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• 計畫中文名稱	以 dGEMRIC 評估前十字韌帶切斷後之軟骨氨基葡聚糖流失---動物實驗
• 計畫英文名稱	Cartilage Glycosaminoglycan Loss in ACL-Transected Knee in Rabbit Model---Delayed Gadolinium-Enhanced MRI
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• 中文關鍵字	動物模型; 軟骨; 磁振造影
• 英文關鍵字	Animal model; Cartilage; Magnetic resonance imaging (MRI)
• 中文摘要	本實驗採用 36 隻兔子針對前十字韌帶切斷模型之建立,使用 18 隻兔子右腳並分成 3 組:A(n=6)10 週、B(n=6)15 週、C(n=6)20 週,做術後犧牲,左腳(第一組,N=6)作爲控制組。結果顯示透明軟骨之表淺磨損,出現在內側股骨踝有 2／6 隻(A 組),2／6 隻(B 組)和 3／6(C 組),另有 2／6(C 組)出現細胞增生與不規則情形,又有 1／6(C 組)出現骨刺,控制組沒有任何一隻出現上述情況,在本實驗因爲延後灌注釓(Gadolinium)技術性無法進行,我們採用不同 MR 波序與 T2map 來測量透明軟骨之損害程度,因此使用另外 18 隻兔子分成 3 組:A(n=6)鑽孔 3mm 並植入 PRF;B(n=6)鑽孔 3mm 並植入 PRF 和軟骨細胞;C(n=6)鑽孔 3mm 不植入任何填充物,追蹤 3 個月後犧牲。結果發現 A 組 3 隻、B 組 2 隻、C 組 0 隻的透明軟骨出現超過 50%的修復,而矢狀面 SPGR 顯影技術呈現較佳之影像品質與解像度,另外 B 組之 T2map 測量數據明顯與 C 組有差異(p＜0.05)。
• 英文摘要	Abstract A total of 36 rabbits were recruited. For ACL-transected model development, 18 rabbits of right knee were divided into three groups: A (n=6), 10 weeks; B (n=6), 15 weeks, C (n=6), 20 weeks, after surgery for sacrifice. The left knee (group D, n=6) of each rabbit acted as controls. Results revealed that erosion of the superficial layer of the articular cartilage was noted in medial femoral condyle in 2／6 rabbits in group A, 2／6 in B, and 3／6 in C, and that 2／6 in C having cell proliferation and disarrangement of the articular cartilage, and 1／6 in C having osteophyte formation. None of the control group (0／6) developed cartilage erosion or osteophytes. Owing to dGEMRIC was unable to perform technically, we employed various MR techniques and T2 mapping to determine status of cartilage damage. Another 18 rabbits were then divided into three groups: A (n=6), a 3-mm

resection with platelet-rich plasma (PRF) implantation; B (n=6), a 3-mm resection with PRF and cell implantation; C (n=6), a 3-mm resection only follow-up 3 months, after surgery for sacrifice. There were 3／6 in group A, 2／6 in B, and none in C having score 1 (i.e. over 50% repair). Sagittal SPGR with gadolinium-enhanced images depicted higher quality and resolution than others. There were significantly different of the surgical area in group B versus group C on T2 mapping($P < 0.05$).