

Commentary on meaningful and interesting arthroscopy articles around the globe, 2016-2017

Arumugam S¹, Prakash A¹

ACL Repair here to stay?

With the re-introduction of arthroscopic ACL repair, the arthroscopy community is visualising the resurgence of this previously abandoned procedure. Andreas Imhoff and Wolf Petersen's group [1] has published their results comparing ACL reconstruction with quadrupled semitendinosus graft and primary ACL repair using knotless suture anchors and micro fracture in a followup period of 28 months with comparable results in terms of IKDC and Lysholm score. However this group had a 15% failure rate in their repair group as opposed to the Danish & Norwegian registries cumulative report of 4% failure rate in ACL reconstruction. Although the results are promising only time will tell if ACL repair is here to stay.

J.P. Van der List [2] studied biomechanics of primary ACL repair in 12 cadavers knees and observed for gap formation during cyclic loading and found approximately 1mm gap formation with failure load of 243N. They emphasise careful ROM exercises and early second look arthroscopy to assess gap formation and healing in primary ACL repair.

Anterolateral ligament does exist ALL Expert Group [3] consisting of leading proponents of the anterolateral ligament provides a comprehensive consensus on anatomy of this ligament of knee, along with comprehensive examination & imaging, also proposing their own surgical technique of ALL reconstruction to improve the outcome of the ACL injured patients. Their broad overview of this subject enables one to see the bigger picture in the enigmatic instability patterns of the human knee.

Etienne et al [4] studied a small cohort of patients with ACL tear and examined their knees clinically and using USG and MRI. Their study revealed the identification of ALL in all cases using USG, MRI could not pick up ALL tear in all cases and patient with ALL tear more often had a positive pivot shift. According to them USG is a better imaging modality to detect this pathology owing to its higher spatial resolution and its ability to examine knees dynamically.

Primary knee ACL, in depth analysis Graft bending angle was studied by Tashiro et al [5] assessing dynamic knee motion after primary ACL reconstruction using quadriceps graft, comparing femoral tunnel created using rigid & flexible reamers. The striking finding of this study was higher bending angles at femoral aperture and

correlating larger bone tunnel widening was observed as early as 6 months following surgery in the flexible reamer group. Suggesting increase stress the tunnel & graft at the femoral aperture.

J.H Wang et al [6] observed a 4% physeal violation by creating tunnels during ACL reconstruction in adolescents, 3.95% in distal femur & 3.65% in proximal tibia. They also observed that physeal violations less than 4% were not associated with growth disturbances.

Biochemistry of joint injury

D.J. Kaplan et al [7] interestingly studied synovial fluid biomarkers in acute ACL injured knee and found significantly higher concentration of 6 specific biomarkers (MMP-3, IL-6, MIP-1 β , TIMP-1, TIMP-2, FGF-2) in the injured knee in comparison to the normal uninjured knee. This inquisitive study urges the scientists to look into joint fluid analysis to accurately describe intra-articular pathologies and future directions to involve biomarkers as a prognostic injuries post surgery.

Stem cells, think inside the box A.W. Anz et al [8] confirmed the presence of viable stem cells in post injury knee effusion and in waste by products of cruciate ligament surgery, they think that these cells are derived from the synovium and fatpad. Their study will help us optimise and make us think about ways to capture viable tissues for stem cells further.

¹Department of Arthroscopy & Sports Medicine, Sri Ramachandra University, Porur, Chennai, India - 600116

Address of Correspondence

Dr. Arumugam S
Centre for Sports Science, Head, Dept. of Arthroscopy & Sports Medicine, Sri Ramachandra University, Porur, Chennai, India - 600116
email: drarumugam@csstrucoach.in

© 2017 by Journal of Clinical Orthopaedics | Available on www.jcorth.com | doi:10.13107/jcorth.2456-6993.194

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

Complex meniscal tear, the unusual suspect

F.A.Barber et al [9] has published his series of 179 patients, in whom he observed 27.4% biconcave medial tibial plateaus and his study concludes that this phenomenon significantly associates itself with a complex medial meniscus tear than those knees without biconcavity. Although MRI was effective in identifying this anatomical variant, the authors believe that arthroscopy is the diagnostic standard to identify these variants.

Alignment and ligament surgery

A comprehensive review done by Tischer et al [10] on the impact of osseous malalignment and realignment procedures in knee ligament surgery makes us consider slope reducing osteotomies in patients revised multiple times for failed ACL reconstruction. They also recommend correction of varus alignment in case of chronic PCL and or PLC instability to reduce failure rate. The article recommends considering correction of mechanical axis in cases of instability accompanied by early unicompartmental osteoarthritis.

An unusual threat

E.Bonnet [11] from France has published an important case report on joint infection due to *Raoultella planticola*, a first of its kind in human joint in a patient following synovectomy and corticosteroid injection for calcium pyrophosphate crystal arthritis. The author provides comprehensive insight into identification of this species by mass spectrometry and a favourable outcome on treatment with antibiotics. He also warns new cases of bone and joint infection should be expected in coming years especially in patients with joint prostheses.

Cartilage regeneration is possible

A first of its kind study by B.Sadlik et al [12] from Poland tries to regenerate knee cartilage using umbilical cord, Whartons's jelly derived mesenchymal stem cells (WJ-MSC) embedded in collagen scaffold using dry arthroscopy technique in 5 patients who had not improved with standard therapy and showed favourable outcomes on the basis of clinical and MRI examination. Long term results can make this a viable option for cartilage repair.

Is it time for PRPP?

Meta-analysis of RCT's done by Wen-li Dai [13] on efficacy of PRPP in the treatment of knee OA suggests that PRP injection have more benefit and functional improvement in patients with symptomatic knee OA at 1 year post injection, in comparison with HA and saline injections. Timothy J Hunt [14] in his editorial commentary in Arthroscopy journal writes "The time has come for those of us who have not tried PRPP injections in our patients with symptomatic knee osteoarthritis to do so".

Meniscal root repair is better for the knee

As we see an increase in the identification and treatment of medial meniscal root tears, the efficacy of this procedure to prevent progression root tears have not been widely published. Michael Alaia et al [15] studied the discrepancy between radiographic and clinical outcomes at two year followup following transtibial medial meniscal root repair using two locking cinch sutures. This retrospective study of 18 patients showed improved clinical outcomes, however they observed only partial healing in majority of cases with increased extrusion and progression of medial compartment arthrosis on followup MRI.

Answer to the important question

When can I drive after ACL reconstruction? I'm sure all of us would've encountered the same question in our practice but, do we really know when? Kevin J [16] has studied the observer reported outcome measures to return to normal, measuring the brake response time and observed patients after Right knee ACL reconstruction exhibit a normal brake response time 4-6 weeks post-operatively and after Left knee ACL reconstruction exhibits a normal brake response 2 weeks post-operatively. The meniscectomy, chondroplasty and diagnostic arthroscopy group exhibit normal brake response time at the end of first week. As interesting it may seem this needs further elaborative effort to arrive at a conclusion and definitely require further investigation considering the other parameters involved.

Rehabilitation - A step ahead

A pilot study on Blood flow restriction training after knee arthroscopy done by David J Tennent [17] suggests BFR is an effective intervention after knee arthroscopy and found significant increase in quadriceps strength and thigh girth when compared to conventional therapy opening new avenues in rehabilitation after ACL reconstruction.

These articles are not just fuel that powers our scientific reasoning but also inspires action in the years to come.

References

1. Burks, R., 2017. Regarding "Acute Proximal Anterior Cruciate Ligament Tears: Outcomes After Arthroscopic Suture Anchor Repair Versus Anatomic Single-Bundle Reconstruction". *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 33(5), p.888.
2. van der List, J.P. and DiFelice, G.S., 2017. Gap formation following primary repair of the anterior cruciate ligament: A biomechanical evaluation. *The Knee*, 24(2), pp.243-249.
3. Sonnery-Cottet, B., Daggett, M., Fayard, J.M., Ferretti, A., Helito, C.P., Lind, M., Monaco, E., Pádua, V.B.C., Thaunat, M., Wilson, A. and Zaffagnini, S., 2017. Anterolateral Ligament Expert Group consensus paper on the management of internal rotation and instability of the anterior cruciate ligament-deficient knee. *Journal of Orthopaedics and Traumatology*, 18(2), p.91.
4. Cavaignac, E., Faruch, M., Wytrykowski, K., Constant, O., Murgier, J., Berard, E. and Chiron, P., 2017. Ultrasonographic Evaluation of Anterolateral Ligament Injuries: Correlation With Magnetic Resonance Imaging and Pivot-Shift Testing. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*.
5. Tashiro, Y., Sundaram, V., Thorhauer, E., Gale, T., Anderst, W., Irrgang, J.J., Fu, F.H. and Tashman, S., 2017. In Vivo Analysis of Dynamic Graft Bending Angle in Anterior Cruciate Ligament-Reconstructed Knees During Downward Running and Level Walking: Comparison of Flexible and Rigid Drills for Transportal Technique. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*.
6. Wang, J.H., Son, K.M. and Lee, D.H., 2017. Magnetic Resonance Imaging Evaluation of Physeal Violation in Adolescents After Transphyseal Anterior Cruciate Ligament Reconstruction. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 33(6), pp.1211-1218.
7. Kaplan, D.J., Cuellar, V.G., Jazrawi, L.M. and Strauss, E.J., 2017. Biomarker Changes in Anterior Cruciate Ligament-Deficient Knees Compared With Healthy Controls. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 33(5), pp.1053-1061.
8. Anz, A.W., Branch, E.A., Rodriguez, J., Chillemi, F., Bruce, J.R., Murphy, M.B., Suzuki, R.K. and Andrews, J.R., 2017. Viable stem cells are in the injury effusion fluid and arthroscopic byproducts from knee cruciate ligament surgery: An in vivo analysis. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 33(4), pp.790-797.
9. Barber, F.A., Getelman, M.H. and Berry, K.L., 2017. Complex Medial Meniscus Tears Are Associated With a Biconcave Medial Tibial Plateau. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 33(4), pp.783-789.
10. Tischer, T., Paul, J., Pape, D., Hirschmann, M.T., Imhoff, A.B., Hinterwimmer, S. and Feucht, M.J., 2017. The Impact of Osseous Malalignment and Realignment Procedures in Knee Ligament Surgery: A Systematic Review of the Clinical Evidence. *Orthopaedic Journal of Sports Medicine*, 5(3), p.2325967117697287.
11. Bonnet, E., Julia, F., Giordano, G. and Lourtet-Hascoet, J., 2017. Joint infection due to *Raoultella planticola*: first report. *Infection*, pp.1-2.
12. Sadlik, B., Jaroslowski, G., Gladysz, D., Puszczkarz, M., Markowska, M., Pawelec, K., Boruczkowski, D. and Oldak, T., 2017. Knee Cartilage Regeneration with Umbilical Cord Mesenchymal Stem Cells Embedded in Collagen Scaffold Using Dry Arthroscopy Technique.
13. Dai, W.L., Zhou, A.G., Zhang, H. and Zhang, J., 2017. Efficacy of platelet-rich plasma in the treatment of knee osteoarthritis: a meta-analysis of randomized controlled trials. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 33(3), pp.659-670.
14. Hunt, T.J., 2017. Editorial Commentary: The Time Has Come to Try Intra-articular Platelet-Rich Plasma Injections for Your Patients With Symptomatic Knee Osteoarthritis.
15. Alaia, M., Strauss, E., Jazrawi, L., Campbell, K. and Kaplan, D., 2017. Discrepancy Between Radiographic and Clinical Outcomes at Two Year Follow-Up Following Transtibial Medial Meniscal Root Repair. *Arthroscopy: The Journal of Arthroscopic & Related Surgery*, 33(6), p.e34.
16. DiSilvestro, K.J., Santoro, A.J., Tjoumakaris, F.P., Levicoff, E.A. and Freedman, K.B., 2016. When can i drive after orthopaedic surgery? A systematic review. *Clinical Orthopaedics and Related Research*, 474(12), pp.2557-2570.
17. Tennent, D.J., Hylden, C.M., Johnson, A.E., Burns, T.C., Wilken, J.M. and Owens, J.G., 2017. Blood Flow Restriction Training After Knee Arthroscopy: A Randomized Controlled Pilot Study. *Clinical Journal of Sport Medicine*, 27(3), pp.245-252.

Conflict of Interest: NIL
Source of Support: NIL

How to Cite this Article

Arumugam S, Prakash A. Commentary on meaningful and interesting arthroscopy articles around the globe, 2016-2017. *Journal of Clinical Orthopaedics* Jan - June 2017; 2(1):56-58