

— Abstract —

Treatment of the Stiffness of the Elbow using Posterior Extensile Approach

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Purpose: To review the surgical results of stiff elbow using the posterior extensile approach which provides a wide surgical view with a single posterior skin incision.

Materials and Methods: From February 1999 to May 2002, we performed 6 surgical correction of stiff elbow using posterior extensile approach and followed the patients more than 1 year. In order to get better result, we performed cadaver study (four elbows of two fresh cadavers). Average duration of follow up was 15.7 months (14~21). Functional results was analyzed using Broberg and Morrey analysis scale.

Results: The approach through the plane between the extensor carpi radialis longus and the extensor carpi radialis brevis was ideal, because it preserves normal anatomy and provides a wide surgical view of the anterior joint. The posterior joint could be approached directly between the medial head of the triceps brachii and brachialis medially, the lateral head of triceps brachii and brachioradialis laterally.

In all patients, an improved ROM was obtained with intra and extra-articular adhesiolysis: an average 61.7 ° improvement (50~75). Functional results were as follows: five excellent, one good. In addition, the patients' satisfaction was high since the scar from the operation was only a single line at the posterior surface of the elbow.

Conclusion: In the treatment of stiff elbow, posterior extensile approach is thought to be useful because this method provides wide anterior and posterior surgical view.

Key Words: Stiff elbow, Posterior approach

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(17~47) , 가 5 , 가 1
가 100° 45°

3 ,
3 14.3

(12~18)
가 34°(25~45), 111°
(100~120)

가 , 가 2)

90°

1.

2 4

(8 cm 6 cm)

(Fig. 2,3). 1

7,10),
3),
8) 가
(Fig. 1). 가



Fig. 1. Three different planes for the anterior approach. (A) The plane between the anconeus(Anc.) and extensor carpi ulnaris (ECU). (B) The plane between the ECRL and extensor digitorum communis (EDC). (C) The plane between the extensor carpi radialis longus (ECRL) and extensor carpi radialis brevis (ECRB): preferable plane for wide anterior surgical view without interruption of normal anatomical structure.

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1999 2 2002 5

1 가 6
15.7
(14~21) 32.4

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3 8
(case 2).

3)

90° ,

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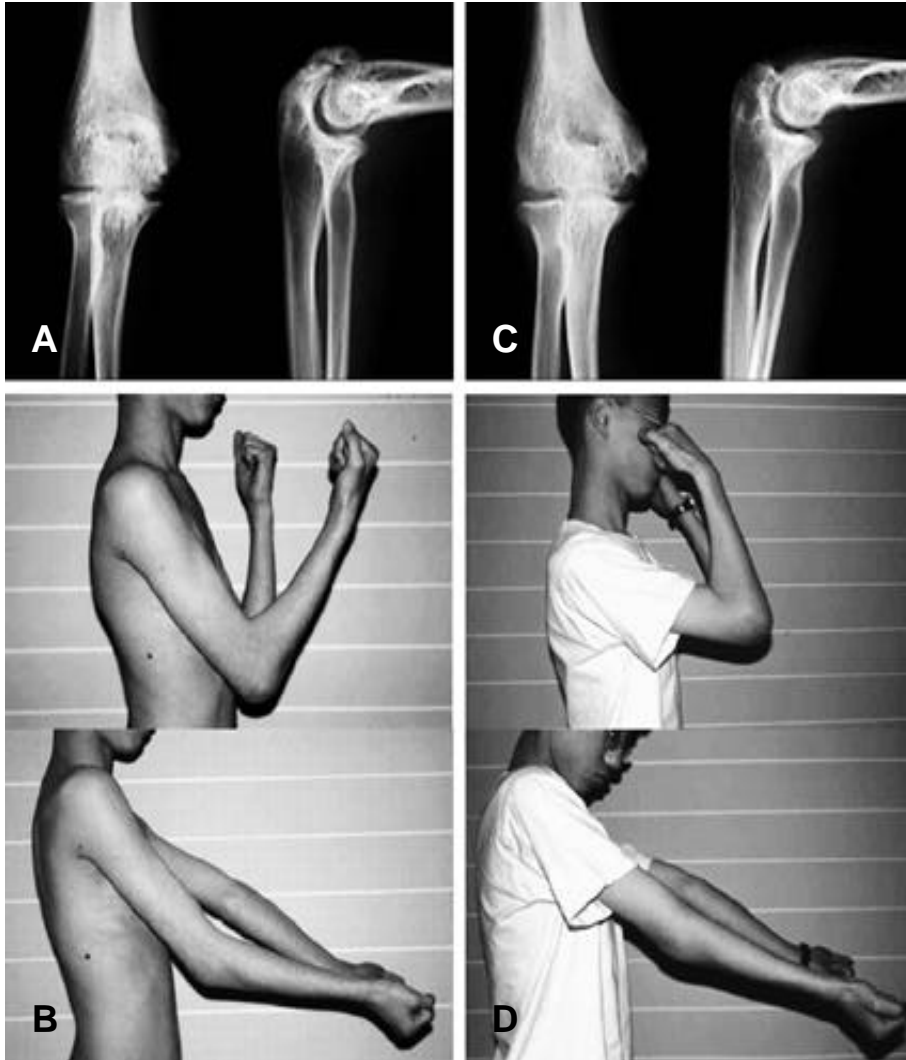


Fig. 2. (A) Preoperative AP and lateral radiographs in a 17-year-old male with post-traumatic right elbow contracture and ectopic bone formation. He suffered a medial epicondyle fracture from Korean wrestling two years ago and subsequently underwent open reduction and internal fixation. (B) Preoperative photographs of flexion and extension of the right elbow demonstrates a decreased range of motion (40-115°). (C,D) Postoperative AP and lateral radiographs (2-C) and photographs of flexion and extension of the right elbow (2-D) (10-150°) 15 months after operation (anterior and posterior capsular release, anterior and posterior soft tissue release, ectopic bone removal).

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가 Broberg Morrey 가
(Table1).

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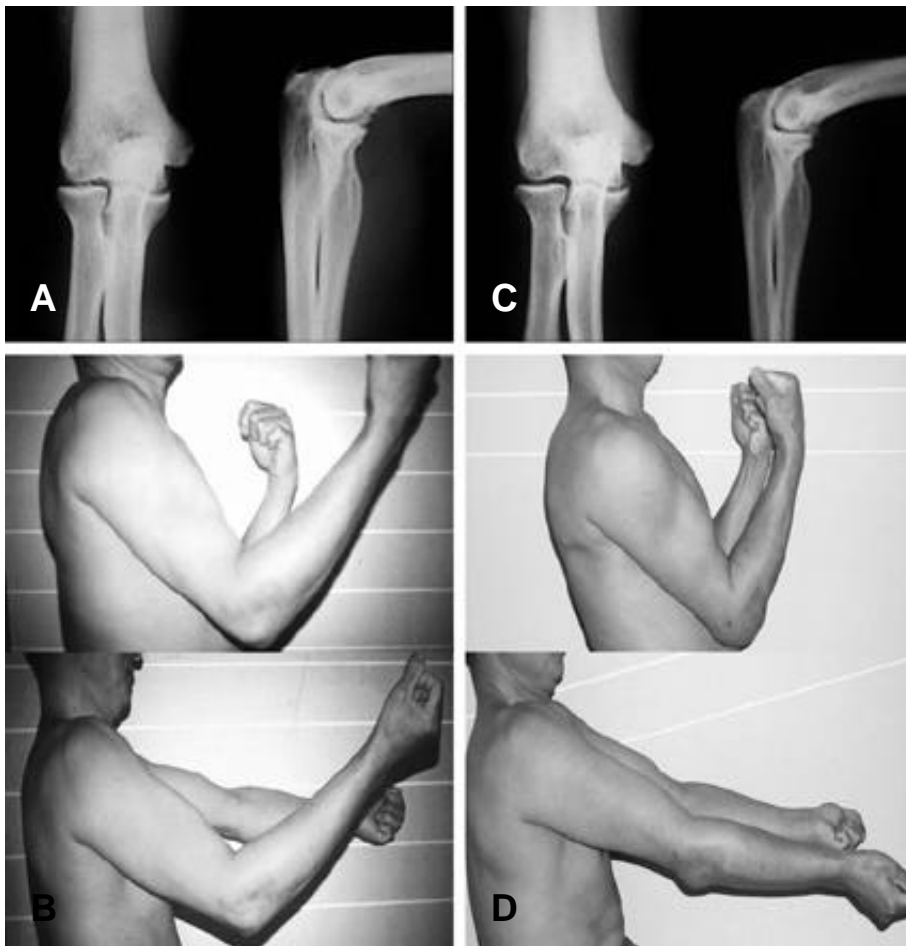


Fig. 3. (A) Preoperative AP and lateral radiographs in a 43-year-old male with painful stiffness of right elbow joint. (B) Preoperative photographs of flexion and extension of the right elbow demonstrates a decreased range of motion (30-110 °). (C,D) postoperative AP and lateral radiographs (3-C) and photographs of flexion and extension of the right elbow (3-D)(5-140 °) 14 months after operation (anterior and posterior capsular release, synovectomy, osteophyte removal).

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(Table 2).

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61.7(50 ~ 75)
가 5 , 1 . , 3,6-10)

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Table 1. Functional Rating Index*

Variable	Point Value
Motion	
Degree of flexion (0.2 × arc)	27
Degree of pronation (0.1 × arc)	6
Degree of supination (0.1 × arc)	7
Strength	
Normal	20
Mild loss (appreciate but not limiting, 80% of opposite side)	13
Moderate loss (limits some activity, 50% of opposite site)	5
Severe loss (limits everyday tasks, disabling)	0
Stability	
Normal	5
Mild loss (perceived by patient, no limitation)	4
Moderate loss (limits some activity)	2
Severe loss (limits everyday tasks)	0
Pain	
None	35
Mild (with activity, no medication)	28
Moderate (with or after activity)	15
Severe (at rest, constant medication, disabling)	0

*The translation of total score to qualitative groups was as follows: 95 to 100 points, excellent; 80 to 94 points, good; 60 to 79 points, fair; and zero to 59 points, poor.

Table 2. Clinical Findings and Results in Patients with Stiff Elbow.

Case No.	Sex /Age	Initial injury or lesions	Operation	Ext. †-Flex. † (degrees)		Improvement of ROM ^{††} (degrees)	Length of F/U ^{**} (Mos. ††)	Remarks	Functional Score ^{†††}
				Pre-operative	Last F/U				
1	M/17	Medial epicondyle fracture, ectopic bone formation on posterior joint	Ant. * & post. † capsular release, ant. & post. soft tissue release, ectopic bone removal	40-115	10-150	65	15		excellent
1	M/37	Elbow degloving injury	Ant. & post. capsular release, ant. & post. soft tissue release,	35-100	15-145	65	21	Needed further antero-medial approach	excellent
3	F/20	Lateral condyle fracture, ectopic bone formation on antero- lateral joint	Ant. & post. capsular release, ant. & post. soft tissue release, ectopic bone removal	45-120	10-150	75	14		excellent
4	M/47	Osteoarthritis	Ant. & post capsular release, synovectomy, osteophyte removal	30-105	5-140	60	17		excellent
5	M/41	Osteoarthritis, multiple loose body	Ant. & post. capsular release, synovectomy, osteophyte removal, loose body removal	25-120	5-150	50	13		good
6	M/43	Osteoarthritis, multiple loose body	Ant. & post. capsular release, synovectomy, osteophyte removal, loose body removal	30-110	5-140	55	14		excellent

Ant. *, anterior; Post. †, posterior; Ext. †, extension; Flex. †, flexion; ROM^{††}, range of motion; F/U^{**}, follow up; Mos. ††, months; Functional Score †††, Broberg and Morrey's functional elbow score

11)

1932 Campbell⁽⁸⁾
Wadsworth⁽²⁾, Bryan and Morrey¹⁾

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1,2,10,12)

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