Towards evidence based emergency medicine: best BETs from the Manchester Royal Infirmary

Edited by K Mackway-Jones

Best evidence topic reports (BETs) summarise the evidence pertaining to particular clinical questions. They are not systematic reviews, but rather contain the best (highest level) evidence that can be practically obtained by busy practising clinicians. The search strategies used to find the best evidence are reported in detail in order to allow clinicians to update searches whenever necessary.

The BETs published below were first reported at the Critical Appraisal Journal Club at the Manchester Royal Infirmary. Each BET has been constructed in the four stages that have been described elsewhere. The four topics covered in this issue of the journal are:

- Treatment of ruptured Achilles tendon
- Treating avulsion fractures of the base of the fifth metatarsal
- Magnetic resonance imaging in acute knee haemarthrosis
- Mobilisation of lateral ligament ankle sprains


Table 1

<table>
<thead>
<tr>
<th>Author, date, country</th>
<th>Patient group</th>
<th>Study type (level of evidence)</th>
<th>Outcomes</th>
<th>Key results</th>
<th>Study weaknesses</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nistor, 1981, USA¹</td>
<td>105 consecutive patients with closed acute rupture of the Achilles tendon Surgical or non-surgical treatment</td>
<td>PRCT</td>
<td>Plantar flexion measured when sitting and standing</td>
<td>No statistical significance 2 (operative) v 0 (conservative) 2 (operative) v 5 (conservative)</td>
<td>No power study</td>
</tr>
<tr>
<td>Cetin et al, 1993, Denmark²</td>
<td>111 patients with acute rupture of the Achilles tendon Operative vs non-operative treatment Assessed at 4 months and 1 year</td>
<td>PRCT</td>
<td>Rate of resuming sports activities Calf atrophy Ankle movement Complication rate</td>
<td>Operative significantly higher rate Operative significantly less Operative significantly better 3 reruptures (operative) v 7 (non-operative)</td>
<td></td>
</tr>
<tr>
<td>Lo et al, 1997, Canada³</td>
<td>19 English language studies 1993-97 comparing operative and non-operative treatments for tendoachilles rupture (including the RCTs above) Result pooling and analysis</td>
<td>Review</td>
<td>Time to return to work Time to return to sport Rerupture rate Complication rate</td>
<td>No significant difference No significant difference (Significantly) higher in non-operative Moderate and minor complications significantly higher in operative group</td>
<td></td>
</tr>
</tbody>
</table>

¹ PRCT=prospective randomised controlled trial.

Clinical scenario

A 35 year old man presents with acute onset of difficulty walking which came on while playing sport. He describes sudden onset of pain at the back of the ankle. Clinical examination reveals complete rupture of the Achilles tendon. You wonder whether operative treatment is better than conservative management in this case.

Three part question

In [acute patients with complete achilles tendon rupture] is [operative treatment better than conservative management] in [speeding time to recovery and improving functional outcome]?

Search strategy

Medline 1966 to 12/98 using the OVID interface. [(exp achilles tendon OR achilles tendon$.$mp OR tendoachilles.mp) AND (exp rupture OR rupture$.mp) AND (exp emergency treatment OR exp treatment outcome OR exp treatment failure OR treat$.mp OR treatment$.mp)] AND maximally sensitive RCT filter] LIMIT to human and english language.
Search outcome
Seventy eight papers found of which 70 were irrelevant and five were of insufficient quality for inclusion; the remaining papers are shown in table 1.

Comment
Two randomised controlled trials (RCTs) and one review have been listed. The better evidence is from the RCTs since both the study selection and the statistical analysis of pooled results in the quantitative review are open to criticism. Although minor complications were more common in operatively treated patients this did not affect later outcome, whereas repeat rupture and tendon lengthening occurred more often in the conservatively treated patients.

Clinical bottom line
On current evidence operative repair is preferable.


Treating avulsion fractures of the base of the fifth metatarsal
Report by Bruce Martin, Clinical Fellow
Search checked by Kevin Mackway-Jones, Consultant

Clinical scenario
A 38 year old woman presents to the emergency department after an inversion injury of the right ankle. Clinical examination and radiography confirm that there is an avulsion fracture at the base of the fifth metatarsal.

You wonder whether immobilisation in a plaster cast is better than simple support bandaging.

Three part question
In [an adult with an avulsion fracture at the base of the fifth metatarsal] is [immobilisation in a below knee cast better than simple support bandaging] in [controlling symptoms and speeding time to functional recovery]?

Search strategy
Medline 1966 to 12/98 using the OVID interface. [(metatars$ AND fifth.mp) AND (exp fractures OR fracture$.mp)] LIMIT to human and english language.

Search outcome
Eighty two papers found of which 77 were irrelevant to the study question and four were of insufficient quality for inclusion; the remaining paper is shown in table 2.

Comment
This is the only trial identified in this area and it has a number of weaknesses. Further well designed and executed studies are warranted.

Clinical bottom line
On current evidence simple support bandages are the treatment of choice.

<table>
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<tr>
<td>Wiener et al, 1997, USA</td>
<td>89 consecutive patients with avulsion fractures of the base of the fifth metatarsal&lt;br&gt;Short leg cast v soft (Jones) dressing&lt;br&gt;Followed up at 2, 4, 8, and 12 weeks</td>
<td>PRCT</td>
<td>Time in support&lt;br&gt;Modified foot score (pain, gait, function, walking distance)&lt;br&gt;Time to full activity&lt;br&gt;Time to bony healing</td>
<td>No significant difference&lt;br&gt;No significant difference&lt;br&gt;Significantly shorter in soft dressing group 33 v 46 days (p &lt; 0.05)&lt;br&gt;No significant difference</td>
<td>No power study&lt;br&gt;Not blinded. 33% drop out rate</td>
</tr>
</tbody>
</table>

PRCT=prospective randomised controlled trial.

Magnetic resonance imaging in acute knee haemarthrosis
Report by Ashes Mukerjee, Research Fellow
Search checked by Kevin Mackway-Jones, Consultant

Clinical scenario
A young man comes into the emergency department after sustaining a knee injury while playing football. Examination reveals a tense haemarthrosis; there is no evidence of fracture on radiography. You wonder whether magnetic resonance imaging (MRI) would be better than an arthroscopy to establish a diagnosis.

Three part question
In [young adults with acute knee haemarthrosis with no obvious fracture] is [early MRI better than arthroscopy] in [diagnosing intra-articular pathology]?
Towards evidence based emergency medicine: best BETs from the Manchester Royal Infirmary. Treatment of ruptured Achilles tendon.

T Gilpin

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