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A Scaffold Based Technique Combined With Autologous Bone Graft For The Treatment Of Relatively Large Osteochondral Lesions.

A report of three patients

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9 November 2013		Day Three	
Start - End	Topic	Speaker	
FREE PAPER : CARTILAGE, FOOT & ANKLE Chairpersons: Dr Edgar Michael Tiu Eufemio & Dr Mohd Asni Alias			
1600 - 1610	Is Arthroscopic Assisted Percutaneous Screw Fixation As Good As Open Reduction And Internal Fixation For The Treatment Of Displaced Intra-Articular Calcaneal Fractures?	Dr Yeap Ewe-Juan	EJ Yeap ¹ , J Rao ² , CH Pan ³ SA Soelar ⁴ , M Schlittler ⁵ , ASE Younger ⁶ ¹ Sime Darby Medical Centre Parkcity, Kuala Lumpur, Malaysia ² Tuanku Fauziah Hospital, Kangar, Malaysia ³ Kedah Medical Centre, Alor Setar, Malaysia ⁴ Clinical Research Centre, Kuala Lumpur, Malaysia ⁵ AO Foundation, Dübendorf, Switzerland ⁶ St Paul's Hospital, Vancouver, Canada
1610 - 1620	Arthroscopic Autologous Osteochondral Grafting For Treatment Of Cartilage Defect Of Knee	Dr Bui Hong Thien Khanh	Bui Hong Thien Khanh, Le Tuong Vien, Duong Dinh Triet University Medical Center, Ho Chi Minh City, VietNam
1620 - 1630	Retrospective Review Of Surgical Management Of Chondral Defects Using Hyaluronic Acid Scaffolds With Bone Marrow Cells	Dr Izan Ibrahim	Izan Ibrahim Al-Islam Specialist Hospital, Kg. Baru, Kuala Lumpur, Malaysia
1630 - 1640	A Scaffold Based Technique Combined With Autologous Bone Graft For The Treatment Of Relatively Large Osteochondral Lesions	Dr Mohamed Zubair Mohamed	M. Zubair, Ng Wuey Min, M. Razif Bin M. Ali, Azhar M. Merican. Orthopaedic Sport Unit, Department of Orthopaedic Surgery, University of Malaya Medical Centre, Kuala Lumpur, Malaysia
1640 - 1650	Arthroscopic Autologous Osteochondral Grafting For Treatment Of Cartilage Defect Of Knee	Dr Suh Dong-Suk	Koh Yong-Gon, M.D ¹ , Jo Seung-Bae, M.D ² , Kwon Oh-Ryong, M.D ³ , Suh Dong-Suk, M.D ⁴ , Lee Seung-Woo, M.D ⁵ , Park Sung-Ho, M.D ⁶ , and Choi Yun-Jin, M.D ⁷ ¹ Center for Stem Cell & Arthritis Research, Department of Orthopedic Surgery, Yonsei Sarang Hospital (Y.G.K., S.B.J, O.R.K., D.S.S., Y.J.C.), Seoul; and the Department of Radiology, Yonsei Sarang Hospital (S.W.L., S.H.P.), South Korea.

Background: The treatment of the osteochondral defects is considered one of the challenges that are facing the physicians for many years. The damaged tissue does not only include the superficial cartilage layer but also the subchondral bone. Therefore, In comparison to chondral lesions the regeneration of osteochondral defects is much more complex and a far greater surgical and therapeutic challenge. Several surgical treatment options have been used including the Autologous or allogeneic osteochondral transplants, disadvantages are the limited amount of available grafts, donor site morbidity (for autologous transplants) and the incongruence of the surface. Other approaches by the use of autologous chondrocytes implantation in combination with autologous bone graft which is a time consuming procedure and requires two steps surgeries. We are describing a new technique for the treatment of the osteochondral defect with a single surgery, that's by using an autologous bone graft combined with Hyalofast scaffold (a semi-synthetic derivative of hyaluronic acid) filled with bone marrow concentrate (BMC).

Methodology: Three patients with osteochondral lesions (two knees and one ankle) had been treated with one step surgical reconstruction of the defect. Bone marrow aspirate and tri-cortical bone graft were harvested from the ipsilateral iliac crest. Intraoperative preparation of the BMC derived from the centrifuge of bone marrow aspirate. Meanwhile, the bone graft was reshaped and impacted in to the defect. On the side table the hyalofast scaffold was impregnated with the BMC and placed to cover the chondral defect. A PRP which is derived from the patient's own blood was applied over the surface as a biological glue.

Results: All three patients had an overall relief of pain and improvement of knee functions. The outcome was confirmed by post operative MRI that shows good graft integration with filling of the defects.

Conclusion: This is a one step procedure for treatment of relatively large osteochondral lesions, where the scaffold based technique was used for the regeneration of the hyaline cartilage combined with autologous bone graft to fill the bony defect. The Hyalofast used to provide a biodegradable support for the BMC that was used instead of chondrocytes to provide mesenchymal stem cells to seed a scaffold. This combination seems to be able to overcome the limitations seen in osteochondral grafts alone and those for autologous chondrocytes implantation.