

RESULTS OF MODIFIED BOSWORTH'S OPERATION FOR PERSISTENT OR RECURRENT TENNIS ELBOW

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ABSTRACT

A retrospective review was made of 28 surgically treated tennis elbows in the Department of Orthopaedics Surgery O SGH between Jan 1986 and Aug 1988. Biodata, duration of conservative treatment, postoperative results and length of recuperation were analysed. All except one patient was discharged from follow-up at the time of the study. Females outnumber males 2:1.11 cases (75%) were not associated with sports. 21 patients (24 elbows) were contacted by phone. Of these, 91.7% reported excellent or good results based on the postoperative assessment scale by Nirschl (JBJS Vol 61-A No 6, Sept 1979). Average duration of medical leave taken was 2.2 weeks. Average time before return to normal activities was 6.7 weeks.

Key Words: Modified Bosworth's Operation, Surgery, Tennis Elbow

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INTRODUCTION

The treatment of tennis elbow is essentially non-surgical. Conservative management include hydrocortisone and lignocaine injections, ultrasound and even splintage to rest the affected elbow. Majority of patients respond to these measures within six months.

However, 3.3% - 8% of cases will continue to have pain or recurrences.(2, 4) These are the candidates for surgery. Unfortunately the pathogenesis of tennis elbow is still unresolved and this has led to descriptions of many surgical procedures for persistent or recurrent tennis elbow. This study analysed the result of the modified Bosworth's operation which is the procedure of choice in our department.

MATERIALS AND METHODS

Between 1986 and Aug 1988, 25 patients underwent the Modified Bosworth's operation for persistent or recurrent tennis elbow. 3 had bilateral involvement with the previous operation performed some years ago.

The casenotes were analysed. 21 patients (representing 24 elbows) were contacted by phone to assess the postoperative results. All patients except one were discharged from follow-up at the time of study.

Postoperative results were graded based on the assessment scale described by Nirschl. (8) (Table 1)

Postoperative recuperation was also analysed in the form of medical leave taken and duration before return to normal daily activities.

Table 1
GRADING SYSTEM BY NIRSCHL

EXCELLENT	: full return to all activity with no pain
GOOD	: full return to all activity with occasional mild pain
FAIR	: normal activity with no pain significant pain with heavy activity 75% or better subjective overall pain relief
FAIL	: no relief of preoperative pain

- JBJS V61-A N6, 1979

RESULTS

PATIENT'S CHARACTERISTICS

Sex, Age

There were 17 females and 8 males giving a female predominance of 2:1. Most of the cases fall within the ages of 30 and 59 (26 elbows, 92.9%). (Table 2)

Table 2
DISTRIBUTION OF SEX AND AGE

Age Group	Female	Male	Total number of elbows
20 - 29	1	-	1
30 - 39	4	3	7
40 - 49	8	5	13
50 - 59	5	1	6
60 - 69	-	1	1
Total number of elbows	18	10	28

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Occupation

18 patients had full-time jobs while 7 were housewives. Their distribution is presented in Table 3.

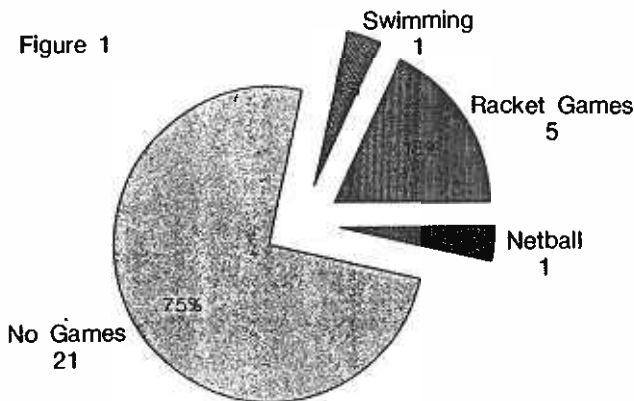
**Table 3
OCCUPATION**

Housewife	7
Nursing	3
Clerical	3
Teacher	4
Factory Operator	3
Technical	3
Labourer	2
TOTAL (patients)	25

Games

7 of 25 patients (7 elbows) were actively involved in some games at the time of ailment. Of these only 5 (17.9%) were playing racket games.(Figure 1) Only 2 patients had played tennis.

Figure 1



CONSERVATIVE TREATMENT PRESCRIBED

25 elbows had previous non-surgical treatment. These are usually in the form of hydrocortisone and lignocaine injections and ultrasonic therapy. (Table 4)

3 had no previous treatment before surgery; 2 because of patients' preference to surgery after good results from previous surgery in the other elbow and one because of severe symptoms on presentation to our clinic. We had no information on 2 patients.

**Table 4
CONSERVATIVE TREATMENT PRESCRIBED BEFORE SURGERY**

Hydrocortisone and Lignocaine Injections	once	2
	twice	5
	3-6 times	12
	>6 times	3
Ultrasound	:	4
Nil	:	3
Unknown	:	2

*57.8% had 3 or more H&L injections; mean 3.6 injections
**some had more than one form of treatment

Table 4 shows that at least 57.8% of patients had 3 or more hydrocortisone and lignocaine injections before surgery was performed. The average number in our study population was 3.6 injections. One patient has on record 15 injections before surgery was recommended.

DURATION OF SYMPTOMS BEFORE SPECIALIST REFERRAL

19 of our patient (67.8%) were seen at our specialist clinics 6 months or more after the onset of symptoms. (Fig 2) The mean duration of symptoms before referral was 14.3 months. Most of the patients were seen and treated by their general practitioners, usually with hydrocortisone and lignocaine injections.

Duration of Symptoms Before Referral

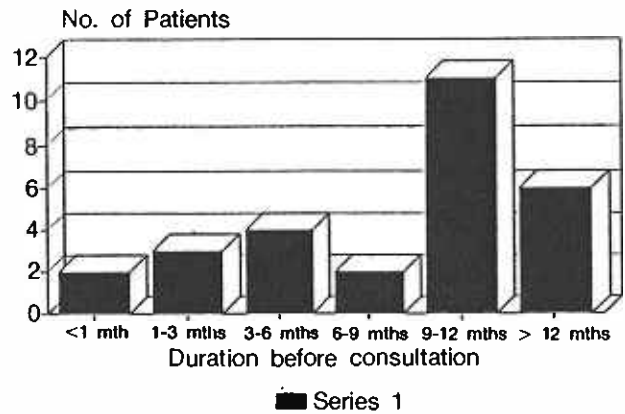


Figure 2

DURATION OF SPECIALIST FOLLOW-UP BEFORE OPERATION

Figure 3 shows the follow-up period in our specialist clinics before operation was recommended. Note the bimodal distribution. Those operated within 2 weeks on presentation to our clinics had long periods of follow-up and treatment by their referring doctors. The mean duration of symptoms before referral in this group was 20.7 months with an average of 3.9 hydrocortisone and lignocaine injections before surgery. The group operated 4-6 months after initial consultation had a period of failed conservative treatment prescribed by us.

Period of Follow-Up Before Operation

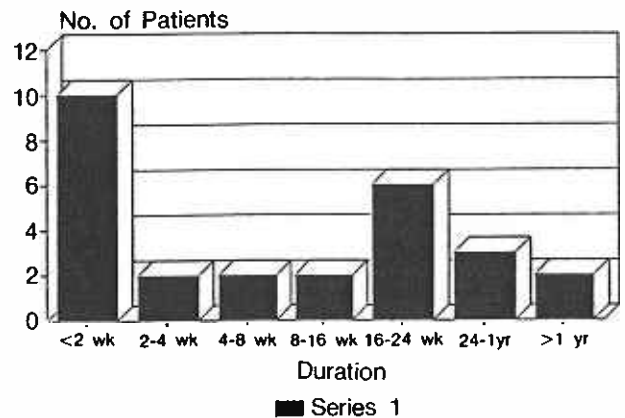


Figure 3

OPERATIVE PROCEDURES

Refer Table 5. Bosworth's operation involved the detachment of the common extensor origin and excision of two-thirds of the orbicular ligament. The operative techniques performed on our patients are modifications of this procedure depending on the findings at the time of surgery.

Table 5
OPERATIVE PROCEDURES

All had detachment of the common extensor origin	
In addition,	
Excision of orbicularis	12 (42.9%)
Excision of capsule	2 (7.1%)
Excision of orbicularis and synovium	3 (10.7%)
Excision of orbicularis and capsule	2 (7.1%)
Excision of orbicularis and epicondyle	1 (3.6%)

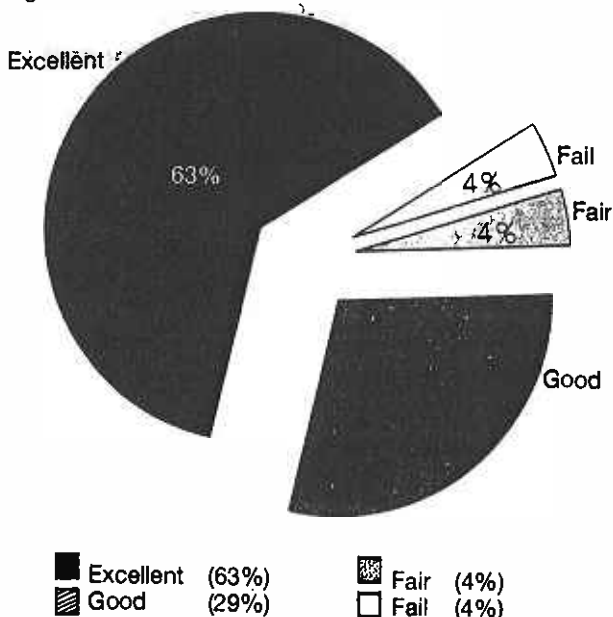
POSTOPERATIVE RESULTS

22 of 24 elbows (91.7%) reported good or excellent postoperative results based on the assessment system of Nirschl. (Fig 4)

One was graded as failed. This is a lady who had a history of multiple joint aches. Synovial biopsy from the elbow joint showed histological evidence of rheumatoid arthritis.

Unfortunately 4 of our patients were not contactable.

Figure 4

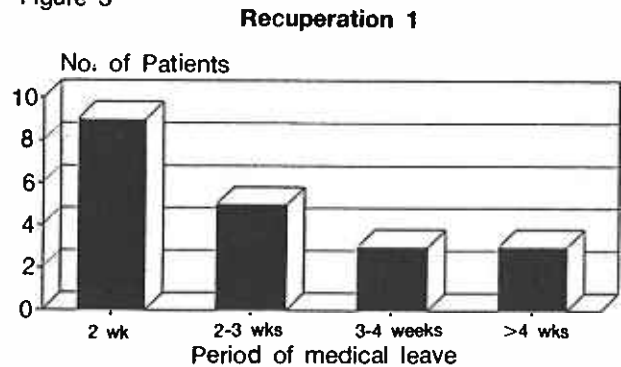


POSTOPERATIVE RECUPERATION

The duration of medical leave (loss of working-days) and time before return to normal daily activities were analysed. For the housewives, the latter was taken as the time before return to usual household chores; for those holding a job it would be when light duty certification was no longer required.

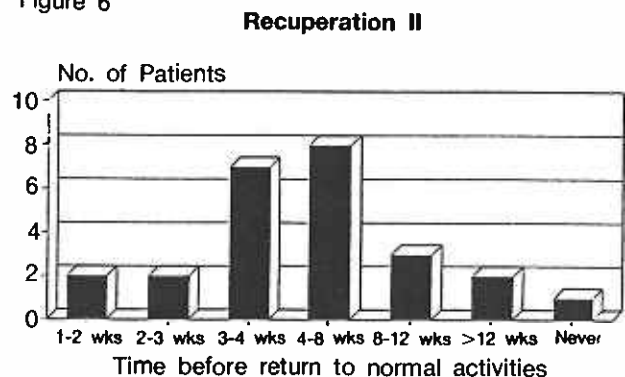
The results are presented in Figures 5 and 6. The period of medical leave taken ranges from 2 to 7 weeks, with a mean of 2.2 weeks. The range for time before return to normal daily activities was 2 to 24 weeks, with a mean of 6.7 weeks.

Figure 5



Range: 2 — 7 weeks
Mean: 2.2 weeks

Figure 6



Range: 2 — 24 weeks
Mean: 6.7 weeks

COMPLICATIONS

There were only 2 reported complications. One patient had wound breakdown. Another developed joint effusion which resolved after aspiration.

DISCUSSION

Tennis elbow was first described by Runge in 1873. By 1936, Cyriax in a review of the world literature at that time found 29 different pathological processes attributed to tennis elbow. (3) Some of the many theories on the pathogenesis of tennis elbow include microtears in the common extensor origin (3, 11), bursitis (9), periostitis, degenerative changes in the annular ligament and even posterior interosseous nerve entrapment (6) at the elbow. Consequently, many surgical procedures have been described; each based on their originator's view of the basic pathological process.

Tennis elbow in our study afflicts mainly middle-age females. The female predominance of 2:1 is not seen with most series reported in the literature.

Our study supports the view that tennis elbow is neither an affliction of tennis nor a sports injury. In fact 75% of our study population were not actively involved in sports at the time of diagnosis.

Housewives formed a major proportion of our patients. Though the numbers involved in this study were small, it seems to suggest that household chores may be an important factor in the aetiology of persistent or recurrent tennis elbow. Many working females also do household chores after their working hours. The absence of professionals among our patients may be significant in that they probably have househelps.

Tennis elbow is a self-limiting disease in most instances. Many patients with tennis elbow probably never seek medical attention. And when they do, they first present to their primary health care doctors.

Those who are referred to the Orthopaedics Specialist Clinics usually have a history of treatment by their referring doctors. Our study showed that about 70% were referred 6 months after the onset of their symptoms (mean 14.3 months). Hydrocortisone and lignocaine injections were administered by their referring doctors in most instances.

Because of the preceding treatment given, most of the patients were referred to our clinics as persistent tennis elbow. For them, surgery is recommended soon after consultation. Those operated later usually had about 4-6 months of conservative treatment which failed.

Most patients with tennis elbow will respond to conservative measures within a period of 6 months. (2) Recurrences has been reported to be rare. (2) When their symptoms persist, or recurrences occur, surgery is recommended.

In considering surgical treatment, one has many options. This reflects the current uncertain or ill-

understood pathology of tennis elbow. Traumatic periostitis was thought to be the cause by Runge and excision of the periosteum was suggested. (4) Holmann advocated release of the extensor origin. Garden believed that it is the extensor carpi radialis brevis that contributed to the periostitis and so described the lengthening of this muscle at the wrist. (5) Osgood suggested excision of the inflamed extra-articular bursa (9) while Stack and Moore described the excision of the nipped synovial fringe. (7, 12)

Fibrositis or inflammation of the orbicular ligament has been noted in tennis elbow. Bosworth emphasised this as the basic pathology. (1) He attributed this inflammation to the pulsating effect caused by the rotation of the radial head. He therefore resected the orbicular ligament and detached the common extensor origin in order to release the extensors firm attachment around the radial head.

In our department, we detached the common extensor origin and excised the orbicular ligament, capsule or synovium of the elbow joint depending on our operative findings.

Our finding of 91.7% good or excellent postoperative results based on the assessment scale of Nirschl is comparable to results reported by other authors. The period before return to normal activities (mean 6.7 weeks) also compares favourably with that reported by Bosworth (1) and Boyd. (2)

CONCLUSION

We recommend that Modified Bosworth's operation is a good surgical procedure for patients with persistent or recurrent tennis elbow. It gives good results with minimal morbidity. Patients are usually rehabilitated within 7 weeks after operation.

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