SEPTEMBER 20-21, 2019
EWAS ISTANBUL,TURKEY
5th WRIST ARTHROSCOPY COURSE
(WITH INTERNATIONAL PARTICIPATION)

PROCEEDINGS

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SCIENTIFIC PROGRAM

September 20, 2019 Friday

08:00-08:45	Registration
08:45-09:00	Opening remarks
09:00-10:40	Session 1
	Chairs: **Tufan KALELI, Ayse SENCAN**
09:00-09:15	Arthroscopic treatment of ulnar impaction
	Kahraman OZTURK
09:15-09:30	Arthroscopic ganglion excision
	Kadir ERTEM
09:30-09:45	Arthroscopic distal radioulnar joint reconstruction
	M. Ali ACAR
09:45-10:00	1. CMC joint arthrosis arthroscopic treatments
	Meric UGURLAR
10:00-10:15	Arthroscopic radial styloidectomy
	Mustafa KURKLU
10:15-10:30	Arthroscopic dorsal ligamentocapsulodesis in scapholunate ligament injuries
	Mehmet ARMANGIL
10:30-10:50	Discussion
10:50-11:10	Coffee break
11:10-13:00	Session 2
	Chairs: **Hassan NOAMAN, Ethem Ayhan UNKAR**
11:10-11:25	Simultaneous scapholunate and L-T joint arthroscopic dorsal ligamentocapsulodesis in floating lunate
	I. Bulent OZCELIK
11:25-11:40	TFCC injury classification and peripheral repair techniques
	Mehmet DEMIRTAS

11:40-11:55	Scaphoid nonunion treatment **Igor GOLUBEV**
11:55-12:10	Arthroscopic total wrist fusion **Shahram NAZERANI**
12:10-12:25	Arthroscopically assisted treatment of malunited distal radial fractures **Amr Moustafa MOHAMED**
12:25-12:40	Surgical alternative to the classic “suspension arthroplasty” for the treatment of trapeziometacarpal arthrosis **Roberto MAGGI**
12:40-13:00	Discussion
13:00-14:00	**Lunch**
14:00-18:00	***Live Surgery***

Live surgical cases will be broadcasted from two operating theatres consecutively

Chairs: **Gursel LEBLEBICIOGLU, Taskin ALTAY**

Cases of live surgery

Ulnar impaction

TFCC injury

Ganglion cyst excision

Thumb CMC joint arthritis

SL ligament lesion

S-L + styloidectomy + interposition PL

Occult ganglion cyst excision

September 21, 2019 Saturday

08:00-08:40 Session 3

Chairs: **Ahmet EKIN, Hayati DURMAZ**

08:00-08:20 Arthroscopic treatment of intraosseous ganglions of lunate

Christophe MATHOULIN

08:20-08:40 APSI (Adaptive proximal scaphoid implant)

Mathilde GRAS

08:40-12:30 ***Live Surgery***

Live surgical cases will be broadcasted from two operating theatres consecutively

Chairs: **Tufan KALELI**

Cases of live surgery

Lunate intraosseous ganglion cyst – curettage and bone grafting

Arthroscopically assisted DRUJ ligament reconstruction with tendon graft

SL ligament lesion
Scaphoid nonunion

12:30-13:30 **Lunch**

13:30-14:30 **Oral presentation session - 1**

Chairs: **Serkan AYKUT, Mehmet BAYDAR**

1. Influence Of Articular Arthroscopy-Like Washout On Fracture Healing Of Intra-Articular Fractures; Animal Experiment
   Osman Orman, Mehmet Baydar, Kahraman Ozturk, Mujgan Orman, Olgu Enis Tok, Ethem Guneren

2. Distal Radius Non-vascularized Bone Graft in Scaphoid Nonunions
   Sercan Capkin, Ali Cavit, Kutay Yilmaz, Tufan Kaleli

3. Arthroscopy-Assisted Scapholunate Ligament Reconstruction: Experience in Two Cases
   Mehmet Ali Acar, Ali Ozdemir

4. Radial Shortening Osteotomy For Late Stage Kienbock Disease
   Onur Basci, Cihangir Turemis

5. Distal Metaphyseal Ulnar Closed Wedge Osteotomy For Ulnocarpal Abutment
   Onur Basci, Cihangir Turemis, Mustafa Ozkan

6. Arthroscopic Resection Of Wrist Dorsal Ganglion Cysts: Outcome Analysis
   Bilge Ozkan, Rustem Celil, Mustafa Y. Hatipoglu, Ali Aydogdu

7. Incidence of Additional Injuries Associated with Scaphoid Fracture According to Fragmentation in Arthroscopy-Assisted Fixation
   Ali Ozdemir, Anil Pulatkan, Ebubekir Eravsar

8. The Effect of Fifth Metacarpal Boxer Fractures on Soft Tissue of Wrist and Functional Results
   Hüseyin Iret, Tansel Mutlu, Ozan Altun

9. Osteoid Osteoma of Capitate: A Rare Cause of Wrist Pain
   Eyyup Emre Bahtiyar, Harun Yasin Tuzun, Arsen Arsenishvili, Mustafa Kurklu

14:30-15:40 **Oral presentation session - 2**

Chairs: **Fatih KABAKAS, Osman ORMAN**

10. The Effect of Volar Plate Position on Flexor Tendon Problems in Distal Radial Fractures
    Yunus Oc, Bekir Eray Kilinc, Adnan Kara

11. Foucher Flap for Thumb Pulp Defect Reconstruction
    Numan Atilgan, Tahsin Sami Colak, Numan Duman

12. Wrist Dislocations In Severe Crush Injuries
    Fatih Kabakas, Burak Sercan Ercin

13. FDS Augmented Mini Anchor Technique in Congenital Swan Neck Deformity Surgery
    Ahmet Fevzi Kekec, Numan Atilgan, Numan Duman

14. Clinical Results Of Patients Treated With Wrist Arthroscopy
    Muhammed Koroglu, Kadir Ertem

15. Intraosseous Ganglion Cysts Of The Lunate Bone: Outcomes Of Arthroscopic Curettage And Autologous Bone Grafting
    Ethem Ayhan Unkar, Mehmet Eren, A. Alperen Ozturk, Zeki Gunsoy, Ismail Bulent Ozcelik

16. Evaluation of FPL Tendon Rupture After Treatment of Distal Radius Fracture with Volar Plate
    Kamil Yamak, Huseyin Gokhan Karahan, Berrak Karatan, Cemil Kayali, Taskin Altay

17. Arthroscopic Treatment of Ulnar Impaction Syndrome
    Murat Iptec, Ayse Sencan, Ayberk Onal, Serkan Aykut

15:40-16:00 **Adjourn**

ORAL PRESENTATION ABSTRACTS

OP-01

Influence of Articular Arthroscopy-Like Washout on Fracture Healing of Intra-Articular Fractures; Animal Experiment

Osman Orman[1], Mehmet Baydar[1], Kahraman Ozturk[1], Mujgan Orman[2], Olgu Enis Tok[3], Ethem Guneren[4]

[1]University of Health Sciences M. S. Baltalimani Teaching and Research Hospital, Hand Surgery Clinic, Istanbul, Turkey

[2]Istanbul Esenyurt University, Vocational School of Health Services, Medical Imaging Techniques Program, Istanbul, Turkey

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[4]Bezmialem Vakif University Faculty of Medicine, Department of Plastic, Reconstructive and Aesthetic Surgery, Istanbul, Turkey

Aim

In recent years the number of arthroscopic joint surgeries has increased dramatically, becoming an important part of orthopedic surgeries. During arthroscopy, the joint surfaces and fracture zone are irrigated with excess of 0.9 % isotonic NaCl or Ringer's Lactate solutions for a few hours. In this study we have examined whether the application of intra-articular lavage during arthroscopic joint fracture surgery can disturb fracture union and cartilage healing.

Material and Methods

Twenty New Zealand rabbits were then randomly divided into 3 groups; these groups consisted of 2 surgical groups including eight rabbits and a control group consisting of 4 rabbits. After both rear limbs exposed with a medial parapatellar incision, medial femoral condyle was fractured. Four groups were created by doing anatomic reduction or non anatomic reduction and making irrigation or no irrigation. (Group 1: Fixed by creating a Gap and No Irrigation; Group 2: Fixed by creating a Gap and Irrigation; Group 3: Fixed with complete reduction and No Irrigation; Group 4: Fixed with complete reduction and Irrigation) X-rays of both knees of all rabbits were taken at the end of the second week and at the end of the eighth week followed by euthanasia with high dose Xylazain and Ketamine. The operated knees were collected for histological (Giemsa and fluorescent) analysis.

Results

Radiological data show a significant difference in the level of ossification between the groups in the 2nd week; however, this difference was lost in the 8th week. Histologically, at the end of week 8, it was observed that the subchondral bone tissue was incompletely renewed in all the groups. The

cartilage tissue of the joint surface was not fully formed and renewed and that it did not completely coalesce with the old cartilage tissue in all of the groups. Compared with the other groups, the group that fracture was anatomically reducted with no irrigation (Group 1), the cartilaginous tissue layer formed was thicker while the surface of the tissue was flatter.

Conclusion

There were no adverse effects of intra-articular lavage on fracture union and cartilage healing in an in vivo environment. Nonetheless, the findings of this study should be confirmed with a larger sample size.

Keywords

Wrist arthroscopy; intra-articular fracture; irrigation; bone formation; animal model.

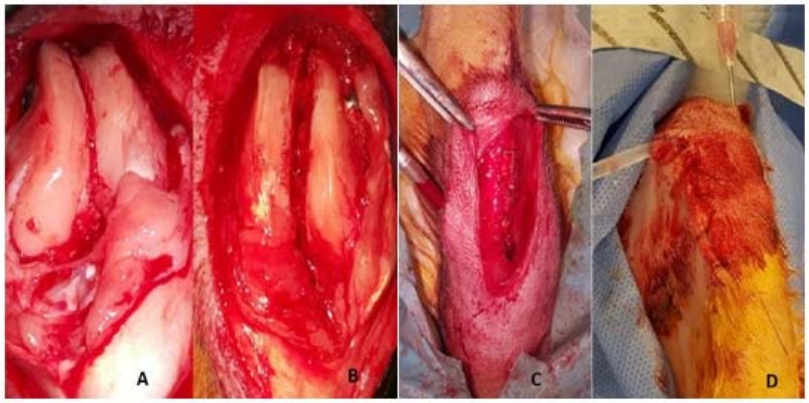

Figure1:

A) Right knee fixed without leaving a gap B) Left knee fixed with 2mm gap C) The joint capsule tightly closed with a cannula placement D) In-knee irrigating; with 18 gauge injector, the liquid is drained from the plastic cannula while 0.9% saline solution is injected into the joint.

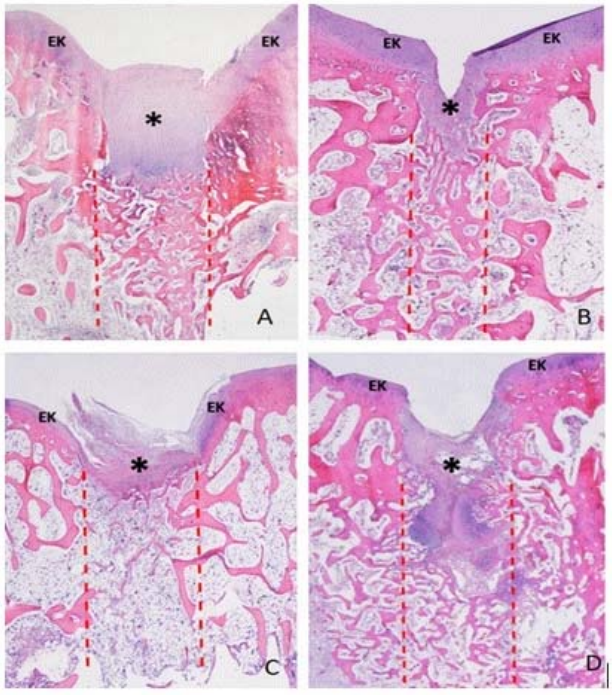

Figure 2: Histologic analysis of sections taken from the knee joints by staining with hematoxylin & eosin. In groups C-I (B), G-NI (C) and Group G-I (D), the area between the old cartilage tissue (EK) on the joint surface has a fibrous connective tissue feature (*) with a new developing density and a subchondral ossification area (red striated area) which is below this part.In group C-NI (A), fibrocartilage tissue (*) containing both connective tissue and newly formed hyaline cartilaginous tissue (*) and newly developed subchondral ossification area (red striated area) has been observed.(C-NI: Complete reduction, no irrigation, C-I: Complete reduction with irrigation, G-NI: Reduction with gap, no irrigation, G-I Reduction with gap with irrigation.)

OP-2

Distal Radius Non-Vascularized Bone Graft in Scaphoid Nonunions

Sercan Capkin, Ali Cavit, Kutay Yilmaz, Tufan Kaleli

Uludag University Faculty of Medicine, Department of Orthopaedics and Traumatology, Hand Surgery Clinic, Bursa, Turkey

Aim

The aim of study was to evaluate the clinical and radiological outcomes of distal radius non-vascularized graft together with compression screw fixation for the treatment of proximal pole and waist scaphoid nonunions.

Material and Methods

Thirteen patients with scaphoid nonunions in proximal pole and waist who were followed for at least 1 year and had no avascular necrosis in proximal part were evaluated. The retrospectively analysed parameters included age, injured hand (dominant/non-dominant), aetiology of the injury, delay between injury and operation, initial treatments following the fracture. Routine clinical and radiological examinations were performed postoperatively. Wrist range of motion was measured with a standart goniometer and muscle strength with a dynamometer. Postoperative clinical and functional outcomes at the latest follow-up were evaluated by Turkish version of Quick Disabilities of the Arm, Shoulder and Hand Questionnare (Quick DASH) and comparing them with preoperative values.

Results

All 13 patients were male with an average age of 28.6 years (range 17-44). The nonunion site was located in the scaphoid waist and proximal pole in 8 (61.5%) and 5 (38.5%) patients, respectively. None of the patients had avascular necrosis in MRI preoperatively. The mean follow-up duration was 13.4 months (range 12-18). Union was achieved in 11 out of 13 patients (84.6%). No complication was observed in any of the patients. Total wrist range of motion was improved in all patients postoperatively. Postoperative Quick DASH scores of all patients were improved compared preoperative values.

Conclusion

Non-vascularized autograft from distal radius can be used as a good alternative to iliac crest in scaphoid nonunion without avascular necrosis. Satisfactory results were obtained in our patients.

Keywords

Scaphoid nonunion; distal radius; avascular necrosis; nonvascularized.

OP-3

Arthroscopy-Assisted Scapholunate Ligament Reconstruction: Experience in Two Cases

Mehmet Ali Acar, Ali Özdemir

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Aim

A broad range of open surgical procedures have been described for SL ligament reconstruction. In open surgeries, the dorsal portion of wrist tendons, ligaments and capsule are dissected and joint movements are reduced. In the present study, two case studies involving with our surgical experience will be presented.

Material and Methods

Two patients who underwent arthroscopic SL ligament reconstruction in our clinic were included in this study. One of our patients was male and the other was female. Patients presented with central wrist pain. Direct X-rays showed SL separation above 4 mm in both patients. Patients were operated with regional block anesthesia. In the supine position, a tourniquet was used and the wrist was tractioned. Fluoroscopic control was performed to determine whether the scapholunate joint was reduced. Since reduction was maintained, reconstruction was planned. Arthroscopically 3-4, 6R; MC-R and MC-U portals were used. Intraarticular examination was performed and sinovial debritments were conducted. Cartilage surfaces were examined. Then, 2 cm incision was made from the wrist volar over the FCR tendon. The tendon was splitted apart and another incision was made over the FCR 10 cm proximally. The distal continuity of the split tendon graft was preserved. Fluoroscopy and arthroscopy were assisted to open the scaphoid tunnel from the dorsal to volar. Split tendon graft was moved from scaphoid tunnel to the dorsal. A 2 cm incision was performed to the wrist dorsal on lunate level. The tendon graft was moved to this incision under the extensor tendons. Second tunnel was opened to the lunate bone at dorsal from this incision under fluoroscopy control. During this procedure, the median nerve and tendons were retracted and protected. The tendon graft was directed to the volar through lunate tunnel. The graft was moved under the volar tendons to the volar of the scaphoid tunnel. An anchor screw was placed in the scaphoid under fluoroscopic control and the tendon graft was sutured. Arthroscopic intraarticular re-examination was performed. In our first operated male patient, we placed an absorbable pin in the tunnel. In the female patient, we applied K-wire from scaphoid to lunate. Wounds were closed after bleeding control. Passive and active ROM exercises were started on the wrist after one month in the short arm splint.

Results

We have two patients that we operated with this method. The ages of the patients were 32 and 57 years. Total follow-up period of our first patient (male) was 3 months and the follow-up period of our second patient (female) was 1.5 months. The range of motion of the first patient was full in the third month. The patient did not complain about any pain and was able to return to the previous job 2.5 months after the operation. There was no loss of scapholunate reduction in the follow-up of this patient. The rehabilitation process of the female patient is still continuing. In this patient, we lost the

reduction and a gap of approximately 3.5 mm occurred. The follow-up of this patient continues. The operation time was 1 hour and 50 minutes in the first patient and 1 hour and 45 minutes in the second patient.

Conclusion

Arthroscopic scapholunate ligament reconstruction is a minimally invasive surgical procedure. Reduction loss was not seen in the patient who was using absorbable PIN. However, there was loss of reduction in the follow-up of the patient who was operated with using K-wire. We believe that as the experiences of the cases increase, the complication rates will decrease and better results can be obtained.

Keywords

Scapholunate reconstruction; wrist arthroscopy; SL dissociation.

OP-4

Radial Shortening Osteotomy for Late Stage Kienböck Disease

Onur Basci, Cihangir Turemis

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Aim

Pathogenesis of Kienböck disease is controversial. Several factors, including negative ulnar variance, local vascular abnormalities, and lunate morphology, may contribute to the etiology of this disease. Excessive force on the lunate by the relatively longer radius leads to avascular necrosis of the bone. To reduce the force, radial shortening osteotomy has been widely performed for patients with negative ulnar variance. We hypothesized that radial shortening could provide satisfactory results for late stage (Lichtman stages, 3B and 4) Kienböck disease.

Material and Methods

6 wrists of 5 patients underwent radial shortening for Kienböck disease. Lichtman stages were, 3B (2 wrists), and 4 (4 wrist), the mean age was 30.1y (range 18-59y) and the mean follow-up period was 26.33 month(range 18-36m). Patient-rated outcomes were measured using VAS (visual analogue scale) for pain, and Quick-DASH (disability of arm, shoulder, and hand) survey for functional outcomes. Due to low number of sample set Nonparametric-Wilcoxon Signed Ranks Test was used for statistical analysis.

Results

The average preoperative and postoperative VAS score for pain was 8.167(standard deviation [SD] 0.75), 2.167 (SD 0.75) respectively. The average preoperative and postoperative Quick-DASH score was 65.53 (SD 8.18) and 21.58 (SD of 10.92) respectively. When preop and postop Flexion(p= 0.027),

Extension(p= 0.027), Q-DASH(p= 0.028) and VAS(p= 0.024) was compared there were significant improvement. The majority of patients had a comparable ROM and strength between the operated side and the non-operated side.

Conclusion

We suggest that radial osteotomy should be carried out only for stage-IV wrists with early changes. This study provides further evidence that radial shortening may be a reliable treatment with acceptable long-term clinical outcomes in patients with stage 3B and 4 Kienböck disease.

Keywords

Kienböck disease; radial shortening; lunate collapse.

OP-5

Distal Metaphyseal Ulnar Closed Wedge Osteotomy for Ulnocarpal Abutment

Onur Basci, Cihangir Turemis, Mustafa Hulusi Ozkan

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Aim

Ulnocarpal abutment is a common condition generally following post- traumatic shortening of the radius. The most common pathologies predisposing to the development of this impaction syndrome are the malunited distal radius fracture, excision of radial head and Essex-Lopresti injury or idiopathic. Different surgical procedures have been described including, open or arthroscopic wafer procedure and Ulnar shortening Osteotomies(USO) We performed a distal metaphyseal closed wedge osteotomy and used one headless compression screw for fixation. We report the results of 8 patients treated with this method.

Material and Methods

Patients with the clinical diagnosis of ulnocarpal abutment, who underwent USO due to ulnar sided pain, and have remarkable ulnar positive variance, and lunate abutment in MRI. Patient-rated outcomes were measured using VAS (visual analogue scale) for pain, and Quick-DASH (disability of arm, shoulder, and hand) survey for functional outcomes. Due to low number of sample set Nonparametric-Wilcoxon Signed Ranks Test was used for statistical analysis.

Results

The mean age of the patients included in the study was 42.8 years (range, 24 – 55). Mean follow-up time was 19.8 months (range, 6–24). The average preoperative and postoperative VAS score for pain was 8.25 (standard deviation [SD] 1.03), 2.87 (SD 0.99) respectively. The average preoperative and postoperative Quick-DASH score was 63.06 (SD 10.36) and 22.89 (SD of 19.05) respectively. When preop and postop Flexion(p= 0.011) , Extension(p= 0.012), Q-DASH(p= 0.012) and VAS(p= 0.009) was

compared there were significant improvement. The majority of patients had a comparable ROM and strength between the operated side and the non-operated side.

Conclusion

The results of the described technique of ulnar shortening osteotomy (VAS, DASH, ROM) are comparable to the results of other validated ulnar shortening techniques. The advantages are the small amount of hardware, the smaller incision and the metaphyseal localization of the osteotomy allowing better and rapid healing.

Keywords

Ulnocarpal abutment; ulnar shortening osteotomy; metaphyseal closed wedge osteotomy.

OP-6

Arthroscopic Resection of Wrist Dorsal Ganglion Cysts: Outcome Analysis

Bilge Ozkan, Rustem Celil, Mustafa Y. Hatipoglu, Ali Aydogdu

University of Health Sciences M. S. Baltalimani Teaching and Research Hospital, Hand Surgery Clinic, Istanbul, Turkey

Aim

Ganglion tumors around the wrist are the most common soft tissue tumors of this region. Ganglions, mostly seen in the wrist dorsal (70%), are most often caused by the scapholunate joint. Although it is generally asymptomatic, surgical treatment may be recommended for pain and cosmetic reasons. Other wrist problems such as scapholunate ligament injuries, dorsal capsule injuries and TFCC injuries are frequently seen. In our study, we evaluated the results of arthroscopic resection of the dorsal wrist ganglia.

Material and Methods

49 patients with arthroscopic resection of dorsal wrist ganglion between 2008 and 2018 were evaluated retrospectively. Patients over the age of 18, who had complaints for more than 6 months and had not undergone previous surgery for the dorsal wrist ganglion were included in the study. Preoperative and postoperative VAS pain, wrist range of motion, grip strength and MAYO wrist scores were evaluated. Additional pathologies evaluated during arthroscopy were recorded.

Results

Twenty-four patients were male and 25 were female. The mean age of the patients was 31 years. The mean follow-up was 29.9 months. The range of motion of the wrist joint compared to the other side was 2.6 ° preop flexion difference was 1.4 °, while the extension difference was 4.5 ° average postop 1.6 ° decreased. Preop VAS pain score decreased from 5.7 to postop 0.56. MAYO wrist scores increased from 71 preop average to 92 postop average. Grip strength increased by 14.2% on average compared to the other side.

Conclusion

The relationship between ganglion formation and ruptures of scapholunate ligament and wrist pericapsular ligaments has been shown more frequently with wrist arthroscopy. In our series, we observed improvement in wrist extension, grip strength, VAS pain and Mayo scores. The main advantages of arthroscopic ganglion resection over open surgery are; lower recurrence (6-11%), less complication rate (4%), smaller wound scarring, and other pathologies of the wrist during arthroscopy.

Keywords

Dorsal wrist ganglion cyst; arthroscopic resection.

OP-7

Incidence of Additional Injuries Associated With Scaphoid Fracture According to Fragmentation in Arthroscopy-Assisted Fixation

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2Bezmialem Vakif University Faculty of Medicine, Department of Orthopaedics and Traumatology, Istanbul, Turkey

Aim

Additional injuries that can be missed by radiological methods in intra-articular fractures can be diagnosed by arthroscopy. The aim of the present study was to evaluate the frequency of additional joint injuries associated with acute scaphoid fractures with respect to fracture type and fragmentation status.

Material and Methods

32 patients who underwent arthroscopy assisted percutaneous fixation for acute scaphoid fracture between January 2011 and September 2018, and had no signs of ligament injury were included in the study. Patients files, computerized tomography sections and arthroscopy video recordings of the patients were evaluated. Fracture identification was done according to Herbert and Fisher classification. Patients were also grouped according to whether the fracture was fragmented or not. Additional injuries were evaluated with respect to fracture types and fragmentation status. Chi-square test was conducted to evaluate the statistical relationship between fracture and additional injury.

Results

According to Herbert-Fisher classification, two of the fractures were classified as A2, eight as B1, 12 as B2, and 10 as B3. 19 of the fractures were evaluated as multi-part fractures, and 13 of them were evaluated as two-part fractures. Two patients had lunotriquetral (LT) laxity, three had chondropathy, three had scapholunate(SL) tears, eight had LT tears, and five had TFCC lesions. Additional injuries were present in 50% of B1 and B2 type fractures and 70% of B3 type fractures. Additional injury was seen in

32% of two-part fractures and 85% of multi-part fractures. Additional fractures were significantly increased in segmented fractures than in two-part fractures p = 0.003.

Conclusion

Although there is no additional radiological injury in acute scaphoid fractures, these injuries are detected with wrist arthroscopy. The rate of additional injury is higher in segmented high-energy fractures.

Keywords

Scaphoid; fracture fixation; arthroscopy.

OP-8

The Effect of Fifth Metacarpal Boxer Fractures on Soft Tissue of Wrist and Functional Results

Huseyin Iret, Tansel Mutlu, Ozan Altun

Karabuk University Teaching and Research Hospital, Department of Orthopaedics and Traumatology, Karabuk, Turkey

Aim

To investigate the effects of trauma-induced energy on soft tissues up to ulnar bone and its functional results in the fifth common metacarpal fractures.

Material and Methods

Twenty-six patients with metacarpal fractures who presented to Karabuk Training and Research Hospital emergency department between 2017-2019 were evaluated. Fracture was detected in the dominant hands of the patients. 22 were right and 4 were left. One patient was female and 25 was male; The mean age was 23.1 (range 17-29). The trauma of all patients was caused by the hand in the fist position hitting the hard body. The fractures in all patients were in the form of a single fracture line and the distal fragment was displaced by 42.5 (35-50) degrees to the volar and the distance of the fracture line from the joint was 12.5mm (9-13). Physical examination and radiography were used for diagnosis. Clinically, the entire hand was examined and especially the carpometacarpal, ulnocarpal and radioulnar joints were examined. Sensitivity was detected in 14 patients. Ulnar grooved splint was fixed in all patients during the application. Magnetic resonance imaging was performed in patients with metacarpal distal ulna. The splint was removed under control before the MRI examination and reapplied after the examination was completed. Displacement was checked by radiography. After 4 weeks, the splint was removed and joint movements were allowed. Patients with ulnar side intercarpal ligaments and triangular fibrocartilage complex (TFCC) injuries were evaluated according to Palmer classification. The mean follow-up was 16.9 months (range 14 to 22 months). Functional assessment was performed according to the QuickDASH questionnaire. Patients with Tfcc injury were followed up with wrist splint for 16 weeks.

Results

Sensitivity was detected in 8 of 14 patients in the carpo-metacarpal joint, in 1 patient in the triquetrum, in 6 patients in the ulno-carpal joint. Eleven wrists (42%) showed no significant soft tissue lesions and additional bone fractures on MRI findings. Seven patients (27%) had edema in the carpo-metacarpal joint. In 3 wrists (12%), TFCC 'injury was detected in 2 patients with tip1a and in 1 patient with tip1b. As Tfcc injury caused instability, it was observed that the clinical results had a negative effect on ulnocarpal stress test and distal radioulnar joint ballotman test. Five patients had tenderness in the carpal joints for an average of 12 weeks. Three patients had an average of 20 degrees volar maligman. In 1 patient with Tfcc injury, pain continued for 11 months.

Conclusion

Although anatomic reduction is achieved in the fifth metacarpal boxer fractures, it is seen that it has a negative effect on functional results due to soft tissue injuries. Apart from fracture, bone edema and tfcc injuries can be seen. Possible pathologies can be detected by MRI in patients with ongoing pain after fracture healing. Therefore, besides the anatomical reduction of the fracture, the detection and treatment of soft tissue injuries are also important.

Keywords

Fifth metacarpal boxer fracture; TFCC tear; edema in carpal bone.

OP-9

Osteoid Osteoma of Capitate; A Rare Cause of Wrist Pain

Eyyup Emre Bahtiyar[1], Harun Yasin Tuzun[2], Arsen Arsenishvili[3], Mustafa Kurklu[3]

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Aim

Osteoid osteoma is a benign bone tumor and usually localized in long bones of lower extremities. It is rarely seen in carpus, especially capitatum. We aim to present an osteoid osteoma localized at capitatum in a patient with dorsal wrist pain.

Material and Methods

Twenty year old male came to polyclinic for dorsal wrist pain. Preliminary diagnosis was Kienböck's disease. In his radiological examination; cystic lesion that involves sclerotic area was seen in x-ray. In computerized tomography hypodens view including calcification accommodating osteonecrosis or complicated cyst was reported. Also resorption cyst is reported in magnetic resonance imagination.

We performed curettage and grafting with open surgery. In pathological examination osteoid osteoma was reported.

Results

Curettage and grafting was performed with open surgery. Visual analog score was 8 and 2 before and after one week of surgery. At least one month the patient has no pain. After three weeks of short splint usage the patient was directed to physical therapy for flexion restriction. He has full extansion and 60 degrees of flexion after three months and no pain. There was completely ossification in the x ray on the third month of surgery.

Conclusion

Osteoid osteoma is one of the benign bone tumors. It usually localizes in long bones of lower extremities. Carpus, especially capitatum, localization is very rare. We must keep in mind tumoral lesions, that are rarely seen, in patients with wrist pain.

Keywords

Capitatum; osteoid osteoma; wrist pain.

OP-10

The Effect of Volar Plate Position on Flexor Tendon Problems in Distal Radial Fractures

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Aim

The aim of this study was to evaluate the relationship between locking anatomic plate placement and soft tissue complications after distal radius fractures.

Material and Methods

In this study, 30 patients who underwent volar plating for distal radius fracture were analyzed retrospectively. The plate placement of the patients was examined. The angle between the long axis of the plaque and the radius shaft and the distance between the midpoint of the radius shaft in that region of the plate midpoint were measured. Patients Soong criteria was evaluated. The measuremets were analyzed statistically.

Results

The gender distribution of the patients in the study was 16 female and 14 male. The mean angle measurements between plate long axis and radius shaft were 5.4 ± 2.1 (0-10). The mean distance between the midpoint of the plate and the midpoint of the Radius shaft in that region was 2.6 ± 1.2mm (0.5-5.9). The mean age was 45.7 ± 12.2 years. Tweny-five patients were right and 5 patients were left side. Fractures were classified according to AO classification. Seven patients had B type (3 b3, 4 b2) and 23 patients had type C (3 c1, 8 c2, 12 c3) fractures. One RSD, 1 flexor tenosynovitis and carpal tunnel syndrome and 4 flexor tenosynovitis were detected. In all patients with tenosynovitis, plate-shaft angle measurement was found to be above 5 degrees. The angulation above 5 degrees was found to be associated with tenosynovitis when evaluated with distal placement of the plate.

Conclusion

In surgical treatment of distal radius fractures, the evaluation of plate-shaft angulation with Soong criteria in the wrist tenosynovitis should be considered during surgery.

Keywords

Distal radius fracture; Soong criteria; tenosinovitis; plate-shaft angle.

OP-11

Foucher Flap for Thumb Pulp Defect Reconstruction

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Aim

The aim of this study was to evaluate the usefulness of the islanded first dorsal metacarpal artery flap for coverage of thumb pulp defects.

Material and Methods

Our study was done over a period of 2 years and involved 10 consecutive cases of thumb pulp defects. The patients included 8 males and 2 female, ranging in age from 16 to 66 years. All the patients had avulsion injuries and the patients were treated as emergency cases. All the flaps were studied for sensory return in the form of fine touch and two point discrimination.

Results

We checked the patients for one week , 1 st. month, 3. month ,6 and 12 months. In one patient observed venous congestion and one patient epidermolysis was observed. No flap loss occurred in any patient.

Conclusion

Our good results further reinforce the island first dorsal metacarpal artery flap as one the best flaps for sensate reconstruction of thumb pulp defects. It replaces the soft tissue loss at the thumb pulp with minimal donor site morbidity and with good return of thumb pulp sensation.

Keywords

Thumb; tissue defect; Foucher flap.

OP-12

Wrist Dislocations in Severe Crush Injuries

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Aim

Wrist dislocations are common in severe crush injuries. The accompanying soft tissue trauma usually precludes the diagnosis and treatment of wrist dislocations. The aim of this study is to present our cases with wrist dislocations and wrist fracture dislocations in severe crush injuries.

Material and Methods

All patients had reduction and fixation of dislocations with K-wires.

Results

All patients had soft tissue trauma in varying degrees that needed intervention.

Conclusion

The main problem with wrist dislocation in crush injuries is the neurovascular and soft tissue trauma usually takes the priority and through diagnosis and treatment of wrist dislocation is precluded. However good reduction and fixation is mandatory for future function.

Keywords

Wrist dislocation; severe crush injuries.

OP-13

FDS Augmented Mini Anchor Technique in Congenital Swan Neck Deformity Surgery

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Aim

The aim of this study was using a new surgical technique for congenital swan neck deformity surgery.

Material and Methods

The operation was performed under axillary anesthesia with tourniquet control. Palmar zig-zag incision was performed on the volar surface of the PIP joint and skin flaps were removed. The diaphragms of proximal and middle phalanges were revealed by subperiosteal dissection. A distal horizontal dorsal incision was made to the PIP joint and the dorsum of the middle phalanx and the central slip were preserved. The mini anchor was placed 1 cm near the PIP joint on the volar surface of the proximal phalanx. Two tunnels were opened using a 1.5-mm drill on the ulnar and radial sides at a 45 degree angle distal to the placement points of the superficial flexor tendon. Needle sutures were passed through the tulle, and the knot was threaded to the volar face with a hook, which would be 20 degrees. Then, with the same suture, the FDS tendon was ligated by augmenting the volar plate.

Results

The reconstruction of the volar plate with a mini-anchor system and augmentation of the fds is very easy and does not require the use of other tendons that prevent extensive surgical intervention, which will result in tendon adhesion and functional deficiency. In this technique, we believe that fibrotic tissues developed around the sutures give additional strength to the anchor sutures of the anchor system to act as a volar plate to prevent prolonged hypertension of the PIP joint. On the second postoperative day, we see that the passive movement is an advantage of the technique and the rehabilitation period is shorter than most other techniques.

Conclusion

Augmentation technique with mini-anchor offers practical, reliable and functional reconstruction of the volar plate in the treatment of congenital swan neck deformity. We believe it can be used for the obtained deformity.

Keywords

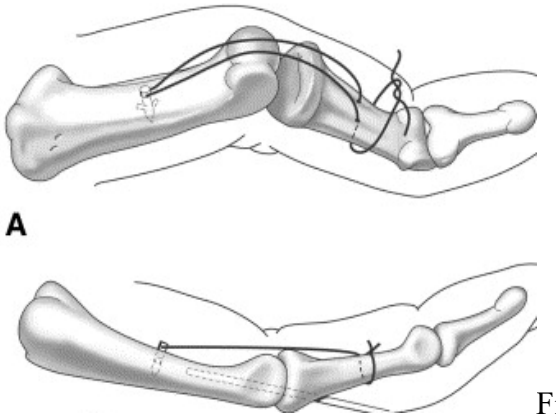

Figure 1

Figure 2

Figure 3

Figure 4

OP-14

Clinical Results of Patients Treated With Wrist Arthroscopy

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Aim

The physical and clinical results of 78 patients were evaluated that were performed wrist arthroscopic surgery in Inonu University Hospital Orthopedics Department between february of 2012 and july of 2017.

Material and Methods

We measured grip strength and used the neutral-zero method to measure range of motion of wrist for assesment of patients. Patients were asked to complete both Quick Disabilities of the Arm, Shoulder and Hand (Q-DASH) and mayo hand-wrist score. The patients were examined with tests that spesific to their diagnoses.

Results

49 (%62,8) of patients were female gender and 29 (%37,8) male gender. Mean age was 38 years (16-81). %28,2 of diagnoses were ganglion cysts, %19.2 TFCC rupture, %14,1 kienböck's dissease and %10,3 of patients had an intraarticuler fracture of distal radius. The waiting period between diagnosis and surgery was 5.18 months (0,03-36 months). Trauma story was positive in %47,4 of patients. In %93,6 of patients, right hand was dominant. In %59 of patients the affected hand was right hand.

Postoperative complication was seen in only 1 patient as regional pain syndrome. In one patient from the 22 patients that arthroscopic ganglion cyst excision performed, dorsal ganglion reccurence developed after 64 months. It is found that the all patients's postoperative DASH score average was 31,3 along with the last MAYO score average 91,28.

Conclusion

Wrist arthroscopy is a surgical technique that used for both diagnosis and treatment. Wrist arthroscopic surgery stands out with shorter hospitalization time, lesser soft tissue trauma and decreased complications rate. In addition, the wrist arthroscopy curtail the rehabilitation period and has a shorter duration period of returning to work which makes the technique gold standart. After hand wrist arthroscopy performed in 78 patients, only 4 patients were not satisfied with their clinic and their symptoms did not decrease. We found that wrist arthroscopy was a good treatment method in our study in which satisfaction was determined with 95% of the clinical outcomes.

Keywords

Wrist arthroscopy; ganglion cyst; Kienböck disease.

OP-15

Intraosseous Ganglion Cysts of the Lunate Bone: Outcomes of Arthroscopic Curettage and Autologous Bone Grafting

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Aim

Intraosseous ganglion cysts (IOGC) are benign osteolytic lesions of the cancellous compartment of the carpal bones. Numerous different techniques have been proposed for the treatment of IOGC of the carpal bones. The main purpose of this study was to present the clinical and radiological outcomes of IOGC of the lunate treated with arthroscopic curettage and autologous bone grafting.

Material and Methods

Between 2012 and 2017, we treated 14 patients (9 males, 5 females) with a mean age of 30.64±6.52 (range, 21-43 years) having histopathologically proven IOGC of the lunate with arthroscopic curettage and autologous bone grafting. We retrospectively reviewed demographic data, clinical and functional outcomes and radiological files of these patients. All the patients had medical treatment (non-steroid

anti-inflammatory drugs), splinting for immobilization of the wrist and physical therapy prior to the surgery. Indication for the surgical intervention was persistent wrist pain affecting the daily activities which failed to settle with conservative treatment modalities.

Preoperative and postoperative assessment included evaluation of The Disabilities of the Arm, Shoulder and Hand (DASH) Score, Mayo Wrist Score (MWS), pain with the visual analog scale (VAS), recording of range of motion and grip strength. Radiographic evaluation included PA and lateral radiographs. All patients had computed tomography (CT) and magnetic resonance imaging (MRI) prior to surgery and at the last follow-up.

All procedures were done under regional anesthesia. In all patients, arthroscopic two portal approach (3-4 portal and 4-5 portal) was used. A small joint shavers, burrs and curettes were used for curettage. The cystic cavities were packed with cancellous bone graft, harvested either from distal radius (5 patients) or olecranon (9 patients) with Jamshidi needles.

Results

The mean of 43.3 months (range, 24-82 months) of follow-up with complete clinical and radiological data were obtained for all the cases.

The MWS increased from 36 preoperatively to 83 at the final follow-up. The DASH score improved from 56 to 16 at the final follow-up. VAS pain score decreased from average 7 preoperatively to 0.4 at the final follow-up. With comparison to the normal wrist, there was 4% limitation of the flexion–extension arc. The mean postoperative grip strength recovered 93 % of the unaffected side. Return to previous work averaged 8.6 weeks (range, 6-14 weeks).

Conclusion

IOGC can be a cause of wrist pain and should be included in the differential diagnosis of benign osteolytic lesions of the carpal region. Surgical treatment is indicated in symptomatic IOGC if other reasons of wrist pain ruled out and all conservative treatment modalities had been tried. Arthroscopic method has some advantages when compared to open surgery, such as reduction in joint stiffness, better cosmetic results and less complications due to deterioration of lunate vascularization.

Keywords

Intraosseous ganglion; lunate; arthroscopic curretage; autologous bone grafting.

OP-16

Evaluation of FPL Tendon Rupture After Treatment of Distal Radius Fracture with Volar Plate

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Aim

The aim of study is to evaluate the frequency of FPL tendon rupture and factors leading to this rupture during the follow-up of patients who underwent volar plate fixation because of distal radius fracture.

Material and Methods

A total of 109 distal radius fractures of 102 patients treated with volar plate fixation and periodically followed-up for at least one year between the dates January 2013-May 2018 were evaluated. Fractures were categorized according to the AO/OTA Fracture-Dislocation Classification and Soong grading was used for classifying volar plate position. All patients operated were inquired retrospectively in terms of flexor tendon rupture.

Results

Gender distribution revealed 45 females and 57 males. Mean age was 47.9(range: 17-88) years old. Mean period of follow-up was 27 months. Distribution of fractures in accordance with the AO/OTA distal radius classification was 6, 8, 7, 12, 24, 33, 11, and 8 patients with Types A2, A3, B1, B2, B3, C1, C2, and C3, respectively. When volar plate positions were analyzed with Soong classification, it revealed that 79(72.4%), 23(21.1%), and 7(6.5%) plates were Grade 0, 1, and 2, respectively. In total, evaluating the 3(2.75%) patients with FPL rupture, it revealed that the volar plate was positioned distally during fixation because the fracture line had advanced to the distal of the watershed line, the distal portion of the plate had lost complete connection with the bone, and at this portion, it was observed that the pronator quadratus muscle was not covering the plate entirely (Soong classification Grade 2). Patients didn't have additional flexor tendon injury.

Conclusion

FPL tendon rupture is a rare but serious complication of volar plate fixation performed for distal radius fractures. We believe that appropriate choice of implant and careful surgical technique, along with the close follow-up of patients with Soong classification Grade 2 volar positions would help preventing this complication.

Keywords

Distal radius fracture; flexor pollicis longus; tendon rupture; volar plate fixation; Watershed line.

OP-17

Arthroscopic Treatment of Ulnar Impaction Syndrome

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Aim

Ulnar impaction syndrome is a degenerative condition characterized with excessive loads on ulnocarpal joint causing ulnar sided wrist pain, diminished grip strength and limited range of motion. Positive ulnar variance often accompany to that problem with exacerbated pain during grip at pronation and ulnar deviation. Positive ulnar variance is often relevant to lunotriquetral and triangular fibrocartilage complex tinjuries beside ulnolunate joint disease. Surgery aims at ulnocarpal decompression. With this study, we evaluated the results of partial arthroscopic ulna resection for ulnar impaction.

Material and Methods

Thirty-five patient who had arthroscopic wafer resection between 2012 and 2018 were retrospectively evaluated. Patients with ulnar impaction syndrome and positive ulnar variance who are older then 18 years-old and failed conservative therapy with no wrist fracture history were included to study. VAS score, DASH score, wrist range of motion and grip strength were evaluated preoperative and postoperatively. Lunate chondropathy, scapholunate, triangular fibrocartilage complex injuries were recorded.

Results

Nine of the patients were male and 26 were female. The mean age was 47.4 and 54.3% had injury at dominant side. Mean ulnar variance was 2.04 cm. Mean postoperative follow-up was 25.5 months. There were 56%, 27% and 21.7% improvement postoperatively at VAS, DASH scores and wrist range of motion, respectively. Lunate drilling was performed to 8, scapholunate ligament repair was performed to 7 and peripheral triangular fibrocartilage complex repair was performed to 9 patients during arthroscopic wafer procedure.

Conclusion

Arthroscopic wafer procedure has satisfactory results for ulnar impaction syndrome and triangular fibrocartilage complex repair, Intercarpal ligament repair and chondral microfracture procedures can be done concomitantly. Arthroscopic wafer resection has advantages on open surgery like lower recurrence rates, smaller scar, lower complication rates and the possibility to treat other pathologies concomitantly.

Keywords

Ulnar impaction syndrome; arthroscopic wafer resection.