



Application of bioreabsorbable implants (OBI TruFit) in case of osteochondral defect of the knee – preliminary report

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Original article

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Summary

The aim of this preliminary report is to present own experience in the OBI TrueFit graft application in case of osteochondral defect of the knee. The TruFit graft was applied in 6 cases (5 male and 1 female). The age of patients range from 19 to 48 years. The procedure was done arthroscopically in 4 cases and via mini arthrotomy in 2 ones. The medial femoral condyle was involved in 5 cases and lateral condyle in one. The follow-up time range from 4 to 23 weeks. Rehabilitation permitted immediate full range of motion, non-weight bearing during 6 weeks with partial loading in the 6th postoperative week. There were not any intra operative and postoperative complication. The early MRI evaluation performed 12 weeks from surgery in one case provided a very promising data which supported TrueFit graft application in case of osteochondral defects of the knee.

INTRODUCTION

Bone grafts materials are widely used in orthopedic procedures. Technological progress has brought us new bone graft substitute (TruFit) which has been used as a resorbable scaffold in case of osteochondral defects [1]. The TruFit is an alternative for autogenous osteochondral graft [2], microfracture technique [3] and chondrocytes transplantation [4,5] in treatment of chondral and osteochondral defect of the knee. The aim of this preliminary report is to present own experience of the TruFit graft application in case of osteochondral defect of the knee.

MATERIALS AND METHODS

The TruFit graft was applied in 6 cases (5 male and 1 female) in Department of Arthroscopy, Minimally Invasive Surgery and Sport Traumatology of Medical University of Łódź (2 cases), Salve Private Hospital (Łódź) (3 cases) and Medical Magnus Clinic (Łódź) (one case) from January to June 2007 by the author. The age of patients range from 19 to 44. The TruFit graft (OsteoBiologic Incorporation) is composed of polylactide-co-glycolide (PLG) copolymer, calcium sulfate, polyglycolide (PGA) fibers and surfactant and the joint side part of graft (4 mm) does not have calcium sulfate [1]. The procedure was done under local and intravenous anesthesia in 2 cases without tourniquet [6] and in 4 with one under epidural anesthesia. The whole procedure was done arthroscopically in 4 cases (medial femoral condyle) and by miniarthrotomy (one lateral and one medial femoral condyle). The defect was measured and diameter of TruFit graft selected, next the edges of the defect were brought back sharply to good hyaline cartilage. The proper size chisels were introduced perpendicular to the defect. The harvester was tapped (16 mm) and removed. The TruFit grafts were implanted (the length of the graft was always 16 mm) [1]. When all the holes were filled, the knee was put through a range of motion with varus and valgus stress to seat the graft properly. The portals and wound were closed and the joint was drained (24 hours). Passive motion was applied immediately after surgery. The patients stayed in the hospital for one day. Rehabilitation permits immediate full range of motion, non-weight bearing during 6 weeks with partial loading in the 6th postoperative week. The follow-up time range

from 4 to 19 weeks. The MRI evaluation was done in one case 12 weeks from surgery.

RESULTS

All patients have tolerated the surgeries well and returned to normal activity after 6 weeks from surgery. There were pain free full range of motion in 5 cases and limitation of flexion up to 115 ° which was present before surgery. There were not any intraoperative and postoperative complications. The MRI evaluation (fig. 1) of the case with lateral femoral condyle involvement (table 1) disclosed good osteointegration of the grafts, partial remodeling and relatively good congruence of joint line with signal of neocartilage formation 12 weeks after surgery.

DISCUSSION

Treatment of an osteochondral defect of the knee is a challenging task. Several surgical options offer similar clinical results [2,3,4,5]. Because of limited availability of donor cartilage for resurfacing defects in articular surface, there is tremendous interest in the in vitro bioengineering of cartilage replacement for clinical application. The biodegradability of PLG and PGA copolymers was proved in vitro and in vivo conditions [7]. Own experience has shown that implantation of TruFit may be done safely under an intravenous anesthesia and it is much more easier than osteochondral auto grafts and chondrocytes transplantation. The early MRI evaluation has provided a very promising data which supported TruFit graft application in case of osteochondral defects of the knee.

CONCLUSIONS

The TruFit graft is a new, safe and promising option of treatment of osteochondral defects in the knee.

Table 1. Clinical data of patients

Patients	Age	Location of defect	Size of defect Grafts	Number of TruFit Grafts	Follow up weeks
Male	19	medial femoral condyle	< 4 cm	3 (9,7 and 6 mm)	8
Male	17	lateral femoral condyle posterior part	> 4 cm	4 (10,9,7,6 mm)	12
Male	24	medial femoral condyle	< 4 cm	11 mm	23
Male	43	medial femoral condyle	< 4 cm	2 (10, 6 mm)	22
Male	48	medial femoral condyle	< 4 cm	2 (9, 7 mm)	5
Female	20	medial femoral condyle	< 4 cm	2 (9, 7 mm)	4

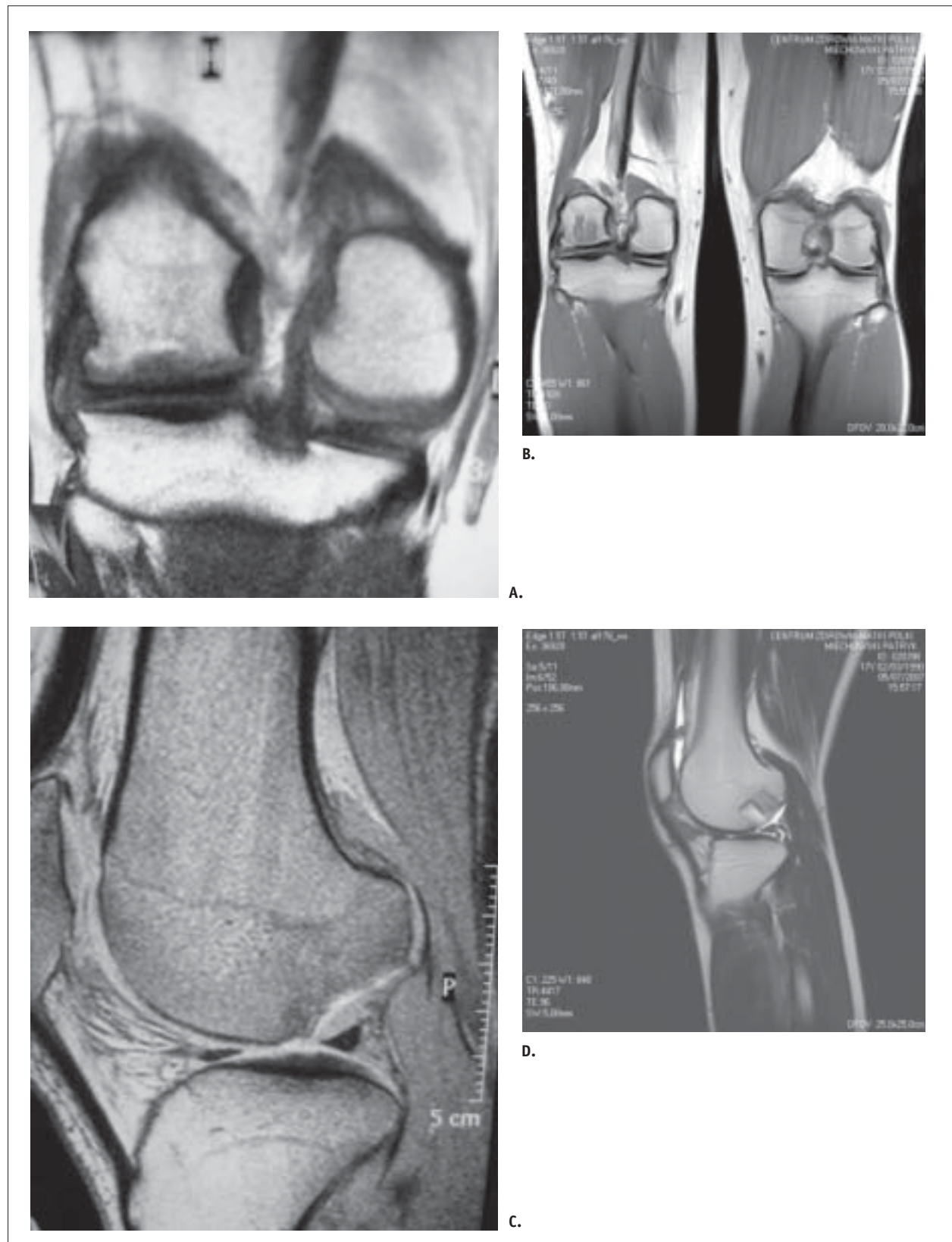


Fig. 1. MRI before and 12 weeks after surgery of the 17 years old patient suffering from osteochondral defect of lateral femoral condyle of right knee. **A.** Coronal section of right knee before surgery – large osteochondral defect of lateral femoral condyle. **B.** Sagittal section of right knee before surgery – large osteochondral defect of lateral femoral condyle. **C.** Coronal section of right and healthy left knees 12 weeks after surgery – good osteointegration of the grafts, partial remodeling and relatively good congruence of joint line with signal of neocartilago in comparison to contralateral knee. **D.** Sagittal section of right knee – good osteointegration of the grafts, partial remodeling and relatively good congruence of joint line with signal of neocartilago.

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