

Osteotomy: The Final Frontier in Knee Preservation

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Asian Journal of Arthroscopy completes 5 years of publication with this issue. This feat could only be achieved because of the unflinching support from all our authors, reviewers and above all, the readers. In all our previous issues, we have dealt with specific areas and pathologies which can be treated by arthroscopy. The knee joint has received most attention because it the most common joint to be injured and be treated as well. However, any talk of knee preservation is incomplete without acknowledging the art and science of osteotomy. This issue is dedicated to discussing the various aspects of a modern knee osteotomy for preserving the knee joint because it is indeed the final frontier.

Osteotomy surgery is a proven method of knee joint preservation by correcting mal-alignment in the coronal and sagittal planes [1]. It has been used to treat knee osteoarthritis by correcting varus or valgus mal-alignment since a very long time and with good results [2]. However, the science and art of osteotomy has evolved significantly over the last decade or so and everything is not so simple about a high tibial osteotomy (HTO) anymore. This has made osteotomy more predictable and safer, while expanding the indications and applications. One major 'expanded' indication has been to use osteotomy to treat ligament instabilities of the knee. This has been a force multiplier for ligament surgeons, who can achieve greater success with their soft-tissue reconstruction [3]. Perhaps the most remarkable progress has been made in planning an osteotomy. The use of digital planning techniques and specialized software for defining the deformity and correction has made osteotomy planning more reproducible and accurate [4, 5]. However, clinical examination cannot be given a miss in spite of any sophisticated radiological planning tool. Assessment of the soft-tissue laxity has to be considered in the surgical plan because this is an important cause of over-correction [6].

Medial open wedge high tibial osteotomy (MOWHTO) remains by far the most commonly performed surgery to correct malalignment around the knee for any indication. A close wedge or dome osteotomy are less frequently performed but have their place. Techniques of these surgeries are also evolving, the most important of which are performing a biplanar osteotomy and use of angle-stable locked plates for fixation. Both these provide definite benefits in terms of biology and biomechanics, thus permitting early mobilization and weight bearing [7, 8]. Another simple but remarkable innovation has been use of a K wire as a hinge protection tool. This has reduced the incidence of lateral hinge fractures by increasing the stiffness of hinge by about 880% and allowing early healing of the osteotomy [9, 10]. Even in cases of varus osteoarthritis with severe deformity, the utility of a double-level osteotomy to prevent joint line obliquity and provide good results has been demonstrated [11]. Another area of interest now are sagittal tibial osteotomies, especially the anterior closing wedge to reduce the posterior tibial slope in the setting of repeated failures of anterior cruciate ligament reconstruction [12].

As regards the use of technology for performing osteotomies, navigation has been used for quite some time. Although navigated HTO has yielded better precision and accuracy of alignment correction, it has not translated to better clinical outcomes [13]. The newest technological marvel in osteotomy surgery is the use of patient-specific cutting jigs and implants. This is a promising new avenue with good clinical results reported in the short-term without an increased risk of specific or non-specific complications [14]. In spite of everything, some patients will eventually require a total knee arthroplasty (TKA) for end-stage disease. The long-term survivorship of a TKA after HTO has been reported as 97% with a 3% revision rate for instability [15]. The survival drops to 88% after a distal femoral osteotomy when 6% revisions are due to instability [16]. These numbers are for patients who underwent osteotomies when the philosophy was still not refined. With better osteotomy technique and respect to ligament balancing, the TKA survivorship should also improve in future.

All these issues related to planning, execution and performance of a knee osteotomy have been dealt with in great detail and up to date information in this issue. We do hope that the wealth of knowledge contributed by the stalwarts of osteotomy surgery will be loved and appreciated by all our readers. The bone always wins and anybody willing to preserve a knee joint must have the weapon of osteotomy in their armamentarium.

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