Outcomes
Friday, October 14, 2011 • 14:00 – 14:45pm
General Session

iHOT

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Vail 10

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HAGOS

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Summary: A new outcome measure, the International Hip Outcome Tool (iHOT), has been designed and rigorously validated for use in young, active patients with hip pathology. This health-related quality of life questionnaire is reliable, valid and responsive. It has two versions: iHOT 33, which is most likely to be used in a research setting; and a twelve question version, iHOT 12, which is ideal for use in routine clinical practice, for service evaluation studies, and in large scale pragmatic randomized controlled trials.

There have been rapid developments in the diagnosis and management of young patients with hip pathology. Measurement of effectiveness of new operative and non-operative interventions requires well-developed and validated outcome instruments. An international collaboration through MAHORN (Multicentre Arthroscopy of the Hip Outcomes Research Network, including surgeons from USA, Canada, UK, Germany and Switzerland) has developed a self-administered, evaluative tool to measure health-related quality of life in young, active patients with hip disorders.

iHOT was developed for active patients (18-60 years; ≥Tegner 4) presenting with a variety of hip conditions. We recruited patients from an international set of hip arthroscopy and arthroplasty surgeon practices. The tool was created using a process of item generation (51 patients), item reduction (150 patients) and pre-testing (31 patients). The questionnaire was tested for test-retest reliability (123 patients), face, content and construct validity (51 patients), and responsiveness over a 6-month period in post-arthroscopy patients (27 patients).

146 items were initially identified by patients. An item reduction process resulted in 60 items in four domains: Symptoms and functional limitations; sport and recreation; job-related concerns; and social, emotional and lifestyle concerns. Questions were formatted using a Visual Analogue Scale. Pre-testing confirmed appropriate wording, content and formatting.

Test-retest reliability showed Pearson correlations greater than 0.80 for 33 of the 60 questions. We used these to formulate a long version of the questionnaire, which we called iHOT-33.

The intra-class correlation statistic for iHOT-33 was 0.78 and Cronbach’s alpha was 0.99. Face and content validity were ensured during development and construct validity was demonstrated with a correlation of 0.81 to the Non-Arthritic Hip Score. Responsiveness was demonstrated with a paired t-test ($p \leq 0.01$), effect size (1.98), standardized response mean (1.7) and responsiveness ratio (6.7).

We then developed a short version of iHOT. A development data set (104 patients) was explored with forward selection linear regression analysis to choose a reduced item set for the new scale. This was tested in a validation data set (1833 patients) and responsiveness subset (80 patients) to measure agreement between the shorter and longer versions and to test the sensitivity of the shorter instrument to change after treatment.

Twelve items were chosen for a short version of the questionnaire, which we called iHOT-12. iHOT-12 demonstrated excellent agreement with the long version, iHOT-33; captured 95.9% (95% CI: 95.0-96.8%) of the variation of iHOT-33, and showed equivalent sensitivity to change with a standardized effect size of 0.98 (0.67 to 1.28).

iHOT is one of the most carefully designed and comprehensively validated outcome measures available in orthopaedic surgery. It has been created through a four year collaboration of twenty surgeons from four countries involving 2390 patients. We propose that iHOT 33 be used where feasible for research, and that iHOT 12 be used to monitor outcome in routine clinical practice. Both versions of iHOT are available through the ISHA website, and iHOT 12 is reproduced below.
INSTRUCTIONS

• These questions ask about the problems you may be experiencing in your hip, how these problems affect your life, and the emotions you may feel because of these problems.

• Please indicate the severity by marking the line below each question with a slash.

  » If you put a mark on the far left, it means that you feel you are significantly impaired. For example:

    ![Significantly Impaired](image)
    ![No Problems At All](image)

  » If you put a mark on the far right, it means that you do not think that you have any problems with your hip. For example:

    ![Significantly Impaired](image)
    ![No Problems At All](image)

  » If the mark is placed in the middle of the line, this indicates that you are moderately disabled, or in other words, between the extremes of ‘significantly impaired’ and ‘no problems at all’. It is important to put your mark at either end of the line if the extreme descriptions accurately reflect your situation.

• Please let your answers describe the typical situation in the last month.

Q1  Overall, how much pain do you have in your hip/groin?

EXTREME PAIN

NO PAIN AT ALL

Q2  How difficult is it for you to get up and down off the floor/ground?

EXTREMELY DIFFICULT

NOT DIFFICULT AT ALL

Q3  How difficult is it for you to walk long distances?

EXTREMELY DIFFICULT

NOT DIFFICULT AT ALL
Q4  How much trouble do you have with grinding, catching or clicking in your hip?

<table>
<thead>
<tr>
<th>SEVERE TROUBLE</th>
<th>NO TROUBLE AT ALL</th>
</tr>
</thead>
</table>

Q5  How much trouble do you have pushing, pulling, lifting or carrying heavy objects?

<table>
<thead>
<tr>
<th>SEVERE TROUBLE</th>
<th>NO TROUBLE AT ALL</th>
</tr>
</thead>
</table>

Q6  How concerned are you about cutting/changing directions during your sport or recreational activities?

<table>
<thead>
<tr>
<th>EXTREMELY CONCERNED</th>
<th>NOT CONCERNED AT ALL</th>
</tr>
</thead>
</table>

Q7  How much pain do you experience in your hip after activity?

<table>
<thead>
<tr>
<th>EXTREME PAIN</th>
<th>NO PAIN AT ALL</th>
</tr>
</thead>
</table>

Q8  How concerned are you about picking up or carrying children because of your hip?

<table>
<thead>
<tr>
<th>EXTREMELY CONCERNED</th>
<th>NOT CONCERNED AT ALL</th>
</tr>
</thead>
</table>

Q9  How much trouble do you have with sexual activity because of your hip?

- [ ] This is not relevant to me

<table>
<thead>
<tr>
<th>SEVERE TROUBLE</th>
<th>NO TROUBLE AT ALL</th>
</tr>
</thead>
</table>

Q10 How much of the time are you aware of the disability in your hip?

<table>
<thead>
<tr>
<th>CONSTANTLY AWARE</th>
<th>NOT AWARE AT ALL</th>
</tr>
</thead>
</table>

Q11 How concerned are you about your ability to maintain your desired fitness level?

<table>
<thead>
<tr>
<th>EXTREMELY CONCERNED</th>
<th>NOT CONCERNED AT ALL</th>
</tr>
</thead>
</table>

Q12 How much of a distraction is your hip problem?

<table>
<thead>
<tr>
<th>EXTREME DISTRACTION</th>
<th>NO DISTRACTION AT ALL</th>
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</table>
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