Implementing the Assessment of Surgical Performance in the Operating Theatre

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Overview

• Background to and rationale for researching surgical skill assessment methods

• Overview of Surgical Skills Study

• Implementation in the surgical environment (illustrated using reflective themes)
Surgical Skills Assessment

• RCOG & RCS (2007) introduced new surgical training curricula
• Shift to formalised assessment of surgical skill
• Portfolio of workplace assessment tools
• Trainees must demonstrate surgical competence
• NOT numbers or experience

“Experience can mean making the same mistake over and over again”  
Charles Mayo
Rationale

- RCOG & RCS have adopted two assessment tools (OSATS & PBA) for assessing surgical competence
- Limited validation of the surgical assessment tools within the workplace environment
- Evaluating assessment tools using the utility model (van der Vleuten, 1996) addresses issues of validity, reliability and acceptability
Aim

To compare the **validity, reliability and acceptability** of different methods of assessing surgical performance in the operating theatre for surgeons in training

- **OSATS** Objective Structured Assessment of Technical Skills
- **PBA** Procedure Based Assessment
- **NOTSS** Non-Technical Skills for Surgeons
# PBA Tool (RCS)

## General Surgery PBA: Laparoscopic cholecystectomy

### Competences and Definitions

<table>
<thead>
<tr>
<th>Rating</th>
<th>NO/S</th>
<th>Comments</th>
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<tbody>
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### Pre-operative Technique

- TT.1: Participants agreed, logical sequence required for the procedure
- TT.2: Chronologically handover all items correctly
- TT.3: Control level required, by an appropriate method
- TT.4: Introductory structure is clear and introduced correctly
- TT.5: Uses instruments appropriately and safely
- TT.6: Paired appropriate instruments with correct instruments

### Intra-operative Technique

- IT.1: Anticipation and unexpected events are handled by the patient
- IT.2: Uses technique with unexpected complications
- IT.3: Maintains an advantageous state, at all times
- IT.4: Communicates clearly and consistently with the team
- IT.5: Communicates clearly and consistently with the assessment
- IT.6: Ensures a pneumoperitoneum, safety

### Post-operative management

- PM.1: Ensures the patient's comfort, safety, from the operating theatre
- PM.2: Corrects a first complication
- PM.3: Ensures clear and appropriate post-operative instructions
- PM.4: Ensures comfort, ächte and post-operative instructions

### Global summary

Level 2: Insufficient evidence observed to support a summary judgment

Level 3: Unable to complete the procedure, assessed as grade 3

Comments by Assessor (Including strengths and areas for development):

Comments by Trainer:

Trainee Signature: 
Assessor Signature: (BAP Assessment: Produced by: UCLH, Comis. JH; The Sheffield Academic)
## OSATS Tool (RCOG)

### Diagnostic Laparoscopy

<table>
<thead>
<tr>
<th>Task Description</th>
<th>Preferred independently</th>
<th>Help needed</th>
<th>Not applicable</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Preservation of the system:</strong></td>
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<td>Evers tpeces positivity of the system</td>
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<tr>
<td>Check for palpation of adnexa and internal organs</td>
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<tr>
<td><strong>Identification of abnormality:</strong></td>
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<tr>
<td>Demonstrate knowledge of instruments and accessories about procedures</td>
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<tr>
<td>Check patency of ovaries (closed)</td>
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<tr>
<td><strong>Impact:</strong></td>
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<td></td>
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<tr>
<td>Controlled insertion of primary port</td>
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<tr>
<td>Controlled insertion of secondary particular diagnostic</td>
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<tr>
<td><strong>Conclusion:</strong></td>
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<tr>
<td>Maintain correct position of the laparoscope</td>
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<tr>
<td>Control movement of pelvic and abdominal movement</td>
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<tr>
<td>Appropriate use of assistants (if applicable)</td>
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<td>Correct interpretation of operative findings</td>
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<tr>
<td>Personal and para-uterine areas</td>
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<td></td>
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<tr>
<td>Dilation of port, reperitoneum</td>
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<td>Appropriate suture closure</td>
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</tbody>
</table>

Both sides of this form to be completed and signed.

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### Generic Technical Skills Assessment

**Assessor, please rate the candidate’s performance for each of the following factors:**

<table>
<thead>
<tr>
<th>Factor</th>
<th>Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assessment of tissues</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Technical skill assessment</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Communication skills</strong></td>
<td></td>
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<tr>
<td><strong>Overall impression</strong></td>
<td></td>
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</tbody>
</table>

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**Recommendation:** As a result of the candidate’s performance on the OSATS tool, it is recommended that the candidate be assessed in the following areas:

- **Technical skills:**
- **Communication skills:**
- **Overall impression:**
## NOTSS Example

<table>
<thead>
<tr>
<th>Category</th>
<th>Category rating *</th>
<th>Element</th>
<th>Element rating</th>
<th>Feedback on performance and debriefing notes</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Situation Awareness</strong></td>
<td></td>
<td>Gathering information</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Understanding information</td>
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<td></td>
<td></td>
<td>Projecting and anticipating future state</td>
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<tr>
<td><strong>Decision Making</strong></td>
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<td>Considering options</td>
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<tr>
<td></td>
<td></td>
<td>Selecting and communicating option</td>
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<td></td>
<td></td>
<td>Implementing and reviewing decisions</td>
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<tr>
<td><strong>Communication and Teamwork</strong></td>
<td></td>
<td>Exchanging information</td>
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<td></td>
<td></td>
<td>Establishing a shared understanding</td>
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<td></td>
<td></td>
<td>Co-ordinating team activities</td>
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<tr>
<td><strong>Leadership</strong></td>
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<td>Setting and maintaining standards</td>
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<td>Supporting others</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>Coping with pressure</td>
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</tbody>
</table>

* 1 Poor; 2 Marginal; 3 Acceptable; 4 Good; N/A Not Applicable

1 Poor: Performance endangered or potentially endangered patient safety, serious remediation is required
2 Marginal: Performance indicated cause for concern, considerable improvement is needed
3 Acceptable: Performance was of a satisfactory standard but could be improved
4 Good: Performance was of a consistently high standard, enhancing patient safety; it could be used as a positive example for others
N/A: Not Applicable
Study Overview

“Reliable assessment of competence requires a multiple sampling strategy, from multiple perspectives using a variety of methods” (PMETB Principles, 2004)

• Trainee surgeons in six surgical specialties:
  Obstetrics & Gynaecology, Upper Gastrointestinal, Colorectal, Vascular, Cardiothoracic, Orthopaedics
• Two to four index procedures per speciality:
  Obstetrics: urgent and elective caesarean
  Gynaecology: diagnostic lap, evacuation of uterus
• 40-50 assessments for each index procedures
• 4 assessments per trainee (mix of supervising consultants)
Method

• **Direct observation**
  Supervising Consultant
  Independent Assessor 1
  (+/- 2 +/- 3)
  Anaesthetist/scrub team

• **Video observation**
  Dual channel with audio
  Fidelity of assessments
  Comparison of methods
Progress

• Study commenced April 2007, due for completion June 2009
• Recruitment completed in three specialities
• 306 cases assessed to date
• Total of 500 surgical cases target
Reflective Themes

I. Relating the study design to research aim
II. Matching the research team to study design
III. Engaging workplace assessors
IV. Training of workplace assessors
V. Recruiting in the surgical workplace
VI. Consenting participants: Patients and Trainees
VII. Research versus training agenda
VIII. The power of the assessment purpose
I. Relating the study design to research aim

- Researching assessment in the workplace is challenging
  - Surgical environment is unpredictable
  - Construct of performance is complex to measure
- Established research method for evaluating assessment
  
  Are the assessment tools valid?
  - Many sources of validity evidence for measuring performance
  
  Are the tools reliable?
  - Use of wide sampling, multiple assessors and GT analysis
  
  Are the tools acceptable?
  - Trainee & trainer perspectives, follow-up questionnaires
II. Matching the research team to study design

- Team expertise in surgery, education & research
- Multidisciplinary team of researchers: All three independent assessors are practicing surgeons, trained in assessment with surgical education research interest
  A psychometrician with expertise in WPBA
- Other important team skills/attributes: diplomacy, tenacity, flexibility, consistent communication and organisation
III. Engaging workplace assessors

- Commencement of study coincided with major shifts in surgical training and assessment.
- Engagement initially difficult, less with time.
- Aim was to use a timely and appropriate method to inform surgical teams in advance.
- Explanation of aims of study in context of WPBA and surgical curricula.
- *Engagement best achieved by face to face discussion, supported by written information.*
IV. Training of workplace assessors

• All assessors provided with training
• Challenging due to breadth of staff, variation in attitudes, feasibility of training within work time
• *Unable to achieve entirely level playing field for training assessors (but reflects reality)*
• Despite training, team observation of key inconsistencies in use of assessment tools:
  1. Prompting trainees too readily
  2. Inability to allow trainees to lead the case
  3. Directing trainees to use their preferred method
  4. Reluctance to negatively score or give feedback
V. Recruiting in the Surgical Workplace

A single surgical case requires alignment of many factors, often beyond control of the research team:

- An appropriate case
- A consenting patient (24 hours prior notice)
- A surgical/HDU bed
- A suitable and consenting surgical trainee
- Available consultant to supervise and assess
- Sufficient operating time and staff for case
- Suitable training list (some service delivery lists)

Recruitment for educational research in the workplace is complex and demanding of resource.
VI. Consenting Study Participants

Patients as Participants
- Patient consent not usually the ‘limiting factor’
- *Consider the patient’s perspective towards surgical training system*

Trainees as Participants
- No ethical requirement for written consent
- Added research requirements to training alone
- Communicate aim of research is not to test individuals
- *Consider trainees as study participants and seek verbal consent in advance*
VII. Research versus training agenda

A collaboration?

• Provision of valuable, timely training for tools
• Ring-fenced opportunities for training
• Encouraged appropriate use of tools for formative assessment
• Practical demonstration that workplace learning and assessment is feasible
• ‘Field testing’ has prompted tool modification
VII. Research versus training agenda

A dichotomy?

• All assessors judge surgical performance and score independently
• Process of assessment prompts discussion
• Role of independent assessors more aligned to observer-as-participant
• Conflict exists in providing sufficient information on tool usage without prompting
VIII. Power of the assessment purpose

• Workplace assessment of surgical skill can have formative & summative assessment purposes
• Implementation of WPBA tools between Royal Colleges has differed significantly
• Within O&G, a requirement for numbers of surgical assessments for summative judgement
• Pressure on trainees & trainers may drive unwanted learning and focuses on competence
• Service provision by surgical trainees may influence the outcome of workplace assessment
Practical Lessons

• Identify most effective & feasible method of communication: engaging and training
• Respect working surgical system: need to work with system rather than seek to adapt it
• Be prepared to abandon assessments or assessors: compromises authentic assessment
• Consider your role in upholding the research agenda whilst drawing upon collaborations
• Research in the workplace has complexities
Acknowledgements

• Funders: NHS Research & Development

• Surgical Skills Research Team:
  Principle Investigator, Mr Jonathon Beard
  Research co-ordinator, Ms Helen Purdie
  Psychometrician, Jim Crossley

• Research Collaborators
  Edinburgh NOTSS research team
Miller's Pyramid

- Knows
- Knows how
- Shows how
- Does

Performance assessment

Competence assessment

Miller, G.E. Academic Medicine 1990, 65 (Suppl.) S63-S67
The Challenges of Work Place Assessment

Does

Shows how

Performance

Competence