Cartilage Plug Options: Autograft or Allograft

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Plug option for Cartilage Defects

• For focal Grade IV defects
• Plugs Fills in the Defect with viable cartilage and bone
• Options:
  – Autograft
  – Allograft
Osteochondral Autograft Plug
Osteochondral Autografts
“Rob from Peter to Pay Paul”

• Round plugs of cartilage and underlying bone used to fill defect
• Generally for isolated defects
• Younger patients
• Definite donor site morbidity
• Repair tissue maintains > 70% hyaline properties
Osteochondral Autograft

- **OATS**
  - **Indications**
    - Focal defects ≤ 1 cm diam.
    - Localized chondromalacia
    - Traumatic lesions
    - Osteochondritis dissecans
    - Failed microfracture
# Osteochondral Autograft Results

<table>
<thead>
<tr>
<th>Treatment</th>
<th>1 Year</th>
<th>2 Year</th>
<th>5 Year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Abrasion</td>
<td>58%</td>
<td>28%</td>
<td>0%</td>
</tr>
<tr>
<td>Microfracture</td>
<td>57%</td>
<td>38%</td>
<td>34%</td>
</tr>
<tr>
<td>Pridie Drilling</td>
<td>21%</td>
<td>33%</td>
<td>34%</td>
</tr>
<tr>
<td>OATS</td>
<td>89%</td>
<td>88%</td>
<td>87%</td>
</tr>
</tbody>
</table>

Hangody & Kish (KSSTA, 1997)
Osteochondral Autograft Procedure

• Advantages
  – Provides similar biomechanical and histological properties to articular cartilage
  – Replaces inferior subchondral bone
Osteochondral Autograft Procedure

• Disadvantages
  – Difficult to match congruity of articular surface
  – Gaps in articular surface
  – Donor site morbidity
  – Increased cost
  – Not good for Larger defects
Osteochondral Allograft

- My “Go to” Procedure for Larger Lesions on the Condyles
- Bigger Lesion…. Bigger Plug
Allograft Osteochondral Grafts

• Isolated defects
  – Patella, femoral condyle, tibia
• Large or small
• Defect filled with single plug from cadaver bone
  – No donor site morbidity
Allograft Osteochondral Grafts

- Allograft tissue takes longer to heal
- Longer recovery
- Little risk
  - Viral transmission < 1:1,000,000
- No donor site morbidity
- Good results in > 85% at 5 years
Osteochondral Allograft

- For Big Defect, instead of lots of little plugs (cobblestones)..... fill it with one big plug
Osteochondral Allograft

Indications

- Localized, unipolar symptomatic chondral lesion of femoral condyle, trochlea, or patella
- Moderate to high-demand patient in whom joint replacement is poor option
- Moderate to large size cartilage lesion, approximately 1.0 to 3.5 cm in diameter
- Pain and symptoms should correspond to the location of the cartilage lesion
Osteochondral Allograft

Indications

• Can be done as Primary, Revision, or Salvage Procedure

• Other problems can be used for: OCD, AVN, Post traumatic
Obtain Fresh Grafts

- storage of fresh grafts up to 14 to 21 days is currently acceptable
- After 28 days viability precipitously falls off
Surgical Technique

- Arthrotomy
- Defect Preparation
- Allograft preparation
- Press fit fixation
PREPARE DONOR GRAFT
Allograft Osteochondral Grafts

Advantages

- Defect filled with single plug from cadaver bone
  - No donor site morbidity
  - Size of defect does not limit procedure
Allograft Osteochondral Grafts
Disadvantages

• Relative paucity of donor tissue – Have to wait for size match of condyle
• Complexities in procurement and handling
• Possibility of disease transmission
• Ultimate durability of fresh allografts remains controversial
Post-op Rehab

- CPM is used in the post-operative period to achieve immediate range of motion 6-8 hrs/day
- Non weight-bearing for 6 to 8 weeks post-operative is used to protect the cartilage surface.
- Bike in 1st 1-2 weeks
- Light recreational activities are considered at 16 to 24 weeks.
- In general, high-impact sports are not recommended after osteochondral allografting for large articular cartilage lesions to improve long-term survival of the graft
Thank You