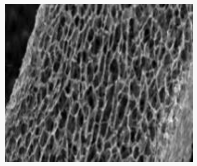


Absorbable adhesion barrier



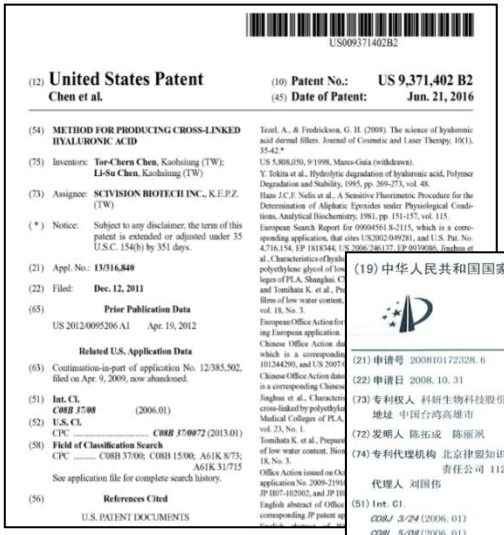
Single-injection viscosupplement

Dermal filler



Other applications

Strong worldwide IPR for CHAP



US009371402B2

(12) **United States Patent**
Chen et al.

(10) **Patent No.: US 9,371,402 B2**
(45) **Date of Patent: Jun. 21, 2016**

(54) **METHOD FOR PRODUCING CROSS-LINKED HYALURONIC ACID**

(75) Inventors: **Tor-Chern Chen**, Kaohsiung (TW); **Li-Su Chen**, Kaohsiung (TW)

(73) Assignee: **SCIVISION BIOTECH INC.**, K.E.P.Z. (TW)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 351 days.

(21) Appl. No.: **13/316,840**

(22) Filed: **Dec. 12, 2011**

(65) **Prior Publication Data**

US 2012/0095206 A1 Apr. 19, 2012

Related U.S. Application Data

(63) Continuation-in-part of application No. 12/385,502, filed on Apr. 9, 2009, now abandoned.

(51) **Int. Cl.**
C08B 37/08 (2006.01)

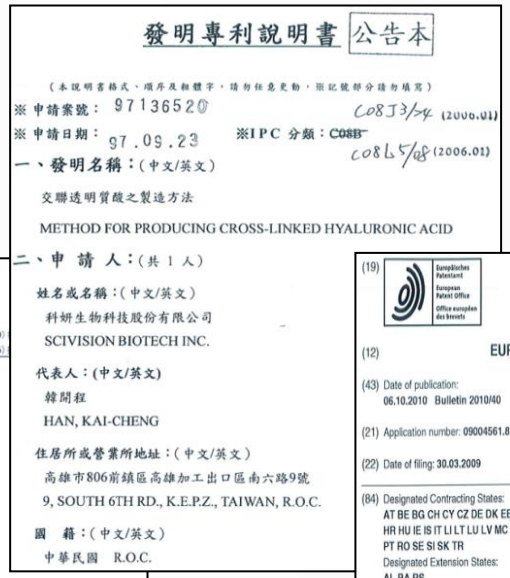
(52) **U.S. Cl.**
CPC ***C08B 37/0072*** (2013.01)

(58) **Field of Classification Search**
CPC C08B 37/00; C08B 15/00; A61K 8/73; A61K 31/715
See application file for complete search history.

(56) **References Cited**

U.S. PATENT DOCUMENTS

United States



發明專利說明書 公告本

（本說明書格式、順序及粗體字，請勿任意更動，※記號部分請勿填寫）

※ 申請案號： 97136520 C08J 3/24 (2006.01)

※ 申請日期： 97.09.23 ※IPC 分類： ~~C08B~~ C08L 5/08 (2006.01)

一、發明名稱：（中文/英文）

交聯透明質酸之製造方法

METHOD FOR PRODUCING CROSS-LINKED HYALURONIC ACID

二、申 請 人：（共 1 人）

姓名或名稱：（中文/英文）

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SCIVISION BIOTECH INC.

代表人：（中文/英文）

韓開程

HAN, KAI-CHENG

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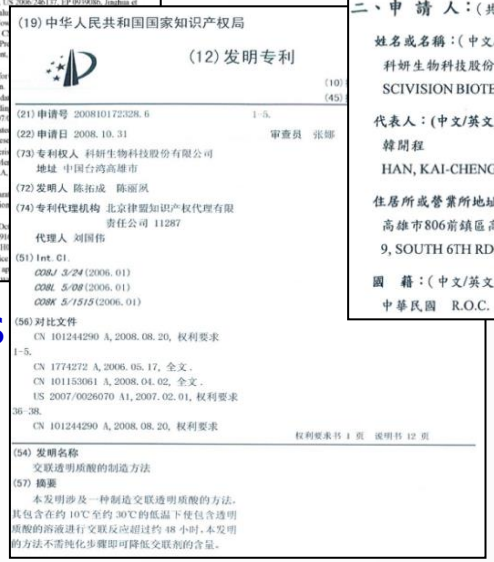
國 籍：（中文/英文）

中華民國 R.O.C.

Taiwan



(19) 中华人民共和国国家知识产权局

(12) 发明专利

(21) 申请号 200810172328.6

(22) 申请日 2008.10.31

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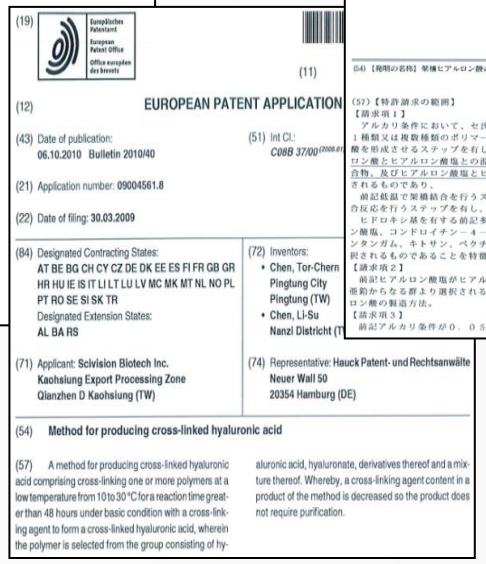
(51) Int. Cl.
C08J 3/24 (2006.01)
C08L 5/08 (2006.01)
C08K 5/1515 (2006.01)

(56) 对比文件
CN 101244290 A, 2008.08.20, 权利要求 1-5.
CN 1774272 A, 2006.05.17, 全文.
CN 101153061 A, 2008.04.02, 全文.
US 2007/0026070 A1, 2007.02.01, 权利要求 36-38.
CN 101244290 A, 2008.08.20, 权利要求

(54) 发明名称
交联透明质酸的制造方法

(57) 摘要
本发明涉及一种制造交联透明质酸的方法，其包含在约 10℃至约 30℃的低温下使包含透明质酸的溶液进行交联反应超过约 48 小时，本发明的方法不需纯化步骤即可降低交联剂的含量。

China



(19) Europäisches Patentamt / European Patent Office / Office européen des brevets

(11)

(12) **EUROPEAN PATENT APPLICATION**

(43) Date of publication:
06.10.2010 Bulletin 2010/40

(51) Int Cl.:
C08B 37/00 (2006.01)

(21) Application number: **09004561.8**

(22) Date of filing: **30.03.2009**

(84) Designated Contracting States:
AT BE BG CH CY CZ DE DK EE ES FI FR GB GR HR HU IE IS IT LI LT LU LV MC MK MT NL NO PL PT RO SE SI SK TR
Designated Extension States:
AL BA RS

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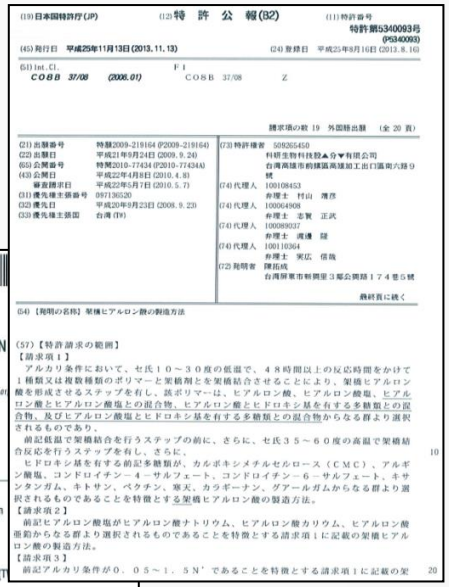
(54) **Method for producing cross-linked hyaluronic acid**

(57) A method for producing cross-linked hyaluronic acid comprising cross-linking one or more polymers at a low temperature from 10 to 30 °C for a reaction time greater than 48 hours under basic condition with a cross-linking agent to form a cross-linked hyaluronic acid, wherein the polymer is selected from the group consisting of hyaluronic acid, hyaluronate, derivatives thereof and a mixture thereof. Whereby, a cross-linking agent content in a product of the method is decreased so the product does not require purification.

Europe



(19)日本国特許庁(JP)　(12)特 許 公 報(B2)　(11)特許番号
特許第5340093号
(P5340093)

(45)発行日 平成25年11月13日(2013.11.13)　(24)登録日 平成25年8月16日(2013.8.16)

(51)Int.Cl.
C08B 37/08 (2006.01)
F I
C08B 37/08 Z

請求項の数 19　外国特許出願　(全 20 頁)

(21)出願番号 特願2009-219164 (P2009-219164)
(22)出願日 平成21年9月24日 (2009.9.24)
(65)公開番号 特開2010-77434 (P2010-77434A)
(43)公開日 平成22年4月8日 (2010.4.8)
審査請求日 平成22年5月7日 (2010.5.7)
(31)優先権主張番号 097136520
(32)優先日 平成20年9月23日 (2008.9.23)
(33)優先権主張国 台湾 (TW)

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最終頁に続く

(54)【発明の名称】架橋ヒアルロン酸の製造方法

(57)【特許請求の範囲】
【請求項１】
アルカリ条件において、セ氏１０～３０度の低温で、４８時間以上の反応時間をかけて１種類又は複数種類のポリマーと架橋剤とを架橋結合させることにより、架橋ヒアルロン酸を形成させるステップを有し、該ポリマーは、ヒアルロン酸、ヒアルロン酸塩、ヒアルロン酸とヒアルロン酸塩との混合物、ヒアルロン酸とヒドロキシ基を有する多糖類との混合物、及びヒアルロン酸塩とヒドロキシ基を有する多糖類との混合物からなる群より選択されるものであり、
前記低温で架橋結合を行うステップの前に、さらに、セ氏３５～６０度の高温で架橋結合反応を行うステップを有し、さらに、
ヒドロキシ基を有する前記多糖類が、カルボキシメチルセルロース（ＣＭＣ）、アルギン酸塩、コンドロイチン－４－サルフェート、コンドロイチン－６－サルフェート、キサンタンガム、キトサン、ペクチン、寒天、カラギーナン、グアールガムからなる群より選択されるものであることを特徴とする架橋ヒアルロン酸の製造方法。
【請求項２】
前記ヒアルロン酸塩がヒアルロン酸ナトリウム、ヒアルロン酸カリウム、ヒアルロン酸亜鉛からなる群より選択されるものであることを特徴とする請求項１に記載の架橋ヒアルロン酸の製造方法。
【請求項３】
前記アルカリ条件が０．０５～１．５Ｎであることを特徴とする請求項１に記載の架

Japan

Important strategic partner

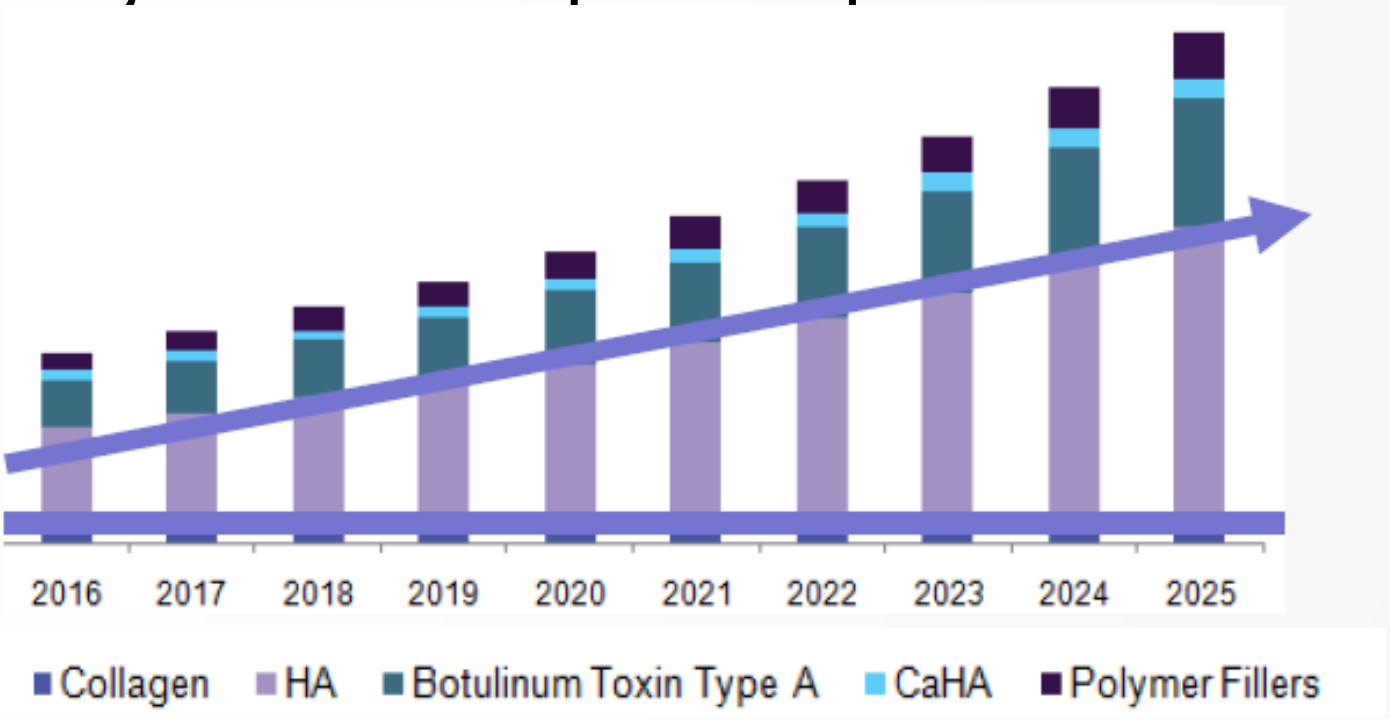
Listed products of SciVision

Application field	Items	Global market value in 2019	CAGR
Facial Aesthetics	Dermal Filler	1.7 billion	9.0 %
Geriatrics Care	Viscosupplement	2.2 billion	6.1 %
Surgery	Adhesion Barrier	3 billion	8.9 %

source :
1. Facial Aesthetics (Botulinum Toxin, Dermal Fillers), GlobalData
2. Hyaluronic Acid Viscosupplementation | Medtech 360 | Market Analysis | Global | 2019 , DRG
3. ANTI-ADHESION PRODUCTS 2012, Global Industry Analysts, Inc.

Microplastic selection

Hyaluronic acid dermal filler is the market's highest microplastic product



資料來源：Facial Injectables Market Analysis By Product (Collagen, Hyaluronic Acid, Botulinum Toxin Type A, Calcium Hydroxylapatite, Polymer Fillers), By Application (Aesthetics, Therapeutics), By Region, And Segment Forecasts, 2018 - 2025

Smooth gel vs Particle type

Hyaluronic acid Dermal Filler can be divided Monophasic Fillers (Smooth gel) and Biphasic Fillers (Particle type) according to the colloidal form of the product. The products represented by each are Juererm of Allergan and Restylane of Galderma.

Allergan's Juvederm and Galderma's Restylane are also the two leading products in the hyaluronic acid Dermal Filler market.

Monophasic Fillers (Smooth gel) – Allergan Juvederm

Biphasic Fillers (Particle type) – Galderma Restylane

Dermal Filler

Monophasic Fillers (Smooth gel)

Biphasic Fillers (Particle type)

Medical conference booth

Dermal Filler

HYADERMIS/ FACILLE

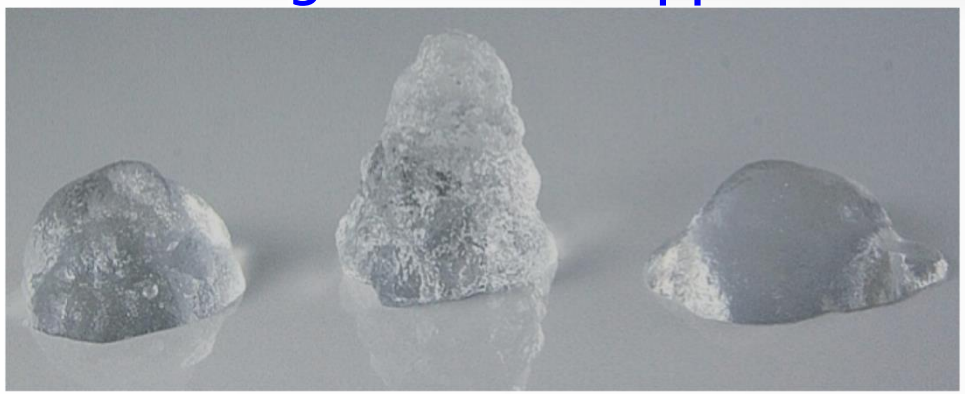
(Particle type)

Advantage

- ✓ High safety performance
- ✓ Strong structural support
- ✓ Shift resistance
- ✓ Lasting effect

Proof of advantage

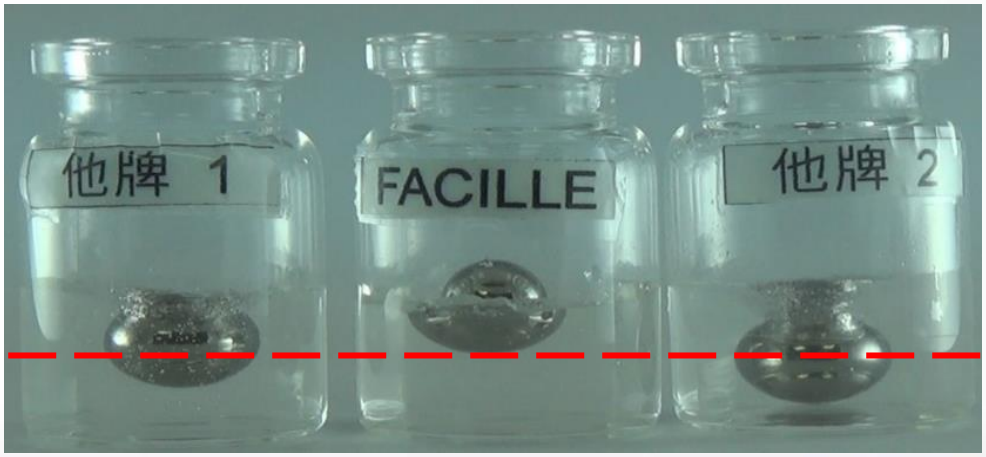
Strong structural support



Competitor 1 FACILLE Competitor 2

Before After

Shift resistance



Before After

Dermal Filler

ANIMERS
(smooth gel)

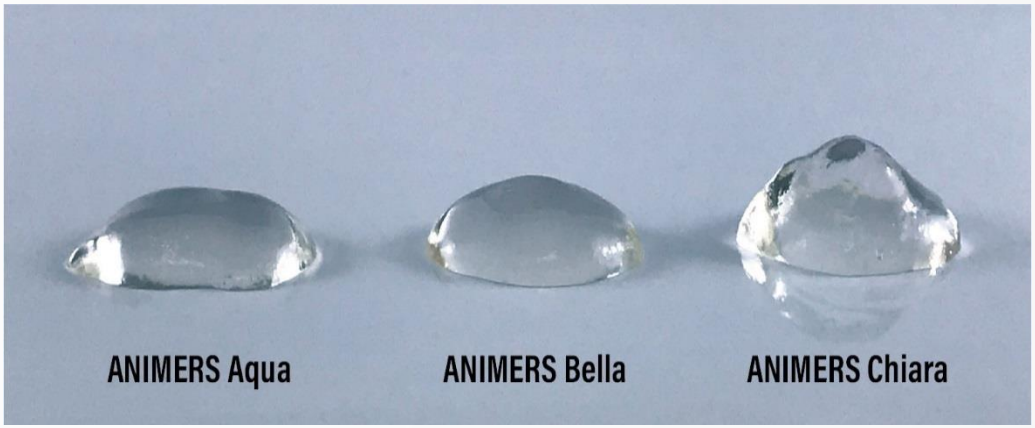
Advantage
- ✓ High security
- ✓ Smooth and natural
- ✓ Easy operation

Monophasic Fillers (Smooth gel)

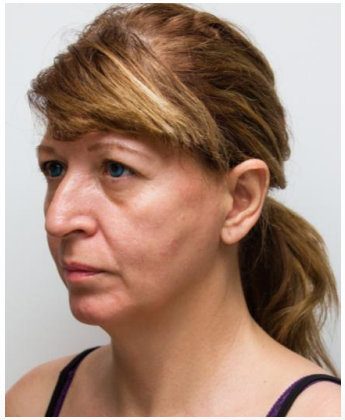
Dermal Filler

ANIMERS
(smooth gel)

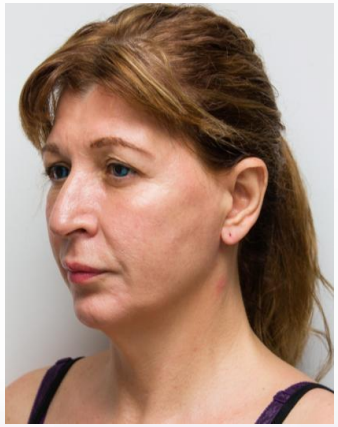
Advantage
- ✓ High security
- ✓ Smooth and natural
- ✓ Easy operation



Before



After



Publication of clinical study

Journal of Cosmetics, Dermatological Sciences and Applications, 2016, 6, 1-8

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blished Online March 2016 in SciRes. http://www.scirp.org/journal/jcdsa
p://dx.doi.org/10.4236/jcdsa.2016.61001

A Guide to Cheek Augmentation: Single-Point Deep Injection of Hyaluronic Acid Filler at Midface in Close Proximity to Medial Suborbicularis Oculi Fat (SOOF) Area

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[2]Department of Dermatology, Shin-Kong Wu Ho-Su Memorial Hospital, Taiwan
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Received 17 December 2015; accepted 1 January 2016; published 4 January 2016

Abstract

Loss of volume in midface can result in an aged, wasted appearance. Osseous and fat atrophy with aging may further contribute to the loss of soft tissue support and midface ptosis. In the aging of periorbital area and midface, fat atrophy occurs mostly in the suborbicularis oculi fat (SOOF) area. The authors proposed that injection of hyaluronic acid (HA) filler to support the SOOF area could counteract the aging sign due to fat atrophy, restore volume loss and achieve a more youthful appearance. The authors described the treatment of 10 female patients who received CHAP[®]-particle hyaluronic acid (CHAP[®]-HA) injections for cheek augmentation, using single-point deep injection technique at midface in close proximity to SOOF area. Such approach provides satisfactory cheek augmentation results without significant complications. The authors discussed a rationale for their choice of dermal filler and provided an injection technique for restoring volume in the midface region with CHAP[®]-HA. Such technique is relatively quick to perform, have little down time, and result in a high rate of patient satisfaction.

Keywords

Midface Lift, Cheek Augmentation, Fat Compartment, Suborbicularis Oculi Fat (SOOF), Single-Point Deep Injection, Hyaluronic Acid (HA) Filler, CHAP[®]-Hyaluronic Acid (Crosslinked Hyaluronic Acid Platform, CHAP[®]-HA), Hyadermis[®]

*Corresponding author.

How to cite this paper: Liang, C.-P. and Thong, H.-Y. (2016) A Guide to Cheek Augmentation: Single-Point Deep Injection of Hyaluronic Acid Filler at Midface in Close Proximity to Medial Suborbicularis Oculi Fat (SOOF) Area. *Journal of Cosmetics, Dermatological Sciences and Applications*, 6, 1-8. http://dx.doi.org/10.4236/jcdsa.2016.61001

CHAP-HA has good usage satisfaction

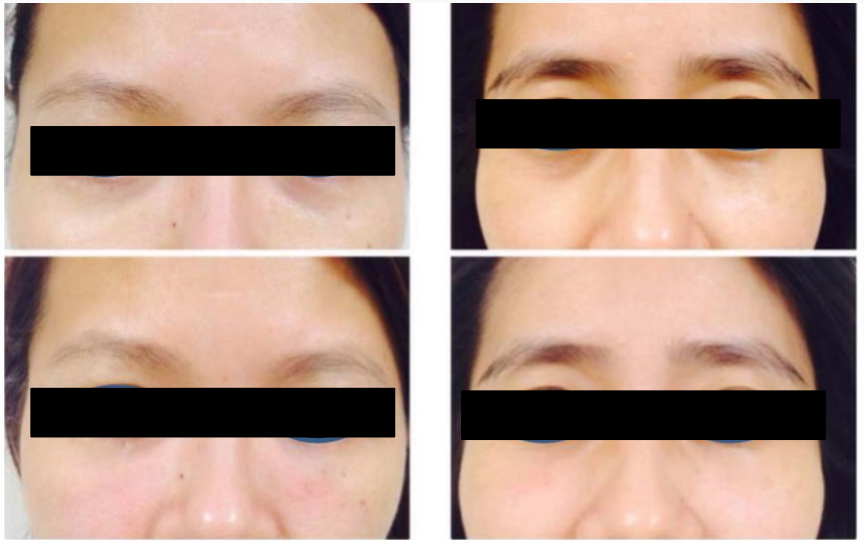

Figure 5. Before (upper) and immediately after (lower) single point deep injection of HA filler (1ml on each side) for cheek augmentation using 27 G sharp needle. Satisfactory results were noted with minimal bruising. Left: Case 2, Right: Case 7.

Publication of clinical study

Scientific Research Publishing

Journal of Cosmetics, Dermatological Sciences and Applications, 2018, 8, 126-132
http://www.scirp.org/journal/jcdsa
ISSN Online: 2161-4512
ISSN Print: 2161-4105

Use of High-Resolution Ultrasound (HRU) in the Assessment of Deep Injections of CHAP-Hyaluronic Acid (CHAP-HA) Fillers for Midface Lift

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[2]Department of Dermatology, Shin-Kong Wu Ho-Su Memorial Hospital, Taiwan
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How to cite this paper: Lee, H-T. and Thong, H-Y. (2018) Use of High-Resolution Ultrasound (HRU) in the Assessment of Deep Injections of CHAP-Hyaluronic Acid (CHAP-HA) Fillers for Midface Lift. *Journal of Cosmetics, Dermatological Sciences and Applications*, 8, 126-132.
https://doi.org/10.4236/jcdsa.2018.83014

Received: May 22, 2018
Accepted: September 10, 2018
Published: September 13, 2018

Abstract

High-resolution ultrasound (HRU) imaging is a useful tool to study hyaluronic acid (HA) filler injection in the face. It is noninvasive, quick, well-tolerated, and can provide *in vivo* and dynamic information. The formations of pools or pearls in HA fillers could be observed real time during injection. The plane of injection could be determined accurately, and there were no specimen manipulation artifacts. It was observed that HA gel fillers with differing production technologies showed distinct spread and distribution patterns in the periocular tissues on HRU examination. The authors used HRU to assess deep injections of CHAP-Hyaluronic Acid (CHAP-HA) fillers for midface lift. 10 patients who underwent bilateral midface deep injections using CHAP-HA filler were examined with HRU before and immediately after treatment, and in 2 weeks and one month later. The CHAP-HA appeared as hypoechoic densities within the preperiosteal plane in HRU. CHAP-HA adopted variable morphology within the tissue depending on individual tissue densities and the compliance of the tissues in the plane of injection. CHAP-HA was unidentifiable with surrounding tissue after one month in 13 of the 20 injection sites. HRU allows *in vivo* study of CHAP-HA injection behavior and could be a tool for further studies of HA-tissue reactions.

Keywords

CHAP-Hyaluronic Acid (CHAP-HA) Filler, High-Resolution Ultrasound (HRU), Midface Lift, Deep Injections, Preperiosteal Filler Injections

CHAP-HA has good tissue compatibility

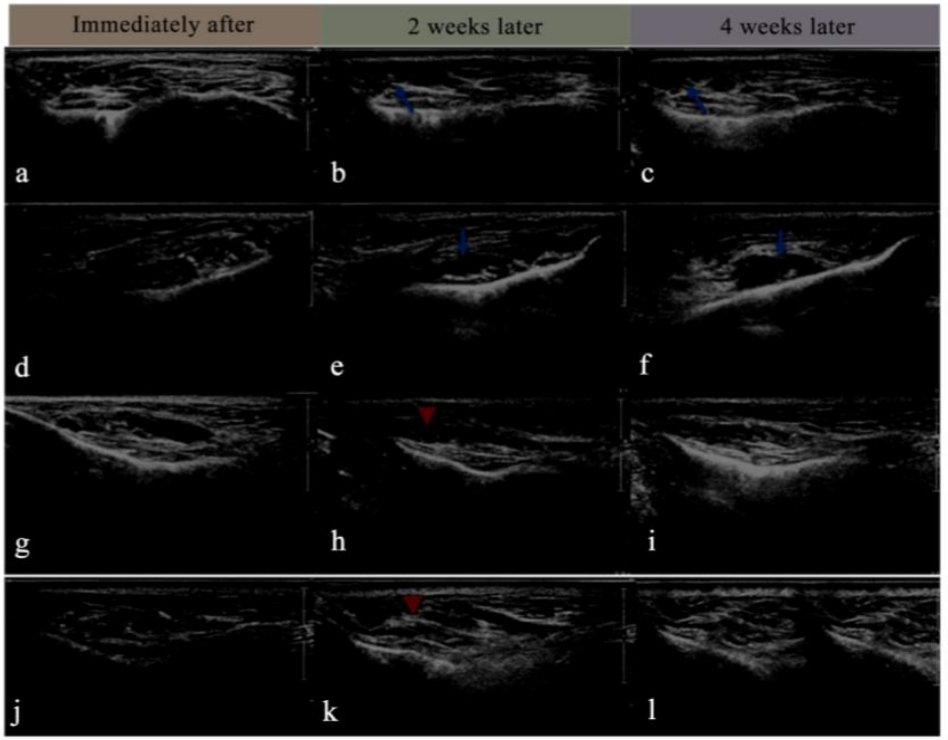


Figure 5. High-resolution ultrasound imaging immediately after HA injection (a, d, g, j), at 2-Week (d, e, h, k) and 4-week (c, f, i, 1) follow up. Hydration of the HA would occur (arrows), and the ha would appear to be more heterogenous and hyperechoic (arrowheads) and may became completely unidentifiable with the surrounding tissues in the 4th week follow up (i, j).

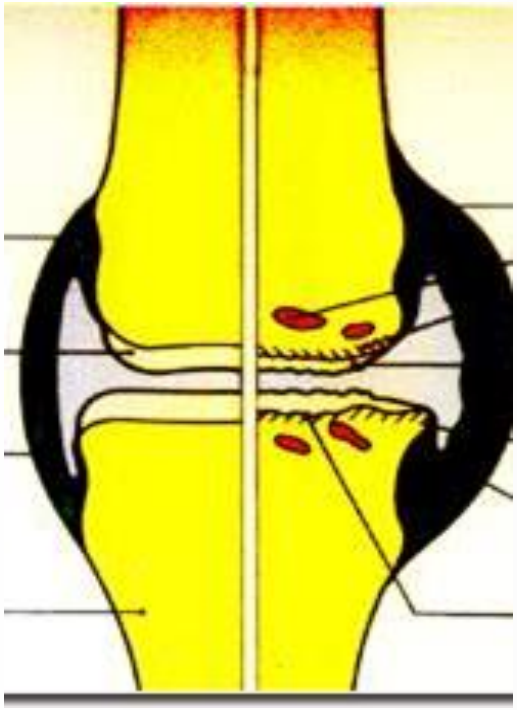
Listed products of SciVision

Application field	Items	Global market value in 2019	CAGR
Facial Aesthetics	Dermal Filler	1.7 billion	9.0 %
Geriatrics Care	Viscosupplement	2.2 billion	6.1 %
Surgery	Adhesion Barrier	3 billion	8.9 %

source :
1. Facial Aesthetics (Botulinum Toxin, Dermal Fillers), GlobalData
2. Hyaluronic Acid Viscosupplementation | Medtech 360 | Market Analysis | Global | 2019 , DRG
3. ANTI-ADHESION PRODUCTS 2012, Global Industry Analysts, Inc.

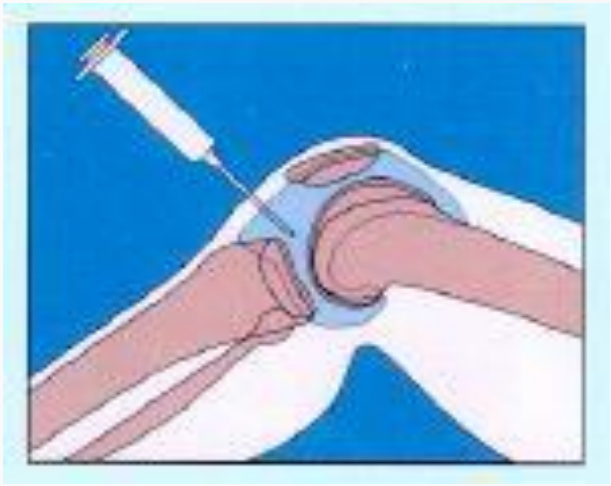
Osteoarthritis (OA)

Osteoarthritis of the knee has been associated with a decrease in the elasticity and viscosity of the synovial fluid



Nomal OA

Inflammation
(erythema and swelling)



Lost of cartilage

Product type	Treatment description	CAGR of treatments
1-syringe (Long-acting)	Effect could be lasted for more than half year with administrating 1 syringe.	10.2 %
3-syringe	Effect could be lasted for half year with administrating 3 syringes continuously , 1 syringe per week.	5.9 %
5-syringe	Effect could be lasted for half year with administrating 5 syringes continuously , 1 syringe per week.	5.5 %

資料來源 :
Hyaluronic Acid Viscosupplementation | Medtech 360 | Market Analysis | Global | 2019 , DRG

Long Acting Type
Synovial Fluid Supplement

HYJOINT Plus
Synovial Fluid Supplement

1 syringe per year
Super Long Acting Type

JETKNEE
Synovial Fluid Supplement

Anti-free Radical
Protection Type

Compare with long acting type Synovial fluid supplement product

Brand	Synvisc-One	Durolane	HYAJOINT Plus	JETKNEE
Manufacturer	Sanofi	Q-Med AB	SciVision	SciVision
Therapeutic effect (month)	6	6	12	6
HA raw material source	Animal-derived	Bacteria-derived	Bacteria-derived	Bacteria-derived
Gel appearance	smooth	grainyl	smooth	smooth
Linker	DVS	BDDE	BDDE	Mannitol
Volume (ml/syringe)	6	3	3	3
HA con. (mg/ml)	8	20	20	20

LD_{50} toxicity (Oral-rat)

DVS (32 mg/kg) > BDDE (2,000 mg/kg) > Mannitol(13,500 mg/kg)

Publication of clinical study

JBJS America, impact factor=5.163
Top international journal in Orthopedics

Comparison of Single Intra-Articular Injection of Novel Hyaluronan (HYA-JOINT Plus) with Synvisc-One for Knee Osteoarthritis

A Randomized, Controlled, Double-Blind Trial of Efficacy and Safety

Shu-Fen Sun, MD, Chien-Wei Hsu, MD, Huey-Shyan Lin, PhD, I-Hsiu Liou, MD, Yin-Han Chen, MD, and Chia-Ling Hung, MD

Investigation performed at the Kaohsiung Veterans General Hospital, Kaohsiung City, Taiwan

Background: Viscosupplementation has been widely used for the treatment of knee osteoarthritis. Because we found no well-controlled trial comparing single-injection regimens of hyaluronan for knee osteoarthritis, we compared the efficacy and safety of a single intra-articular injection of a novel cross-linked hyaluronan (HYA-JOINT Plus) with a single injection of Synvisc-One in patients with knee osteoarthritis.

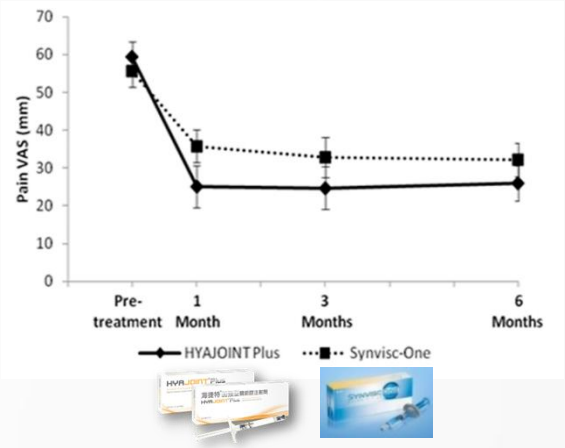
Methods: In a prospective, randomized, controlled, double-blind trial with a 6-month follow-up, 132 patients with knee osteoarthritis (Kellgren-Lawrence grade 2 or 3) were randomized to receive 1 intra-articular injection of 3 mL of HYA-JOINT Plus (20 mg/mL) (n = 66) or 6 mL of Synvisc-One (8 mg/mL) (n = 66). The primary outcome was the change from baseline in the visual analog scale (VAS) (0 to 100 mm) pain score at 6 months. Secondary outcome measures included the Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC, Likert scale), Lequesne index, timed "Up & Go" (TUG) test, single-limb stance (SLS) test, use of rescue analgesics, and patient satisfaction.

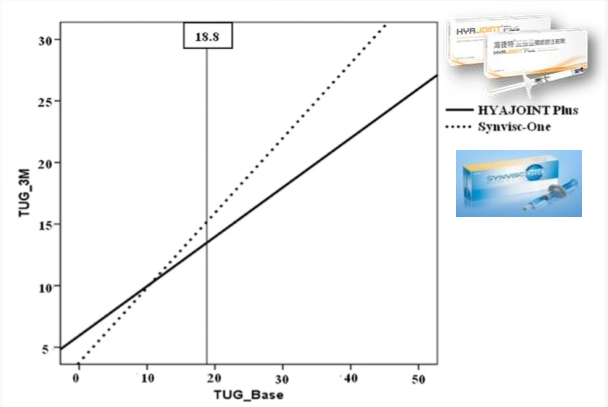
Results: A total of 121 patients were available for the intention-to-treat analysis at 6 months. Both groups had a significant improvement in the VAS, WOMAC, and Lequesne index scores at each follow-up visit ($p < 0.001$). Patients who received HYA-JOINT Plus experienced a significantly greater improvement in the VAS pain score at 1, 3, and 6 months compared with those treated with Synvisc-One (adjusted mean difference: −12.0, −8.5, and −6.6; $p = 0.001$, 0.033, and 0.045, respectively). There were no significant between-group differences in any of the secondary outcomes except the WOMAC stiffness scores at 6 months, which favored HYA-JOINT Plus treatment ($p = 0.043$). The TUG time did not change significantly in either group during the study ($p > 0.05$), but the SLS time improved significantly in both the HYA-JOINT Plus and the Synvisc-One group ($p = 0.004$ and $p = 0.022$, respectively). No significant between-group differences were observed with respect to patient satisfaction or consumption of analgesics. No serious adverse events occurred following the injections.

Conclusions: A single injection of either HYA-JOINT Plus or Synvisc-One is safe and effective for 6 months in patients with knee osteoarthritis. HYA-JOINT Plus is superior to Synvisc-One in terms of reducing the VAS pain score at 1, 3, and 6 months and the WOMAC stiffness score at 6 months, with similar safety.

Level of Evidence: Therapeutic Level I. See Instructions for Authors for a complete description of levels of evidence.

HYAJOINT Plus has a significantly better effect on relieving pain than competitive products





HYAJOINT Plus is significantly better than competitive products for more severe OA patients

Publication of clinical study

Journal of Back and Musculoskeletal Rehabilitation 31 (2018) 709–718

Journal of Back and Musculoskeletal Rehabilitation 31 (2018) 709–718
DOI 10.3233/BMR-170950
IOS Press

Improvement of self-reported functional scores and thickening of quadriceps and femoral intercondylar cartilage under ultrasonography after single intra-articular injection of a novel cross-linked hyaluronic acid in the treatment of knee osteoarthritis

Shenghui Tuan[a], Ihsiu Liou[b], Hungtzu Su[a], Yunjeng Tsai[b], Guanbo Chen[c] and Shufen Sun[b,d,*]
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[b]*Department of Physical Medicine and Rehabilitation, Kaohsiung Veterans General Hospital, Kaohsiung, Taiwan*
[c]*Department of Internal Medicine, Kaohsiung Armed Forces General Hospital, Kaohsiung, Taiwan*
[d]*School of Medicine, National Yang-Ming University, Taipei, Taiwan*

Abstract.
BACKGROUND: Most studies used hyaluronic acid (HA) requiring 3–5 intra-articular injections (IAJ) for knee osteoarthritis (KOA).
OBJECTIVE: We evaluated the efficacy of a single IAJ of a novel HA by measuring the thickness of quadriceps and femoral intercondylar cartilage (FIC) under ultrasonography (US) in addition to subjective self-reported measures.
METHODS: Forty-nine patients with KOA (Kellgren-Lawrence grades 2–3) received unilateral IAJ of HYAJOINT Plus to the worse knee and were assessed at baseline and 1, 3 and 6-months after IAJ. Outcome measures were the (1) Visual Analog Scale for pain (VAS), (2) Western Ontario and McMaster Universities Osteoarthritis Index (WOMAC), (3) Lequesne's Index, (4) single-leg-stance duration (5) thigh circumference, and (6) thickness of quadriceps and FIC under US.
RESULTS: Forty-six patients completed the 6-month-follow-up study. All outcome measures improved significantly after HA injection ($p < 0.001$). Both VAS and WOMAC-pain subscale scores improved significantly at 1, 3, and 6 months ($p < 0.01$). The US thickness of the quadriceps and FIC improved significantly at both 3 and 6 months ($p < 0.05$). The Lequesne's index, single-leg-stance and thigh circumference improved significantly at 6 months ($p < 0.01$).
CONCLUSIONS: HYAJOINT Plus is effective both subjectively and objectively for 6 months and is safe as a treatment for KOA.

Keywords: Knee pain, osteoarthritis, hyaluronic acid, ultrasonography

1. Introduction

Osteoarthritis (OA) is the most common musculoskeletal disease around the world. Among populations with OA, 80% of them have limited range of motion of joints, and 25% of them cannot perform major

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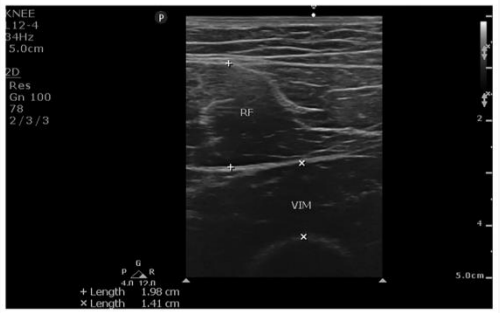
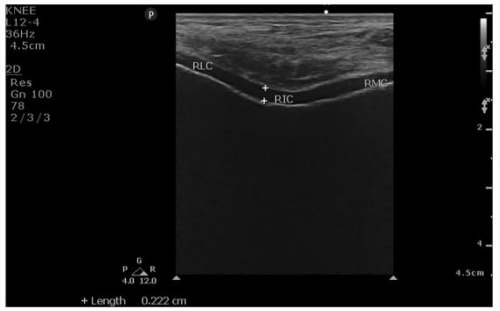
The US thickness of the quadriceps and FIC improved significantly at both 3 and 6 months



Measurement of quadriceps thickness



Measurement of femoral intercondylar cartilage thickness

Listed products of SciVision

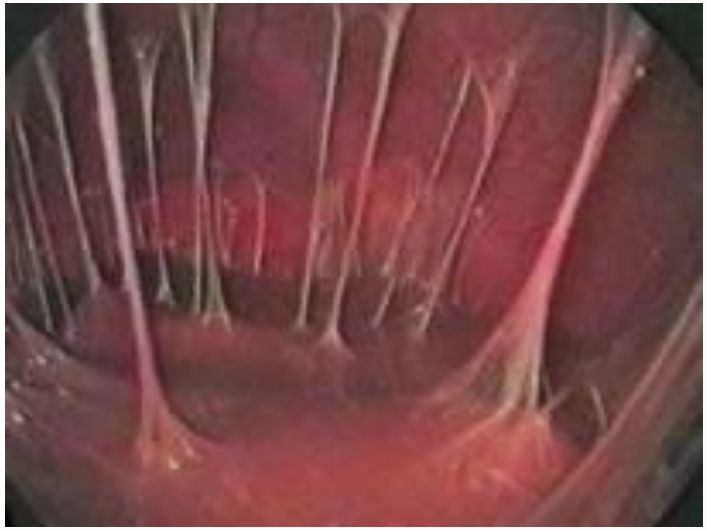
Application field	Items	Global market value in 2019	CAGR
Facial Aesthetics	Dermal Filler	1.7 billion	9.0 %
Geriatrics Care	Viscosupplement	2.2 billion	6.1 %
Surgery	Adhesion Barrier	3 billion	8.9 %

source :
1. Facial Aesthetics (Botulinum Toxin, Dermal Fillers), GlobalData
2. Hyaluronic Acid Viscosupplementation | Medtech 360 | Market Analysis | Global | 2019 , DRG
3. ANTI-ADHESION PRODUCTS 2012, Global Industry Analysts, Inc.

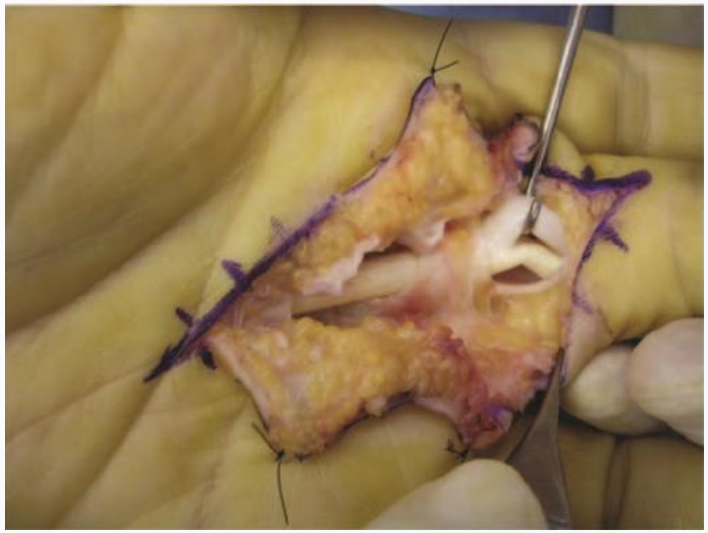
Postsurgical adhesion

Injured organ or tissue → The fibrin acts like a glue to seal the injury → Adhesion formation

↑ Inflammation



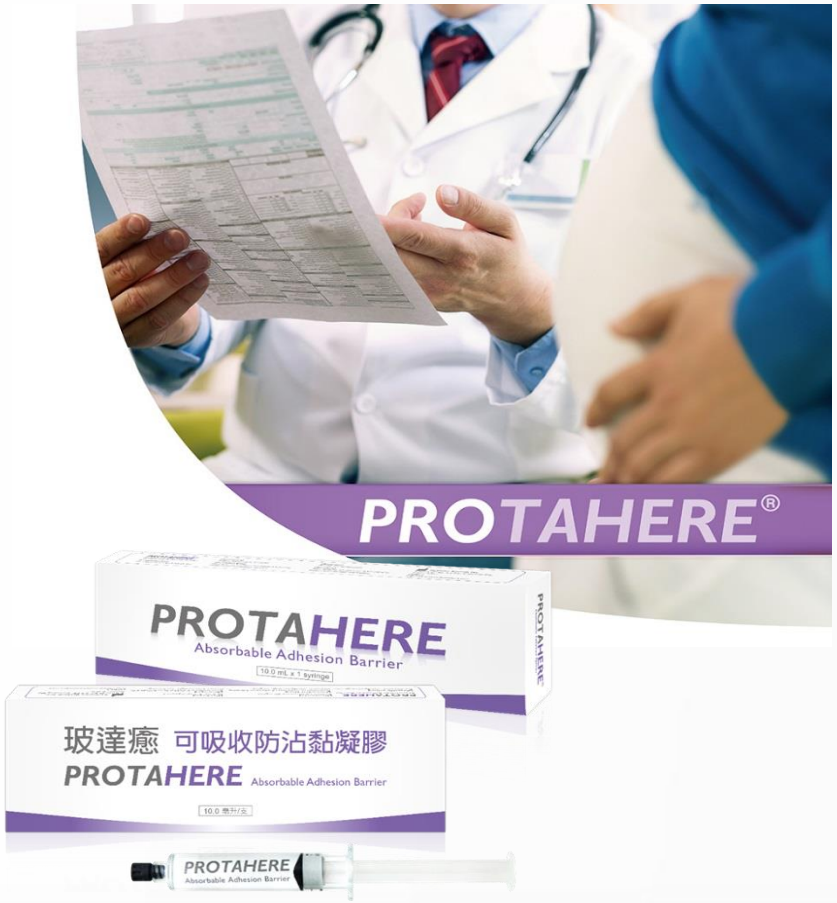
Gynecologic surgery



Tendon, peripheral nerve, joint surgery

Absorbable Adhesion Barrier

Absorbable Adhesion Barrier
Gynecologic surgery



Absorbable Adhesion Barrier
Tendon, peripheral nerve, joint surgery

Absorbable Adhesion Barrier

Absorbable Adhesion Barrier

Gynecologic surgery

PROTAHERE

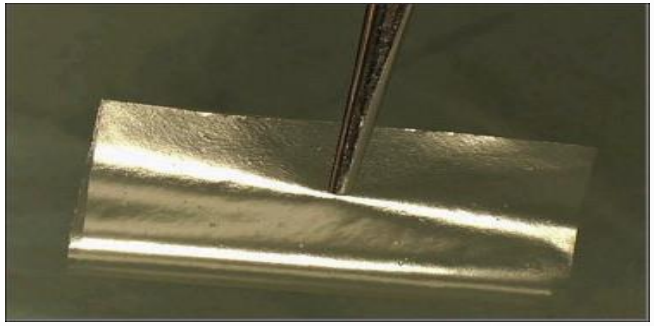
Advantage

- ✓ High Biocompatibility
- ✓ Easy to apply
- ✓ Shift resistance

Compare with competitive product

Item \ Brand	Preclude	SurgiWarp	Interceed	Seprafilm	Hyalobarrier	PROTAHERE
Manufacturer	GORE	MAST BIOSURGERY	Johnson	SANOFI	Fidia	SCIVISION
Material	ePTFE	Polylactic acid	ORC	HA-CMC	Cross-linked HA	Cross-linked HA
Type	Membrane	Membrane	Membrane	Membrane	Membrane	Gel

Teflon: needs a second surgery to remove it due to non-absorbable by the body;
Polylactic acid: product needs to be sutured and fixed to the wound due to poor adhesion;
Regenerated cellulose: being used around blood vessels may cause scar formation and the shrinking scar may affect blood flow; being used in orthopedic surgery may delay the callus formation and have a risk of cysts formation.



Operability

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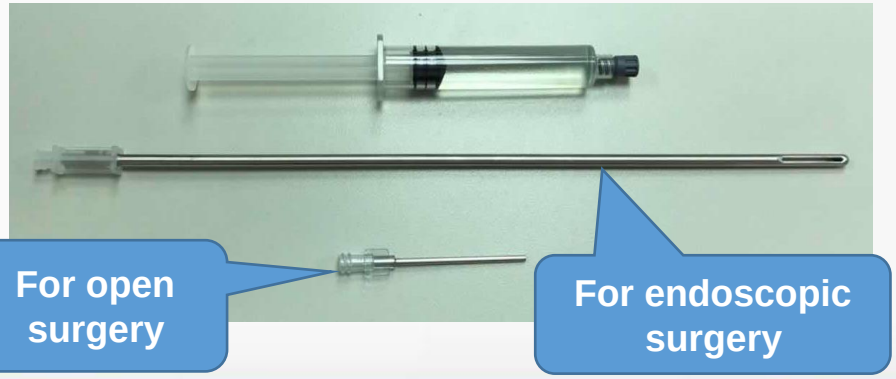
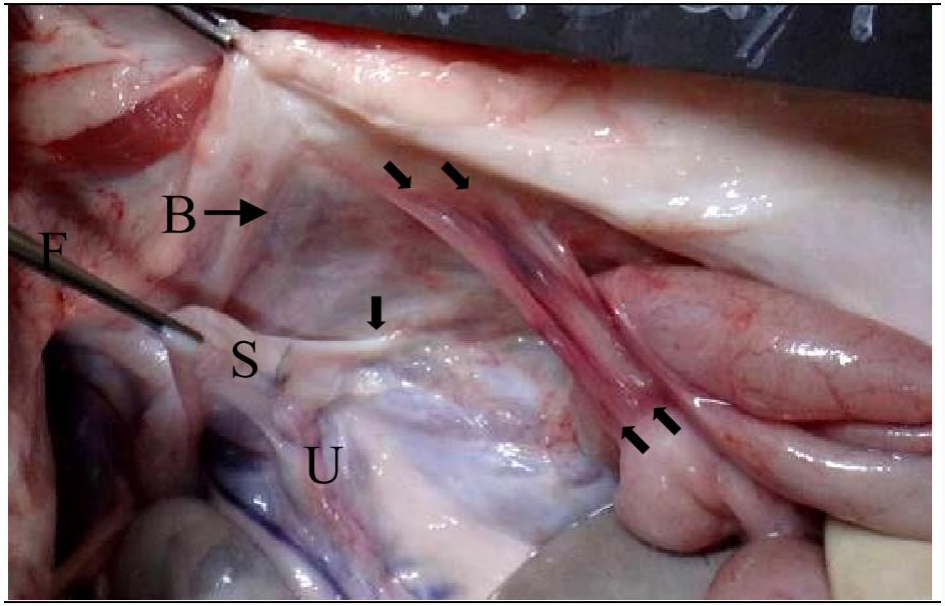
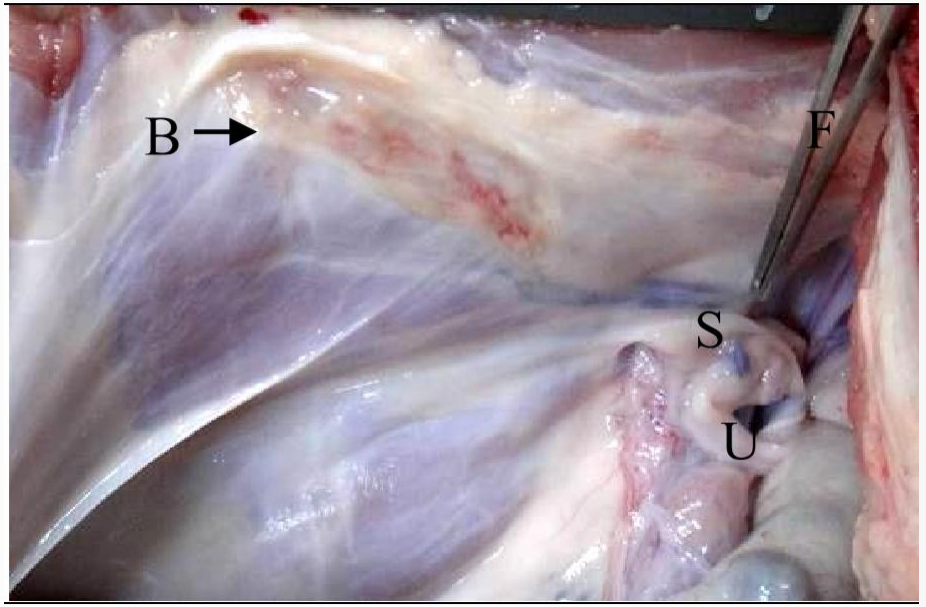


Prevent postoperative adhesions

To evaluate the effectiveness of absorbable adhesion barrier
Preventing adhesion in porcine model under laparotomy pelvic surgery



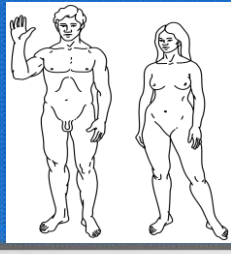
Control group (Unused)



Use **PROTAHERE**

Data source: Agricultural Technology Research Institute

Clinical trial of PROTAHERE



Life 2020, 10(5), 67

life

MDPI

Article

Crosslinked Hyaluronic Acid Gels for the Prevention of Intrauterine Adhesions after a Hysteroscopic Myomectomy in Women with Submucosal Myomas: A Prospective, Randomized, Controlled Trial

Chen-Yu Huang [1,2,3], Wen-Hsun Chang [1,2,4], Min Cheng [1,2,3], Hsin-Yi Huang [5], Huann-Cheng Horng [1,2,3], Yi-Jen Chen [1,2,3], Wen-Ling Lee [2,6,7,*] and Peng-Hui Wang [1,2,3,8,9,*]

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Received: 20 April 2020; Accepted: 13 May 2020; Published: 15 May 2020

check for updates

Abstract: Intrauterine adhesion (IUA), fibrosis, and scarring resulting from damage to the endometrium is a rare but serious clinical disease, contributing to a significant impairment of reproductive function. Uterine instrumentation, especially that of a hysteroscopic myomectomy, has become the main cause of IUA. Therefore, a prospective randomized controlled study to assess the effectiveness and short-term safety of the use of hyaluronic acid gels in the prevention of IUA after a hysteroscopic myomectomy and an evaluation of the characteristics of IUA observed at follow-up are presented here. A total of 70 patients were analyzed at the end of 16 March 2020. The results show that the incidence of IUA in women who underwent a hysteroscopic myomectomy is 21.4% (15/70), overall. Women treated with hyaluronic acid gels have a statistically significantly lower incidence of IUAs than non-treated women (12.8% vs. 39.1%, $p = 0.012$). In addition, women in the anti-adhesive gel treatment group had a dramatically reduced severity of IUA than women in the no-treatment group ($p = 0.002$). Further analysis shows that the International Federation of Gynecology and Obstetrics (FIGO) classification type and the use of anti-adhesive gels are independent factors associated with moderate and severe degrees of IUA formation. The results here highlight the significant therapeutic benefits of the application of hyaluronic acid gels in women undergoing a hysteroscopic myomectomy, especially for those patients with a uterine myoma classified as FIGO type 2. Since the risk of IUA after a hysteroscopic myomectomy is high, especially for patients who have not received prophylactic anti-adhesive gels, the application of hyaluronic acid gels as a prevention strategy is highly recommended. More studies are encouraged to confirm our observation.

Keywords: anti-adhesive gel; hyaluronic acid; hysteroscopic myomectomy; intrauterine adhesion; prevention; reduction

	CHA-P Gel (n = 24)	CHA Gel (n = 23)	No (n = 23)	*p*-Value
Intrauterine Adhesion				
No	22 (91.7%) [a]	19 (82.6%) [a]	14 (60.9%)	0.031
Yes	2 (8.3%) [a]	4 (17.4%) [a]	9 (39.1%)	
Modified AFS Stage				
0	22 (91.7%) [b]	19 (82.6%) [b]	14 (60.9%)	
I (mild)	2 (8.3%) [b]	3 (13.0%) [b]	1 (4.3%)	0.014
II (moderate)	0 [b]	1 (4.3%) [b]	4 (17.4%)	
III (severe)	0 [b]	0 [b]	4 (17.4%)	

The data are presented as number (percentage). CHA-P (PROTAHERE absorbable adhesion barrier®, SciVision Biotech Inc., Kaohsiung, Taiwan), CHA gel (Hyalobarrier® gel, Baxter, Pisa, Italy). No: no anti-adhesive agent gel treatment. AFS: American Fertility Society. [a] and [b]: The comparison between the CHA-P gel and CHA gel ([a]: p-value = 0.352, [b]: p-value = 0.497).

PROTAHERE could avoid or reduce the postoperative adhesion formation effectively.

Adhesion Barrier

Absorbable Adhesion Barrier

Tendon, peripheral nerve, joint surgery

DEFEHERE

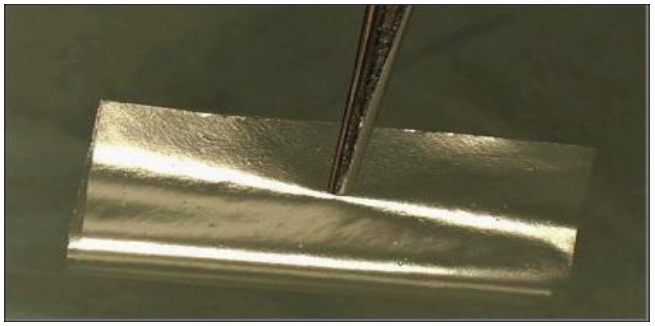
Advantage

- ✓ High Biocompatibility
- ✓ Easy to apply
- ✓ High viscosity
- ✓ Long effective protection time

Compare with competitive product

Brand / Item	OrthoWrap	FzioMed	Hyaloglide	DEFEHERE
Manufacturer	Mast	Medtronic	Anika	SCIVISION
Material	PLA	PEO and CMC)	Cross-linked HA	Cross-linked HA
Type	Membrane	Gel	Gel	Gel

Polylactic acid: product needs to be sutured and fixed to the wound due to poor adhesion;
Oxidized polyethylene: widely used in papermaking, coatings, inks, and textile industries, but its safety needs long-term clinical data to support;
Regenerated cellulose: used around blood vessels may cause scar formation and the shrinking scar may affect blood flow; used in orthopedic surgery may delay the callus formation and have a risk of cysts formation.



Operability

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Outline

1. Company & Product &Technology Overview

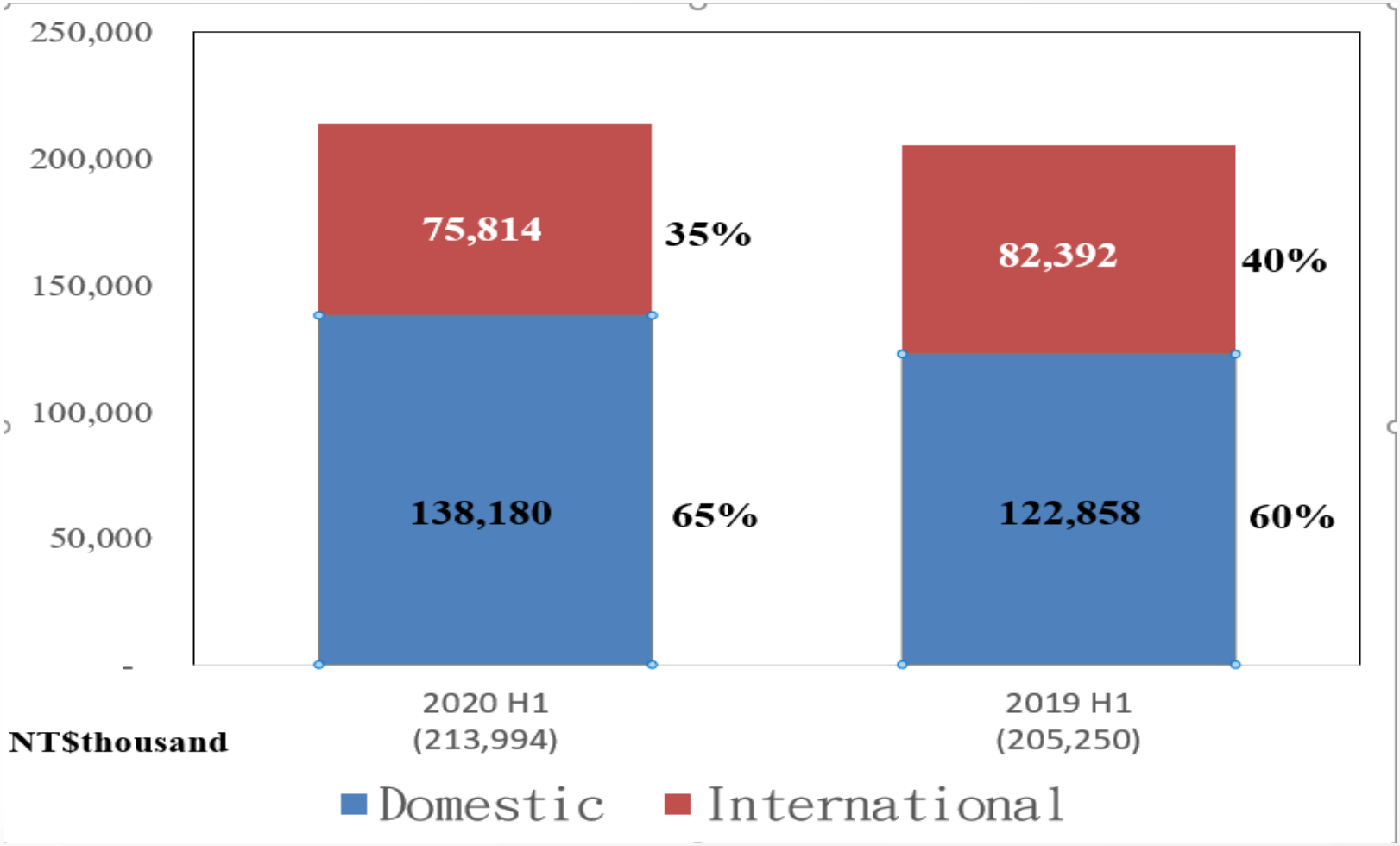
2. Business Operation

Profit & Loss-Consolidated

Unit:NT thousand dollars (except for EPS)	H1,'20 (Reviewed)		H1,'19 (Reviewed)		Annual growth rate
Revenue	213,994	100%	205,250	100%	4.3%
Cost of Goods Sold	(61,433)	-29%	(69,625)	-34%	-11.8%
Gross Profit	152,561	71%	135,625	66%	12.5%
Operating Expense	(88,098)	-41%	(76,143)	-37%	15.7%
Operating Income	64,463	30%	59,482	29%	8.4%
Non-operating Income,Net	3,872	2%	936	0%	313.7%
Income before Tax	68,335	32%	60,418	29%	13.1%
Net Income	58,704	27%	55,156	27%	6.4%
EPS(NT$)	1.01		0.95		

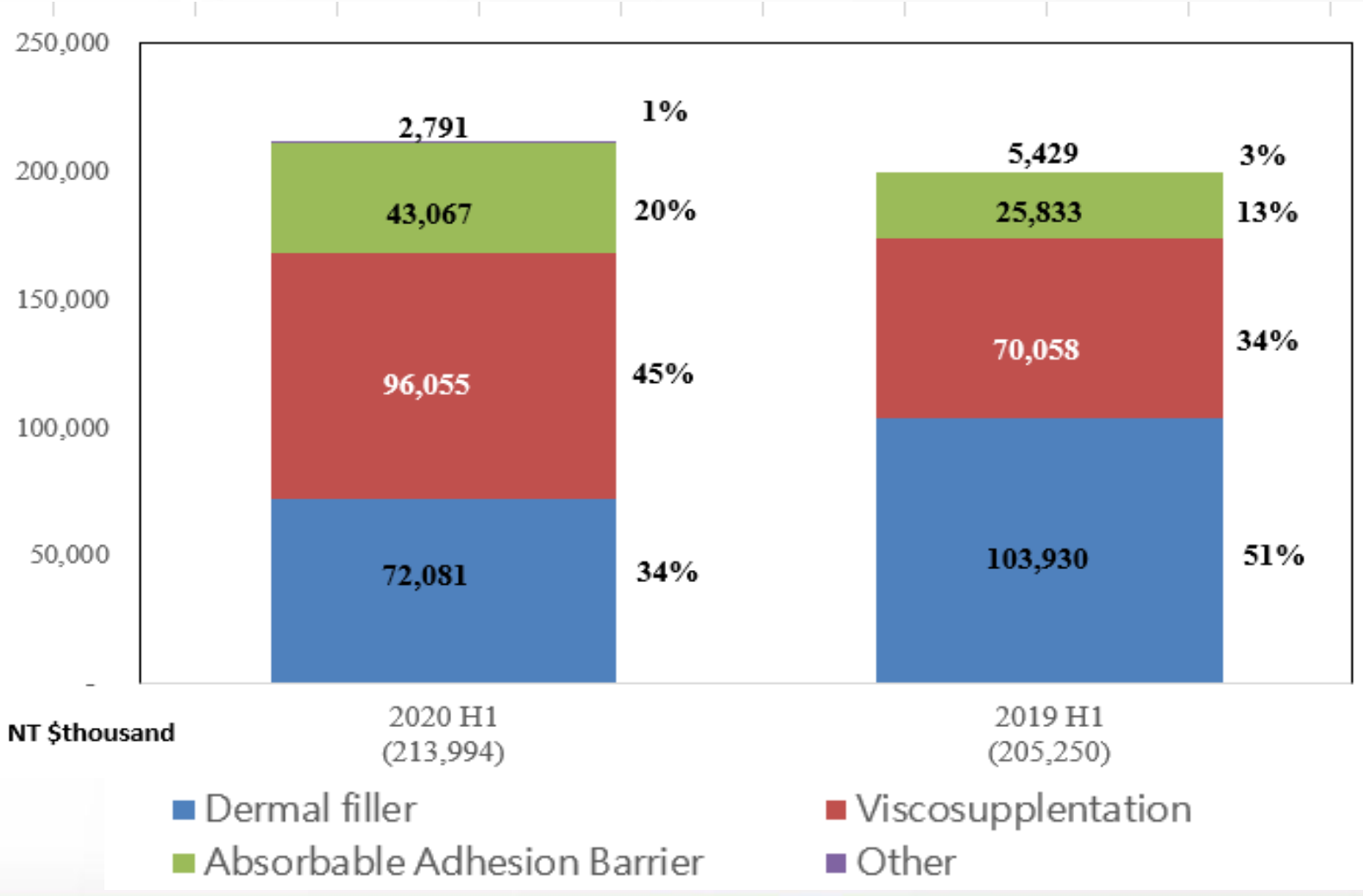
Domestic and International Sales Ratio

2020 Jan.~Jun. & 2019 Jan.~Jun.



Product Portfolio Sales Ratio

2020 Jan.~Jun. & 2019 Jan.~Jun.



Balance Sheet-Consolidated

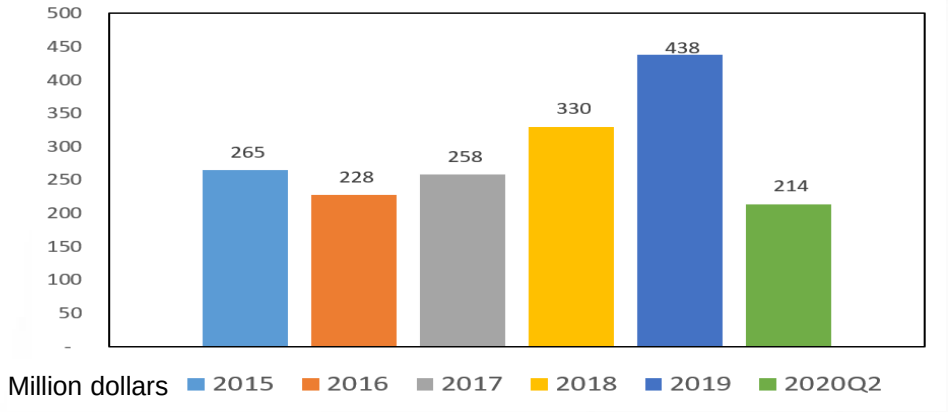
Unit: NT thousand dollars	2020/6/30 (Reviewed)		2019/6/30 (Reviewed)	
Cash and Cash Equivalents	293,159	15%	342,834	18%
Accounts Receivable	55,371	3%	73,963	4%
Inventories	31,106	2%	32,746	2%
Current Financial Assets at Fair Value through Profit or Loss	53,500	3%	-	0%
Amortized Cost Financial Assets	133,998	7%	146,042	8%
Property, Plant & Equipment	1,257,559	65%	1,196,783	63%
Other Current/Non-Current Assets	98,546	5%	88,940	5%
Total Assets	1,923,239	100%	1,881,308	100%
Current Liabilities	226,328	12%	235,955	12%
Long-Term & Other Liabilities	356,766	18%	349,726	19%
Total Liabilities	583,094	30%	585,681	31%
Total Shareholders' Equities	1,340,145	70%	1,295,627	69%
Key Indices				
A/R Turnover (Days)	49.69		65.54	
Inventory Turnover (Days)	95.14		96.77	
Current Ratio(x)	385.48%		260.71%	
Net Profit Margin(%)	27.43%		26.87%	

Cash Flows-Consolidated

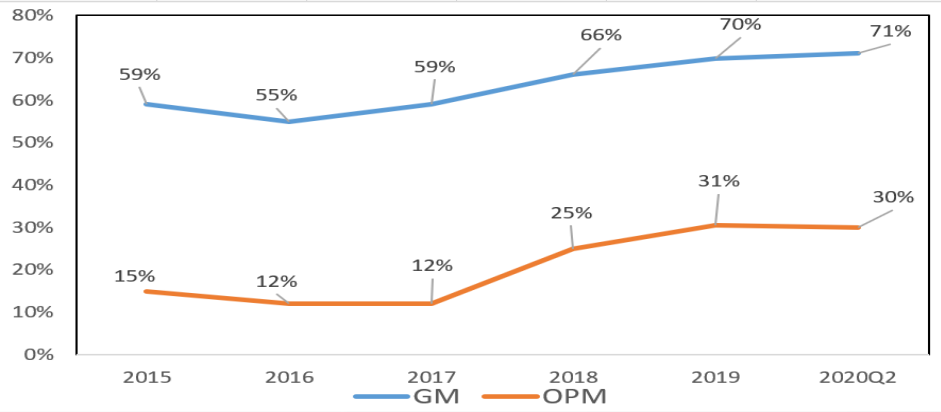
Unit:NT thousand dollars	H1,'20 (Reviewed)	H1,'19 (Reviewed)
From Operating Activities	67,690	82,883
Profit before tax	68,335	60,418
Depreciation & Amortisation	6,874	6,434
Net change in working capital	(7,519)	16,031
From Investing Activities	(104,972)	(207,744)
Financial asset measured at amortised cost	(38,391)	(134,080)
Current Financial Assets at Fair Value through Profit or Loss	(50,000)	0
Capital expenditure	(17,781)	(115,295)
Net change in Investing item	1,200	41,631
From Financing Activities	(606)	98,743
Short-term loans	0	0
Long-term loans	0	(434,306)
Net change in Fincncing item	(606)	533,049
Net Change in Cash	(37,888)	(26,118)
Beginning Balance	331,047	368,952
Ending Balance	293,159	342,834
Free Cash Flow	49,909	(32,412)

HEALTHY CASHFLOW AND EXPANDING PROFIT

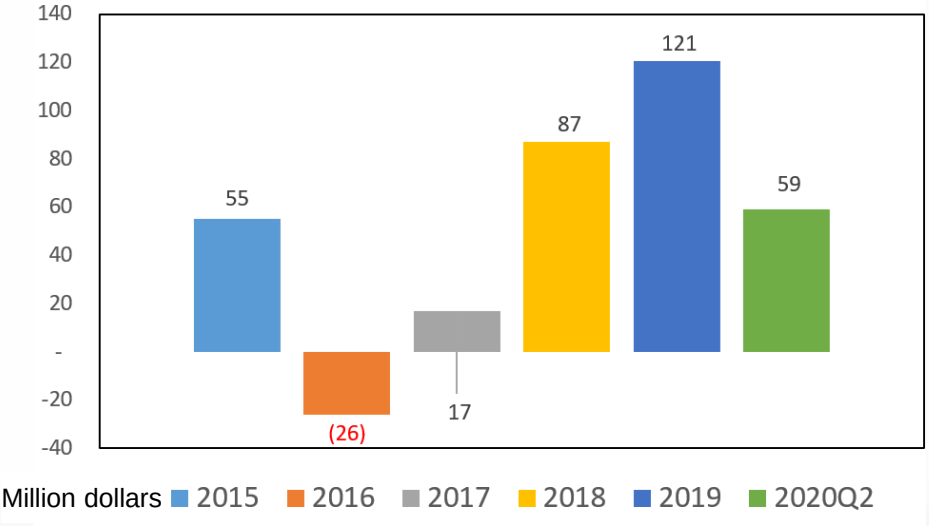
Revenue



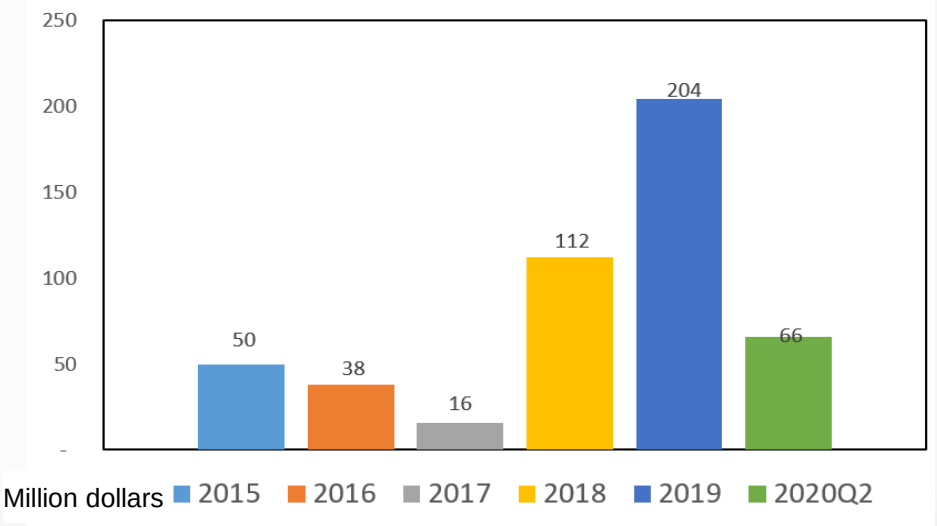
Gross and Operating Margin



Net Profit



Cash Generated From Operations Before Interest And Taxes



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