Current State of Cartilage Regeneration

Gold Standard – ACI

? Periosteum
? Collagen membrane

By Prof. George Bentley
New approaches to Cell grafting

- **Increase yield**
  - Bioreactors
  - Growth factors
- **New source of cells**
  - Stem cells
  - Allografts ? Xenografts
- **Improve biodegradable matrix**
Biodegradable Matrices

• Advantages
  – Custom-sized implants
  – Minimally invasive implantation

• Disadvantages
  – ? Interference with cell migration & matrix production
  – Uncertain biodegradability
Future Aims of Cartilage Transplantation

• Improve Results

• Reduce Morbidity

• Extend Scope  ? OA  ? Arthropathies
Future Directions in Cartilage Transplantation 1

- Refined diagnosis and screening
- Clarify indications
- Harvesting ? Morbidity
- Healthy cartilage – improve assessment
  - Probes - Mechanical
  - Biochemical
- Excision of Bone - Bleeding
- Grafting of Bone - Indications
Future Directions in Cartilage Transplantation 2

- Periosteum or Collagen membrane
- Suture technique and cartilage damage
- Water-Tight testing - relevant?
  - harmful?
- Number and Type of cells required
- Cell Adherence Time
Future Directions in Cartilage Transplantation 3

• Non – Invasive Surgery – avoid biopsy
• Timing of Rehabilitation
• Non – Invasive monitoring
• Correlation of Repair with Assessment
• Quality of Life and Cost Assessment
Future Directions in Cartilage Transplantation 4

- Clinical Trials – National and International
- Increase Laboratory – Clinical Contact
- Alternative Study Design
  - C.P.M v Immobilisation / Weight bearing
  - Matrices
  - MACI concept
  - Cell – Engineered Solutions
  - Genetic Therapy
Cartilage – Davos 2002

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