DELAMINATION RATES OF TISSUE FLAPS USED IN ARTICULAR CARTILAGE REPAIR

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**Introduction**

Of the various strategies advocated for the treatment of articular cartilage lesions, the transplantation of autologous chondrocyte suspensions has attracted considerable attention in recent years (1). Defects thus treated are traditionally closed by a periosteal flap to prevent loss of cells. In a recent study using adult goats, we discovered that such flaps became detached during the postoperative mobilization phase. We thus wished to ascertain whether the delamination rate, observed as delaminations of fascial (2) flaps, which are thinner and more flexible, is influenced by postoperative restriction of joint movement. In some cases, following immobilization (for three weeks), the effect of subsequent joint mobilization, was also investigated, in order to ascertain whether flaps became sufficiently interknitted with native tissue to ensure their retention.

**Materials and Methods**

We used 31 skeletally mature goats, each weighing approximately 60 kg. Following a lateral arthrotomy of the stifle joint under general anesthesia, chondral defects, 5 mm in width x 10 mm in length x 0.5 mm in depth, were created in each trochlear groove, either on the lateral or the medial aspect of the distal half, using a custom-built planing instrument. We chose to fill the defect with a fibrin matrix, since the absence or presence of this material could be readily ascertained by macroscopic inspection at the allotted time after surgery.

Periosteal (6 animals) or fascial (25 animals) flaps, with a surface area corresponding to that of the lesion, were excised from the proximal medial diaphysis of the tibia or from the fascia cruris (distal to the arthrotomy site), respectively. They were stripped of loose connective tissue, positioned over the fibrin clots and then sutured with 7-0 vicryl thread, by means of single interrupted stitches, to the surrounding articular cartilage surface. The knots were buried beneath the flaps in order to minimize surface friction. 4 of the goats (all with fascial flaps) were permitted unrestricted knee joint movement after surgery. In the other 27 animals, the operated joint was immobilized by applying a light Robert Jones bandage up to the inguinal region, this being interrupted by cage movement for a similar period, lost their flaps during this mobile phase. We thus wished to ascertain whether the flaps will be retained (5 % loss of fascial flaps). 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