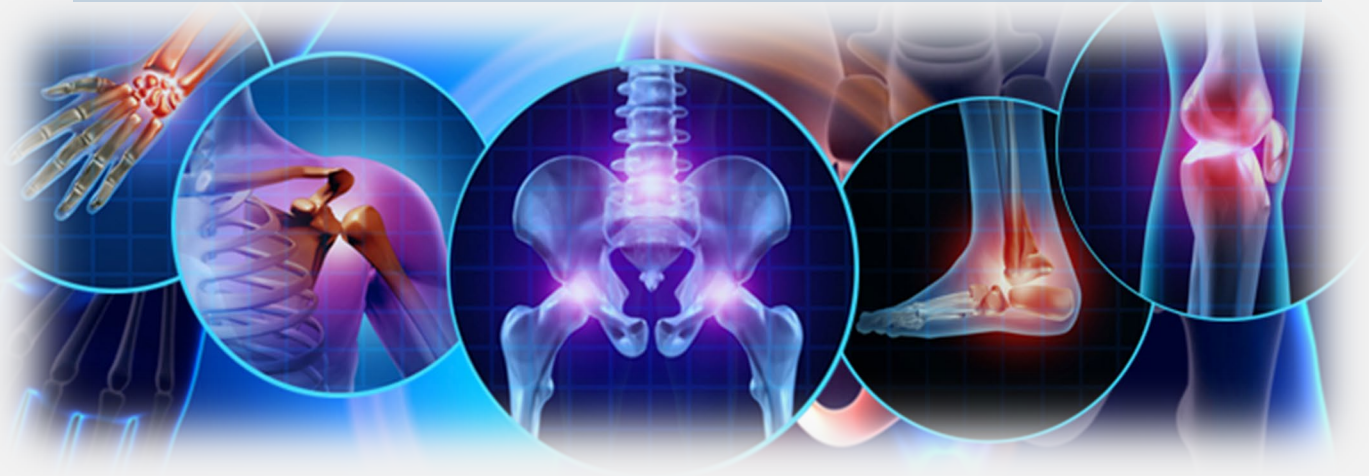


ORTHO NEWSCAST



Volume 3|Issue 20|2022

Dear Doctor,
Greetings from Micro Labs. We are happy to bring you "Ortho Newscast" which contains latest and interesting news in the field of Orthopaedics.

This issue contains

1. The combination of biceps tenodesis and rotator cuff restoration for elbow strength and function
2. A systematic review and meta-analysis of the relevance of vascular endothelial growth factor as a predictive and clinicopathological marker in osteosarcoma
3. The Z-shaped approach a unique biplanar medial opening-wedge high tibial osteotomy. A case study with a 7.2-year follow-up
4. A common injury, subtalar joint dislocation: A case report

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Looking forward to your valuable feedback



1. The combination of biceps tenodesis and rotator cuff restoration for elbow strength and function

A rotator cuff tear is a shoulder condition that causes discomfort and disability. In 30–69% of cases, rotator cuff tears are accompanied with long head of biceps pathology (LHBT).¹ For discomfort linked with biceps diseases, tenotomy or tenodesis is usually the recommended treatment. Arthroscopic biceps tenodesis is used to treat severe biceps tendonopathy, partial or full-thickness biceps tendon tears, or biceps instability in the presence of a rotator cuff rupture. Several procedures for tenodesis of the biceps long tendon have been documented.² When

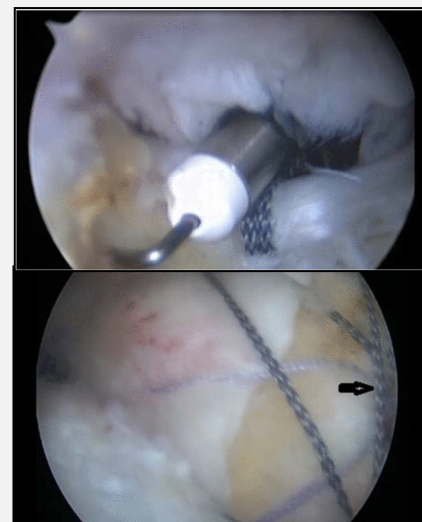


Elbow flexion strength at 90° flexion (a, b) and forearm supination strengths (c, d) of both operated and non-operated side elbows were measured using a digital dynamometer.

compared to open subpectoral biceps tenodesis, arthroscopic suprapectoral biceps tenodesis has a number of advantages, including less soft tissue dissection, reduced scar development, and the elimination of the requirement for an assistant to retract soft tissue. When compared to tenotomy, tenodesis appears to be related with greater forearm supination and elbow flexion strength. When two frequent procedures, biceps tenodesis and rotator cuff repair, are performed simultaneously, nothing is known about elbow strength compared to preoperative values.³

The aim of this study was to assess the elbow flexion and supination strengths, as well as the functional results, of patients who had arthroscopic rotator cuff surgery with concomitant biceps tenodesis.

The study included 19 patients who had arthroscopic rotator cuff surgery and biceps tenodesis with at least 24 months of follow-up. Patients were assessed using a visual analogue scale (VAS) for bicipital groove pain, American Shoulder and Elbow Surgeons (ASES) and constant scores (CS), biceps apex distance (BAD), elbow flexion, and supination strengths, as well as the American Shoulder and Elbow Surgeons (ASES) and constant scores (CS). The VAS for biceps groove measurement averages in the postoperative 6th, 12th, and 24th months was lower than preoperative data, which was statistically significant ($p < 0.05$). The



Biceps tendon cut after Lasso loops & Double row repair of rotator cuff tear. (Arrow sutures from the biceps tendon)

constant score, which is the sum of all postoperative measurements and scores, was found to be greater than preoperative values, which was statistically significant ($p < 0.01$). At the 3- and 6-month follow-ups, there was a significant difference in the operated and non-operated forearm supination and elbow flexion muscle strength ($p < 0.01$).



The study demonstrated that rotator cuff restoration with biceps tenodesis improves supination and elbow flexion strength while reducing biceps groove pain in the early postoperative phase when compared to preoperative values.

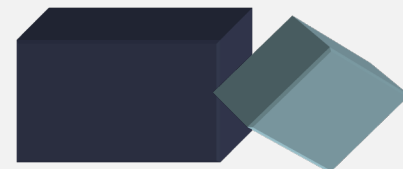
This study found that rotator cuff restoration with biceps tenodesis improves supination and elbow flexion strength while reducing biceps groove pain in the early postoperative phase when compared to preoperative values.³

Hufeland M et al demonstrated that, for the treatment of isolated biceps lesions, all-arthroscopic proximal suprapectoral intraosseous single-limb biceps tenodesis provides good-to-excellent clinical results, with significant improvement in elbow flexion strength and clinical scores and no significant difference from the unaffected contralateral arm.⁴ MacDonald P et al revealed both tenotomy and tenodesis are effective treatments for injuries of the long head of the biceps tendon, but the tenotomy group has a higher rate of Popeye deformity.⁵

Arthroscopic biceps tenodesis into the lateral row anchors combined with rotator cuff repair improves elbow flexion and forearm supination strength while also reducing discomfort. These improvements were seen not only on the operated side, but also on the non-operated side, which was positively influenced in the early postoperative phase.

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2. A systematic review and meta-analysis of the relevance of vascular endothelial growth factor as a predictive and clinicopathological marker in osteosarcoma

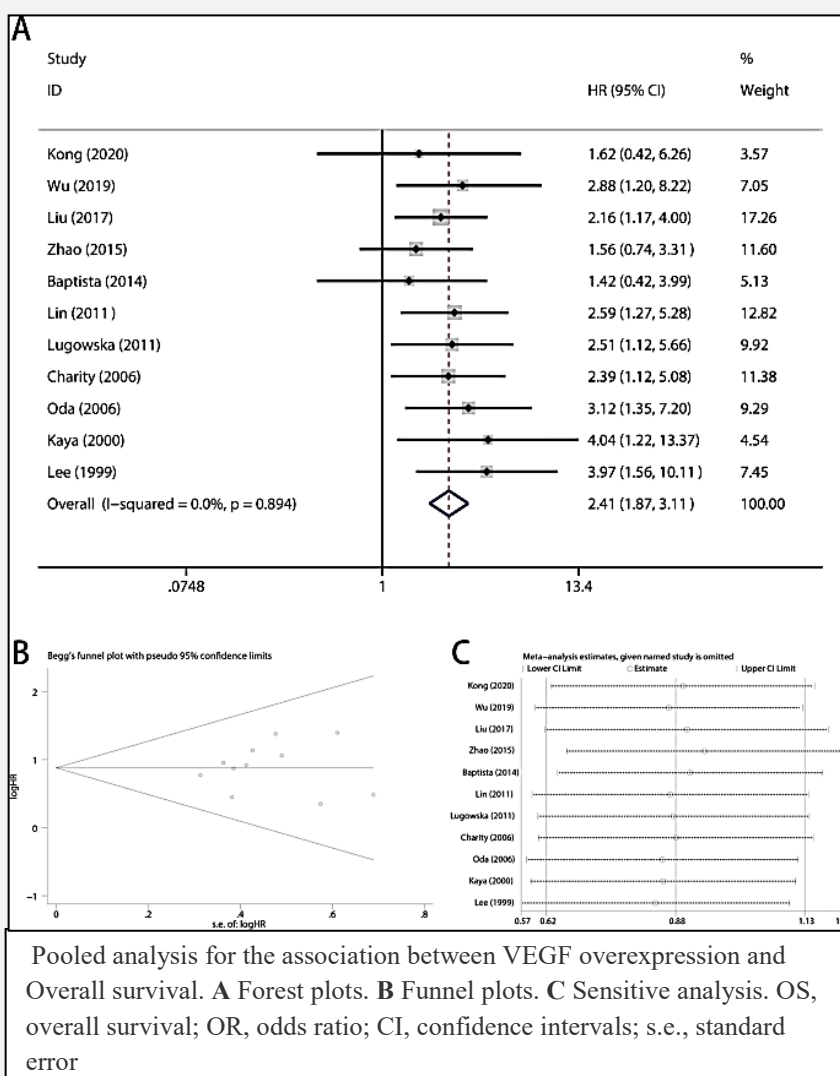
Osteosarcoma is a primary bone tumour in which an immature osteoid matrix is formed. The rates of occurrence vary by age, race, sex, and a variety of other characteristics. In average, the annual death rate for children aged 0 to 19 years is roughly 5.2 per million people. With roughly 2.4 percent of tumours diagnosed, it is the ninth

most common childhood cancer.¹ There are presently no feasible ways for diagnosing and treating osteosarcoma early on. As a result, additional research into prognostic molecular indicators is necessary for a better understanding of osteosarcoma

pathogenesis and the development of more effective treatment options.² Angiogenesis is important in tumour formation because tumour growth is dependant on neovascular perfusion. VEGF (vascular endothelial growth factor) is a potent pro-angiogenic agent that controls the

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proliferation, differentiation, and migration of vascular endothelial cells.³



The aim of this meta-analysis was to assess the predictive and clinicopathological relevance of VEGF in patients with osteosarcoma in a comprehensive manner.

The researcher used available databases to conduct a systematic literature search. To investigate the link between VEGF expression and prognosis in patients with osteosarcoma, researchers estimated odds ratios (ORs) or standard mean differences (SMDs) for clinicopathological characteristics, as well as hazard ratios (HRs) for overall survival and disease-free survival.

This study covered 22 studies with 1144 patients. Overexpression of VEGF was linked to a lower risk of overall survival (HR, 2.42; 95 percent CI, 1.87–3.11, p 0.001) and disease-free survival (HR, 2.604; 95

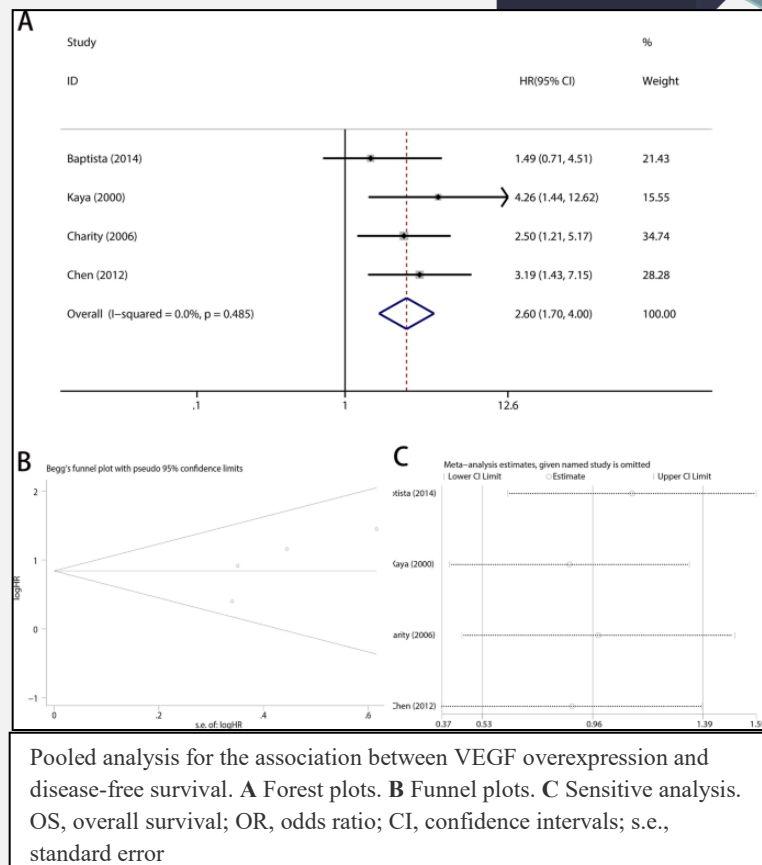
percent CI, 1.698–3.995, p 0.001). Furthermore, high VEGF expression was found to be significantly associated with metastasis (OR, 4.39; 95 percent CI, 2.77–6.95; p 0.001), clinical stage (OR, 0.73; 95 percent CI, 0.62–0.87; p 0.001), and microvessel density (SMD, 3.33, 95 percent CI, 1.57–5.10, p 0.001), but not with tumour location, gender, age, local recurrence.

Identifying additional biomarkers linked to osteosarcoma prognosis is critical for the development of new possible treatment targets.^{4, 2} Ferrara N et al reported that anti-VEGFA therapy has made significant progress in the treatment of some malignancies and intraocular neovascular diseases. The research agenda for how anti-VEGFA to improve patient outcomes in the future is determined by unaddressed questions of resistance, refining molecular targeting, adding biomarkers, and selecting effective combinations with other medicines.⁵ Han G et al revealed that, the osteosarcoma grade and metastasis are linked to VEGF. It could have a major impact on therapy and prognostication standards in the future.⁶

According to this meta-analysis, increased VEGF expression was linked to negative osteosarcoma clinicopathological characteristics and a poor prognosis. Our findings imply that VEGF is a prognostic biomarker in osteosarcoma patients.

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3. The Z-shaped approach a unique biplanar medial opening-wedge high tibial osteotomy. A 7.2-year follow-up

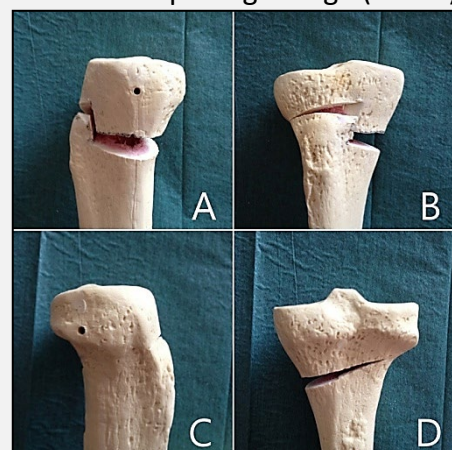
Knee osteoarthritis (OA) is a common orthopaedic condition that has a large direct and indirect socioeconomic impact. The treatment of symptomatic medial unicompartamental cartilage degeneration with high tibial osteotomy (HTO) is well-established. The purpose of HTO is to move the loading axis away from the deteriorated

The study showed Z-shaped MOWHTO had a survival rate of $95 \pm 1.7\%$ at a medium-term follow-up. There were no perioperative problems with the average period for bone healing of 12 weeks.

medial compartment and toward the healthy lateral compartment, alleviating pain and avoiding osteoarthritis progression.¹ HTO can address a faulty weight-bearing line, alleviating pain and other symptoms while also being a less invasive surgical technique. HTO has a low impact on soft tissues and has little effect on the stability and mobility of the knee joint.² The medial opening-wedge HTO (MOWHTO) technique was created with various advantages, including easier and more accurate correction and good long-term results.³

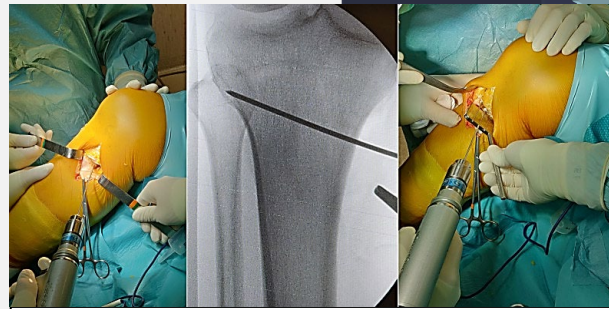
The aim of this study was to provide a new modified biplanar medial opening-wedge (MOW) HTO technique with Z-shaped osteotomies, as well as the medium-term clinical and radiological outcomes.

This study presented with a case series of 75 patients (80 knees) with a mean age of 45.8 years who underwent unique biplanar Z-shaped MOWHTO for isolated medial knee osteoarthritis and symptomatic varus knee malalignment. Clinical and radiological results were gathered retrospectively before surgery and after a median follow-up of 7.2 years (95 percent confidence interval: 5.6–9.2 months). Visual analogue scale (VAS), Western Ontario and McMaster University Osteoarthritis Index (WOMAC), and Likert scale were used to measure clinical outcomes and satisfaction. The medial proximal



Reproduction of Z-shaped biplanar medial opening-wedge high tibia osteotomy technique on artificial bone model of left proximal tibial

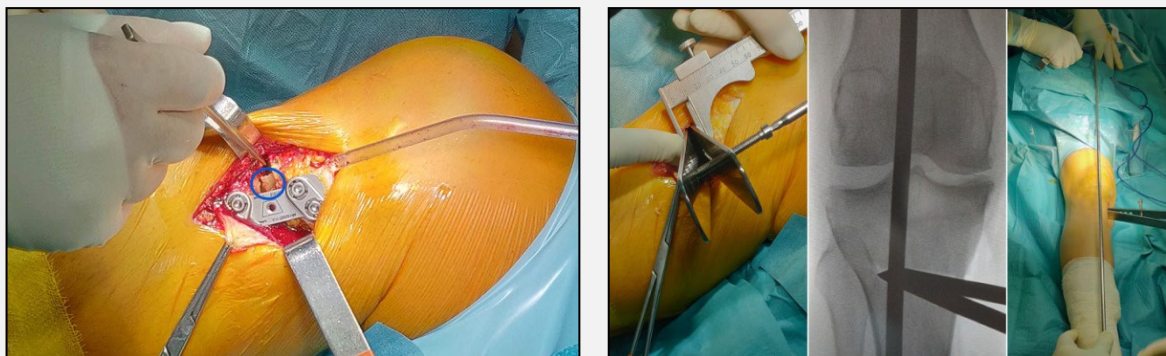
tibial angle (MPTA), tibial slope (TS), Caton–Deschamps index, and knee osteoarthritis severity according to Ahlbäck classification were also assessed radiologically. The two-tailed t-test or Wilcoxon's test of independent samples for paired data or nonparametric analogue were used to compare pre- and postoperative findings.



Intraoperative findings and fluoroscopic imaging of the first guide wire drilled through the proximal right tibia



A graphical representation of the three guide wires (yellow dots) and the first coronal osteotomy (vertical white line), on a lateral X-ray view of a right knee, and the intraoperative findings



Intraoperative findings of the third horizontal osteotomy performed with an oscillating saw and the intraoperative findings of complete Z-shaped MOWHTO, in a right tibia, from medial view

Z-shaped MOWHTO had a survival rate of $95 \pm 1.7\%$ at a medium-term follow-up, with failure occurring in four knees due to symptom recurrence and osteoarthritis development. There were no perioperative problems (intraarticular fracture, delayed union or nonunion, and neurological injury). The average period for bone healing was 12 weeks. At the most recent follow-up, clinical ratings showed significant improvement and a high level of satisfaction. The MPTA increased dramatically, whereas the Caton–Deschamps index fell. There was no discernible increase in TS.

At 7.2 years' follow-up, this retrospective cohort of 74 knees treated with MOWHTO employing a new Z-shaped osteotomy demonstrated good clinical and radiological

outcomes.³ Brinkman JM et al demonstrated that, the stability of a biplanar osteotomy with an internal plate fixator is excellent.

Although bone healing in opening-wedge osteotomies can take anywhere from three to twelve months, these sturdy plates allow for

early full weight-bearing and good bone healing without losing correction.⁴ In a cadaveric investigation, Pape et al. demonstrated that biplanar osteotomy improved fixation stability in the anteroposterior and rotational planes significantly, especially when short spacer plates, such as the Puddu plate, were utilised. The geometric structure of the Z-shaped biplanar MOWHTO exhibited may enhance the additional biomechanical stabilising effect of V-shaped biplanar MOWHTO as well as the biologic bone healing enhancement observed.⁵

The modified biplanar Z-shaped MOWHTO was a safe and dependable procedure with a low knee arthroplasty conversion rate that provides good clinical and radiological medium-term outcomes. The unique three-dimensional geometrical shape may promote bone healing, increase anteroposterior and rotational stability, and safer opening-wedge loading force application with a minimal chance of lateral hinge fracture.



Anteroposterior X-ray views of the same right knee. From left to right, respectively: preoperatively, and 1 day, 1 month, and 3 months postoperatively

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4. A common injury, subtalar joint dislocation: A case report

Subtalar dislocation is a rare injury that accounts for about 2% of all joint dislocations. The talocalcaneal and talonavicular joints are both disrupted, while the calcaneocuboid joint is unaffected. Medial subtalar dislocations account for up to 85% of all subtalar dislocations, while lateral subtalar dislocations account for 15% to 20% of all dislocations. The head of the talus is found laterally while the rest of the foot is dislocated medially in medial subtalar dislocation. The talus, on the other hand, can remain fixed while the rest of the foot is displaced laterally along the talus in a lateral subtalar dislocation.¹ The talus maintains its usual anatomical relationship with the ankle mortise in this uncommon type of dislocation, whereas the calcaneus and navicular bones are dislocated beneath it. High intensity trauma is thought to be the cause of occasional dislocations.² If immediate closure reduction is achieved in patients with uncomplicated lateral subtalar dislocation, an excellent prognosis can be expected. Wound debridement, proper joint reduction, and extra stabilisation with an external fixation are necessary in the event of difficult subtalar joint dislocations necessitating open reduction. Patients might expect a complication rate of up to 50%.³

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Case presentation

Following a motor vehicle accident, a 40-year-old man presented to the Emergency Department. The patient was first found to be haemodynamically stable, with a supinated right forefoot. Subtalar dislocation was discovered on radiographs and verified by a CT scan. A post-reduction CT revealed the presence of an osteochondral fragment within the subtalar joint, preventing the subtalar joint from being reduced congruently. The lost piece was removed after an open reduction was conducted and congruent reduction was confirmed under the c-arm. The subtalar joint was reduced congruently on post-operative x-ray. After that, the patient was placed in a below-knee slab and was not allowed to bear weight for three weeks. After 6 weeks, complete weight bearing was restored, and the ankle joint's entire range of motion was achieved.



CT 3d recon showing avulsion of posterior process of talus, which is intra-articular and causing incongruent reduction



Intra-op avulsion fragment removal, measuring and Post op plain x-ray showing congruent reduction of subtalar joint

Early mobilisation of uncomplicated, low-energy subtalar dislocations that are stable following closed reduction is possible, and the prognosis is usually good. Increasing the intensity of trauma, especially when there are concomitant fractures, usually results in bad consequences. If closed reduction is performed quickly after trauma, the majority of patients should have excellent functional results.

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