

# ACLR Surgical Pearls

Considerations for Early Rehab: Grafts & Healing

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## Ideal Graft Choice



The ideal graft choice should match as closely to the native ACL as possible, with regard to the individual's preference, activity requirements & goals, & with consideration for long-term safety & outcomes. (Baer & Harner, 2007)

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## Healing of Tissues



- **Bone-to-bone:** relatively quick (6-8wks); weak link at 6wks is the fixation
- **Tendon-to-bone:** longer incorporation time (8-12wks)
- **Allograft tissue:** slower rate of healing, prolonged inflammatory phase, delayed incorporation

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## Factors in Healing



- **Age-related changes:** ↓ stiffness & ultimate tensile load of graft; slower healing in general
- **Stress/loading:** graft tissue needs proper motion & stress
- **Blood supply:** synovium regeneration 1-2mos post-injury
- **Graft type**

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Graft Type	Advantages	Disadvantages
<b>Allograft: Bone-tendon-bone</b>	<ul style="list-style-type: none"> <li>• Bone-to-bone healing</li> <li>• ↓ surgical time</li> <li>• Predictable graft size</li> <li>• ↑ availability</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> <li>• Delayed incorporation</li> <li>• Immunogenic response</li> </ul>
<b>Allograft: Soft tissue</b>	<ul style="list-style-type: none"> <li>• ↓ surgical time</li> <li>• Predictable graft size</li> <li>• ↑ availability</li> </ul>	<ul style="list-style-type: none"> <li>• Cost</li> <li>• Delayed incorporation</li> <li>• Immunogenic response</li> </ul>
<b>Autograft: Bone-tendon-bone</b>	<ul style="list-style-type: none"> <li>• Faster incorporation</li> <li>• High strength &amp; stiffness</li> <li>• No immunogenic response</li> </ul>	<ul style="list-style-type: none"> <li>• Harvest site morbidity &amp; ↑ surgical time</li> <li>• Ant knee pain; possible ext deficit</li> </ul>
<b>Autograft: Soft tissue</b>	<ul style="list-style-type: none"> <li>• No immunogenic response</li> <li>• Less ant knee pain; no ext deficit</li> </ul>	<ul style="list-style-type: none"> <li>• Harvest site morbidity; possible knee flex deficit</li> <li>• Unpredictable graft size</li> </ul>

## Key Factors that Influence Outcome of ACLR

- **Graft selection** – consider pt's age, activity level, desired return to activity/sport, concomitant injuries, pros/cons of each graft
- **Graft fixation** – weakest link in 1<sup>st</sup> 6-8wks of rehab; must consider loads/stresses of early rehab activities
- **Rate of graft healing** – biologic healing & incorporation of grafts *require time*
- **Early post-op rehab** – influence of knee flex angle (high stress 0-30deg), quad activity (↑ quads = ↑ ant shear)