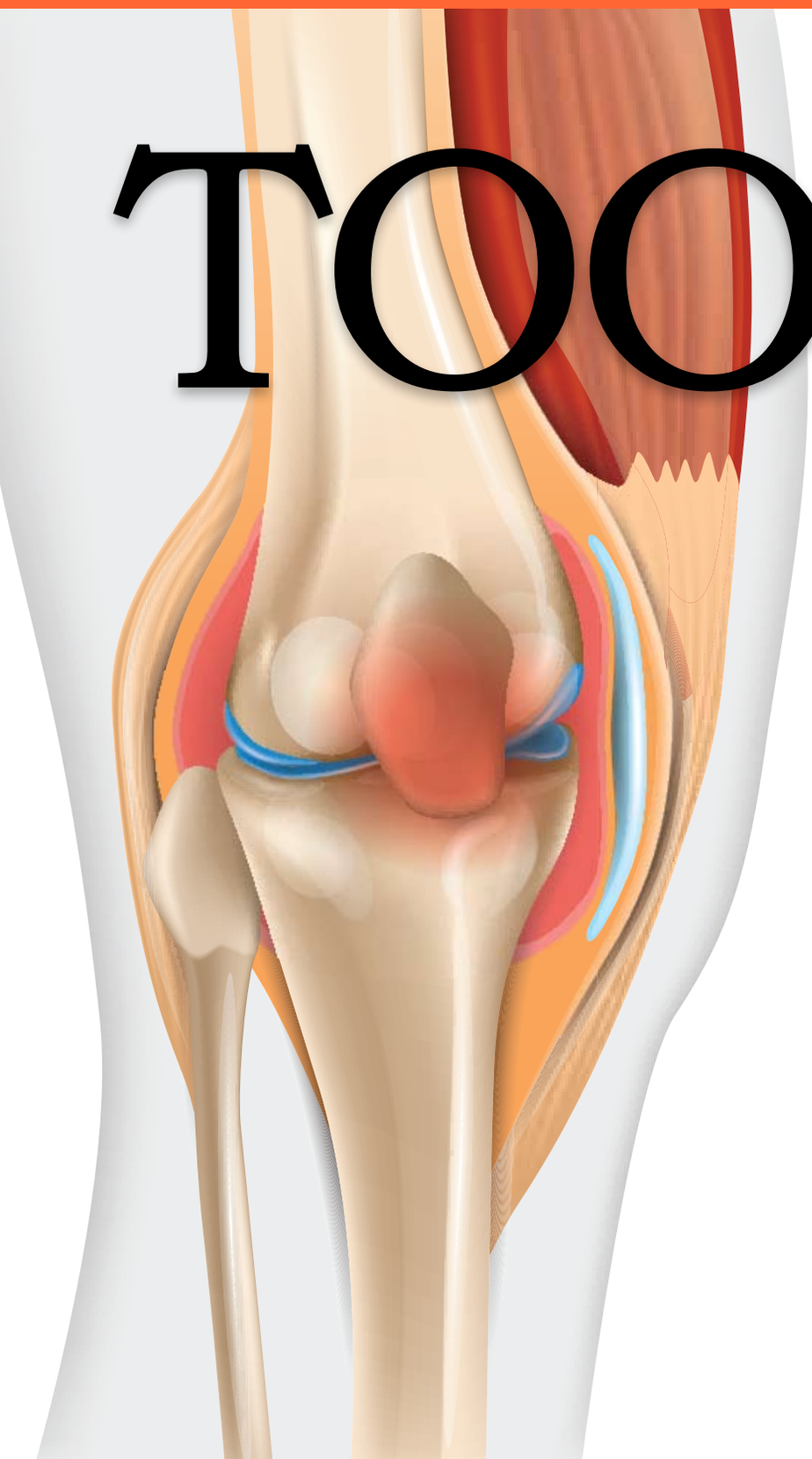

TOO

Times of Orthopedics®

Issue 21 | 2020

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EDITORIAL

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Editor's Message

It gives us great pleasure and pride to pen the introduction of the twenty first issue of Times of Orthopedics (TOO), a peer-reviewed journal.

The aim of this series is to have a mix of academic, scientific, and lifestyle-related articles to keep you up-to-date with the developments in our field. TOO is being launched with an aim to provide a rapid and reliable source of information in the mode of original articles, review articles, case reports, short communications, etc. in all areas of the field. TOO will focus predominantly on the areas of trauma, but wide and relevant aspects of bone tumors, pediatric orthopedics, foot and ankle surgery, joint replacements, metabolic bone diseases, etc. will also be covered. Although several important topics are mentioned, we believe TOO will not limit the consideration for publication of other allied topics, if found suitable to cover under the wide scope of this journal.

An enormous amount of work has gone into the development of this journal, and I believe you will see that effort reflected in this and future editions in the impact it will have on the readers. It has been an interesting start, many aspects of which our President has shared in his welcome notes. As we look at TOO, it is important to keep in mind that it represents the collective thinking of a group of innovative individuals at Science Integra with whom I am privileged to work. Firstly, we want TOO to be a premier academic journal in the engagement of our fraternity. We want it to look different, to be different, and to be one journal that, will be as dynamic as the work going on in our discipline, a rarity in academic publishing. Secondly, we want it to be a vehicle for a new type of conversation and have a place in academic review, tenure, and promotion. Lastly, we want TOO to lead the way in defining scholarship in the fraternity: scholarship in which faculty, students, and community members participate from idea to presentation. We do not know how, but we intend to get there.

Authors are encouraged to share their ideas and valuable research outcomes through this platform and to provide Indian readers with updated and most important information in this regard. We will work to make TOO not only a success in India but a platform to reckon across countries too. Those wanting to be a part of this winning team may share your papers by sending us an e-mail attachment to the editorial office at sushrutdsurgeon@gmail.com or production@scienceintegra.com

Vitamin D in osteoporosis: An insight on deficiency and benefits of supplementation

Authors: Dr. Rohit Yadav, Dr. Ramjit Patel, Dr. Farheen Rana

Burden of osteoporosis

- Osteoporosis is a major health problem globally, especially in the elderly. However, its prevalence is thought to be on rise with the increase in number of elderly people worldwide.[1]
- Osteoporosis is a common cause of fragility fracture, which is not only associated with reduced quality of life but also frequent rate of hospital admissions and increased mortality risk.[1] **Globally osteoporosis has been associated with about 8.9 million fractures annually**.[2]
- Females are at higher risk of suffering from osteoporotic fractures as compared to males. Worldwide, **approximately 50% of women suffer from at least 1 fragility fracture once in their lifetime.**[1] In women >45 years of age, osteoporosis accounts for more days spent in hospital as compared to that of diabetes, myocardial infarction and breast cancer.[2]

DID YOU KNOW?

Globally, osteoporosis is estimated to result in a fracture every 3 seconds.[2]

Unmet needs in the management of osteoporosis

Drugs for osteoporosis have been available for the last two decades and have been proven to be effective in lowering the risk of fractures. However, it is certainly not enough for tackling the rising pandemic of fragility fracture prevention, indicating an unmet need in current osteoporosis prevention and management.[1]

- Primary prevention of osteoporosis by obtaining high peak bone mass in young individuals has been recognized as one of the key unmet need worldwide**. A 10% loss of bone mass in the vertebrae and hip increases the risk of vertebral fractures by 2 times and hip fractures by 2.5 times, respectively**.[2] Modifying factors of calcium and vitamin D in diet plays a crucial role in obtaining high peak bone mass.[1]
- Another major unmet challenge in developing preventive treatment is the unknown optimal timing of osteoporosis treatment. For example, efforts at building up strong bones during the menopausal transition may play a critical role in reducing the risk of future fractures in a woman's life.[3]

Role of vitamin D in bone formation

- Vitamin D plays a crucial role in promoting bone health by maintaining optimal serum levels of calcium and phosphorus, essential for cellular functions and promoting mineralization of the skeleton.[4] It is also essential for maintaining muscle strength.[5]
- Sunlight is the primary source of vitamin D for humans. However, aging, sunscreen use and climate can dramatically affect the cutaneous production of vitamin D3.[4] It is generally accepted that a daily intake of 400–800 IU of vitamin D is required to maintain healthy bones throughout lifetime.[6]

Vitamin D deficiency and osteoporosis

The consequences of vitamin D deficiency includes secondary hyperparathyroidism and bone loss, mineralisation defects and muscle weakness, leading to osteoporosis and increased risk of falls and fractures.[7]

Vitamin D deficiency is common across age groups. The prevalence of vitamin D deficiency is reported to range between 84.9%–100% among school-going children, 42%–74% among pregnant women, 44.3%–66.7% among infants, 70%-81.1% among lactating mothers and 30%–91.2% among adults in different parts of India.[8]

The link between vitamin D deficiency and osteoporosis is well-established in literature.

- In a multinational study among 2,606 postmenopausal women with osteoporosis, low levels of the active form of the vitamin D, better known as 25-hydroxy-vitamin D [25(OH)D] was found be prevalent in 64% of the cases.[9]
- Another retrospective study among 206 patients with osteoporosis demonstrated the prevalence of vitamin D deficiency to be 55.3%. The mean vitamin D level was 22 ng/ml (p=0.00), the mean T score was −2.1 in the spine (p=0.55) and −1.7 at the femoral neck (p=0.00).[10]
- Authors suggest that monitoring and supplementation of vitamin D in pediatric patients with primary and secondary osteoporosis may be important to prevent further bone deterioration.[11]

Importance of vitamin D supplementation in osteoporosis

Vitamin D is directly proportional to bone mineral density (BMD) and inversely proportional to bone turnover. Supplementation in osteoporosis improves BMD and decreases bone turnover. Trials on calcium and vitamin D have shown to reduce the risk of fractures in patients with osteoporosis.[7]

- Vitamin D supplementation for a period of 8 weeks showed a significant improvement in T-scores and Z-scores in patients with osteoporosis vs. those without osteoporosis or not receiving supplementation ($p<0.001$).[12]
  - » T-score changes in the intervention group were significantly higher vs. control (0.81 vs. 0.30; $p<0.001$, figure 1).

Figure 1 Line chart of T-score changes of bone density in patients by intervention and control groups

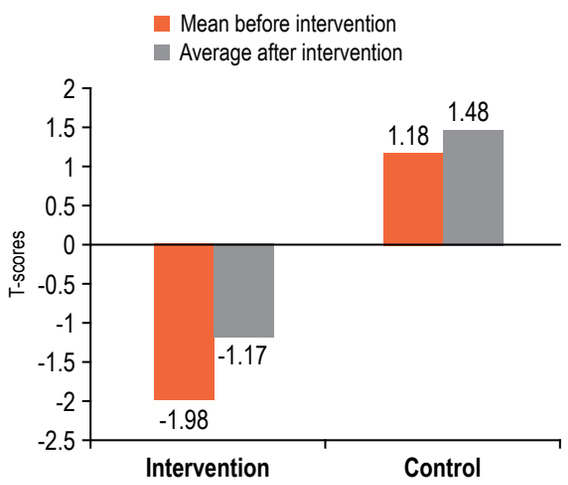
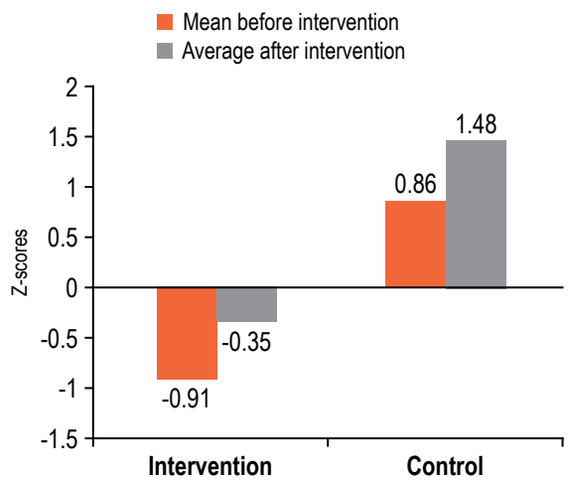


Table 1. Count distribution and frequency percentage of different statuses in BMD test of patients, by intervention and control groups.

Group	Bone density status: Count (1%)					
	Normal (≥-1)		Osteopenia (-1 to -2.5)		Osteoporosis (≤-2.5)	
	Before intervention	After intervention	Before intervention	After intervention	Before intervention	After intervention
Intervention	20 (6.9%)	34 (10.5%)	22 (38.6%)	21 (47.7%)	34 (65.4%)	10 (32.3%)
Control	271 (93.1%)	291 (89.5%)	35 (61.4%)	23 (52.3%)	34 (65.4%)	21 (67.7%)
Total	291 (100%)	325 (100%)	57 (100%)	44 (100%)	52 (100%)	31 (100%)

» Z-score changes in the intervention group were significantly higher vs. control (0.56 vs. 0.32; p<0.001, figure 2).

Figure 2 Line chart of Z-score changes of bone by intervention and control groups



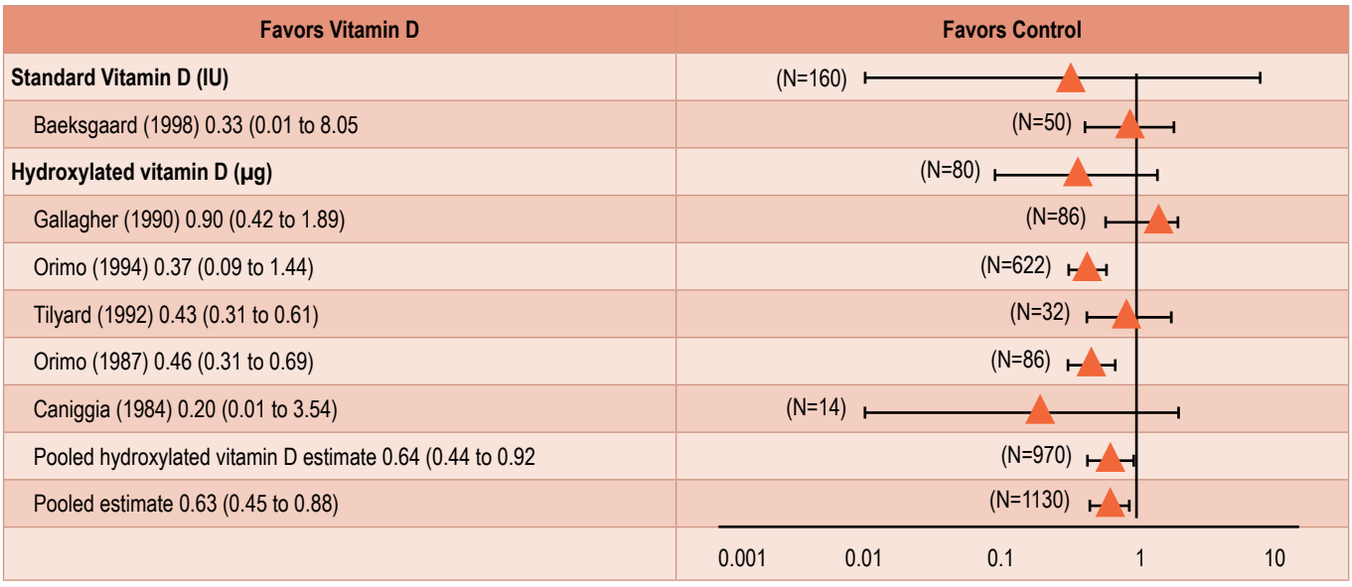
» The prevalence of osteoporosis after vitamin D supplementation was also shown to be significantly lower in the intervention group vs. control group (32.3 vs. 67.7 and p<0.001, Table 1).

- A previous history of hip fracture is associated with 5-to 10-fold increased risk of a second hip fracture. Evidence from the Nottingham Neck of Femur (NONOF) Study suggests that supplementation of vitamin D was associated with significantly reduced risk of a second fall in such patients. The relative risk of falling in elderly women post-hip fracture receiving supplementation with vitamin D was 0.48 vs. the control group.[13]
- A meta-analysis of 25 trials aimed to assess the efficacy of vitamin D treatment in preventing osteoporosis in postmenopausal women. Data analysis from the study showed that vitamin D was associated with significant reduction in the incidence of vertebral fractures [relative risk (RR) 0.63; p < 0.01, figure 3] and a trend toward reduced incidence of nonvertebral fractures (RR 0.77; p = 0.09).[14]

Current recommendation of vitamin D supplementation in osteoporosis

- The American Geriatrics Society Work-group on Vitamin D Supplementation for older adults recommends a serum 25OHD level of 75 nmol/L should be a minimum goal for elderly adults (particularly frail ones) to reduce the risk of fragility fractures.[15]
- In elderly patients at moderate risk for vitamin D deficiency, supplement with 1,000 IU of vitamin D3 daily is recommended. Higher doses up to 2,000 IU a day are considered safe.[15]
- The Endocrine Society Clinical Practice Guidelines for vitamin D supplementation has advocated 10,000 IU/ day

Figure 3 RR with 95% CI for vertebral fractures after treatment with vitamin D



as tolerable upper level intake (UL) of cholecalciferol for adults, who are vitamin D deficient, for a period of eight weeks.[16]

- Oral cholecalciferol 60,000 IU administered once a week for two months along with oral 500 mg of elemental calcium led to 25OHD sufficiency levels in vitamin D deficient patients at 8 weeks.[16]

Summary

- Osteoporosis is a major health problem globally, especially in the elderly population. Globally osteoporosis has been associated with about 8.9 million fractures annually.
- Vitamin D plays a crucial role in promoting bone health by maintaining optimal serum levels of calcium and phosphorus, essential for cellular functions, and promoting mineralization of the skeleton. It is also essential for maintaining muscle strength.
- The consequences of vitamin D deficiency includes secondary hyperparathyroidism and bone loss, mineralization defects and muscle weakness, leading to osteoporosis and increased risk of falls and fractures.
- Vitamin D deficiency is associated with increased risk of osteoporosis and supplementation is associated with improved BMD, T-scores, Z-scores, and reduced risk of fractures.
- The American Geriatrics Society Work-group on Vitamin D Supplementation for older adults recommends a serum 25-OH D level of 75 nmol/L should be a minimum goal for elderly adults (particularly frail ones) for reducing the risk of fragility fractures.
- In elderly patients at moderate risk for vitamin D deficiency, supplement with 1,000 IU of vitamin D3 daily is recommended. Higher doses up to 2,000 IU a day are considered safe.
- The Endocrine Society Clinical Practice Guidelines for vitamin D supplementation advocates 10,000 IU/ day as tolerable UL of cholecalciferol for adults, who are vitamin D deficient, for a period of eight weeks.
- Oral cholecalciferol 60,000 IU administered once a week for two months led to 25OHD sufficiency in vitamin D deficient patients at 8 weeks.

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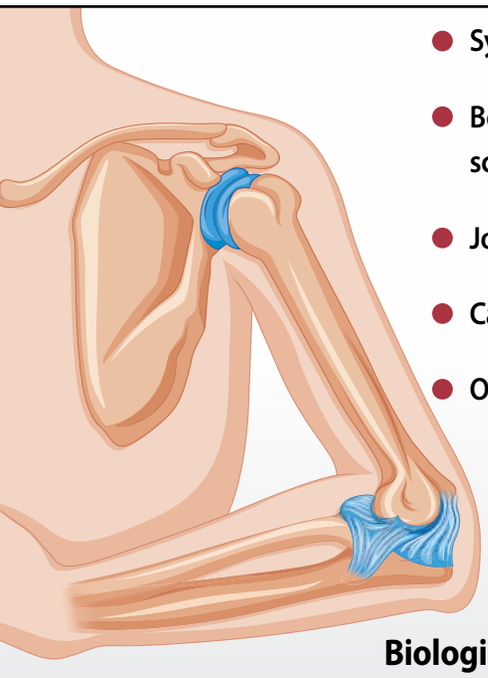
Arthroscopic debridement for elbow osteoarthritis: Effect on primary vs. post-traumatic etiology

Authors: Dr. Amit Ajgaonkar, Dr. Sumant Jaiswal



- Synovial inflammation
- Bone remodelling and sclerosis
- Joint space narrowing
- Cartilage breakdown
- Osteophytes

Biological processes responsible for causing elbow osteoarthritis

RADIOLOGICAL PRESENTATION OF PRIMARY AND POST-TRAUMATIC OSTEOARTHRITIS[4]

PRIMARY OSTEOARTHRITIS

Lateral radiograph demonstrates idiopathic osteoarthritis with osteophytes on the radial head as well as anterior and posterior ulnohumeral joints.

POST-TRAUMATIC OSTEOARTHRITIS

Radiographs demonstrate anterolateral osteophytes noted at the radial head and decreased joint space in the radiocapitellar joint.

PREVALENCE, RISK FACTORS, AND CAUSES OF ELBOW OSTEOARTHRITIS[1,2,3]

PREVALENCE

Around 55% of Asians were detected with elbow osteoarthritis

RISK FACTORS

- Older age
- Male sex
- History of elbow trauma

CLASSIFIED BY ETIOPATHO-GENESIS AS

Primary and secondary osteoarthritis differ in pathophysiology, radiological, and clinical presentation.

- Primary (Iterative microtraumatic movement, occupational overload, and aging)
- Secondary (Cartilage lesions, traumatic injury, trauma with fracture-dislocation, osteochondritis dissecans, and osteochondromatosis)

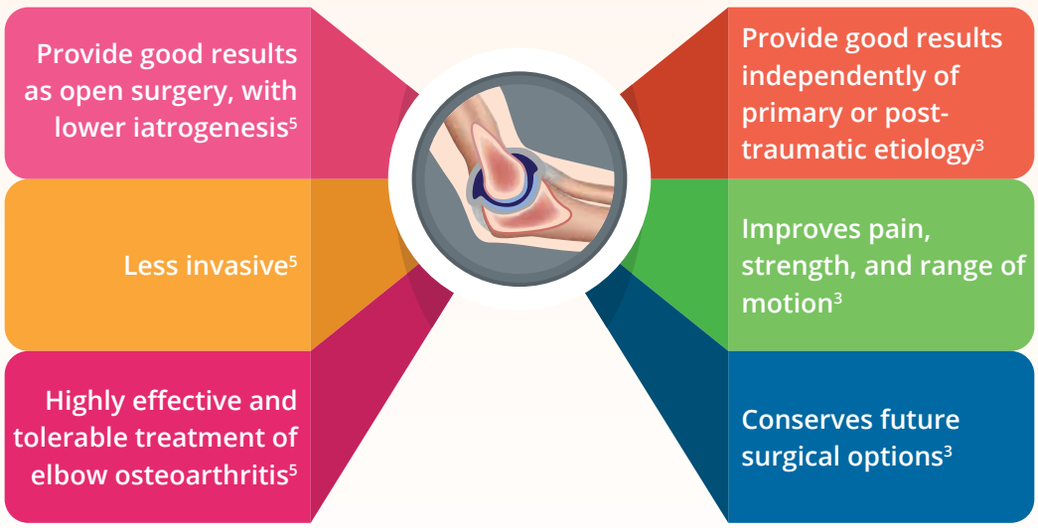
SIGNS

- Pain
- Discomfort
- Progressive loss of functionality
- Impaired ability of movement

SURGICAL TREATMENT OF ELBOW OSTEOARTHRITIS: ARTHROSCOPIC DEBRIDEMENT[5]

Arthroscopic debridement is defined as the common denominator of treatment in all centers that divides the anterior capsule between the anterior approaches, cleanses the olecranon, coronoid, and radial fossae, and removes foreign bodies.[5]

BENEFITS OF ARTHROSCOPIC DEBRIDEMENT IN ELBOW OSTEOARTHRITIS



EFFECT OF ARTHROSCOPIC DEBRIDEMENT IN PRIMARY AND POST-TRAUMATIC ELBOW OSTEOARTHRITIS[3]

AIM

- To compare the preoperative profiles and the efficacy of arthroscopic debridement for elbow osteoarthritis between patients with primary versus post-traumatic osteoarthritis.

PATIENT POPULATION

- Study included 87 patients with 6 months' follow-up of arthroscopic debridement.
- G1: Primary elbow osteoarthritis (n = 53)
- G2: Post-traumatic elbow osteoarthritis (n = 34)

METHODS FOR ANALYSIS

- Pre- and post-operative clinical assessment for elbow osteoarthritis in both groups compared Andrews-Carson specific functional score, QuickDash, Patient-Related Elbow Evaluation (PREE) and Mayo Elbow Performance Score (MEPS) functional scores.
- Progression in pain on visual analog scale (VAS) and range of motion (RoM) and strength was also assessed.

STUDY RESULT

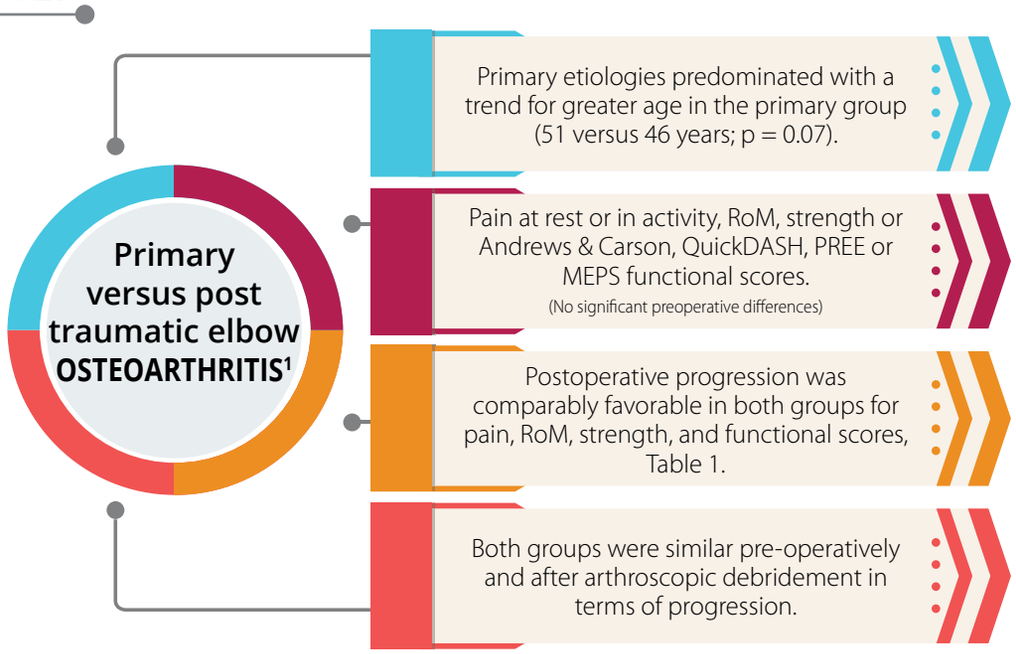


TABLE.1 Postoperative gains in primary versus secondary osteoarthritis

	GAIN: Primary osteoarthritis	GAIN: Secondary osteoarthritis	p-value
Pain on VAS			
Resting	−1.8 ±2.1 (−8 to 5)	−2.1 ±2.0 (−6 to 2)	0.5461
Active	−5.1 ±2.6 (−10 to 1)	−4.4 ±2.7 (−8.5 to 1)	0.2802
Motion (⁰)			
Flexion	13.6 ±14 (−50 to 50)	13 ±8.5 (−5 to 25)	0.83
Extension	15.4 ±11.5 (−30 to 35)	15.5 ±11.0 (−15 to 40)	0.97
Pronation	7.6 ±12.4 (−50 to 40)	7.3 ±9.3 (−20 to 20)	0.9342
Supination	8.0 ±9.7 (−20 to 40)	10 ±17.3 (−35 to 50)	0.50
Range of motion (⁰)			
F/E	42.9 ±22.1 (−15 to 105)	49.3 ±24.5 (10 to 90)	0.2281
P/S	15.5 ±17.7 (−45 to 80) Vs	17.3 ±24.3 (−55 to 65)	0.7009
Functional scores			
Andrews & Carson	68.5 ±28.7 (−5 to 110)	62.6 ±25.4 (18 to 110)	0.3523
MEPS	22.4 ±11.8 (0 to 50)	17.1 ±22.0 (−70 to 55)	0.1701
QuickDASH	−29.9 ±16.7 (−59 to 4.5)	−26.8 ±18.9 (−68.2 to 8.2)	0.4562
PREE	−38.9 ±17.6 (−86 to 7)	−39.3 ±33.2 (−120 to 27)	0.9519
Strength (kg)			
Flexion	7.6 ±4.7 (−2 to 17.5)	6.1 ±4.8 (−1 to 13)	0.2376
Grip	8.2 ±9.9 (−8 to 35)	9.2 ±11.7 (−6 to 36)	0.7080

F/E: Flexion/extension, P/S: Pronation/supination, MEPS: Mayo Elbow Performance Score, PREE: Patient-Rated Elbow Evaluation

CONCLUSION

- According to primary vs. secondary osteoarthritis, there were no significant differences in preoperative profile or results.
- Clinical progression was significantly positive with comparable improvements in pain, RoM, strength, and functional scores in both, the primary and post traumatic elbow osteoarthritis groups.
- Arthroscopic debridement has yielded good results independently of primary or post-traumatic etiology.

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NICE, EULAR, or ACR criteria: Which of these is effective in identifying early knee osteoarthritis?

Author: Dr. Sanskriti Babhulkar, Dr. Vidisha Kulkarni

Introduction

Knee osteoarthritis (OA) is one of the most prevalent conditions of the knee that causes pain and disability in elder people.[1] Knee OA is a degenerative 'wear and tear' disorder that mainly affects people over the age of 50 years and is also seen in younger people due to an injury or as a part of other diseases.[2] Globally, 3.8% of the population is affected by symptomatic knee osteoarthritis. In rural and urban India, knee OA is estimated to be 3.9% and 5.5%, respectively.[3] The etiology of knee OA may be multifactorial which is characterized by hypertrophy of bone at the margins, loss of articular cartilage, subchondral sclerosis, and range of morphological and biochemical alterations of the synovial membrane and joint capsule.[4] The treatment access to early knee OA is believed to be limited.[3] Early diagnosis can be considered as a crucial factor that will permit early treatment to modify the course of OA.[5]

In recent years, as demanded by the clinicians, the prospect of medically diagnosing OA without imaging techniques has increased the likelihood of early diagnosis and treatment. Clinical diagnosis without imaging has the potential to reduce the use of imaging in patients with typical OA presentations. The time required for structural changes to occur and only modest agreement with symptoms is the reason for the delayed use of imaging in patients with OA. However, this transition increases the demand for criteria applicable to primary care. The most commonly applied criteria for knee OA are those described by:[6]

- The European League Against Rheumatism (EULAR)
- The American College of Rheumatology (ACR)
- The National Institute for Health and Care Excellence (NICE)

Rationale for evaluating EULAR, ACR, and NICE criteria

The need for assessing non-imaging classification criteria in patients with knee OA is the fact that most of the patients are managed in primary care. Previous clinical studies (patients not more than 1000) have shown 30% to 81% of patients with knee symptoms to fulfill ACR criteria. Till date, no large-scale studies have estimated the efficacy of EULAR and NICE criteria in primary care.[6]

Comparison of EULAR, ACR, and NICE criteria for identification of knee OA

This is the first large-scale analysis that compared the three most applied classification criteria for knee OA. The analysis compared data from 13,459 patients with knee symptoms treated in a primary care setting according to the EULAR, ACR, and NICE criteria.[6]

Analysis design

This was a cross-sectional analysis initiated from 7th February 2017 and lasted till 31st December 2018. The baseline data of all the patients with knee symptoms or associated OA symptoms were recorded in the Good Life with osteoArthritis in Denmark (GLA:D®) treatment program. The prevalence of knee OA was estimated in all the participants (n=13,459) and the subgroup of patients with self-reported radiographic changes associated with knee OA (n=10,651; 79%). The knee pain was defined as the movement-related knee pain (yes/no) to be able to compare the performance of ACR with the two other sets of criteria.[6]

Components of clinical classification criteria

EULAR[6]

- Patients >40 years of age with movement-related joint pain
- Morning knee stiffness of less than 30 min
- Either one or more of examination findings such as:
  - » Crepitus
  - » Restricted range of motion
  - » Bony enlargement

ACR[6]

- Aged ≥38 years, crepitus, morning knee stiffness of 30 min or less
- Crepitus, morning stiffness of longer than 30 min, and bony enlargement
- No crepitus, but bony enlargement

NICE criteria[6]

- Aged ≥45 years with movement-related joint pain
- Morning knee stiffness or stiffness of 30 min or less

The result favored NICE criteria in identifying knee OA in primary care[6]

- The mean age was 65.3 years (standard deviation, SD; 9.8 years), the median duration of symptoms was 12 months (interquartile, IQR; 6-36 months) and the mean pain intensity was 46.5 mm (0-100; SD; 22.1 mm).
- All three sets of criteria were fulfilled by 39% of the patients. Accordingly, 48%, 52%, and 89% fulfilled the EULAR, ACR, and NICE criteria for having knee OA, respectively.
- Concerning the subgroup analysis including self-reported radiographic changes, 49%, 54%, and 90% fulfilled the EULAR, ACR, and NICE criteria for having knee OA, respectively (Table 1).

The NICE classification was efficacious in comparison to EULAR and ACR in identifying patients treated for knee OA in primary care. The NICE criteria identified 9 out of 10 treated patients with knee OA and seem to be appropriate classification in primary care. Conversely, the EULAR and ACR criteria were less appropriate in identifying knee OA in primary care settings.[6]

Summary

- Knee OA is a very common and prevalent type of osteoporosis in people aged more than 50 years.
- In India, knee OA is highly prevalent with limited access to early diagnosis and early treatment of knee OA.
- Non-imaging techniques can increase the likelihood of early diagnosis and early treatment of knee OA.
- EULAR, ACR, and NICE clinical classification criteria can be used commonly in non-imaging identification of knee OA in patients presenting with symptoms or pain in the knee.
- Among the three, NICE criteria identified 90% of treated patients with knee OA while the EULAR and ACR were able to find knee OA in 48% and 52%, respectively.
- The first large-scale analysis including 13,459 patients with knee symptoms concluded that NICE classification is most appropriate to identify knee OA in the primary setting.

Table 1. Prevalence of symptoms, examination findings, risk factors, and knee OA according to clinical classification criteria for all patients and patients with x-ray showing OA changes

	All (n=13,459)	Self-reported OA changes on x-ray* (n: 10,651)
Symptoms, n (%)		
• Movement-related joint pain, n (%)	12,274 (91.2)	9,744 (91.5)
• Functional limitation	10,979 (81.6)	8,758 (82.2)
• Morning stiffness	8,672 (64.4)	6,945 (65.2)
Examination findings, n (%)		
• Crepitus	8,440 (62.7)	6,744 (63.3)
• Restricted knee range of motion	8,482 (63.0)	6,873 (64.5)
• Bony enlargement	3,594 (26.7)	3,061 (28.7)
Risk factors, n (%)		
• Age (more than 40 years)	13,328 (99.0)	10,564 (99.2)
• Gender (female)	9,380 (69.7)	7,339 (68.9)
• Overweight (BMI ≥25)	10,224 (76.4)	8,190 (77.3)
• Prior joint injury	4,702 (34.9)	3,770 (35.4)
• Hard physical work	5,666 (42.1)	4,572 (42.9)
• Family history	6,394 (47.5)	5,094 (47.8)
Number of symptoms fulfilled, n (%)		
• 0	98 (0.7)	72 (0.7)
• 1	498 (3.7)	390 (3.7)
• 2	1,419 (10.5)	1,012 (9.5)
• 3	2,744 (20.4)	2,100 (19.7)
• 4	3,943 (29.3)	3,111 (29.2)
• 5	3,441 (25.6)	2,829 (26.6)
• 6	1,316 (9.8)	1,137 (10.7)
Fulfill criteria for knee OA, n (%)		
• EULAR**	6,411 (47.6)	5,246 (49.3)
• ACR***	6,938 (51.6)	5,718 (53.7)
• NICE****	12,007 (89.2)	9,557 (89.7)

*11,546 patients had done x-rays and 478 did not know if the x-ray reported radiographic signs of OA; **The European League Against Rheumatism (EULAR): More than 40 years, movement-related joint pain, functional limitations, morning stiffness and at least one of the following: crepitus, restricted range of motion, and bony enlargement; ***The American College of Rheumatology (ACR): Movement-related joint pain and either crepitus, morning knee stiffness of 30 min or less, and age of 38 years or above or bony enlargement; ****The National Institute for Health and Care Excellence (NICE): 45 years or older and movement-related joint pain.

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What's New!!!

Circuit training improves muscle quality in patients with knee osteoarthritis

The impact of 14-weeks circuit training was analysed on thigh intermuscular fat and muscle quality in patients with knee osteoarthritis (KOA). A total of 61 patients aged 40–65 years with grades 2 and 3 KOA were enrolled in this study and were randomly allocated into the following three groups: circuit training, conventional strength training, and educational protocol. Additionally, the assessment was carried out at week 0 (baseline) and week 14 (follow-up) for thigh intermuscular fat, knee extension maximal isometric voluntary contraction (MIVC), and muscle quality.

- It was observed that only the circuit training group had substantial thigh intermuscular fat reductions ($p = 0.003$) and significantly lower values than educational protocol in week 14 ($p = 0.032$).
- At week 14, both circuit and strength training group showed a significant increase in muscle mass area ($p = 0.002$ and $p = 0.008$, respectively), knee extension MIVC ($p = 0{,}033$ and $p = 0.019$, respectively), and muscle quality ($p = 0.004$ and $p = 0.042$, respectively) compared with educational protocol group.

Accordingly, this study concluded that circuit training for a duration of 14-weeks may reduce the intermuscular thigh fat and improve the muscle quality in patients with KOA.

REFERENCE: de Almeida AC, Aily JB, Pedroso MG, et al. A periodized training attenuates thigh intermuscular fat and improves muscle quality in patients with knee osteoarthritis: Results from a randomized controlled trial. Clin Rheumatol. 2019. DOI: 10.1007/s10067-019-04892-9.

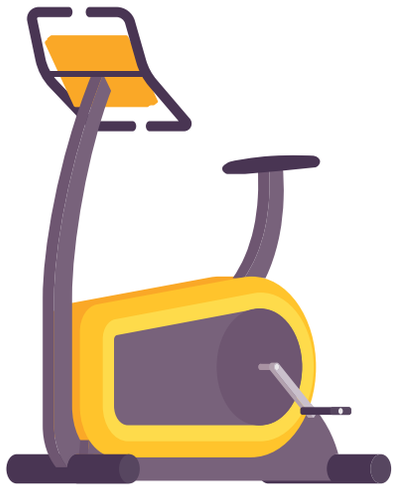
Risk factors for prosthetic joint infection following primary TKR surgery

Prosthetic joint infection (PJI) following total knee replacement (TKR) surgery is one of the most devastating complications that increases the financial burden to the patient. Recently, a study was conducted on 48 patients to identify potential risk factors and micro-organisms associated with PJI following TKR surgery. They found that body mass index (BMI), prolonged operative time, type and order of surgery, and comorbidities like diabetes mellitus, and rheumatoid arthritis as independent risk factors responsible for PJI. However, in majority of cases, methicillin-resistant *Staphylococcus aureus (*MRSA) was the underlying culprit responsible for PJI.

REFERENCE: Iqbal F, Shafiq B, Zamir M, et al. Micro-organisms and risk factors associated with prosthetic joint infection following primary total knee replacement-our experience in Pakistan. Int Orthop. 2019. doi: 10.1007/s00264-019-04472-1.

SUGGESTED EXERCISES AFTER KNEE SURGERY

A. PHYSICAL THERAPY EXERCISES



- Continue to exercise as instructed by your physiotherapist or doctor for at least 2 months after surgery.
- Riding a stationary bicycle can help maintain muscle tone and keep your knee flexible.
- Try to achieve a maximum possible degree of bending and extension, without discomfort.

1. Swimming

- Swimming improves muscle strength and endurance without exerting any pressure or stress on the replaced joint. You can start swimming once the sutures have been removed and the wound is healed. This will take about 6 to 8 weeks after surgery.
- Activities generally recommended by doctors after knee replacement surgery include walking, cycling (on level surfaces), and all low impact exercises.

2. Straight leg raises

- While lying on bed tighten the thigh muscle with your knee fully straightened on the bed. Lift your leg several inches. Hold for 5 to 10 seconds, and lower your leg slowly.
- Leg raises can also be done while sitting on a chair. Sit on a chair, tighten your thigh muscle and hold your knee fully straightened with your leg unsupported.

WHIZ

1. A 65-year-old woman presented with a left elbow fracture after a fall. She had a history of recurrent joint dislocations since childhood and orthopedic procedures on several joints. What is the most likely diagnosis?

A. Cutis laxa ☐
B. Ehlers-Danlos syndrome ☐
C. Elastoderma ☐
D. Pseudoxanthoma elasticum ☐

2. A 14-year-old girl presented with intermittent right knee pain that began several weeks ago. The pain worsened after activity and improved with rest. What is the most likely diagnosis?

A. Osgood-Schlatter disease ☐
B. Osteochondritis dissecans ☐
C. Osteosarcoma ☐
D. Patellofemoral dysfunction ☐

3. A 20-year-old man presented a health clinic with intermittent pain in his right knee that began two months earlier. Which one of the following is the most likely diagnosis?

A. Giant cell tumor of bone ☐
B. Myositis ossificans ☐
C. Osteoid osteoma ☐
D. Osteosarcoma ☐

ANSWERS: 1: B; 2: A; 3: D