

Functional Results in Arthroscopic Treatment in Patients with Chronic Lateral Elbow Pain

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Background: Modern surgery as elbow arthroscopic surgery is an accepted operation due to benefit in precise intra-articular lesion detection and minimally invasive surgery.

Objective: To report the functional results when using arthroscopic surgery to treat chronic lateral elbow pain.

Material and Method: The data was collected from 25 patients with chronic lateral elbow pain that failed in non-operative treatment and treated with elbow arthroscopic surgery. Five patients were excluded from this study due to diagnosed as instability that needed the ligament reconstruction. The etiology of pain were grouped in to tennis elbow (4 pts), plica (9 pts), tennis elbow combined with plica (4 pts) and cartilage lesion (3 pts). Thai quick DASH questionnaire was used to evaluate the functional results by comparing pre and post operation score and calculated statistic results with paired t-test by level of significance $p < 0.05$.

Results: The mean follow-up after surgery was 22 months by mean disability module pre and post-operative score is 68 and 18 respectively. In the occupation module was 74 and 25 respectively and in sports module was 81 and 17 respectively. All modules, scores was significant improved with p -value = 0.000, 0.000 and 0.004 respectively. The disability mean score in pre and post-operative along the diagnosis, tennis elbow mean score was 74 and 33, in plica lesion mean score was 65 and 11, combined lesions mean score was 60 and 18 and cartilage lesion mean score was 60 and 20.

Conclusion: Approaching chronic lateral elbow pain with arthroscopy can maintain the significant improvement of functional result in midterm follow-up.

Keywords: Lateral elbow pain, Elbow arthroscopy, Thai quick DASH, Results

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The elbow arthroscopic surgery is allowing both diagnostic and therapeutic for the patients who come with elbow pain⁽¹⁾. This procedure have become more popular in the last 20 years and is widely accepted in many countries. There are many advantage of elbow arthroscopy, one of these is treatment based on causes of disease such as, lateral epicondylitis⁽²⁾, cartilage lesion⁽³⁾, and plica impingement⁽⁴⁾.

In the diagnosis part, the elbow arthroscopic surgery is a dynamic investigation, which can help to identify the lesion of patients who present with chronic lateral elbow pain⁽¹⁾. So, the diagnosis and treatment in group of lateral elbow pain symptom has been improved.

Due to the advantages of the elbow arthros-

copic surgery, from our knowledge there were not many reports of the study in English language from South East Asia or Asia and most of them reported from the United States or Europe. The reason might be that the surgery is new and has been reported as the highest incidence of complications⁽⁵⁻⁷⁾.

According to that, we conducted this study to report the functional result of elbow arthroscopic surgery in patient who came with chronic lateral elbow pain by many causes that were diagnosed by the arthroscopy.

Material and Method

The data was collected from patients who came with the symptom of chronic lateral elbow pain that fail conservative treatment and had the elbow arthroscopic surgery by a same elbow surgeon (CC) at HRH Princess Maha Chakri Sirindhorn Medical Center from April 2011 to December 2013. Exclusion criteria were the patients who had been diagnosed with instability pain and had the lateral collateral ligament

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reconstruction surgery, patients who could not be contacted and patients who refused to participate in the research.

We used Thai quick DASH questionnaire which is a short form of the DASH questionnaire⁽⁸⁾ in Thai language to evaluate the functional result of patients. This questionnaire has proven to have high validity^(9,10). We used telephone to contact the patients by our nursing staff, which has been blind in the clinical information of patients, and ask the patients to complete the Thai quick DASH questionnaire in final follow-up. The data was record into pre-operative and post-operative score.

Operative technique

The patients were placed in lateral decubitus position with a support under the affected arm. A pneumatic tourniquet was used during operation. The proximal antero-medial portal is a starting portal follow with antero-lateral portal which identified by outside in technique. The proximal antero-lateral portal was created for placing the retractor. In the posterior space, starting portal was direct posterior portal or postero-lateral portal for the intra-articular scope and instrument. The direct lateral or soft spot portal was used to insert the instrument in the lateral gutter. We routinely used radiofrequency cautery and 4 mm shaver blade in our operation for debridement until excision. The operative technique in each diagnosis was described below.

We diagnosed tennis elbow in patient who had defect fraying lesion at ECRB insertion and capsule. Patients who were diagnosed with tennis elbow, the elbow arthroscopic surgery were performed only in anterior compartment. We debrided the capsule of the elbow joint, released ECRB origin and used mid-equator of capitellum landmark to prevent debridement the LCL.

For plica lesion, we diagnosed in the patient who had synovial fold thickening and impingement in radiocapitellar joint. We did the debridement of plica and synovitis tissue to be free from the impingement in radiocapitellar joint both anteriorly and posteriorly. In cases that plica extended and involved in posterior, the postero-lateral and soft spot (direct lateral) portal were added to manage the postero-lateral lesion.

In patients with cartilage lesion, we diagnosed patients who have fibrillations, fissuring or loose body of cartilage lesion and classified them in stable or unstable type⁽¹¹⁾. We exammed the elbow joint systematically to find the loose body and removed them. We decided the management of cartilage lesion depended on the depth of lesion, size and area of the

lesion. The chondroplasty was done in partial thickness and a microfracture was done in the full thickness lesion. In our series, only one case had big capitellum lesion in the area that caused radial head engaging and loss of lateral support, in that case we added the mosaicplasty for it.

Statistical analysis

We calculated DASH score and evaluated by using the statistical processing program SPSS version 19. And compared the mean of DASH score between pre-operative and post-operative resulted by using the paired t-test. We decided the level of significant which *p*-value was <0.05 and showed the results in pre and post-operative in the different diseases.

Results

Twenty-five patients match our criteria. Five patients who have been done the lateral collateral ligament reconstruction surgery have been excluded from this study. The remaining 20 patients participated in this study were divided into 7 male and 13 female the average age was 38 year olds. Diagnosed tennis elbow 4 patients, plica 9 patients, combined lesions 4 patients and cartilage lesion 3 patients and the mean follow-up was 22 months.

The pre-operative mean DASH score in disability module = 65.7 (20.5-95.5) and post-operative = 18 (0-68.2) in occupation module the mean occupation pre-operative = 74.4 (12.5-100) and post-operative = 26 (0-75) in sport module there are 5 patients given the information the mean sport = 81.5 (56.3-100) post-operative = 17.5 (0-50).

From the result, we found the statistical significant of the difference between pre-operative and

Table 1. Demographic data of patients

Topic	Number
Total patient (%)	20
Female	13 (65)
Male	7 (35)
Age (median (inter-quartile range)), years	38 (14-53)
Follow-up time (mean (inter-quartile range)), months	22 (5-42)
Diagnosis (%)	
Tennis elbow	4 (20)
Plica	9 (45)
Combine lesion	4 (20)
Cartilage lesion	3 (15)

post-operative of DASH score with $p < 0.001$, $p < 0.001$, and $p < 0.004$ respectively (Fig. 1).

The mean of the DASH score was compared due to the diseases; tennis elbow, plica, combine lesion, and cartilage lesion as shown:

1) The patients with tennis elbow have mean DASH score in disability pre and post operation 73.9, 32.9 and in occupation 78.1, 40.6 respectively. There was no patient answer in sport module.

2) The patients with plica had mean DASH score in disability pre and post operation 64.6, 10.8 in occupation 70.1, 13.9 and in sport 91.7, 25, respectively.

3) The patients with combined lesions had mean DASH score in disability 60.21, 18.14 and in occupation 75.00, 40.62 respectively. There was no patient answer in sport.

4) The patients with cartilage lesion had mean DASH score in disability pre and post operation 65.1, 19.7 in occupation 66.7, 18.8 and in sport 65.6, 6.3 respectively (Fig. 2-4).

When we calculated the difference between pre and post-operative in each module and compared all of these between 4 groups of diagnosis with Anova

statistical analysis. There was no statistical significant differences.

The result in the range of motion of elbow was found that mean elbow flexion = 136.8 degree (115-145) and mean elbow extension = 0 degree ((-5)-(+5)). All the patients did not have serious complications, only 2 patients that had minor complication; lateral cutaneous nerve of forearm injury and superficial skin infection that could be treated with medical treatment.

Discussion

The overall results in this study showed the lower post-operative score with statistical significantly difference in all module even though the mean of follow-up was 22 months. It could be considered as the good functional midterm result. For the comparison of the score, we used the Thai quick DASH score; it had the appropriate questions for our patients and covers all their life style. The questions in the Thai quick DASH score are from DASH score. It is easily used and has been recognized for reliability and validity comparable to the DASH score⁽¹²⁾.

For the result in each group, plica and cartilage

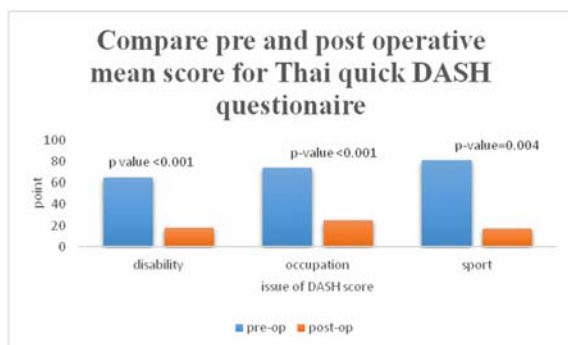


Fig. 1 Compare mean Thai quick DASH score pre and post operation.

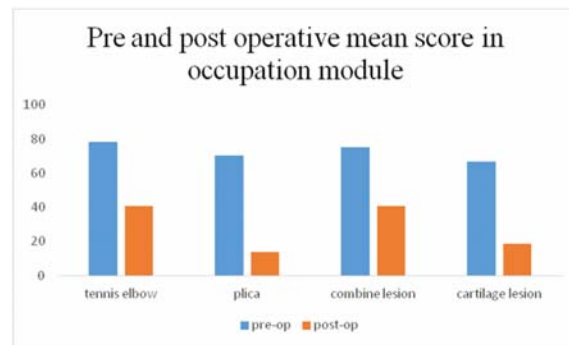


Fig. 3 Pre- and post- operative mean score in occupation module.

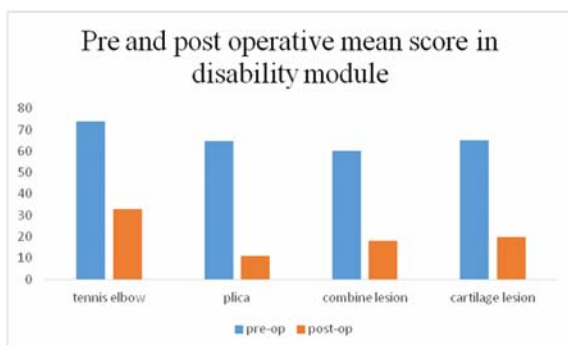


Fig. 2 Pre- and post-operative mean score in disability module.

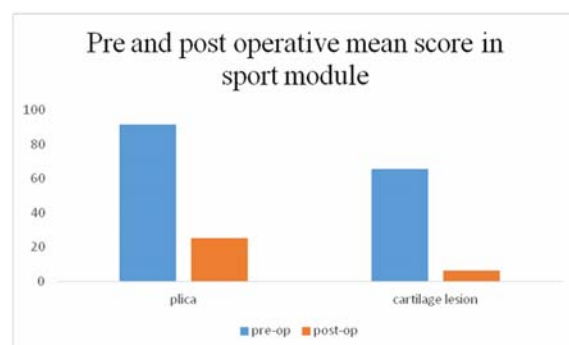


Fig. 4 Pre- and post- operative mean score in sport module.

lesion group showed the lower post-operative score in all module and lower than tennis elbow and combined lesions group. But when we calculated the post-operative score between groups with Anova statistical analysis, there was no statistical significance neither within group nor between groups. The minimal number of patient in each group may be the cause of no statistical significance. No patient answered in sport module for tennis elbow and combined lesions group because of the age and their life styles of not doing sport.

In 2007, Schubert⁽¹³⁾ used DASH score in the study that collected from the patients who had the elbow arthroscopic surgery which the result had shown well in disability module, occupational module or sport module. In Schubert et al⁽¹³⁾, most patients were diagnosed with loose body in elbow and had to be removed. But in our study most patients had plica impingement and had to do the plica debridement.

Rhyou et al⁽¹⁴⁾ reported in 2013 about excision of synovial plica in refractory tennis elbow cases that gave a better result. And Thornton⁽¹⁵⁾ study in 2005 mentioned about unclear diagnosis and surgical procedure of tennis elbow that provided good satisfied outcomes. From these studies, the key of a satisfactory result was the diagnosis and treatment. So, our arthroscopic result showed a good outcome might be because from the minimal invasive procedure, precise diagnosis and treatment based on disease's pathology.

In this study, we found only the minor complications; cutaneous nerve of forearm injury and superficial skin infection that can be treated by only medical treatment and there was no sequelae. Therefore, the elbow arthroscopic surgery in Thailand is effective and safe.

Conclusion

Approaching chronic lateral elbow pain with arthroscopy can maintain the significant improvement of functional result in midterm follow-up. Precise diagnosis and minimal invasive surgery is the key for success.

What is already known on this topic ?

The elbow arthroscopic surgery have a benefit both in diagnosis and treatment for patient who present with chronic elbow pain. This procedure improve the patient's symptom and have a minor complication. So, it become a widely accepted procedure last 20 years.

What this study adds ?

The elbow arthroscopic surgery showed a

good functional result in patient who came with chronic lateral elbow pain. The result was no statistical significant difference between groups of diagnosis. Precise diagnosis and minimal invasive surgery is the key for success.

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Potential conflicts of interest

None.

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การศึกษาผลการผ่าตัดส่องกล้องในผู้ป่วยที่มาด้วยอาการปวดข้อศอกด้านข้าง

เดิมพงศ์ พอลา, ชลวิษ จันทรรลิต

ภูมิหลัง: การผ่าตัดแบบส่องกล้องข้อศอกได้รับความนิยมมากขึ้นในนานาประเทศรวมถึงในประเทศไทย เนื่องจากบาดเจ็บน้อยเมื่อเทียบกับการผ่าตัดและให้การวินิจฉัยที่แม่นยำขึ้นโดยเฉพาะอย่างยิ่งเกี่ยวกับพยาธิสภาพในข้อ

วัตถุประสงค์: เพื่อศึกษาผลลัพธ์ของการผ่าตัดแบบส่องกล้องข้อศอกโดยใช้แบบสอบถาม Thai quick DASH score

วัสดุและวิธีการ: เก็บรวบรวมผู้ป่วยที่มาด้วยอาการปวดข้อศอกด้านนอกทั้งหมด 25 ราย โดยตัดกลุ่มที่ได้รับการวินิจฉัยเป็น instability pain ที่ได้รับการผ่าตัดทำ lateral ulnar collateral ligament reconstruction ออกไป 5 ราย เหลือผู้ป่วย 20 ราย เข้าสู่อารมณ์แยกเป็นผู้ป่วยกลุ่ม tennis elbow (4 ราย), plica (9 ราย), combine tennis elbow and plica (4 ราย), และ cartilage lesion (3 ราย) ใช้การโทรศัพท์สอบถาม Thai quick DASH score ทั้งก่อนและหลังผ่าตัด ณ เวลานั้น จากนั้นนำคะแนนที่ได้มาเปรียบเทียบระหว่างก่อนและหลังผ่าตัดโดยใช้ paired t-test กำหนดความมีนัยยะสำคัญทางสถิติเมื่อ $p < 0.05$

ผลการศึกษา: ระยะเวลาในการติดตามผู้ป่วยเฉลี่ย 22 เดือน โดยคะแนนเฉลี่ยในส่วน disability ก่อนและหลังผ่าตัดคือ 65 และ 18 ในส่วน occupation คือ 74 และ 25 ในส่วน sport คือ 81 และ 17 ตามลำดับ ซึ่งในทุกส่วนแตกต่างกันอย่างมีนัยสำคัญทางสถิติ $p\text{-value} = 0.000, 0.000, \text{ และ } 0.004$ ตามลำดับ สำหรับคะแนนเฉลี่ยใน disability module ก่อนและหลังผ่าตัดแยกตามกลุ่มโรคมี่ดังนี้ ในกลุ่ม tennis elbow คือ 74 และ 33, กลุ่ม plica คือ 65 และ 11, กลุ่ม combine tennis elbow and plica คือ 60 และ 18, และกลุ่ม cartilage lesion คือ 60 และ 20

สรุป: การรักษาผู้ป่วยที่มาด้วยกลุ่มอาการปวดข้อศอกด้านนอกโดยใช้การส่องกล้องข้อศอก สามารถให้ผลการรักษาที่แตกต่างจากก่อนผ่าตัดอย่างชัดเจน แม้จะอยู่ในการติดตามในระยะเวลา 2 ปี
