

상과염 (Epicondylitis)

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송현석

LATERAL EPICONDYLITIS

HISTORY

- 1873, Runge; 처음으로 병을 기술
- 1882, Morris; “lawn tennis elbow” 로 명명
- angiofibroblastic tendinosis²²⁾

INCIDENCE

- 1~3% of population
- 5 times more common than medial epicondylitis

AGE

35~50 years old (median 41 years old)

GENDER

overall male to female ratio ; usually equal

ETIOLOGY

1) tendon overuse

- sports players ; tennis
- workers
- housewives

; eccentric contraction producing a powerful stress on the ECRB origin

2) Acute trauma

- direct blow⁴⁾
- sudden extreme effort or activity

PATHOLOGY

; tendon overuse & failed healing

- primary; ECRB (extensor carpi radialis brevis)
- secondary; EDC (extensor digitorum communis)

- degeneration
- microtear
- “angiofibroblastic hyperplasia”²²⁾
 - invasion of immature fibroblast
 - nonfunctional vascular proliferation (angiogenesis)
- no acute or chronic inflammatory cells
- mucoid degeneration, mucopolysaccharide infiltration
- collagen fiber disruption

PHASES

* Nirschl classification of phases of lateral epicondylitis²⁰⁾

Table 1. Nirschl Classification of Phases of Lateral Epicondylitis

Phase	Description of Level of Pain
I	Mild pain after exercise, lasting less than 24 hours
II	Pain after exercise, lasting greater than 48 hours, resolves with warm-up
III	Pain with exercise, does not alter ability to exercise
IV	Pain with exercise that alters ability to exercise
V	Pain caused by heavy activities of daily living
VI	Pain caused by light activities of daily living; intermittent pain at rest that does not interfere with sleep
VII	Constant pain at rest, interferes with sleep

DIFFERENTIAL DIAGNOSIS

- radial tunnel syndrome
 - ; posterior interosseous nerve
- lateral collateral ligament sprain or insufficiency
 - PLRI (posterolateral rotary instability)
- intra-articular pathologies; OCD, chondromalacia, synovitis
- triceps tendonitis

- referred pain form cervical, shoulder or wrist injuries

CONSERVATIVE TREATMENTS

1) modification of activity

- proximal forearm splint

; a compressive force on the muscle bellies

→ limiting the excursion of the muscle & decreasing the force on the extensor origin

- wrist orthoses ; limit wrist extension

2) ultrasound

- a commonly used modality⁹⁾

- no difference¹²⁾

3) iontophoresis

- use low-velocity electrical current to drive topical medication (steroid or NSAIDs)

- early pain response

- no difference between the groups²¹⁾

4) deep friction massage

5) stretching

6) ESWT (extracorporeal shock wave therapy)

- helpful^{26,31)} or helpless^{6,10,28)}

7) steroid injection

- with local anesthetics

- less than 3 times in a year

- post-injection worsening of pain ; almost half⁹⁾

- adverse effects ; skin atrophy, discoloration

- metaanalysis of randomized clinical trials²⁾

; the bulk of the evidence was inconclusive as to the beneficial effect of corticosteroid injection over the longer term

8) counter–force bracing

- create a new ECRB origin⁴⁾

- decreasing stress on the affected tendon and allowing time to heal without interfering with activity

- disadvantage; skin problems, radial nerve compression

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9) laser therapy

- no significant difference¹³⁾

10) glycosaminoglycan polysulfate injection

- significantly improved pain scores¹⁾
- local pain; 41%

11) topical botulinium toxin injection

- improve pain³³⁾
- finger paresis & weakness of finger extension¹⁴⁾

12) topical nitric oxide injection

- reduced pain & improved extensor muscle function²⁴⁾

13) topical diclofenac injection

- pain relief^{5,16)}

14) acupuncture

- a good short-term effect of pain relief
- not a lasting effect that exceeds untreated⁴⁾
- no difference from the control groups¹¹⁾

15) autologous blood injection

- 50% success with 1 injection & 79% excellent results with 1 or 2 additional injections
- start a cascade of local factors that stimulate angiogenesis and healing⁸⁾
- dramatic reduction in pain⁷⁾

OPERATIVE TREATMENTS

- 5~10% recurrent
- 25% of the patients¹⁵⁾

A. Indications of Operation¹⁹⁾

- chronic symptoms > a duration of 1 year
- limit a daily living activity
- failure to respond to conservative treatments
6 months^{23,25)}
- 3 or more failed steroid injections
- quality of life is unacceptable by patient

B. Modalities³⁰⁾

- open or percutaneous release of the extensor origin
- decompression of the radial nerve
- excision(debridement) of the pathologic tissue & repair the defect
- anconeus rotation
- denervation of the lateral epicondyle³²⁾
- arthroscopic treatment

C. Open

(1) open release of the extensor origin

- resect the pathologic tissue¹⁸⁾
- decortication
- drilling

- ECRL (extensor carpi radialis longus)에 손상
- LUCL (lateral ulnar collateral ligament)를 다칠 위험성
- 관절내 동반 병변을 확인할 수 없다
- 관절경 술식에 비하여 회복이 늦고 동통이 많다. 강직의 위험성

* suture anchor repair of ECRB to the lateral epicondyle²⁹⁾

; more anatomical repair

the grip & pinch strength ; 110% & 106% of the nonoperative limb

15/16(94%) ; return to previous level of activity at an average 4.1 months

D. Arthroscopic Treatments

- 1995, Grifka et al ; 소개⁹⁾
- ECRL에 손상을 입히지 않음
- 재활 기간이 짧다

* LUCL risk

; safe zone - resection do not extend posteriorly to an intra-articular line bisecting the radial head, at 90 flexion position²⁷⁾

*** COMBINED INTRA-ARTICULAR PATHOLOGIES**

; 관절내 동반 병변을 확인하여 동시에 치료가 가능

; 18.8²³⁾~69%³⁾

- synovitis
- loose bodies
- osteophytic spurs
- chondromalacia

* procedures

- resect the capsule
- release of ECRB origin
- decortication of the lateral epicondyle
- resection of the synovial fringe¹⁷⁾ or annular ligament

* Arthroscopic Classifications

- Baker et al (2000)³⁾
 - type I; intact capsule
 - type II; linear capsular tear
 - type III; complete capsular tear
- Mullett et al (2005); degenerative fringe of the radiocapitellar complex
 - ; based on the relationship of the capsular fold to the radial head¹⁷⁾
 - type 1; the radial head is completely exposed
 - type 2; partial coverage of the radial head without interposition into the joint
 - type 3; subluxation of the capsular edge into the joint
 - type 4; the radial head is completely obscured throughout the ROM

* Results of Arthroscopic Treatments

- a) return to daily activities
 - average return to unrestricted work ; 6 days (range, 0~28 days)²³⁾
 - return to work ; 7 days¹⁷⁾
 - return to work in an average 2,2 weeks³⁾
 - b) grip strength
 - 96% of the strength of the unaffected arm at an average F/U of 2,8 years³⁾
 - c) satisfaction at the last F/U
 - better or much better in 37/39(95%) elbows at an average F/U of 2,8 years³⁾
 - d) compare with the open procedures
- * 유사한 결과
- 69% of open / 72% of arthroscope ; good or excellent outcomes²⁵⁾

MEDIAL EPICONDYLITIS

ETIOLOGY

- most common cause of the medial elbow pain

- only 15~20% as common as lateral epicondyle
- male/female = 2/1
- dominant arm ; 60%
- “golfer’ s elbow”

PATHOLOGY

- primary ; pronator teres, FCR (flexor carpi radialis), PL (palmaris longus)
- secondary ; FCU (flexor carpi ulnaris), flexor sublimis

COMBINED PATHOLOGY

- neuropraxia of ulnar nerve
 - ; the most common
 - 40~50%
- MCL (medial collateral ligament) strain and/or rupture
 - ; valgus instability

CLASSIFICATION

type I; no associated ulnar nerve symptoms

→ epicondylar debridement

type IIA; mild ulnar nerve signs or symptoms

→ epicondylar debridement with/without cubital tunnel decompression or transposition

type IIB; moderate or severe ulnar neuropathy with objective deficits on P/E or denervation on EMG

→ epicondylar debridement with submuscular transposition

DIFFERENTIAL DIAGNOSIS

- MCL insufficiency
- cervical neuropathy
- thoracic outlet syndrome
- triceps tendinitis
- triceps medial head subluxation
- ulnar nerve subluxation
- isolated ulnar neuropathy

NON-SURGICAL TREATMENTS

; generally similar with those of lateral epicondylitis

SURGICAL TREATMENTS

- medial antebrachial cutaneous nerve & ulnar nerve ; risk

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