Meniscal Repair

MC Solan
Kingston
Meniscal Repair

Scientific Basis

Indications

Techniques
Meniscal Repair

References
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History

1897  Sutton  Remnants of intra-articular leg muscles

1909  Robert Jones  Excision if reduction fails

1936  King  Canine experiments
          Cartilage protection
          Partial excision only
## Meniscal Repair

### History

<table>
<thead>
<tr>
<th>Year</th>
<th>Author</th>
<th>Details</th>
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<tbody>
<tr>
<td>1944</td>
<td>Smillie</td>
<td>600 menisectomies</td>
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<td></td>
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<td>BJS Regeneration - stronger</td>
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<tr>
<td>1948</td>
<td>Fairbank</td>
<td>Knee joint changes after menisectomy</td>
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<td>JBJS(Br) 30:664</td>
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</tbody>
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“..no longer considered wholly innocuous..”
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**History**

Fairbank 1948

Osteophytes

Joint narrowing

Femoral condyle flattening
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History

1968 Jackson BMJ Degenerative changes in the knee after menisectomy.

Frequency of degeneration increased with follow-up, not with delay between injury and menisectomy.
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**Basic Science**

Fibrocartilage

Circumferential collagen (90% type I)

Radial fibres too - resist splitting
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Functions

Weight bearing  15-34% excision, 350% contact pressure
Radin, Maquet et al 1984 Clin Orth 185: 290

Shock absorption
Stability, especially if ACL deficient

Lubrication
Proprioception
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Partial Menisectomy

Northmore-Ball, Dandy, Jackson

Arthroscopic, open partial and total menisectomy

JBJS (Br) 65: 400 1983
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First Repair

1883  Thomas Annandale

An operation for displaced semilunar cartilage
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**Vascularity**
Medial: 10-30%
Lateral: 10-25%

Arnosky and Warren

Microvasculature of the human meniscus

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Indications

Definitely repairable vs Questionably repairable
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**Indications**

- Age of patient
- Knee stability
- Chronicity
- Site / pattern
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Indications

Knee stability

1989 DeHaven Open Repair
85% healing
2/3 retears ACL deficient knees
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**Indications**

- Young (Average 21)
- Fresh tear (6-20 weeks)
- Peripheral (Red-red or peripheral detachment)
- Stable knee (80% ACL too)
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Contra-Indications

Tears < 1cm heal spontaneously

Chronic tear with deformed fragment

Radial and complex tears (? Function even if heal)

White-white tears
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Techniques

Out - In

Warren
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Techniques

All-inside

Morgan
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**Healing Enhancement.**
- Vascular Access Channels - may disrupt function
- Trephination - smaller holes
- Synovial pedicles - experimental
- Fibrin Glue
- Laser welding

**Synovial Abrasion** - increases red / white healing

**Fibrin Clot** - Scaffold; growth factors; 50mL blood; glass
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Summary.

Effective techniques for selected patients

Knee stability paramount - ACL repair

Enhancement techniques expanding indications