

W HOSPITAL

HAND & MICROSURGERY ORTHOPEDIC SURGERY

2021 연보
ANNUAL REPORT



2021 ANNUAL REPORT 연보

01

미션비전 및 의료진 소개

본원 의료진 소개

진료통계

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원무통계, 응급실 통계, 수술통계, 영상의학 통계,
진단검사의학과 통계, 작업치료 통계, 물리치료 통계

03

학술 및 연구활동

학술 발표, 의료진 학회 참석 및 발표, 컨퍼런스 스케줄



Always!

W병원이 늘 함께 하겠습니다

MISSION

예쁜 손, 편한 발, 튼튼한 관절을 위한
특화된 근골격계 전문병원으로서의 위상 구현

VISION

01_환자 중심의 진료

W병원은 정확한 진단, 맞춤진료, 기능적 심미적 측면을 통합한 의료 서비스로
환자에게 희망과 감동을 선물한다.

02_연구 및 교육하는 의료진

W병원은 다양한 임상 경험을 바탕으로 미래지향적 연구와
교육을 할 수 있는 역량있는 의료진을 갖춘다.

03_소통과 나눔

W병원은 환자와의 소통, 직원간의 화합, 지역사회에 봉사와
나눔을 실천하는 문화 공간이 되게 한다.





ORTHOPEDIC & TRAUMA CENTER

회전근개파열, 오십견

어깨/팔꿈치



전문분야

어깨, 팔꿈치, 수부, 소아정형외과

정형외과 전문의 | 의학박사
수부외과 세부전문의
의무원장 서재성



전문분야

어깨, 견관절, 관절내시경

정형외과 전문의 | 의학박사
원장 박성혁

일반외과



전문분야

복강경, 간, 담도, 췌장 질환

외과 전문의 | 의학박사
의무원장 유용운



ORTHOPEDIC & TRAUMA CENTER

무릎/고관절 발/발목관절



전문분야

골절 및 무릎관절

정형외과 전문의 | 의학박사
명예원장 인주철



전문분야

외상, 인공관절치환술, 골연장술,
관절내시경, 사지변형, 소아정형외과

정형외과 전문의 | 의학박사
원장 김성중



전문분야

무릎인공관절, 관절경

정형외과 전문의
부장 김상희



HAND & RECONSTRUCTIVE
MICROSURGERY CENTER

수지접합, 손목, 손저림

손/손목관절



전문분야

손발의 선천성기형, 손저림, 신경수술,
힘줄, 인대수술, 소아수부 및 족부외과

성형외과 전문의 | 의학박사
수부외과 세부전문의
병원장 우상현



전문분야

손의 통증 및 저림, 상하지 외상,
미세접합수술, 수부재건,
소아정형외과

정형외과 전문의 | 의학박사
수부외과 세부전문의
원장 김영우



전문분야

관절내시경, 수부재건, 미세접합수술,
손의 통증 및 저림, 소아정형외과

정형외과 전문의
수부외과 세부전문의
원장 천호준



SPINE & REHABILITATION &
PAIN MEDICINE CENTER

스포츠재활, 척추 비수술적 처치

척추재활 통증의학센터

신경 외과



전문분야

척추질환, 척추내시경, 노인성 척추질환,
골다공성 압박골절 및 척추골절,
비수술적 척추시술

신경외과 전문의
과장 이경민

마취 통증 의학과



전문분야

소아신생아 마취, 통증치료,
팔마취, 각종 부위마취

마취통증의학과 전문의
원장 이영희



전문분야

척추 비수술적 처치,
소아신생아 마취, 통증치료,
팔마취, 신경차단

마취통증의학과 전문의
부장 서보병



전문분야

척추 비수술적 처치,
소아신생아 마취, 통증치료,
팔마취, 신경차단

마취통증의학과 전문의
과장 이원기

W GENERAL HOSPITAL HAND & RECONSTRUCTIVE MICROSURGERY ORTHOPEDIC SURGERY

소아 청소년과



전문분야

소아심장, 초음파

소아청소년과 전문의
의무원장 전진곤

영상의학과



전문분야

초음파, 근골격계영상의학,
소화기영상의학

영상의학과 전문의
과장 이지현



전문분야

초음파, 근골격계영상의학,
소화기영상의학

영상의학과 전문의
과장 이종훈



전문분야

초음파, 근골격계영상의학,
소화기영상의학

영상의학과 전문의
과장 황재도



전문분야

골절 및 외상, 족부족관절 내시경,
발의 통증 및 변형, 관절염

정형외과 전문의
과장 이상현



전문분야

다발성외상, 복합골절, 골수염,
인공관절치환술, 관절내시경

정형외과 전문의
과장 여도현

내과



전문분야

내분비계질환 및 소화기계질환

내과 전문의 | 의학박사
원장 안재희



전문분야

심장초음파, 고혈압, 당뇨병,
간질환, 류마티스

내과 전문의
과장 김수미



전문분야

스포츠 손상, 골절 및 외상,
미세접합수술, 관절내시경

정형외과 전문의
수부외과 세부전문의
부장 강동호



전문분야

수부화상재건, 연부조직재건술,
미세수술, 수부재건, 흉터성형,
치료성형

성형외과 전문의
수부외과 세부전문의
부장 남현재



전문분야

발가락을 이용한 손가락 재건술,
관절내시경, 미세접합수술,
수지접합

정형외과 전문의
수부외과 세부전문의
과장 유명재



전문분야

미세수술, 수부재건, 수지접합,
수지접합, 골절 및 외상

정형외과 전문의
수부외과 세부전문의
과장 김병진



전문분야

척추 비수술적 처치,
소아신생아 마취, 통증치료,
팔마취, 신경차단

마취통증의학과 전문의
과장 김민지

진단검사 의학과



전문분야

진단검사의학일반, 임상화학,
검사정보학, 정도관리학

진단검사의학과 전문의
원장 이태수

응급실



전문분야

골절, 응급의학

응급의학과 전문의
실장 설동환



전문분야

미세수술, 수부재건, 수지접합,
골절 및 외상, 흉터성형,
치료성형

성형외과 전문의
수부외과 세부전문의
과장 최진희

2021 ANNUAL REPORT

Worthwhile Results

SECTION. 01 진료통계

- 원무통계
- 응급실 통계
- 수술 통계
- 영상의학 통계
- 재활치료 통계
- 진단검사의학 통계



외래환자 통계

진료과	실인원	연인원
수부외과	28,642	135,173
정형외과	21,780	75,041
응급실	14,137	15,445
내과	14,992	21,888
기타	11,663	16,631
합계	91,214(+23,252)	264,178(+46,326)

신환 · 구환 통계

신환자수	구환자수	합계
43,416(+14,344)	47,798(+8,908)	91,214(+23,252)

초진 · 재진 통계

초진	재진	합계
79,763(+23,503)	184,415(+22,823)	264,178(+46,326)

지역별 외래환자 통계

합계	대구	경북	서울	부산	울산	대전	인천	광주	경기
264,178	188,543	47,025	961	1,067	1,465	283	193	210	1,323
	경남	충북	충남	전북	전남	강원	제주	세종	기타
	10,919	440	336	256	272	229	196	83	10,377

입원환자 통계

	실인원(입원)	연인원(재원)
수부외과	8,080	48,485
정형외과	4,489	38,355
기타	267	1,586
합계	12,836(+1,430)	88,426(+7,398)

수술건수 통계

수부외과	정형외과	성형외과	신경외과	합계
12,061	4,878	2	151	17,092(+1,716)

주요지표

일평균 외래환자수(명)	외래 신환율(%)	외래 초진율(%)	일평균 재원 환자수(명)	병상가동율(%)	일평균 수술건수(건)
920(+164)	16.4(+3.1)	30.2(+4.4)	242(+21)	92.8(+8.0)	46.8(+4.7)



손상별 환자 수

amputation	crushing inj	fracture	laceration	skin defect	degloving	burn	pain	others	합계
653	1,139	3,304	6,258	401	6	38	2,528	1,451	15,778

응급실 입&퇴원 환자 수

입원	퇴원	합계
6,689	9,089	15,778

남녀별 내원 환자 수

남	여	합계
10,425	5,353	15,778

연령별 내원 환자 수

0~9세	10~19세	20~29세	30~39세	40~49세	50~59세	60~69세	70~79세	80세~	합계
1,359	1,194	2,421	2,227	2,228	2,756	2,284	866	443	15,778

요일별 내원 환자 수

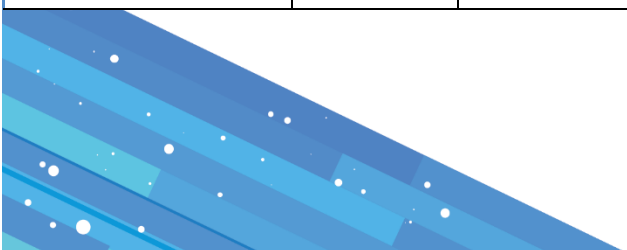
월요일	화요일	수요일	목요일	금요일	토요일	일요일	합계
1,912	1,800	1,835	1,748	1,878	2,807	3,798	15,778

지역별 응급환자 통계

합계	대구	경북	경남	경기	서울	부산	울산	충북	대전
15,778	11,667	2,454	562	103	67	66	51	29	16
	인천	전남	충남	전북	광주	제주	강원	세종	기타
	14	13	11	10	10	7	6	4	688

시간대별 환자 수

0~4시	4~8시	8~12시	12~16시	16~20시	20~24시	합계
1,000	490	3,211	3,811	4,150	3,116	15,778



마취종류별

Brachial plexus block	9,966
General anesthesia	719
Spinal anesthesia	2,934
Lower extremity nerve block	2,954
Local anesthesia	1,180
MAC (W.A)	1,160
합계	18,913

수술 종류별

1. CONGENITAL DEFORMITY

Duplicated thumb	234
Z-deformity	23
Syndactyly(foot)	41
Syndactyly(hand)	54
Polysyndactyly(foot)	176
Apert	0
Cleft hand	4
Constriction ring	11
Hypoplastic thumb	5
합계	548

2. DISEASE

1) BONE & JOINT

ARTHRITIS	DIP and PIP joint	118
	1st CMC joint	33
	Wrist	10
	소계	161
CONTRACTURE	Dupuytren's contracture	44
	Scar contracture	146
	Others(joint)	12
	소계	202
합계	363	

2) TENDON

Trigger finger	857
DeQuervain's disease	104
Lat/Med. epicondylitis	62
Tb tenosynovitis	22
Other tenosynovitis	144
합계	1,189

3) NERVE COMPRESSION

Carpal tunnel syndrom	874
Recurred CTS	5
Cubital tunnel syndrom	130
Recurred CuTS	0
합계	1,009

4) TUMOR

SOFT TISSUE TUMOR	Lipoma	58
	Ganglion	404
	Giant cell tumor	41
	Glomus tumor	45
소계	548	
BONE & CARTILAGE TUMOR	Enchondroma	15
	Osteochondroma	14
	Others	73
소계	102	
합계	650	

3. TRAUMA

1) REPLANTATION

LEVEL에 따른 분류	Zone I	59
	Phalanx	169
	Metacarpal	2
	Wrist	0
	Above wrist	2
	Others(lower ext.)	3
	소계	235
연령에 따른 분류	소아(<15 세)	2
	청장년(16~59 세)	148
	고령(>60 세)	37
	소계	187
합계	422	

2) REVASCULRIZATION(Incomplete amputation case)

LEVEL에 따른 분류	Zone I	11
	Phalanx	167
	Metacarpal	6
	Wrist	2
	Above wrist	4
	Others(lower ext.)	7
소계	197	
연령에 따른 분류	소아(<15 세)	3
	청장년(16~59 세)	101
	고령(>60 세)	59
	소계	163
합계	360	



3) REVISION AMPUTATION

Phalanx	245
Metacarpal	10
Wrist	5
Forearm	6
Elbow	0
Upper arm	3
Above Knee	2
Below Knee	2
Foot	8
Toe	49
합계	330

4) FLAP

LOCAL FLAP	V-Y advancedment flap	192
	Rotational flap	73
	Turn-over fascial flap	1
	Muscle flap	3
	Others(fillet flap etc.)	324
	소계	593
REGIONAL FLAP	Groin flap	6
	Thenar flap	14
	Cross finger flap	29
	Others	0
	소계	49
ISLAND FLAP	Radial forearm flap	3
	Reversed or digital island flap	120
	PIA flap	2
	Propellar flap	4
	소계	129
FREE FLAP	ALT flap	27
	RASP	11
	Toe pulp flap	4
	Venous flap	2
	Vascularized bone graft	5
	Other (PIA, SCIP, FFMT, etc.)	26
	소계	75
합계	846	

5) TOE TRANSFER

TYPE	Great toe transfer	11
	Second toe transfer	2
	Vascularized toe joint tranfer	1
	소계	14
OPERATION TIMING	Primary toe transfer	6
	Elective toe transfer	1
	소계	7
합계	21	

6) FRACTURE

Phalanx	1,688
Metacarpal	319
Carpal	55
Radius/Ulnar	841
Humerus	219
Clavicle	133
Femur	134
Tibia	262
Patella	61
Fibula	317
Calcaneous	105
Metatarsal	259
Toe	221
합계	4,614

7) TENDON LACERATION OR REPAIR

Hand	1,210
Wrist	151
Forearm	78
Arm	3
합계	1,442

8) MUSCLE LACERATION OR REPAIR

Hand	138
Forearm	135
Arm	18
합계	291

9) NERVE LACERATION OR REPAIR

Digit	475
Hand	116
Wrist	91
Forearm	26
Arm	5
합계	713

10) BITE INJURY

Dog bite	78
Human bite	1
Snake bite	1
Others	5
합계	85

4. ARTHROSCOPT

1) SHOULDER & ELBOW

Rotator cuff rupture (Bankart 포함)	592
Contracture	2
ECRB release	11
OA	13
합계	618

2) WRIST

TFCC injury	76
Scaphoid nonunion	24
합계	100

3) KNEE

ACL reconstruction	120
Meniscus injury	228
Plica syndrome	49
합계	397

4) ANKLE

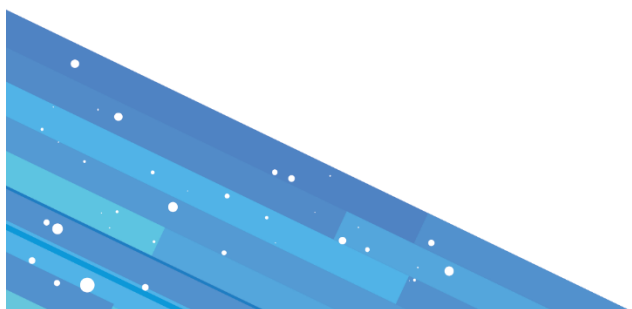
OLT	7
Impinge	3
OA	23
Instability	27
합계	60

5. JOINT REPLACEMENT ARTHROPLASTY

TKR	208
THR	27
HTO	116
RTSA	14
합계	365

6. ANKLE & FOOT

Hallux valgus	131	
Bunionette	20	
Ankle instability	54	
Flat foot & Cavus deformity	19	
Achilles rupture	101	
Tarsal tunnel syndrome	5	
Accessory navicular syndrome	5	
Morton's neuroma	Supramalleolar osteotomy	5
Arthritis	Ankle fusion	11
합계	351	



영상의학통계

2021년(전년대비증감)		
일반촬영	189,982(+9,371)	
CT	9,970(+322)	
초음파(SONO)	34,891(+3,503)	
MRI	MRI 1호기	11,845(+3,499)
	MRI 2호기	2,845(+211)
	MRI 소계	14,690(+3,710)
골밀도검사(BMD)	1,615(+100)	

작업치료환자

2021년(전년대비증감)	
작업치료	6,968(-914)
수지기능검사	3,079(-58)
2 Point 검사	813(+85)
족저압검사	2,170(+262)
관절가동범위검사	5,786(+236)

진단검사의학과통계

물리치료통계

임상병리검사

2021년(전년대비증감)		
혈액검사	일반화학	442,442(+43,360)
	진단혈액	355,667(+39,962)
	진단면역	71,779(+8,547)
	수혈의학	59,359(+7,543)
	요경검	25,691(+3,450)
	소계	954,938(+102,862)
종합검증/판독	5,592(+584)	
기능검사	NCV	11,818(+3,789)
	EMG	1,187(-54)
	EMG(체간)	254(-63)
	DITI	1,297(+66)
	DITI(Cold)	1,492(+339)
	심전도	9,218(+882)
	소계	25,266(+4,959)
COVID19 PCR	코로나19(개별)	27,782(+17,731)
	코로나19(취합)	7,549(+4,409)
	신속항원	7,274(+6,804)
	소계	42,605(+28,944)
합계	1,022,809(+136,765)	

물리치료환자

2021년(전년대비증감)	
고압산소치료	16,427(+382)
표층열치료	49,684(+7,865)
심층열치료	26,936(-3,058)
파라핀치료	3,871(+1,183)
회전욕	13,756(-6,242)
한냉치료	1,055(+310)
견인치료	271(-62)
EST	5,380(-1,854)
TENS,ICT	67,800(+5,538)
단순운동치료	30,187(+7,201)
CPM	6,817(+377)
저출력레이저	1,475(+936)
도수치료	15,941(+3,723)
합계	239,600(+16,299)

2021 ANNUAL REPORT

Wonderful Presentations & Publications

SECTION. 02

학술 및 연구활동

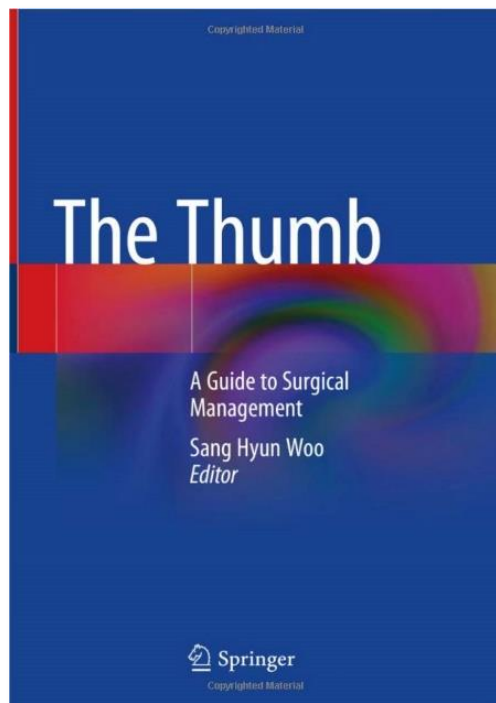
- 학술 발표
- 의료진 학회 참석 및 발표
- 컨퍼런스 스케줄

W

HOSPITAL
2021 ANNUAL
REPORT

WORTHWHILE
RESULTS

W병원 이상현 병원장, 세계적인 의학전문 출판사 Springer에서 단행본 'The Thumb' 교과서 출간



W병원 이상현 병원장이 세계적인 의학전문 출판사인 Springer에서 의뢰한 "The Thumb – A Guide to Surgical Management" 단행본 영어 교과서를 집필해 출판되었다.

손 기능의 50%를 담당하는 엄지 손가락의 해부와 운동 기능, 다지증 및 기타의 선천성 기형, 골절 및 힘줄 파열, 절단 등의 외상에 대한 치료, 관절염과 종양 등의 질병의 치료, 엄지가 외상으로 절단되었을 때 재건수술에 대해 총 400여 페이지로 다루고 있다.

엄지에 발생하는 모든 질병과 외상, 선천성 기형에 대한 종합 교과서로서 의과대학생을 비롯해 외과 계열 수련의, 정형외과, 성형외과, 신경외과 전문의, 또한 수부외과 세부 전문의들이 꼭 봐야 할 교과서 역할을 할 것으로 기대된다. 또한 경험이 많은 국내 손수술 전문 의사들이 함께 참여해 만든 교과서이기 때문에 우리나라 의학 수준을 세계에 알리게 되는 계기가 되었다는 평가이다.

"The Thumb – A Guide to Surgical Management"이 아마존 닷컴에서 eBook은 판매를 시작했으며, 2019년 1월에 출판되었다.

월	날짜	TITLE	SPEAKER
1 월	5	Hook Nail deformity	남현재 M.D.
	6	Mueller-Weiss Treated with Pan-Navicular Fusion	이상현 M.D.
	7	Elbow Arthroscopy and Instability	강동호 M.D.
	12	Ganglion, Mucous Cyst, and Carpal Boss	김병진 M.D.
	13	Patellar, Tibial, and Fibular Fractures	여도현 M.D.
	14	Osseointegration of Extremity Prosthesis: A Primer for the Plastic Surgeon (PRS 2020)	최수현 M.D. / 김영우 M.D. PhD
	19	Corrective Osteotomy of Metacarpal Fracture Malunion	유명재 M.D.
	20	Olecranon Stress Fractures	서재성 M.D. PhD
	21	Closed Reduction with Kirschner Wire Fixation of Bennett and Rolando Fractures	최진희 M.D.
	26	Lunotriquetral Ligament Reconstruction Using Extensor Carpi Ulnaris Tendon	이영석 M.D.
	27	Primary Hip Arthroplasty	김성중 M.D. PhD
	28	Pediatric Fingertip Injuries (Clinics 2021)	오상호 M.D. / 천호준 M.D.
	2 월	2	Treatment of Scaphoid Nonunion
3		AIDS 환자의 수술	안재희 M.D. PhD
4		Ulnar Shortening Osteotomy for Ulnar Impaction Syndrome	김영우 M.D. PhD
9		Correction of Swan-Neck Deformity	남현재 M.D.
10		Pediatric Elbow Fractures	송광순 M.D. PhD
16		Efficacy of Nonoperative Treatments for Lateral Epicondylitis: A Systematic Review and Meta-Analysis (PRS 2021)	최수현 M.D. / 남현재 M.D.
17		Treatment Options: Distal Clavicle Fractures	박성혁 M.D. PhD
18		Indications for Primary Flexor Tendon Repair	강동호 M.D.
23		Open Reduction and Internal Fixation of Extraarticular Phalangeal Fractures	김병진 M.D.
24		Osteochondral Allografting in the Knee	김상희 M.D.
3 월	2	Arthrodesis of the Interphalangeal joints with Headless compression screws	강동호 M.D.
	3	Unilateral biportal endoscopic surgery	이경민 M.D.
	4	Scapholunate Instability	김병진 M.D.
	9	Injuries of the Extensor Apparatus	유명재 M.D.
	10	Open Reduction and Internal Fixation of Lisfranc/Tarsometatarsal Injuries	이상현 M.D.
	11	Open Reduction for Metacarpophalangeal Joint Dislocation	오상호 M.D.
	16	Treatment of the Stiff Finger and Hand	최진희 M.D.
	17	Arthroscopic Ankle Arthrodesis	여도현 M.D.
	18	Traumatic Brachial Plexus Injury	천호준 M.D.
	23	Thoracic Outlet Compression Syndrome	김영우 M.D. PhD
	24	Radial Head Fracture: Open Reduction and Internal Fixation	서재성 M.D. PhD
	25	Chemical Modification of Tendon Gliding Surface	남현재 M.D.
	30	Skin Tumors of the Hand and Upper Extremity	강동호 M.D.
	31	Posterolateral Corner Repair and Reconstruction	김성중 M.D. PhD

월	날짜	TITLE	SPEAKER
4 월	1	CMCJ Dislocation	남현재 M.D.
	6	Skin Tumors of the Hand and Upper Extremity	강동호 M.D.
	7	Proximal Radius Fractures in Children	송광순 M.D. PhD
	8	Staged Tendon Grafts and Soft Tissue Coverage	김병진 M.D.
	13	Management of Chronic Upper Extremity Pain and Factitious Syndromes	유명재 M.D.
	14	Arthroscopic Management of Lateral Epicondylitis	박성혁 M.D. PhD
	15	Skin Graft	오상호 M.D.
	20	Management of Upper Extremity Vascular Disorders and Injuries	최진희 M.D.
	21	Diagnostic and therapeutic spinal injections	이경민 M.D.
	22	Treatment of Neuropathic Diabetic Foot Ulcers	천호준 M.D.
	27	Soft Tissue Reconstruction and Flaps	김영우 M.D. PhD
	28	General Principles of Fracture Care	김상희 M.D.
	29	Treatment of the upper extremity amputee	남현재 M.D.
5 월	4	Zone 1 Flexor Tendon Injury	강동호 M.D.
	6	Growth Considerations in Pediatric Upper Extremity Trauma and Reconstruction	김병진 M.D.
	7	Carpal Instability	백구현 교수님(서울대학교병원)
	11	Vascular Anomalies of The Upper Extremity	유명재 M.D.
	12	Fracture Management in Primary Care and Emergency Medicine Settings	여도현 M.D.
	13	Replantation and Revascularization	오상호 M.D.
	18	Fractures and Ligament Injuries of the Thumb and Metacarpals	최진희 M.D.
	20	Evidence-Based Scar Management: How to Improve Results with Technique and Technology (PRS 2019)	조기현 M.D.
	25	Triangular fibrocartilage tears	천호준 M.D.
	26	Treatment of the Unstable Shoulder with Humeral Head Bone Loss	서재성 M.D. PhD
27	Correction of Boutonniere Deformity	김영우 M.D. PhD	
6 월	1	Five Reliable Nerve Transfers for the Treatment of Isolated Upper Extremity Nerve Injuries (PRS 2021)	최진희 M.D.
	2	Deformity Correction around Knee	김성중 M.D. PhD
	3	Evidence-Based Scar Management: How to Improve Results with Technique and Technology (PRS 2019)	조기현 M.D.
	9	Nerve Compression Syndromes of the Shoulder	서재성 M.D. PhD
	10	ASSH Surgical Videos & Lectures	
	15	Triangular fibrocartilage tears	천호준 M.D.
	16	Surgical Options for Pediatric Distal Radial Fractures	송광순 M.D. PhD
	17	Correction of Boutonniere Deformity	김영우 M.D. PhD
	22	Burns and Frostbite of the Hand	남현재 M.D.
	23	Rotator Cuff Repair: Arthroscopic Technique for Partial-Thickness or Small or Medium Full-Thickness Tears	박성혁 M.D. PhD
	24	ASSH Surgical Videos & Lectures	
	29	Fractures of the Forearm and Elbow	강동호 M.D.
	30	Evaluation of cervical spine disorders	이경민 M.D.

월	날짜	TITLE	SPEAKER
7 월	1	Applying evidence-based concepts in the treatment of distal radius fractures in the 21st century (Clinics 2021)	최진희, 김병진, 남현재 M.D.
	6	Polydactyly / Duplicated Thumb (JHS (European vol) 2021)	조기현, 오상호 M.D.
	7	Acute and Chronic Patellar Tendon Ruptures	김상희 M.D.
	8	ASSH Surgical Videos & Lectures	-
	13	Fractures of the Forearm and Elbow	강동호 M.D.
	14	Plantar Heel Pain	이상현 M.D.
	15	Diagnostic and Therapeutic Arthroscopy for Wrist Injuries	김병진 M.D.
	20	Surgical Management of Painful Peripheral Nerves	유명재 M.D.
	21	Fractured: Repairing the acetabulum	여도현 M.D.
	22	ASSH Surgical Videos & Lectures	-
	27	Hook of Hamate Fractures in Major and Minor League Baseball Players (JHS 2021)	조기현 M.D.
	28	Surgical Techniques for Shoulder Instability	서재성 M.D. PhD
	29	An Evidence-Based Guide for Managing Phalangeal Fractures (PRS 2021)	오상호 M.D.
	8 월	3	Surgical Management of Painful Peripheral Nerves
4		Fractured: Repairing the Acetabulum	여도현 M.D.
5		Hook of Hamate Fractures in Major and Minor League Baseball Players (JHS 2021)	조기현 M.D.
10		An Evidence-Based Guide for Managing Phalangeal Fractures (PRS 2021)	오상호 M.D.
11		Surgical Techniques for Shoulder Instability	서재성 M.D. PhD
12		ASSH Surgical Videos & Lectures	-
17		Local flap	최진희 M.D.
18		Patellar Bone Loss	김성중 M.D. PhD
19		Tendon Transfers for Extensor Tendon Reconstruction	천호준 M.D.
24		4-Corner Fusion with a Circular Plate	김영우 M.D. PhD
25		Recent advances in the diagnosis and treatment of glenohumeral bone loss	박성혁 M.D. PhD
26	ASSH Surgical Videos & Lectures	-	
31	Treatment of Dorsal Wrist Ganglions	남현재 M.D.	
9 월	1	Anterior Cervical Discectomy and Fusion	이경민 M.D.
	2	Local flap	남현재 M.D.
	7	Nerve Entrapment Around the Elbow	강동호 M.D.
	8	Implant Removal in Revision Total Knee Arthroplasty	김상희 M.D.
	9	ASSH Surgical Videos & Lectures (인증 때문에 case 발표만)	
	14	Outcomes and Complications of Tendon Transfers to Address Pinch and Grasp Weakness: A Systematic Review of the Operative Management of Ulnar Nerve Paralysis (PRS 2021)	공태현 선생님(영남대학교 성형외과)
	15	Arthrodesis of the Hallux Metatarsophalangeal and Interphalangeal Joints	이상현 M.D.
	16	비디오 이어서 시청함 Treatment of the Upper-Extremity Amputee	김병진 M.D.
	23	Case conference	
	28	Journal Review -Treatment of hypoplasia thumb, pollicization	공태현 선생님(영남대학교 성형외과)
	29	Nonoperative Management and Rehabilitation of the Hip	여도현 M.D.
	30	Treatment of the Upper-Extremity Amputee	김병진 M.D.

월	날짜	TITLE	SPEAKER
10 월	5	Treatment of the Upper-Extremity Amputee	김병진 M.D.
	6	Open Bankart Procedure for Recurrent Anterior Shoulder Dislocation	서재성 M.D. PhD
	7	ASSH Surgical Videos & Lectures	
	12	Flap Coverage of Thumb Defects	유명재 M.D.
	13	Total Hip Arthroplasty in the Young Active Patient with Arthritis	김성중 M.D. PhD
	14	Proximal Interphalangeal Arthroplasty	최진희 M.D.
	19	Treatment of Scaphoid Nonunion	천호준 M.D.
	20	Arthroscopy for Arthritis of the Elbow	박성혁 M.D. PhD
	21	ASSH Surgical Videos & Lectures	
	26	Sauvé-Kapandji Procedure	김영우 M.D. PhD
	27	Diagnostic and therapeutic spinal injections	이경민 M.D.
	28	Capsulotomy for Proximal Interphalangeal Contracture	남현재 M.D.
	11 월	2	Tendon Transfers for Rheumatoid Tendon Attrition Rupture
3		Patellar Tendinopathy	김상희 M.D.
4		ASSH Surgical Videos & Lectures	
9		NERVE GRAFT FOR MAJOR NERVE INJURY IN UPPER EXTREMITY	남현재 M.D.
10		Mueller-Weiss Treated with Limited Fusion	이상현 M.D.
11		Scapholunate Ligament Reconstruction	김병진 M.D.
16		Joint Fusion for Thumb Metacarpophalangeal Instability	유명재 M.D.
17		Impaction Grafting of the Femur	여도현 M.D.
18		ASSH Surgical Videos & Lectures	
23		Distal Ulnar Resection (Darrach Procedure)	최진희 M.D.
24		Primary Idiopathic Shoulder Stiffness: Frozen Shoulder	서재성 M.D. PhD
25		The Role of Arthroscopy in Midcarpal Instability	천호준 M.D.
30		Arthroscopic Partial Wrist Fusions	김영우 M.D. PhD
12 월	1	Spine Trauma	이호형 M.D. (제주한라병원)
	2	ASSH Surgical Videos & Lectures	
	7	슬관절 치환 술에 대한 분석 심사	김영우 M.D. PhD
	8	External Fixation for Lower Extremity Trauma	김성중 M.D. PhD
	9	Vascular anomalies of the upper extremity	남현재 M.D.
	14	Strategy of treatment of acute complex upper extremity injury	강동호 M.D.
	15	SSC SSP massive tear	박성혁 M.D. PhD
	16	Strategy of treatment of acute complex upper extremity injury	강동호 M.D.
	21	SSH Surgical Videos & Lectures	
	22	Cervical Arthroplasty vs Foraminotomy	이경민 M.D.
	23	Nerve compression syndromes of the shoulder	김병진 M.D.
	28	Flap Coverage of Digits	유명재 M.D.
	29	Knee anterolateral and posterolateral instability	김상희 M.D.
30	ASSH Surgical Videos & Lectures		

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for Surgery of the Peripheral Nerve.

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광범위 두 번째 등쪽 손허리 동맥 천공지 피판을 이용한 제1수지 간부의 재건

최수현, 천호준, 오상호, 이상현

W병원 수부외과 및 미세재건센터

Reconstruction of the First Web Space Using the Wide-Second Dorsal Metacarpal Artery Perforator Flap

Su Hyun Choi, Ho Jun Cheon, Sang Ho Oh, Sang Hyun Woo

W Institute for Hand and Reconstructive Microsurgery, W General Hospital, Daegu, Korea

Purpose: This study evaluated the functional and aesthetic outcomes of a wide-second dorsal metacarpal artery perforator flap for reconstruction of the first web space of the hand. This flap sets the proximal edge of the extensor retinaculum as the distal limit.

Methods: We measured the preoperative and postoperative angles of the first web space and assessed the quality of the donor site scar in eight patients.

Results: The average flap size was 5.5 × 2.8 cm (range, 5.0 × 1.5 cm to 5.0 × 6.0 cm), and all flaps survived completely. The mean postoperative angle was 53°. The mean Vancouver Scar Scale score of the donor site was 4 points, and the patients had near-normal thickness and vascularity values. There was no distortion of the scar, and patients were satisfied with the scar appearance of the donor site.

Conclusion: The wide-second dorsal metacarpal artery perforator flap is a useful technique to reconstruct large defects of the first web space. It is easy to raise, thin, and pliable, and has excellent color and tissue matching.

Keywords: Hand injuries, Joint capsule release, Perforator flap, Reconstructive surgical procedures

INTRODUCTION

The thumb is critical to hand function, and complete loss (amputation) of the thumb represents a 40% loss of hand function according to impairment rating conventions [1]. Adequate first web space is significant for the function of thumb. A contracted web space restricts thumb function, and a proper web space is indispensable for thumb abduction, web space expansion, and thumb mobility [2]. Many etiologies can induce web contracture, including trauma, burns, infection, paralysis, ischemia, spastic conditions, and improper splinting [3]. Many surgical techniques have been established to release web contracture using skin grafting, local flaps (Z-plasty, four-flap, or five-flap technique), first dorsal metacarpal flap, fill-up web flap, lateral arm flap, cross arm flap, groin flap, reverse posterior interosseous artery flap, and skeletal traction [4-6]. Each of these methods has its own

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Original Article
 Cell Therapy &
 Organ Transplantation



Process of Obtaining Social Consensus and 3-Year Functional Outcomes of the First Hand Allotransplantation in Korea

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ABSTRACT

Background: On February 2, 2017, the surgical team of ten board-certified hand specialists of W Hospital in Korea successfully performed the nation's first hand transplantation at Yeungnam University Medical Center (YUMC). This paper reports on the legal, financial, and cultural hurdles that were overcome to open the way for hand transplantation and its functional outcomes at 36 months after the operation.

Methods: W Hospital formed a memorandum of understanding with Daegu city and YUMC to comply with government regulations regarding hand transplantation. Campaigns were initiated in the media to increase public awareness and understanding. With the city's financial and legal support and the university's medical cooperation, a surgical team performed a left distal forearm hand transplantation from a brain-dead 48-year-old man to a 35-year-old left-handed man.

Results: With this successful allotransplantation, the Korean Act on Organ Transplantation has now been amended to include hand transplantation. Korean national health insurance has also begun covering hand transplantation. Functional outcome at 36 months after the operation showed satisfactory progress in both motor and sensory functions. The disabilities of the arm, shoulder, and hand score were 23. The final Hand Transplantation Score was 90 points. Functional brain magnetic resonance imaging shows significant cortical reorganization of the corticospinal tract, and reinnervation of intrinsic muscle is observed.

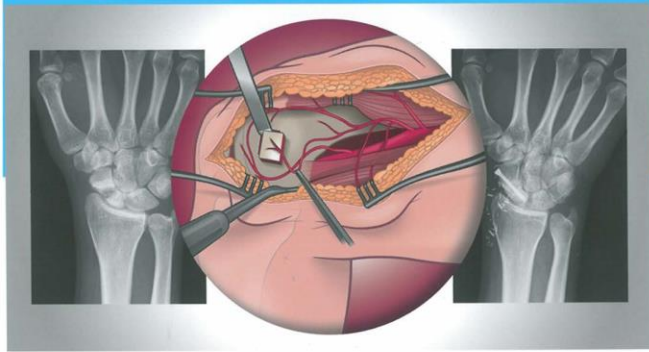
Conclusions: Hand transplantation at the distal forearm shows very satisfactory outcomes in functional, aesthetical, and psychological aspects. Legal and financial barriers against hand transplantation have long been the most burdensome issues. Despite this momentous success, there have been no other clinical applications of vascularized composite allotransplantation due to the limited acceptance by Korean doctors and people. Further public education campaigns for vascularized composite allotransplantation are needed to increase awareness and acceptance.

Keywords: Hand Transplantation; Social Consensus; Functional Outcome; Korea

Problems in Hand Surgery

Solutions to Recover Function

Michael W. Neumeister
Michael Sauerbier



59 Failed Digit Replant: Toe-to-Hand Transfer

Sang Hyun Woo

59.1 Patient History Leading to the Specific Problem

A 34-year-old male patient sustained a complete amputation of the right index, long, and ring fingers by a press machine (> Fig. 59.1).

After replantation failed, the index finger was cloned primarily at the middle phalanx. The long finger had a minor soft-tissue defect closed but did not require any bone shortening. There is motion at the PIP joints of each finger. The index is amputated just distal to the PIP joint, whereas the long finger is amputated at the DIP joint. The fore-shortened fingers inhibit key pinch and render the fingers dysfunctional.

59.2 Anatomic Description of the Patient's Current Status

The patient now has soft tissue covering the fore-shortened right index and long fingers. The ring finger had a minor soft-tissue defect closed but did not require any bone shortening. There is motion at the PIP joints of each finger. The index is amputated just distal to the PIP joint, whereas the long finger is amputated at the DIP joint. The fore-shortened fingers inhibit key pinch and render the fingers dysfunctional.



Fig. 59.1 Amputation of the distal aspect of the index, long, and ring fingers.



Fig. 59.2 Division and inset of the groin flap provided early coverage of the exposed base of the long and ring fingers.



Fig. 59.3 A groin flap raised to cover the exposed base at the end of the long and ring fingers.

61 Failed Replant: Failed Degloving Revascularization

Sang Hyun Woo

61.1 Patient History Leading to the Specific Problem

A 27-year-old male patient sustained a degloving amputation of the right hand by a roller machine. All soft tissues of the index, long, ring, and small fingers were completely detached from the phalangeal bones and tendons distal to the distal interphalangeal joint of all fingers (> Fig. 61.1).

61.2 Recommended Solution to the Problem

The degloved digits require coverage with a flap. Free tissue coverage is an option, but that would require vein grafts into the fingers. A staged reconstruction can be achieved while keeping the hand elevated using the thoracoepigastric flap and the radial arm flap. These are random flaps that will be used to create a surgical syndactyly with subsequent separation of the digits after revascularization of the flaps from surrounding tissue. This often takes 2 to 3 months and then debriefed and repositioned. Skin grafts may be needed to obtain full closure.

61.3 Technique

The soft-tissue defect of the palmar area was covered with anterior chest flap and the dorsal area covered with medial upper inner arm flap (> Fig. 61.2).

Before reconstructing the degloved fingers, two steps are mandatory to achieve successful postoperative results. Revision amputation of the distal phalangeal bone should be carried out if not, the distal phalangeal bone inside the flap becomes necrotic due to insufficient perfusion through the flap. Transverse fixation on the adjacent proximal phalangeal bones is also necessary to avoid narrowing of the interdigital joint of all fingers (> Fig. 61.2).



Fig. 61.1 Degloving amputation of all fingers.



Fig. 61.2 The skin was removed and the distal phalanx will be removed to permit better finger function without contracture.

58 Failed Replant: Ray Amputation

Sang Hyun Woo

58.1 Patient History Leading to the Specific Problem

A 36-year-old woman sustained a complete amputation of the left index finger through the proximal phalangeal bone. The patient was taken to the operating room emergently. An attempt at replantation failed (> Fig. 58.1).

58.2 Anatomic Description of the Patient's Current Status

The patient had an amputation of the index finger at the level of the mid-proximal phalanx. There was no movement of the phalanx, which was too short to be functional.

58.3 Recommended Solution to the Problem

- Revision amputation at the just proximal part of replantation is performed by denuding articular cartilage, shaping the condyles of the proximal phalanx, and employing tension-free skin closure.
- Primary ray amputation shortens lost work time, eliminates the cost of a second procedure, and improves cosmetic appearance.

• Second toe-to-hand transfer for the digits recovers a normal appearance and also maintains the original digit length, but consideration of donor site morbidity and risk of operation failure must be taken.

58.4 Technique

Through a Y-shaped incision on the dorsal surface of the metacarpophalangeal joint area, the extensor tendons and the first dorsal interosseus muscle are divided at the level of the second metacarpal base. After stripping of the dorsal periosteum, the second metacarpal is transected in a bevel design at the metacarpal base (> Fig. 58.2).

At least 1 cm of the metacarpal bone should be left to preserve the insertion of the extensor carpi radialis longus tendon. On the palmar aspect, the digital artery to the radial side of the index finger is ligated and the digital nerves dissected distally into the proximal phalangeal segment and divided. When the ulnar digital nerve of the index finger is resected, the radial digital nerve and accompanying digital artery of the long finger should be protected. The digital nerves should be transected as far proximally as possible to prevent painful neuroma formation. The flexor tendons of the index fingers are pulled distally and transected. The first palmar interosseus tendon, volar plate, transverse intermetacarpal ligament, and proximal portion of the flexor tendon sheath are sharply resected. The rough edge of the distal end



Fig. 58.1 (a, b) Left index finger failed an attempt at replantation. The finger is nonviable, leaving the patient with a stump of the proximal phalanx.

60 Failed Thumb Replant: Great Toe-to-Thumb Transfer

Sang Hyun Woo

60.1 Patient History Leading to the Specific Problem

A 47-year-old male patient sustained a crushing amputation of the left thumb by agricultural machine. The distal phalangeal bone was segmentally fractured and two attempts of the reattachment of the vascular digital artery were not successful. On the seventh postoperative day, the necrotic thumb was debrided (> Fig. 60.1).

60.2 Anatomic Description of the Patient's Current Status

The patient has a distal thumb amputation through the base of the distal phalanx. The thumb requires with tissue coverage for exposed phalangeal bone as well as length for restoration of key pinch and grip.

60.3 Recommended Solution to the Problem

There are a number of options for this patient. The goals are to provide adequate stable coverage and added length to recover optimal function and form. The wounds could be closed with a

Vaseline dressing and allowed to heal by secondary intent. This would take a number of weeks and still not address the short thumb problem. A revision amputation would shorten the bone even more, but would offer glabrous skin coverage with sensation and have the least amount of down time for the patient. Thoracoepigastric flaps do not offer sensation. Local flaps from perforators from the digital arteries can be grafted from the proximal thumb to the distal thumb and offer stable coverage, but again thumb length has not been addressed and the distal end remains inverted. The first dorsal metacarpal artery flap can also provide stable, sensate coverage but does not address thumb lengthening.

An optimal solution to this problem would be to use the great toe as a toe-to-hand transfer offer restoration of sensation and thumb length.

60.4 Technique

The great toe flap is designed first by measuring the contralateral thumb to be accurate with the required length of toe needed to restore normal anatomy (> Fig. 60.2).

Using a retrograde approach on the first web space of the foot, the dominant artery should be dissected from the first web space to the proximal direction. In this case, the first plantar metatarsal artery is dominant and extensive incision on the plantar area is necessary. The artery is skeletonized by a



Fig. 60.1 (a-c) A failed distal thumb replantation resulted in a revision amputation with soft tissue loss to the volar skin and a bone loss at the level of the base of the distal phalanx.

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오상호, 김영우, 이상현

W병원 수부외과 및 미세재건센터

Impact on the Service Volume of a Single
Hand Surgery Center during the COVID-19
Pandemic Period in Daegu

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Purpose: We investigated what changes occurred at single hand surgery center during the coronavirus disease 2019 (COVID-19) pandemic in Daegu, Korea using patient data of 4 years (2018–2021).**Methods:** This is a single-center retrospective study of patients visiting our center during the COVID-19 pandemic (Jan 22 to May 6, 2020) for recent 4 years from 2018 to 2021. Service volumes (SVs) including the number of in/outpatient, emergency room, elective, and emergency surgery were analyzed. During the peak period of the COVID-19 (Feb 24 to Mar 9, 2020) at W Hospital, patient's demographics, injury mechanism, and place of injury of hand trauma were analyzed.**Results:** SVs were significantly reduced in 2020 as compared with other years. The SVs except for the number of emergency surgeries have recovered after 2 months from the first confirmed case of COVID-19 in Daegu, Korea. At the peak period, the effect of COVID-19 was weak on emergency room-related SVs. In addition, a daily number of in/outpatients and elective surgeries had a statistically significant negative correlation with the number of COVID-19 confirmed ($p < 0.05$). During the peak period, superficial laceration increased and finger and wrist fractures decreased. The number of cases occurring in workplace increased, however, occurring outside during daily life decreased.**Conclusion:** COVID-19 pandemic greatly reduces service volume in our center. Thorough protective strategy from COVID-19 such as personal protective equipment was essential for early recovery of hospital functions during the pandemic. In addition, manpower for the emergency room must be preserved during the pandemic. The results of our study, which reported SVs through the pandemic will help maintain the function of hand surgery centers.**Keywords:** COVID-19, Hand surgery, Hand trauma, Service volume, Pandemics

서론

코로나 바이러스 감염증 2019 (coronavirus disease 2019, COVID-19)는 중국 우한에서 2019년 11월 17일에 첫 환자가 보고된 이후 지속적으로 전 세계에 전파되면서 2020년 1월 세계보건기구는 국제적 공중보건 비상사태(public health emer-

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ORIGINAL ARTICLE

|Craniofacial/Pediatric

Predictive Factors of Keloid Formation in Congenital Foot Syndactyly

Sang Ho Oh, MD
Sang Hyun Woo, MD, PhD

Background: Keloid formation after syndactyly division is a stressful situation for patients. In our experience, digital enlargement may be involved in keloid formation following syndactyly divisions. Therefore, we aimed to identify predictive factors and reference values for keloid formation.

Methods: In this retrospective study, 11 keloid patients (seven children, four adults) and 11 nonkeloid patients after syndactyly division (control group) with the same sex, age, webspace division site, and operation were enrolled between 2008 and 2020. Using preoperative x-ray images, we compared bony width, length, area, and protruding index relative to the great toe between keloid and control groups. Additionally, reference values for keloid formation were obtained using receiver operating characteristic curves. Statistical analysis was performed using Spearman's correlation test.

Results: When compared with same digit in normal foot, distal phalanx (P3) bony base width, area, and protruding index on keloid foot were significantly different between keloid group and control group. The reference values for keloid formation after syndactyly release were 1.34 for the P3 area ratio and 1.61 for the P3 triangular area ratio (using the horizontal length of the P3 base and P3 vertical length). The reliability of reference values for the P3 area ratio and P3 triangular area ratio was excellent for all patients.

Conclusions: If digital enlargement in distal phalanx is present when compared with adjacent toe in patients who had undergone primary foot syndactyly divisions, risk of keloid development should be communicated preoperatively, and preventive strategies for keloid development and close observations are required. (*Plast Reconstr Surg Glob Open* 2021;9:e3946; doi: 10.1097/GOX.0000000000003946; Published online xxx xxx 2021.)

INTRODUCTION

Keloids are a fibroproliferative disease of the skin.¹ They involve normal skin, have a strange appearance, and induce pain or an itching sensation. Many studies have been conducted to identify the keloid formation mechanism and effective treatments.^{2,3} However, the mechanism of keloid formation is still unclear, and there is no established treatment method for keloids.⁴

At our institute, we have seen a few keloid patients after foot syndactyly division (Fig. 1). The keloid scars formed

after foot syndactyly division make large and unusual scars on the webspace, resulting in syndactyly recurrence, a significantly stressful situation for the patient and their guardians. If the keloid develops without the patients and guardians having received a detailed explanation of such risk preoperatively, they would not understand the cause of keloid formation and the need for additional surgery.

Fortunately, keloid formation after foot syndactyly division is significantly rare, and there are few cases reported in the literature.⁵⁻¹⁰ However, once the keloid occurs, it continuously progresses, and operative results can be detrimental. Therefore, if an anticipatory tool for keloids is available, it would allow surgeons, patients, and guardians to prepare for the keloid formation. According to a previous study, digital enlargement like large digit may be involved with keloid formation following syndactyly divisions.⁷ Conventionally, the larger digit means a larger width and longer length. Therefore, based on prior case reports and our own experience, we believe that not only digital enlargement but also digital protrusion is associated

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