TREATMENT OF TRAUMATIC STRUCTURAL INSTABILITY OF THE SHOULDER
1. Shoulders dislocate
2. Shoulders redislocate
3. Surgery works well
4. Arthroscopic surgery is feasible
5. Dislocating shoulders get arthritic
EPIDEMIOLOGY

- Young, male, contact sports
- Posterior impact/abduction ext rotation
- Recurrence: 17% - 90%+
- Teens/high level sports/military
- Teens: 75% 20-30: 50%
- Why youngsters?
- Take particular care > 50
What are the benefits of?

- Physiotherapy
- Splint/external rotation
- Lavage
- $1^0$ arthroscopic repair
PHYSIOTHERAPY
SPLINT/EXTERNAL ROTATION

- Itoi: JBJS(Am) 01
- MRI of Bankart lesions
- IR 29° vs ER 35°
- ↓ separation/displacement in ER
- NB: n=19 and 13 recurrent
- Miller: JSES 04 ▲ contact force 45° ER cadavers - ? comfort/compliance
- Hart: JSES 05 – 1° scope, 2/4 labrum ER – 92% reduce

Optimum 60° ER/30° ABD
SPLINT/EXTERNAL ROTATION

- Itoi: JBJS(Am) 07
- RCT $10^\circ$ ER $3/52$ F/U > 2 yr
- F/U 80%
- Compliance: 53% IR, 72% ER
- Recurrence: 42% IR, 26% ER
- <30yrs: relative risk reduction 46.1%
- Limpivasti: AJSM 08 - cadavers – no contact pressure in ER
THE BASIS FOR SURGERY

- Edinburgh – C.M. Robinson
- JBJS Am 06
- Natural History/Trial Design
- 15-35 years
- 60% redislocated @ mean 13/12
- 2 year plateau (86% of recurrences)
- Predictors – male/young (not sports)
Probability of recurrence at 2 years

<table>
<thead>
<tr>
<th>AGE</th>
<th>MALE</th>
<th>FEMALE</th>
</tr>
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<tbody>
<tr>
<td>15</td>
<td>0.86</td>
<td>0.54</td>
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<tr>
<td>17</td>
<td>0.81</td>
<td>0.48</td>
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<tr>
<td>20</td>
<td>0.72</td>
<td>0.40</td>
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<tr>
<td>25</td>
<td>0.56</td>
<td>0.28</td>
</tr>
<tr>
<td>27</td>
<td>0.50</td>
<td>0.24</td>
</tr>
<tr>
<td>35</td>
<td>0.29</td>
<td>0.13</td>
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</tbody>
</table>

= more benefit from surgery in young males
Trial Design

- Arthroscopic surgery
- Randomised controlled
- To demonstrate large treatment effect
- 30 in each limb
- Instability measurement – WOSI
- DASH/Constant not sensitive.
ARTHROSCOPIC LAVAGE

- Wintzell: JSES 1999
- PRS – lavage vs nonoperative
- 15 each group
- Early movement
- 2 year f/u
- Recurrence: nonoperative - 60%
  lavage - 20%

? haematoma/distension
10 ARTHROSCOPIC REPAIR

- Viable.................................✔
- Desirable?............................✔
- Logical - ?labrum only............✔
- Easy....................................✗
- Robinson JBJS Am 08

..........but consider....
- Timing of surgery
- Sports calendar
- ‘Collision’ sports
- Youth ? ↑ failure
## Classification of surgery

<table>
<thead>
<tr>
<th>Operation</th>
<th>Introduced</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Perthes (Bankart)</td>
<td>1906 (1923)</td>
<td>anatomic</td>
</tr>
<tr>
<td>Eden-Hybinette</td>
<td>1918/1932</td>
<td>augmentation</td>
</tr>
<tr>
<td>Putti-Platt (Osmond-Clark)</td>
<td>1948</td>
<td>tightening</td>
</tr>
<tr>
<td>Magnusson - Stack</td>
<td>1940</td>
<td>tightening</td>
</tr>
<tr>
<td>Bristow-Helfet</td>
<td>1958</td>
<td>augmentation</td>
</tr>
<tr>
<td>Latarjet</td>
<td>1954</td>
<td>augmentation</td>
</tr>
</tbody>
</table>
Blundell Bankart: RNOH

- The gold standard

BMJ 1923
Bankart lesion

The damaged area is now fully exposed. Internally one sees the neck of the scapula with the fibro-cartilaginous glenoid ligament lying upon it. This ligament has usually been torn up a little way from the glenoid margin, so that it appears as a free edge lying upon bare bone.
Bankart technique (Rowe 1978)

- Beach chair/deltpectorlal
- Subscapularis separation – reflect/split
- Capsulotomy
- Preparation
- Reattachment
  +/- capsular tightening
Bankart technique (Rowe 1978)

* ANCHORS
Hovelius and the ‘Bristow/Latarjet’- I

- JSES 04
- 15 years: 3.4% recurrence - 1 redo
- 13.4% subluxations, 98% ‘satisfied’
- Bilateral instability ↑ with time - 35%
- Now: bone deficiency/revision cases
Latarjet - evolution

Edwards 2002
Eden-Hybinette/glenoid graft

- Eden 1916
- Hybinette 1932
- Bone defect - 25% glenoid width
- ‘Inverted pear’
- Epileptics
Eden-Hybinette/glenoid graft
External rotation before surgery

- Silvestro: JSES 07
- Under GA/Compare with uninjured side
- Blinded observer
- ER-abd, ER-side – mean loss 11°
- Maximum loss – 28°
- Unstable shoulders tend be **stiff** not lax
- Beware capsular tightening
- Unstable shoulders lose proprioception
Arthroscopic vs Open

- Meta-analysis
- Hobby (Boileau) JBJS Br 07
- 1985 ➔ 2006
- Failure rates:
  - staple 16-33% (23%)
  - transglenoid 8-60%
  - BA tacks 0-44%
  - anchors 0-30% (9.1%)
  - open 8.7% - ‘similar’ to anchors
Arthroscopic vs Open

- Meta-analysis
- Lectors (Matsen) JBJS Am 07
- 1991 - 2005
- Arthroscopic:
  - relative risk of instability x2
  - less effective in return to sports/work
  - higher Rowe scores ? better ROM

Ref re scores: “arbitrary weighting of one attribute in relation to another”
Transglenoid suture

- Caspari 1988
- Why? – a blind alley?

- Suderland JBJS 08
- 445 military recruits
- 34% redislocation @ 6.4 years
Bioabsorbable Tacks

- Kartus (Resch) JBJS Am 07
- 1994-97
- 71/81 at 107/12
- 27 had instability (16 redislocated)
Arthroscopic Technique - anchors

- Set up, set up, set up
- Assistant
- Portal placement
- Avoid pump
- Efficiency
- Key instruments
- Knots or ‘knotless’?
Arthroscopic Technique
ARTHROSCOPIC FAILURE

- Boileau - JBJS Am 06
- Acknowledged higher failure rates
- Mean age 26/male/sports - 3 years
- 15% recurrence
- Bone defects
- Hyperlaxity
- 3 anchors or less?
WHY THE FOUR ANCHORS?

- Open technique - usually 3
- Arthroscopic stabilisation has a flaw
- Difficulty with key anchor
- Wrong angle
- Securing labrum/capsule is difficult
Bankart vs Arthroscopic technique

- Key point - inferior suture/anchor
- Copeland single suture - 90’s
- www.shoulderdoc.co.uk
Herbert Resch

- Percutaneous expert
- Anterior/inferior portal
- “Slalom technique”
- BA tacks
Open vs Arthroscopic

“Open is reliable in my hands, you can’t teach an old dog new tricks”

“I haven’t opened a shoulder in years, I haven’t seen a failure yet”

‘The Third Way …..Education, Education, Education’
Introducing **New** Techniques

And of course .......... Bob!
Which way to go?

- Calvo JBJS Br 05
- 18% recurrence (TG)
- Scoring:
  - age < 28: 1
  - lax: 1
  - rim fracture > 15%: 5
  - contact/overhead: 1

2 or more - 43% recurrence = go open
Which way to go?

- Porcellini JBJS Am 09
- 385 studied
- Arthroscopic anchor technique
- 8.1% redislocation at 36/12
- 13.3% < age 22

Risks: young,
  - male (x3.5)
  - delay to surgery > 6/12 (x2.6)
Bankart – the aftermath

- Pelet JSES 06
- 30/39 reviewed at 20 – 41 years
- 10% recurrence
- 5 ➔ TSR, 7 ➔ OA
- OA rate 40%
- Mean loss ER 24°
- Severity of OA ↑ with time
Hovelius and the ‘Bristow/Latarjet’- II

- Radiological study: JSES 06
- 15 years
- Moderate/severe OA - 15%
- Graft placement 2-4 mm medial to articular margin
1° Repair - too controversial?

- Robinson JBJS Am 08 - 14 pages!
- DBPRT 88 (42 per group) <35
- 2 year F/U
- Risk of recurrence □ 82%
- Repair 3/42 Lavage 16/42
- No. needed to treat to prevent one patient having instability = 3.2
- Not justified as routine
CONCLUSIONS

- Epidemiology indicates treatment
- Unstable shoulders are stiff
- Bankart - gold standard - ?full circle
- Bankart – easier with the arthroscope?
- Arthroscopic compromises
- Arthroscopic revision? - it depends……
- Long learning curve for profession
- Shorter curve for the surgeon now
- OA - 15% at 20 years.